Ágústa Pálsdóttir

Health and Lifestyle

Icelanders' Everyday Life Information Behaviour

Ágústa Pálsdóttir
was born in Reykjavík, Iceland, in 1955.
She holds a BA degree in Library and Information Science (1995) and an MA in Library and Information Science (1997) from the Department of Library and Information Science at the University of Iceland.
She has been enrolled as a doctoral student at the Department of Information Studies at Åbo Akademi University since December 1999.

From 1997-1998 she had a position as a temporary lecturer and since 1998 she has been an Assistant Professor at the Department of Library and Information Science at the University of Iceland.

Cover: Tove Ahlbäck

Åbo Akademi University Press
Biskopsgatan 13, FIN-20500 ÅBO, Finland
Tel. int. +358-2-215 3292
Fax int. +358-2-215 4490
E-mail: forlaget@abo.fi
http://www.abo.fi/stiftelsen/forlag/

Distribution: **Oy Tibo-Trading Ab**
P.O.Box 33, FIN-21601 PARGAS, Finland
Tel. int. +358-2-454 9200
Fax int. +358-2-454 9220
E-mail: tibo@tibo.net
http://www.tibo.net

HEALTH AND LIFESTYLE

Health and Lifestyle

Icelanders' Everyday Life Information Behaviour

Ágústa Pálsdóttir

ÅBO 2005

ÅBO AKADEMIS FÖRLAG – ÅBO AKADEMI UNIVERSITY PRESS

CIP Cataloguing in Publication

Ágústa Pálsdóttir
Health and lifestyle : Icelanders' everyday life information behaviour / Ágústa Pálsdóttir. - Åbo : Åbo Akademi University Press, 2005.
Diss.: Åbo Akademi University.
ISBN 951-765-272-0

ISBN 951-765-272-0
ISBN 951-765-273-9 (digital)
Åbo Akademi University Printing House
Åbo 2005

Acknowledgements

The present thesis is carried out at the Department of Social and Political Sciences / Information Studies at Åbo Akademi University. The work is carried out as a co-operational project to the research project "Citizens, Health and the Changing Media Culture." The research work was supported by The Research Fund of The University of Iceland. NORSLIS and its predecessor, NordIS-NET, have also provided financial support for travels to international courses from which I have benefited. I owe my thanks for this support.

Many people have contributed to this thesis and it is my great pleasure to thank them all. Professor Mariam Ginman has been my supervisor and I would like to express my deepest appreciation for her valuable guidance. Mariam offered me a very generous and wise guidance during the development of this project and a constant support, encouragement and inspiration towards its final completion. I am deeply grateful for this. I also express my gratitude to Professor Sara von Ungern-Sternberg for her sincere help and insightful comments. To Professor Niels Ole Pors and Professor Paul Solomon I am indebted for reviewing the thesis.

I gratefully acknowledge the assistance of The Social Science Research Institute staff for help with data gathering and statistical assistance. I wish to thank Guðlaug J. Sturludóttir for her assistance during the data collection. From Stella Blöndal I have received statistical advice and assistance. I have benefited from her expertise and for this I am thankful. I also thank Eva Heiða, Einar and Ella Björt who contributed with statistical assistance and Ella Björt receives special thanks for proof reading part of the text.

I wish to thank Anna-Karin for her efficient assistance with all kinds of practical matters. Thanks are also due to all my colleagues at the Department of Information Studies for creating a stimulating environment and for their friendly support at the research seminars. Especially I want to express my gratitude for the hospitality they

have offered me during my many visits to Åbo and for making me feel welcome from the very start.

My special thanks also go to my friends, to many to mention them all, for always being there, for keeping me socially alive and providing an enjoyable and stimulating life outside the work on the thesis.

Last but not least, I give my dearest thanks to my family, for their love, constant support and endurance throughout the work on this thesis.

CONTENTS

List of figures

List of tables

1 Introduction

We are, today, well aware that the health and well-being of people are affected by the lifestyle habits that they adopt in their everyday life. Yet in spite of campaigns aimed at educating people about healthy living, there are indications of gaps between the different groups in society, with some groups being able to gain more from these efforts than others (Nutbeam, 2000). This calls attention not only to the need to encourage people to behave in ways that enhance their health, but also to the importance of enabling people to acquire the necessary skills that allow them to benefit from the knowledge that is available about healthy lifestyles. An understanding of the abilities that different groups within society have to take advantage of information about healthy behaviour is of importance to improve the outcome of efforts to inform people of ways to adapt to healthier lifestyles (Ginman, 2000).

Most studies on health information investigate information behaviour in relation to health risk factors or the information behaviour of patients (see, for example Baker, 1996; Baker and Pettigrew, 1999; Johnson, Andrews and Allard, 2001; Reagan and Collins, 1987; Rimal, 2001). Few studies examine the factors that influence the everyday life information behaviour of people that are normally thought of as healthy. Everyday life information seeking (ELIS), which has also been called non-work information seeking or citizen information seeking, refers to the acquisition of information used by individuals to gain knowledge or solve their daily life problems not directly connected to their occupational tasks or educational setting (Savolainen, 1995). Iceland has a small, homogeneous population of only 293,577 people, with average life expectancies that are among the highest in the word (Hagstofa Íslands, 29.7.2005). However, studies about information behaviour are an underdeveloped field in Iceland, and little is known about how Icelanders utilise the opportunities that they are offered to be informed about healthy lifestyles.

1.1 Aim of the study

The aim of this study is to gather knowledge about how different groups of Icelanders are able to take advantage of information about health and lifestyle in their everyday life. As such, the study will seek an understanding of both social and cognitive characteristics, which can influence people's patterns of information behaviour. The study will seek to explore the connection between people's information behaviour and their self-efficacy beliefs, and examine how this relates to their health behaviour.

More specifically, the study will seek to answer the following questions:

1. Is there a relationship between purposive information seeking about health and lifestyle and other aspects of information behaviour, and if so, what is the nature of this relationship?

    a. Are differences in purposive information seeking connected to differences in information encountering?
    b. Are differences in purposive information seeking connected to a preference for specific information channels or information sources?
    c. If purposive information seeking is connected to preferences for specific information channels, how does this relate to evaluations of information in the different channels?
    d. Is there a relationship between purposive information seeking and motivation to information behaviour?
    e. Is there a relationship between purposive information seeking and barriers to information behaviour?

2. Is there a relationship between information behaviour and health behaviour, and if so, what is the nature of this relationship?

3. Is there a relationship between information behaviour and health self-efficacy beliefs, and if so, what is the nature of this relationship?

4. Is there a relationship between health self-efficacy beliefs and health behaviour, and if so, what is the nature of this relationship?

1.2 Structure of the thesis

The thesis is presented in two main sections. The first section, which will discuss the theoretical background of the thesis, is structured in four chapters. In Chapter 2, the concepts of health and health lifestyles will be discussed, as well as the impact of social cognitive theory on explaining health behaviour. An overview of studies of health behaviour and the relationship between health behaviour and social cognitive factors and demographic factors will be presented at the end of the chapter. In Chapter 3, health promotion will be discussed in relation to health behaviour, with the emphasis on the explanation of the knowledge gap. Chapter 4 addresses the various aspects of information behaviour. The chapter begins with a discussion of conceptual frameworks, followed by a discussion of information need. The chapter then turns to exploring the concept of information behaviour and factors associated with it. Chapter 5 focuses on information seeking and information source preference and will present a literature review of studies of health information seeking. The second section of the thesis presents the empirical part of the study. In Chapter 6, the methods used in the study are described. The results from the empirical study are shown in Chapter 7. The results are presented in three parts: first, the results about information behaviour; second, the results about the relationship between self-efficacy and information behaviour; and finally, the results about the relationship between information behaviour, self-efficacy and health behaviour. In the final

chapter (Chapter 8) the empirical results of the study are discussed and linked with the ideas and findings that are presented in the theoretical section.

2 Health and health lifestyles

In the following, health and health lifestyles will be discussed. The chapter starts by discussing the concepts of health and health lifestyles. It then moves on to discuss the relationship between social background and health. After that, the impact of social cognitive theory and particularly the key construct of the theory, self-efficacy, on explaining variances in health behaviour will be considered. The chapter ends by presenting an overview of studies of health behaviour with an emphasis on the relationship between health behaviour and social cognitive factors and demographic factors.

2.1 The concept of health

Definitions of health can be divided into two separate categories (see e.g. Antonovsky, 1979; Brannon and Feist, 2000; Sarafino, 1994). The biological approach is to define health as the absence of disease, injury or disability of some sort. In this sense, health and disease are seen as extremes on a continuum. The absence of a disease means health, and consequently, a person is either diseased or healthy (Brannon and Feist, 2000; Sarafino, 1994).

A more holistic approach, where health is viewed as multidimensional, involving psychological and social factors, as well as physical factors, appears in a definition proposed in 1948 by the World Health Organization (2002) stating that "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

In describing health as a positive condition, the second definition is perhaps more useful in the sense that it allows for conceptualising health as a movement on a continuum, with healthiness or wellness at the optimal end and a not-as-positive state of health, or illness, at the unfavourable end. In the biological approach, the focus is on illness, and health behaviour would therefore be aimed at preventing people from becoming ill. Whereas, when the focus is on health, the purpose of health behaviour goes beyond preventing illness, and instead, the aim is to move the individual toward a more positive state of health (Antonovsky, 1979). What is also interesting with the second definition is that it implies that psychological and social factors need to be taken into consideration.

2.2 The concept of health lifestyles

Inequalities in the health situation among different groups in society have been connected to biological reasons such as hypertension (Bosma, Vand de Mheen, Dike and Mackenbach, 1999). The prevalence of hypertension, in turn, has been connected with factors such as physical inactivity, dietary behaviour and being overweight (Geleijnse, Kok and Grobbee, 2004). Also, cardiovascular diseases, which are among the most serious health problems in Iceland as well as in many other Western countries, are believed to be caused by many different factors that are mostly under the control of each individual, among them are dietary choices, smoking and exercise (Guðmundur Þorgeirsson, 2003). It is, however, interesting to notice that coronary diseases have been declining throughout the Western world. Among the explanations suggested as to what has driven this change is success in controlling the disease by adopting new lifestyles (Tunstall-Pedoe et al., 1999; Tunstall-Pedoe et al. 2000). *Thus, personal lifestyle choices have been shown to have impact on people's health.*

The concept of health lifestyles has been defined in different ways. Backett and Davison (1995) argue that health-related behaviours are intertwined with the practices

of everyday life. They identify health lifestyles as "a behaviour or set of behaviours which are typical for an individual or group" (p. 630).

Aarø (1986) also confines health lifestyles to behaviour and habits. He describes lifestyles as "…relatively stable patterns of behaviour and habits which are typical for the groups the individual belongs to, or the groups he or she wants to belong to" (p. 4). He, further, recognises that attitudes, values and social norms are closely linked to lifestyles, and also that people's socio-economic circumstances and the resources that they have at hand are related to lifestyles, but excludes this from the definition.

According to Cockerham (2005), health lifestyles are "collective patterns of health-related behaviour based on choices from options available to people according to their life chances" (p. 55). His understanding represents the notion that people who live under different social conditions have dissimilar life chances. For some, life chances may act as hindrances, while for others, they may act as opportunities or supports. Although people have options about their health behaviour, the choices are made within the boundaries of their social circumstances.

A more comprehensive definition has been put forward by the Public Health Agency of Canada (2002). Apart from behaviours that are traditionally thought of as healthy lifestyles, for instance a healthy diet, physical activity, and staying away from tobacco use and substance abuse, the definition also includes factors such as effective coping and lifelong learning. Furthermore, it is stressed that the reconstruction of the definition of a healthy lifestyles involves both the individual and the social environment, as well as the relationship between these two factors. Healthy lifestyles are not considered to be optimal, but rather to consist of a broad array of behaviours that may vary according to several factors, for example, the person's gender, life stage, geography, culture and resources.

The link between dietary behaviour and health has been emphasised. For instance, in the US, diet and activity patterns have been identified as one of the major causes of

death of citizens (McGinnis and Foege, 1993), and obesity, which is rapidly increasing, has been identified as an emerging health problem in the Western world (World Health Organization, 2003).

An Icelandic study that has investigated changes in the prevalence of overweight and obese people living in Reykjavík, during the period from 1975 to 1994, found that obesity and being overweight had increased for both men and women, age 45 to 64. Among women, the prevalence of obesity had more than doubled. At the end of the period, 14.6% of women in the younger age group (45-54) and 24.5% of the older women (55-64) were classified as obese, compared to 8.6% and 11.2% in the beginning of the period. A total of 19.2% of men in the younger age group were obese at the end of the period, compared with 10.4% in beginning. The incidence of being overweight had also increased from 46% among men in both age groups in the beginning of the period to 53-54% at the end of it. For women in the younger age group, the increase was from 29% to 39%, and among older women, it was from 34% to 46% (Hólmfríður Þorgeirsdóttir et al., 2001). Furthermore, a study among adults age 30-85, living in the capital area in Iceland reports similar results. It was found that more than half of the participants were overweight or obese. For women age 30 to 45, a total of 50.4% were overweight or obese, and 68.2% of men age 50 to 64 were overweight or obese. Furthermore, the study also reported that a total of 19% of the women and 24% of the men were not physically active (Sigríður Lára Guðmundsdóttir et al., 2004).

2.3 Social background and health

People's health and well-being is moulded by many different factors. Well known are factors which are difficult to affect, such as the influence of genetic heritage and age on human health. Researchers have also studied the relationship between health and social class. The findings imply that people’s health is linked to their social

background and that various factors, such as income, education and profession are connected to people's health status (Bosma, Vand de Mheen, Dike and Mackenbach, 1999; Chandola, 2001; Mackenbach et al., 2004; Oliver and Nutbeam, 2003).

Furthermore, socio-economic factors during childhood have been related to differences in health conditions in adulthood. People who come from a lower social class have health associated with a higher risk of mortality from heart disease, stroke, lung cancer and respiratory disease (Claussen, Smith and Thelle, 2003; Kaplan and Salonen, 1990; Smith et al., 1998). Bosma et al. (1999) have further pointed out that unhealthy personal characteristics and coping styles are influenced by poor social conditions during childhood. People coming from a lower social class were more likely to have negative personality characteristics such as "external locus of control", "neuroticism" and the coping style "absence of active problem-focused coping".

According to a recent study, there is a connection between the health of children and adolescents living in the five Nordic countries and their social position. The findings show that children and adolescents living under lower social conditions have worse health than those who live under higher social conditions (Halldörsson et al, 2000). When examining the use of health services for the children, it was found that the use of GP services did not differ according to socio-economic groups. However, the use of phone calls to doctors and the use of specialists' services were positively related to the education of the mother. Children belonging to the lower socio-economic group, on the other hand, were more often admitted to hospitals than those who belonged to the higher groups, with the strongest association with the mothers' educational level (Halldórsson et al., 2002).

In a review by Ball and Crawford (2005) of studies published between 1998 and 2002, it was found that the prevalence of obesity in developed countries is negatively associated with social class. This relationship was found to be relatively consistent between occupational level and obesity and slightly less consistent for education. This finding is confirmed in a recent study of the prevalence of obesity in Estonia,

Finland and Lithuania, where obesity is associated with a lower educational level among women, but less consistently among men (Klumbiene et al., 2004). Also, findings from a Danish study indicate that body fatness is negatively associated with social class (Teasdale, Sørensen and Stunkard, 1990). Furthermore, previous evidence has shown that the association between obesity and social class in developing countries is positive. There are, however, indications of shifts in this relationship. A review of studies published between 1989 and 2003 on obesity in the adult population in developing countries indicates that, as the country's gross national product increases, the prevalence of obesity tends to become higher among the lower social groups than the higher groups (Monteiro et al., 2004).

2.4 Social Cognitive Theory and health behaviour

Many of the implications of social differences in relation to health have been explained by social cognitive theory. According to Bandura (2001), social cognitive theory is concerned with exploring the social diffusion of new styles of behaviour. People live their lives in social systems that are formed around a number of factors. The emphasis of the theory is on the social networks that provide a pathway through which styles of behaviour spread and are supported, and on the psychosocial factors that control their acquisition and adoption. In other words, the focus is on the interplay of social and cognitive factors and how they together shape behaviour.

The perspective of social cognitive theory is that people operate in a broad network of social systems, which they are assumed to participate in shaping as well as being shaped by. "People are self-organizing, proactive, self-reflecting, and self-regulating, not just reactive organism shaped and shepered by environmental events or inner forces" (Bandura, 2001, p. 266). The personal agentic capability, where people are not only seen as products of the social system that they live in, but also as producers of it, is central in social cognitive theory and has been emphasised by it. The notion

of human agency is, however, not confined to personal agency. Other modes of agency are proxy agency, that is when people depend on others to perform on their behalf, and collective agency, that is, people's beliefs in the ability to achieve something through the mutual effort of a group (Bandura, 1997, 2000). The idea of a close relation between human self and social structure applies also to social theory more generally. In his theory of structuration, Giddens suggests that social structure, that is, traditions, moral codes, customs and institutions, work together with human agency and shape society. Social structure is reproduced by individual agents when they continuously repeat the established ways of doing things but individual agents can also change the social structure if they disregard these acts, replace them, or start to reproduce them in a different way (Gauntlett, 2002).

The viewpoint of the social cognitive theory is based on "triadic reciprocal causation" in which there is a bi-directional interaction between behaviour, environmental factors and intrapersonal factors, especially cognitive processes.

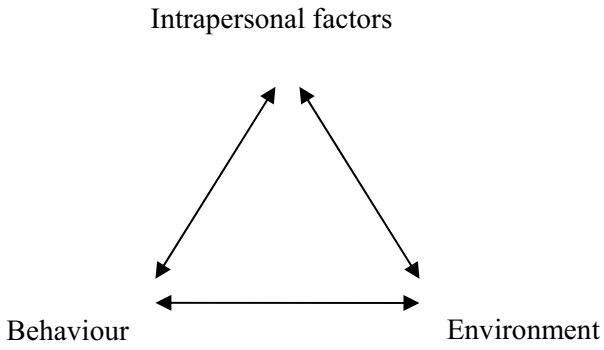


Figure 1: Triadic reciprocal causation

In this model, referred to by Bandura (1989, 2001) as reciprocal determinism, there is a transactional view of self and society, where these factors all work together and both affect and are affected by each other.

2.4.1 Social networks: diffusion of behaviour patterns

People receive a great quantity of information from both personal experiences as well as vicarious experiences, that is reading, observing or listening to others. Vicarious experiences, or "observational learning" as it is also referred to, is emphasised as being especially important. If people had to rely on direct experiences as a source of knowledge, the process of learning would become extremely time consuming. Therefore, observational learning to a great extent influences people's beliefs and their understanding of social reality (Bandura, 1997, 2001). In their everyday life, people are linked, directly and indirectly, to social networks that serve as communication systems through which they receive motivation and advice about desired changes in behavioural patterns. Family and peers can provide strong modelling influences. Also, persons who have high status within an individual's social surroundings can partly affect which behavioural choices are made. However, although a great deal of social learning takes place, either intentionally or as a coincidence, by observing models in the nearest physical and social environment, the potentials of modelling offered that way are limited. The mass media and the Internet, on the other hand, have the capacity to offer a huge quantity of information about human values, ways of thinking and patterns of behaviour (Bandura, 2001, 2002). By using modern media technology, information can be spread more rapidly through communities and societies than before.

By operating symbolically on the information gathered by observational learning, people can increase their knowledge and understanding of causal relationships. Which actions will be observed, the meaning given to them, their effects and how information that can be drawn from them is organised for later use, is determined partly by cognitive factors. But social cognitive theory also emphasises the importance of social systems on human thought, and on analysing the social networks through which new styles of behaviour are diffused (Bandura, 2001).

There is, however, a distinction between obtaining information about desired behaviour and acting on it, and Bandura (1989, 1997, 2001) has put emphasis on the importance of perceived self-efficacy as a cognitive mediator of action.

2.4.2 Perceived self-efficacy

The construct of perceived self-efficacy, which was introduced by Bandura in 1977 as part of social cognitive theory, has been much used in the area of health psychology. Self-efficacy is being included as a component in most theoretical models of health behaviour (Bandura, 1998; Hevey, Smith and McGee, 1998; Schwarzer and Fuchs, 1996), for example, the Theory of planned behaviour (Ajzen, 1985), Protection motivation theory (Maddux and Rogers, 1983), Modified social learning theory (Wallston, 1992), the Health belief model (Becker and Rosenstock, 1987) and the Health action process approach (Schwarzer and Fuchs, 1996).

Self-efficacy beliefs are people's expectations about whether or not they will be able to master a behaviour, and if so, how successful they will be. The emphasis is not on people's skills, but on what they believe they can do with their skills under different circumstances. Individuals who believe that they have the necessary skills and will be able to perform well at a task are considered likely to be more strongly motivated, to set themselves higher goals and to have the strength to carry out the act than those who are low on self-efficacy beliefs. Therefore, people's judgements about their competencies can influence whether or not they make good or poor use of the skills that they have (Bandura, 1997, 1998).

2.4.2.1 Outcome expectancy

Another type of expectancy that needs to be taken into consideration is outcome expectancy. Outcome expectancy can be described as the judgment of the likely results of performing a task. Before people act, they try to predict the possible results of their behaviour, and the decision about whether or not to carry out the specific behaviour is built on the outcome of that prediction (Bandura, 1997, 1998).

It has been suggested that outcome expectancies can be considered as precursors to self-efficacy (Schwarzer and Fuchs, 1996). However, according to Bandura, the direction of the relationship between these two theoretical constructs is clearly from self-efficacy to outcome expectancy. For a person to start and perform a task, for example, look for, evaluate and make use of information about health and lifestyles, that person must believe that she is capable of doing so. Even if she believed in the outcome, that information about health and lifestyles can be used to improve her behaviour, which in turn would make her health better, that alone would not be enough. The self-efficacy beliefs of a person operate as a mediator, in that she needs to believe in her own capabilities of gathering the information, evaluating them and being able to use them to improve her health habits. If she doubts her capabilities of performing the task, she is unlikely to undertake the action (Bandura, 1997, 1998). In certain situations, when contingencies are restrictively structured, so that no level of competence by certain groups can produce desired outcomes, expected outcomes are independent of efficacy beliefs. It can happen in circumstances that are strictly segregated by some factors, for example by gender, age or race, so that no matter how capable those who belong to the excluded group consider themselves, they expect the outcomes to be negative. Also, in some instances, when the outcome depends entirely on the quality of the action, self-efficacy may be enough to explain behaviour. In most cases, however, actions can best be predicted by the combined influence of perceived self-efficacy and outcome expectation (Bandura, 1997, 1998).

Individuals who believe that a successfully performed behaviour will lead to a favourable outcome and that they are capable of performing the behaviour properly are thought to be likely to act. Three main types of outcome expectancies exist: physical, social and self-evaluation outcome expectations, where the positive ones act as encouragement and the negative ones as discouragement (Bandura, 1998). The anticipated physical effects of a behaviour can affect the behavioural choices made. Physical outcomes involve expectations about whether or not actions are likely to cause enjoyable physical experiences, or as a negative consequence, be painful or cause discomfort (Bandura, 1998). Expectations about how the social environment will react to a behaviour, whether it will cause positive or negative feedback, forms the second type of outcome. When making decisions about their behavioural choices, the social systems that people are part of serve as regulators, where people try to make choices that are likely to result in social rewards and to avoid decisions that they believe will be unrewarding or lead to social punishments. Thereby, the social environment that people belong to may influence the way that behaviour patterns are formed (Bandura, 1998, 2001). Behaviour practices, however, are formed not just by the influences of the social environment. People also develop their own personal standards against which they evaluate their behaviour against. The third type of outcome involves self-evaluative feedback. In regulating their behaviour against these personal standards, people are inclined to become engaged in activities that they find self-satisfying and give them a sense of self-worth and to avoid doing things that they find personally disapproving. It is not the standards as such, but the self-satisfaction that people attain from carrying out a behaviour in such a way that it fulfils them or the dissatisfaction experienced when the performance does not meet the standards, that act as motivators for action (Bandura, 1998, 2001).

2.4.2.2 Four main sources of self-efficacy beliefs

According to Bandura (1997, 1998) there are four main sources of influence, which can enhance people's sense of efficacy: mastery experience, vicarious experience, social persuasion and somatic and emotional states. These sources differ in strength and influence in relation to the order that they are presented here.

Mastery experience is believed to be the most influential way of establishing strong self-efficacy beliefs. It is through continuing evaluation of their performance that people develop their sense of self-efficacy. By completing a task successfully, a strong sense of self-efficacy can be built up for that particular task, whereas failing at a task can weaken self-efficacy. This is particularly the case if failing at a task happens early in the process, before developing a strong sense of self-efficacy. Although a previously successful performance is considered the strongest source of self-efficacy, Bandura (1997, 1998) emphasises that it is not by going through easy experiences, but by facing problems and making a persistent effort in overcoming them, that a strong sense of self-efficacy can be developed.

People's self-efficacy beliefs can also be enhanced through vicarious experiences. By observing others, who are considered to be similar to oneself, complete a task successfully and making judgements about their own performance in a similar situation, people can develop their beliefs of self-efficacy. But social models do not serve only as a standard for judgement of competence. Through their way of behaving and expressing themselves, they also provide information about how activities can be approached and how to cope with demands. Vicarious experiences are, however, considered to be a weaker source of self-efficacy than mastery experience (Bandura, 1997, 1998).

Although a still less-significant source, social persuasion is one method of increasing self-efficacy beliefs. People's self-doubts about their competence to handle a task can

be diminished through verbal encouragement. By encouraging people and explaining to them that they have the necessary abilities to succeed, their self-efficacy expectations can be increased in such a way that they become more likely to make a persistent effort at the task and thereby make self-improvements (Bandura, 1997, 1998).

Somatic and emotional states can also partly affect self-efficacy beliefs. Tension or stress can be taken as signs of inability and result in lower self-efficacy. By presenting people with ways to cope with stressful situations, their efficacy beliefs can be altered in a positive way. Also, emotional factors such as mood can influence people's self-efficacy judgements. A positive mood can increase perceived self-efficacy, and a negative state of mind can result in a lowered self-efficacy. By raising people's moods, their sense of self-efficacy can be altered so that they feel more competent (Bandura, 1997, 1998).

2.4.2.3 Dimensions of self-efficacy

Self-efficacy beliefs can vary in terms of three dimensions, that is: strength, magnitude, and generality. Self-efficacy can vary according to the strength of the belief of performing a behaviour successfully. A behaviour can also be broken down into increasingly more specific components and the magnitude of self-efficacy beliefs refers to the number of components that a person believes she is capable of performing. Generality refers to the extent to which successful performance with a behaviour in one situation will affect self-efficacy beliefs in performing the behaviour in another situation, or in performing another type of behaviour (Bandura, 1997; Hevey, Smith and McGee, 1998).

2.4.2.4 Perceived self-efficacy: Level of specificity

Bandura (1997) has stressed that self-efficacy judgements are domain-specific as well as situational specific, rather than general in nature. That is, the capacity of a person's sense of self-efficacy can vary between different domains of behaviour. A person who believes in her ability to change her habits so that her diet becomes healthier, for example, may or may not believe in her ability to stop smoking, or to start to exercising regularly. Also, people may feel more confident under certain circumstances about their ability to perform successfully in what they are trying to achieve, while under different circumstances, their self-efficacy beliefs regarding the same behaviour may be lower (Maibach and Murphy, 1995). A number of health behaviour-specific self-efficacy scales have been developed and used in studies on various behaviours. However, Hevey, Smith and McGee (1998) have noted an increased interest in conceptualising self-efficacy at a more general level, between the domain-specific and personality or trait-like level. Others have also pointed out that there may exist a more generalised sense of self-efficacy that reflects an overall personal belief about the ability to cope with different domains of activities (Scholz et al., 2002; Schwarzer and Fuchs, 1996). This may, for example, be the case when similar skills are required to perform more than one kind of behaviour (Maibach and Murphy, 1995). The Perceived Health Competence Scale (PHCS) (Smith, Wallston and Smith, 1995) is an example of a scale designed to measure both self-efficacy and outcome expectations at an intermediate level of specificity, in relation to general health behaviours.

2.5 The relationship between social cognitive factors, demographic factors and health behaviour

Although social cognitive factors have been recognised as having influence on people's health and health behaviour, the reasons for health inequalities across

different groups in society are not fully understood. Various factors have been shown to be connected to people's lifestyle patterns. Among these are factors such as self-efficacy, educational level, gender and age.

Several authors have reviewed studies of self-efficacy in relation to health behaviour and found it to be an important determinant of health behaviour. Strecher et al., (1986) reviewed studies that examined self-efficacy in relation to the topics of cigarette smoking, exercise, weight control, alcohol abuse and contraceptive behaviour, since 1977. The authors found a strong positive association between self-efficacy and health behaviour in the different health domains reviewed and concluded that self-efficacy had proved to be a predictor of initiating and maintaining a health behaviour change. Furthermore, as indications from experimental studies exist that participants' self-efficacy can be enhanced and this in turn can be related to a behaviour change, the authors claim support for the notion that self-efficacy refers to people's beliefs about their skills to perform a behaviour, rather than people's actual skills. However, as a limitation to the studies reviewed, it was pointed out that most of them had only investigated the self-efficacy beliefs, leaving out the expectations of outcome. Schwarzer and Fuchs (1996) reached a similar conclusion in a review of studies of sexual risk behaviour, physical exercise, nutrition and weight control and addictive behaviours, such as smoking, alcohol use and use of drugs. They found self-efficacy beliefs to be positively related to both the intention to initiate a health behaviour and also the health behaviour itself. They further point out that, with regard to addictive behaviours, it is important to differentiate between categories of self-efficacy beliefs that are related to different stages of the behaviour: resistant self-efficacy and harm-reduction self-efficacy that relate to primary and secondary prevention; and action self-efficacy, coping self-efficacy and recovery self-efficacy that relate to self-change, treatment and relapse prevention. Also, Hevey, Smith and McGee (1998) reviewed the use of self-efficacy in studies on exercise, diet, alcohol use, smoking and illicit drug use, as well as studies on multiple health behaviours. They concluded that the construct of self-efficacy has proved to be important in "initiating, maintaining, controlling, quitting and avoiding a number of health

behaviours" (p. 265). The fact that the reviewed studies focused primarily on one single health behaviour is claimed to be a limitation, and the need to explore the inter-relationship between the various health behaviours is being stressed. Others have also emphasised the need for studies that take a more comprehensive approach and analyse the relationship between self-efficacy and multiple health behaviours (Rimal, Flora and Schooler, 1999; Smith, Wallston and Smith, 1995). Apart from the review articles, a number of studies indicate that self-efficacy plays a role in predicting whether or not people are likely to engage in, or continue, a certain behaviour.

Education has been mentioned as an important factor in relation to health and lifestyles. Educational differences have, for example, been found in relation to behaviour such as diet, exercise, consumption of alcohol and smoking. In Iceland, studies have found health to be connected to people's level of education. Findings from Iceland show that people with higher education were more likely to judge their health as good than those with lower education (Emil L. Sigurðsson, 1996). Higher education has also been associated with lowered mortality due to coronary heart diseases among Icelandic men (Maríanna Garðarsdóttir et al., 1998). Moreover, an Icelandic longitudinal study, conducted in five stages, the first one in the period 1967-1969 and the last one in 1983-1991, among residents in the metropolitan Reykjavík area, has found that respondents who have higher education also tend to live longer than those with a lower level of education (Hardarson et al., 2001).

Gender differences have also been reported in relation to health behaviour, with the studies often reporting women to have more positive health habits than men. Men have, for example, been found to be more overweight, and to be more likely to smoke and drink alcohol, than women (Denton, Prus and Walters, 2004). Age, on the other hand, seems to have been examined to a much lesser extent in relation to health behaviour than the above mentioned factors. However, Backett and Davison (1995) report a study from the UK. The study links age and demographic situations to assessments of what behaviour is considered good or bad and found that different kinds of behaviour are connected to different stages in people's life course. Young,

single people seemed to believe that although they had unhealthy habits, like bad diet, smoking and drinking, this would be balanced out by other factors, such as being young and strong, more physically active and less stressed. After having entered a stable relationship, people became more concerned with health and lifestyles. And after having started a family with children, the understanding that good health could not be taken for granted was present. The necessity for more regularity and less excessive behavioural habits were connected with responsibilities for children. These findings are in line with results from a study that was conducted among citizens in three Australian towns. It was found that participants in the younger age groups (under 35 years) were more likely than those who were older to practice a number of unhealthy habits, such as smoking, excessive alcohol drinking, unhealthy diet, and not exercising enough (Kassulke et al., 1993).

In the following sections, the relations between social cognitive factors, demographic factors, and specific types of health behaviour will be discussed, that is: dietary behaviour, physical exercise, consumption of alcohol and smoking behaviour.

2.5.1 Dietary behaviour

Self-efficacy and the connection to dietary behaviour

Schwartzer and Fuchs (1996) have investigated the relationship between self-efficacy beliefs about healthy diet, outcome expectancy and risk perceptions among citizens living in Berlin, Germany. The findings suggest that self-efficacy beliefs are important both in creating an intention to eat healthy food and also in transforming the intention into an actual behaviour. This is in line with findings from a study conducted in Massachusetts which show that the self-efficacy of obese participants in a weight reduction programme was enhanced when they successfully decreased in weight. The more weight and body fat decreased, the higher people were found to

score on the self-efficacy scale (Melanson et al., 2004). Furthermore, a study among participants from two rural communities in Minnesota, one that received a year-long programme encouraging a change in diet, and the other that served as a reference group, found self-efficacy to moderately predict both dietary behavioural intention and self-reported dietary behaviour, independent of the effects of demographic variables (Hertog et al., 1993).

However, a recent study by Burke et al. (2005), where they compared changes in diet and self-efficacy of two groups of participants undergoing a dietary programme – a group that received usual treatment and another group that received more intense treatment – did not find proof for self-efficacy as a mediator of improvements in behaviour. Although positive dietary changes were found to occur in the group that received more intense treatment, no changes were detected in the self-efficacy between the groups. Also, in a study aimed at determining the predictive value for a 20-item Weight Efficacy Lifestyle Questionnaire (WEL), conducted among obese people seeking treatment, Fontaine and Cheskin (1997) found that the scale did not associate with participants' programme attendance, nor with their weight loss.

Education and the connection to dietary behaviour

Studies investigating dietary behaviour suggest that the choice of food among higher social classes may be healthier than among lower social classes. According to a large study conducted within the European Union, which examined people's perceptions of healthy diet, people with better education, or coming from groups with higher income were found to be more likely to make changes in their eating habits (Margetts et al., 1997). Also, the findings from an extensive research investigating food consumption in Iceland indicate a strong connection between food habits and factors such as education and profession. Income, on the other hand, did not seem to be related to the nutritional value of the food. The findings revealed that although the food selection of people with lower income was different from those with higher income, it was not

less health oriented (Laufey Steingrímsdóttir, Hólmfríður Þorgeirsdóttir and Stefanía Ægisdóttir, 1990, 1992). These results are, further, in line with the findings from a study by Lennernäs et al., (1997) that revealed that food-related behaviour is influenced by people's attitude rather than their income. In addition, in the US , adolescents (age 14 to 19) living in rural areas and who had parents with higher education were found to have better knowledge about nutrition and to have better dietary habits than those who had parents with lower education (Misra and Aguillon, 2001).

The previous mentioned findings, however, are in contradiction to the results from a study by Prättälä et al. (2003). In order to analyse socio-economic differences in the use of butter and cheese, they reviewed twenty dietary surveys from 10 European countries in the period of 1985 to 1997. They found that the sources of saturated fat were different for the higher and lower social classes. In all countries, the use of cheese was greater among the higher classes than among the lower classes. The lower social classes, however, used more butter or animal fats. This seems to indicate that the amount of saturated fat used by the higher classes may not differ so much from the amount used by the lower classes. It is suggested that different trends in dietary behaviour exist, with the higher social classes preferring modern food and the lower classes traditional food.

Furthermore, findings from Shröder et al. (2004) also indicate that choice of food among people living in the Mediterranean area of Spain is influenced by cultural values rather than the participants' level of education. Their study found that the diet of those who had a lower level of education was not less healthy than the diet of those who belonged to the higher educational level.

Gender and the connection to dietary behaviour

A number of studies have found women to have more positive attitudes towards a healthy diet, and also that women's dietary behaviour is healthier than men's. In the US, women have been found to have more positive beliefs about dietary and lifestyle factors recommended by The American Heart Association (Kline and Terry, 1986). This is consistent with the findings of Sheperd and Stockley (1987), who reported that women in the UK had both more negative attitude towards and lower intentions of eating high-fat foods than men. Roininen et al. (2001) compared health-related attitudes in Finland, the UK and the Netherlands. They found that women in all three countries were generally more interested in healthy eating than men. Women were also more interested in eating natural food products than men. In Finland and the UK, women reported more interest in light food products than men, but on the other hand, women in these countries were also more interested in eating sweet foods than men

A study on food consumption in Finland found that although Finnish men have, since 1979, been reporting an increasingly healthier food consumption, women are still more health oriented (Prättälä, Berg and Puska, 1992). Findings from an Icelandic study also show that women (67.9%) were more likely than men (44.1%) to try to keep their diet healthy. When asked about consumption of butter, most of the respondents reported keeping it low. Men, (31.1%), however, were more likely than women (13.3%) to spread thick butter on bread (Emil L. Sigurðsson, 1996).

French female university students have been found to try to avoid fat and cholesterol and to consume more fruit and fibre than men do. Male students, on the other hand, have reported more consumption of meat, adding more salt to meals, and eating snacks more often than women (Monneuse, Bellisle and Koppert, 1997). A study by Stock, Wille and Kramer (2001) among university students in Germany reports similar findings. Women were found to make a more conscious effort for a health diet, and women were also more likely than men to have a low-fat diet. However, Davies et al. (2000) found that male college students in Oregon, in the US, were

indeed concerned about dietary habits, but mainly in order to maintain appropriate weight and because it affected their physical appearance, rather than in relation to their overall health. Furthermore, there are indications that gender differences in relation to diet are adopted at an early age. In a study by Misra and Aguillon (2001) among American adolescents living in rural areas it was found that girls were more knowledgeable and had better dietary habits than boys.

Age and the connection to dietary behaviour

Study findings about age-related differences in connection to dietary behaviour are somewhat inconsistent. Findings from a Finnish study have shown age-related differences in connection with diet. Although the study found that differences in connection with age had disappeared among the highest social class, they were still found, especially among the lowest social classes. The food habits of the oldest women were less healthy than middle-age and younger women, and middle-age men were found to have a more positive behaviour than older or younger men (Prättälä, Berg and Puska, 1992).

In Iceland, on the other hand, older people have been found to have healthier food habits than younger people (Emil L. Sigurðsson, 1996). Also, a study among employees in German metal companies found that, although the diet of most of the employees could be described as a combination of healthy and unhealthy food, healthy diet increased with higher age (Reime et al., 2000). These findings are supported in other studies that have found older people to have more healthy dietary habits than younger people (Backett and Davison, 1995; Kassulke et al., 1993).

2.5.2 Physical exercise

Self-efficacy and the connection to physical exercise

Self-efficacy has been examined in relation to physical exercise. A study among sedentary older adults (55-65 years) participating in a physical activity programme found an increase in the self-efficacy beliefs of participants that had moved to an action or maintenance phase after 18 months in the programme, while a decrease in self-efficacy beliefs was observed for those who were still in the first three phases of the programme (Stevens et al., (2003). On the other hand, Netz and Raviv (2004) found that although there was a positive correlation between self-efficacy and the level of exercise, it only accounted for a very limited variance (1.1%).

Self-efficacy has been found to play an important role in the health behaviour of US college students. Self-efficacy was examined in relation to several behavioural habits, such as exercise, diet, alcohol use and smoking and was reported to be a significant predictor of behaviour. The higher the students perceived self-efficacy, the more likely they were to have positive health habits, with the exception of smoking, where higher self-efficacy was related with higher prevalence of smoking (Von Ah et al., 2004). Also a study conducted among adolescents in twenty-four high schools in South Carolina examined the effects of a lifestyle education programme on both respondents' self-efficacy beliefs and their physical activity. The study found self-efficacy to partially mediate the effect of the programme on physical activity (Dishman et al., 2004).

Education and the connection to physical exercise

Studies have also examined the relationship between educational level and exercise activity. The prevalence of a sedentary lifestyle in each member state of the

European Union has been examined by use of two different methods of defining sedentary. It was found that, independent of how sedentary was defined, educational level was connected to sedentary behaviour among both genders. People with a higher educational level had a lower prevalence of sedentary lifestyle than people with a lower educational level (Varo et al., 2003). Also, in a study of physical inactivity in relation to being overweight among the adult population in Los Angeles County, it was found that people with a high school education or less were more likely to be sedentary than those who had at least some college education (Yancey et al., 2004). The relationship between education and physical activity has also been underlined in a study by Thompson et al. (2003), who found that the odds of being physically active were higher among Native American women with a college education, than among women with less than a high school education.

A study by Aarø (1986), conducted in Norway, measures socio-economic status through several variables, among them education, occupation and income. The findings show that, after controlling for age, physical activity is indeed related to socio-economic status. However, for both men and women, those who are most physically active do not come from the group who hold the highest occupational positions but rather from the group of respondents that hold an intermediate occupational position. A positive relationship between people's educational level and physical exercise has, moreover, been found in a study conducted among people living in the capital area in Iceland. The study also found that exercise activity can partly explain the association between mortality and educational level (Einar Þór Þórarinsson et al., 2002).

In contradiction to these above mentioned findings, Shröder et al. (2004) did not observe a difference in physical activity by level of education in a study among the Spanish Mediterranean population. Likewise, a study of leisure-time physical activity conducted in Greece found no statistically significant relations between physical activity levels and education level. Interestingly, however, the study found that the lifestyle of participants who were physically active was also healthier in other areas,

compared to sedentary participants. That is, physically active participants were less likely to be smokers, they consumed lower quantities of alcoholic beverages and their diet was healthier, compared to sedentary participants (Pitsavos et al., 2005). Evidence that healthy behaviour practices are related has also been found in a study of unhealthy diets in a middle-aged Scottish population. Especially, association was found between poor diet and smoking among both genders. but unhealthy diet was also associated with binge drinking among men (Abel et al., 1992). Thus, there are indications that people form their personal lifestyles, and if they practice unhealthy behaviour in one respect, they do so in other respects, and vice versa.

Gender and the connection to physical exercise

Several studies have reported gender differences in relation to physical activity. In a study of leisure-time physical activity conducted in Greece, Pitsavos et al. (2005) found that, across all age groups, men were more likely to be physically active than women, with a total of 53% men being physically active compared to 48% of women. Physically active men were also likely to practice more intense activities and exercised more times per week, compared to women. Likewise, Shröder et al. (2004) found leisure-time physical activity to be higher for men than for women in a study conducted among the Spanish Mediterranean population. In Iceland, gender differences in relation to exercise show that men exercised more often than women (Emil L. Sigurðsson, 1996).

The findings about physical inactivity in relation to being overweight among the adult population in Los Angeles County are similar: women were almost twice as likely as men to be sedentary (Yancey et al., Wold et al., 2004).

Vaez and Laflamme (2003) conducted a study among Swedish university students and found that male students exercised four times or more often a week, while female students exercised two to three times a week. On the other hand, Stock, Wille and

Kramer (2001) found no gender difference for physical activity in a study conducted among university students in Germany.

Age and the connection to physical exercise

A study of factors related to physical exercise among three age groups of physically inactive Australians has shown that age is an issue. Booth et al. (1997) examined preferences for physical activities, preferred sources of assistance or support to become physically active, as well as barriers to regular participation. Walking was found to be the most preferred activity among all age groups, although not to the same extent by the youngest group as the older groups. A total of 38% of the youngest group (18-39) preferred walking, compared to 67% of the middle age group (40-59) and 68% of the oldest group (60+). Swimming was the second most preferred activity, mentioned by 10% of both the youngest and the middle groups and 15% of the oldest group. Age-related differences, however, were more obvious for preferred sources of support to become physically active. A total of 50% of the oldest group mentioned advice from health professionals, compared with 22% in youngest group. The opportunity to exercise with a group, on the other hand, was preferred by 40% of the youngest group, compared with 27% of the middle group, and less than 20% of the oldest group. As for barriers to physical exercise, about 45% of both the youngest and the middle groups considered lack of time to be a problem, but only 20% of the oldest group. Motivation was also mentioned by 35% and 30% of the youngest and middle group, respectively, compared with only 16% of the oldest group. The oldest group, on the other hand, found injury (40%) to be a barrier to a greater extent than the youngest group (20%), and bad health was considered a problem by 27% of the oldest group compared with 10% of the youngest group.

2.5.3 Consumption of alcohol

Self-efficacy and the connection to consumption of alcohol

Self-efficacy has been examined in relation to consumption of alcohol. Recently, a study conducted by Oei and Morawska (2004) among university students revealed that both self-efficacy and outcome expectancy were necessary to discriminate between three different types of drinking styles: binge drinkers, social drinkers and heavy drinkers. Dijkstra, Sweeney and Gebhardt (2001) also assessed drinking behaviour and its determinants in a sample of university students. They used a model that measured both positive and negative expectancies of drinking outcomes, social influence, and two types of self-efficacy expectations, that is, self-efficacy to resist the urge to drink four or more alcoholic beverages in particular social situations, and self-efficacy to cope with the urge to drink the same amount of drinks in negative emotional states. Social norms were found to be the strongest predictor of drinking behaviour, explaining 24% of the variance in drinking, positive social expectations explained 6% and self-efficacy to resist a drink added 3%. When analysed by gender, self-efficacy to cope with social pressure explained 7% of the variance in females. While for students living with their parents, self-efficacy to cope with social pressures to drink was found to explain 21% of the variance.

Education and the connection to consumption of alcohol

Social differences have been found in relation to the use of wine and alcohol. The relationship seems to vary according to cultural values. Findings about drinking habits among the Spanish Mediterranean population show that the consumption of wine and alcohol, among both genders, was not related to people's educational level (Shröder et al., 2004). In Brazil, on the other hand, higher consumption of alcohol was found to be related to having higher education and belonging to the upper or middle class. Men belonging to the upper social class had a higher risk of becoming

alcoholics than those belonging to the lower class. However, among women, no differences were found for higher-risk drinking across social classes (Almeida-Filho et al., 2004). Findings from a study conducted in Norway show that both men and women in the higher status groups consume more alcohol than the lower groups (Aarø, 1986). In Denmark, a relationship was found between the type of beverage that was consumed and respondents' socio-economic position. People who reported drinking wine were found to be better educated and to have a higher income than those who drank beer and spirits (Nielsen et al., 2004).

Gender and the connection to consumption of alcohol

The consumption of alcohol has been reported to be greater among men than women. Stock, Wille and Kramer (2001) found that male university students in Germany had a higher frequency of alcohol drinking than female students, and more male students were identified to have a risk for alcohol abuse or to be alcohol dependent than female students. Males were also found to be more likely to report consumption of drugs than women. Similar findings are reported about French male university students, who were found to drink more alcohol than female students (Monneuse, Bellisle and Koppert, 1997). Davies et al. (2000) found that American male college students considered alcohol consumption and drug use to be the most serious of their health concerns.

Bendtsen, Lejman and Bjurulf (2002) conducted a study among all patients attending an alcohol treatment centre in Sweden, during a period of four years. A higher number of men (255) attended the centre than women (164). However, no significant gender differences were found in relation to the severity of alcohol dependence.

A study conducted in Brazil reports that drinking is related to gender. Men were found to drink twice as much as women. Furthermore, their risk of becoming alcohol dependent was six times greater for men than for women (Almeida-Filho et al., 2004).

Also, among the Spanish Mediterranean population, more men were found to drink wine and alcohol than women, and their daily consumption was also higher than that of women (Shröder et al., 2004).

A Danish study reports about somewhat different findings. Gender differences were found in relation to consumption of beer and spirits, with men drinking more than women. On the other hand, no gender differences were found in relation to wine drinking (Nielsen et al., 2004).

2.5.4 Smoking behaviour

Self-efficacy and the connection to smoking behaviour

The role of self-efficacy has been assessed in studies that examine smoking cessation as a process, with smokers at a later stage of change expressing higher self-efficacy. Djikstra, Roijackers and DeVries (1998) categorised Dutch smokers into four stages, according to their increasing readiness to quit smoking respectively: immotives (plan to keep smoking), precontemplators, contemplators and preparers (decided to quit smoking). They found that the first three groups differed from each other, with an enhancement in self-efficacy across stages as readiness to quit smoking increased. Preparers, on the other hand, did not have higher self-efficacy beliefs than contemplators. Stephens, Cellucci and Gregory (2004) reported similar findings in a study among adolescents in Idaho. They categorised participants into five stages, three precontemplation stages, a contemplation stage and an action stage. They found that the self-efficacy of participants in the third precontemplation phase was higher than those in levels one or two. However, in a study among Dutch smokers, Gerrit, Rijt and Westerik (2004) found only a limited support for the role of self-efficacy in relation to participants' intention to undergo a smoking cessation treatment.

A study among high school students in California found that regular smoking had decreased in schools that offered support programmes addressing environmental influences of cigarette smoking, as opposed to control schools not offering such a programme. The students also experienced significantly more positive changes in the social cognitive constructs: perceived incentive value for creating a tobacco-free environment, perceived self-efficacy to perform advocacy activities and the outcome expectancies that advocacy activities would result in changes in the environment (Winkelby et al., 2004).

The role of self-efficacy in relation to the smoking behaviour of adolescents, as well as the modelling influences that the adolescents receive from their nearest social environment, has received attention. Ausems et al. (2003) conducted a study on a sample of students in their final year at 143 Dutch primary schools. Three categories of participants were identified: never smoked, experimented with smoking and regular smoker. It was found that those who never smokerd had the highest self-efficacy beliefs, this was followed by experimental smokers, and regular smokers were the least convinced of their ability to resist smoking. The three groups also differed according to the modelling influences that they experienced in their immediate social environment. Never smokers had the fewest smokers in their social environment and perceived the most positive social norms towards non-smoking, while regular smokers had the highest number of smokers in their social environment and perceived the least positive social norms towards non-smoking.

Kodl and Mermelstein (2004) conducted a study in the US investigating parental self-efficacy and various parental practices in relation to adolescent smoking. They discovered that the smoking status of the parents was related to their parental self-efficacy belief, that is, how confident parents felt about influencing their children's smoking behaviour, as well as other different domains. Parents who had a history of smoking, even when it was only at experimental levels, were found to have lower self-efficacy beliefs than those who had never smoked. The findings also suggest that self-efficacy beliefs are not only related to the parents' own behaviour but also to the

behaviour of their children. After controlling for the smoking of parents, those parents who had children that had experimented with smoking, or smoked more regularly, were found to report lower levels of self-efficacy beliefs.

Education and the connection to smoking behaviour

Studies on smoking behaviour have also shown a connection with people's social position, especially their educational level. In a study that was conducted in ten European countries, it was found that the rates of incidence of lung cancer, which is to a large degree believed to be caused by smoking, varied by educational level. People with less education were found to have higher rates of incidence of lung cancer than those who had higher education (Mackenback et al., 2004). This is in line with findings from Norway that report that the lower status groups have a higher risk of being daily smokers (Aarø, 1986). In contrast, Shröder et al. (2004) did not find a significant relationship between smoking prevalence and educational level among the Spanish Mediterranean population, although the highest prevalence of smoking was found for women with the highest level of education.

Barbeau, Krieger and Soobader (2004) have analysed patterns of current smoking, attempts to quit smoking, and former smoking, among households in the US. They found that for both white and black populations, current smoking was highest among people with less education, less income, and in service or blue collar occupations. Although the differences between socio-economic groups were not as strong among other racial/ethnic groups, a similar pattern was found for them. No differences were found for attempts to quit smoking between socio-economic or ethnic groups. On the other hand, success in quitting had a strong association with people's socio-economic position among all racial/ethnic groups, with those who had a lower social position being less successful than those who had a higher social position.

In a study conducted by Kurtz et al. (2003) among economically disadvantaged women living in the US, their knowledge, attitudes and preventive behaviour regarding exposure to environmental tobacco smoke was examined. They found that the main predictors of preventive behaviour against environmental tobacco smoke were knowledge about the harmful health affects of it, attitudes towards being exposed to it and the smoking status of the women. Women with more formal education had better knowledge about the unfavourable consequences of being exposed to environmental tobacco smoke, their attitudes were more against being exposed to tobacco smoke, and they had better preventive behaviour than women with less formal education. The smoking rates among the women in the study varied by educational level. A total of 62.3% of women with no high school degree smoked, compared to 62% of those with a high school degree, 37.8% of those with some college education and 32% of women with a college degree.

Gender and the connection to smoking behaviour

Studies have also reported gender difference in relation to smoking, with men having a higher level of smoking than women. Mackenbach et al. (2004) found that the rates of lung cancer mortality in ten European countries were higher among men than women. The size of the difference between genders, however, varied between the countries. Shröder et al. (2004) reported that more men than women smoked in the province of Gerona in the Spanish Mediterranean. In a study by Barbeau, Krieger and Soobader (2004), conducted in the US, it was found that in all racial/ethnic groups, women were less likely to be current smokers than men. However, although no gender differences were found for attempts to quit smoking, men in all racial/ethnic groups, except for the white population, were found to be more likely than women to succeed at quitting smoking and become former smokers. Stock, Wille and Kramer (2001), on the other hand, found no gender difference in the smoking behaviour among university students in Germany. Results from an Icelandic study that investigated the prevalence of smoking in the period 1967 to 1996 revealed

gender differences, with men having a higher prevalence of smoking at the beginning of the period. However, for the oldest age group, the gender difference had disappeared at the end of the period. Whereas for the youngest age group, the difference between genders had become somewhat smaller at the end of the period than it was in the beginning of it (Nikulás Sigfússon et al., 2003).

Age and the connection to smoking behaviour

Kviz et al. (1995) have studied age-related differences among smokers in Chicago. They found that those who belonged to the older age groups, 30-49 and 50 years or older, were more likely to be heavy smokers than the youngest age group of 18-29. Furthermore, while the desire to stop smoking was positively associated with age, the confidence in being able to do so was negatively associated with age.

3 Health promotion, the knowledge gap and the impact of information

The chapter will discuss health promotion in relation to people's health behaviour; the emphasis in the discussion will be on the explanation of the knowledge gap.

3.1 Health promotion

Health behaviour and the promotion of health have received increasing attention in recent years. Behaviours such as consuming a healthy diet, exercising regularly, using alcohol moderately and avoiding smoking are among those that people can undertake to promote their health. Staying informed about health issues is also a step in that direction (Public Health Agency of Canada, 2002).

According to the World Health Organisation (1999), the purpose of health promotion is to enable individuals "to increase control over, and to improve, their health". This requires society to provide the means and support in order for individuals to be able to gain the necessary skills to take active care of their health. Subsequently, understanding the factors that encourage people, as part of their everyday activities, to behave in a way that at least aims at maintaining their present health, or more preferably, to move in the direction of better health rather then in the opposite direction, becomes important.

The main idea behind health promotion is the assumption that by increasing people's access to information about health risks and healthy behaviour, they can be persuaded to change their health habits in such a way as to improve their health. Health promotion, thus, consists among other things of assuring people access to information and the knowledge necessary to make informed health choices. The problem,

however, appears to be, not the lack of information, but rather how people are able to relate the information to themselves and benefit from it.

3.2 The knowledge gap

While efforts are being made to provide people with information about healthy lifestyles, there are also indications that a gap exists between different groups in society, with some groups taking more advantage of the information available than others. It has been argued that in spite of an abundance of information on health behaviour, the result is not always better public understanding and that people often remain confused. It has also been pointed out that access to health information in itself does not necessarily result in modified health behaviour, and that a change in the individual's attitude is a necessary precursor to a behaviour change. The link between receiving and understanding information, a change in attitude and behaviour change, is complicated, and knowledge does not necessarily lead to a change in behaviour (Leventhal, 1973; Thomas, 1980).

Providing people with information about health risks and healthy behaviour with the aim of improving their habits is a central notion behind health promotion, although not everyone agrees on the impact of information. Others have stressed that information is the tool that individuals have to enable them to make decisions based on knowledge and facts. If sufficient health information is not available, people will not have the knowledge needed to make appropriate changes in their health behaviour (Pugh, Kropf, and Greene, 1994). It has also been noted that, although not everyone may be able to take advantage of the information that is provided, information nevertheless is necessary if a change in health behaviour is to happen, as "knowledge creates the precondition for change" (Bandura, 1997, p. 282). Thus, by providing people with information on health issues, they are given the possibility to take more responsibility for their own health. It is therefore important to analyse which kind of

information and information behaviour is likely to prove efficient for different groups of society (Gibney, Kearney and Kearney, 1997; Margetts et al., 1997).

The unequal spread of information and knowledge to the different groups of society is the concern of the knowledge gap hypothesis. The hypothesis states that "As the infusion of mass media information into a social system increases, segments of the population with higher socio-economic status tend to acquire the information at a faster rate than the lower status segments, so that the gap between these segments tends to increase rather than decrease" (Tichenor, Donohue, and Olien, 1970, p. 159-160).

The original knowledge gap hypothesis defines the knowledge gap from a social structural point of view. In most studies concerned with the knowledge gap, the main indicator of socio-economic status has been formal education, although socio-demographic variables, such as gender or age have also been used (Viswanath and Finnegan, 1996). It has been noted that factors other than the social level may also influence the knowledge gap. The need to examine the gap from an individual-level point of view has been suggested. Ettema and Kline have proposed an alternative to the original hypothesis:

> As infusion of mass media information into a social system increases, segments of the population motivated to acquire that information and/or for which the information is functional tend to acquire the information at a faster rate than those not motivated or for which it is not functional, so that the gap in knowledge between these segments tends to increase rather than decrease (Ettema and Kline, 1977, p. 188).

3.3 The relationship between the knowledge gap and social cognitive and demographic factors

The literature about the effects of health communication campaigns on health behaviour describes a somewhat inconsistent pattern between people's awareness of a risk that certain behaviour may cause and how they behave.

Gaziano and Horowitz (2001) have tested the knowledge gap hypothesis by measuring the level of publicity that different types of cancer had received in three major newspapers in the US and comparing it with data about women 40 years or older from a national health survey. They found that inequalities in knowledge about cancer were related to the women's educational level, with lower educated women being less knowledgeable than those who had a higher level of education. The gap in knowledge was found to be related to the amount of publicity, with the inequalities being greater for the types of cancer that had received greater publicity than those that were less publicised.

Also, Viswanath and Finnegan (1996) have reviewed the literature that examines the knowledge gap phenomenon, for a period of 25 years, since the knowledge gap theory was formalised. According to their findings, reports from longitudinal studies of health knowledge show that, although gaps between social groups tend to increase to begin with, they close eventually. This is in line with results from a Finnish study on social class-based food consumption patterns, over a twelve year period from 1979 to 1990, which indicates that there has been a shift towards healthier food consumption and diminishing social class differences in food consumption. The findings show that, when the higher class changed their lifestyle in a more positive direction, people belonging to the lower social class followed the trends set by the higher social classes with a time lag of about ten years. The study, however, also pointed out that it may be a lifelong task to adapt to a healthier lifestyle, and when behavioural changes such as dietary habits are examined, a study that examines a longer period may find

evidence of changes that short-term studies fail to demonstrate (Prättälä, Berg and Puska, 1992).

The above-mentioned studies highlight the importance of the relationship between people's knowledge about health issues and their health behaviour. The studies also underscore the information behaviour of individuals as one of the most important factors for a successful outcome of health promotion.

3.4 The importance of information

Several studies indicate that, in fact, there is a relationship between knowledge about health issues and behaviour. Osler and Schroll (1995) in their study on changes in health knowledge and behaviour among adult Danes in the years from 1982 to 1992 found that better knowledge was associated with improvements in lifestyle, and that these changes reflect the topics that Danish health education has emphasised in recent years. Groups with a low level of risk factors, such as smoking, being overweight and unhealthy eating practices, were more likely to have read about health information than those with higher level of risk factors (Osler, Lous and Rasmussen, 1992). This is consistent with findings from a study conducted among citizens in three Australian towns. It was found that there was an association between the participants' information seeking behaviour, their choice of information sources and their health-related risk behaviour, such as smoking, excessive alcohol drinking, an unhealthy diet, and not exercising enough. Those who practiced more healthy behaviour were also found to make more effort in seeking information, and their preference for information channels differed from those who practiced more risky behaviour (Kassulke et al., 1993).

Margetts et al. (1997) have found that respondents reporting not having any source of information about diet were also less knowledgeable about healthy eating. When

asked to mention aspects of healthy eating, these respondents were the least likely to mention factors such as low fat consumption, eating more vegetables and the need for balance in diet. Healthy dietary guidelines put forward to promote a healthy diet seem to be having some effect, but there may be specific groups who are missed by health campaigns. Findings from the Norsjö project in Sweden, where several different channels were used to inform citizens about the impact of nutrition, indicate that people's food habits can indeed be affected. It is, however, stressed that it is necessary to do more than just inform people of the risks involved, as they also need to be provided with information about ways to change their pattern of food habits (Måns, 1991).

On the other hand, a study conducted by Shepherd and Stockley (1987) in the UK found that people who had high knowledge about nutrition did not report lower consumption of food that increased fat in the diet, nor had a more negative attitude toward high-fat food. Also, findings from an Icelandic study on health promotion, over a period of three years, revealed that although the media was providing more information about health matters in the year 1992 compared with the year 1989, this had not lead to more improvements in lifestyles, and that people still thought that there was a demand for more information (Hrafn V. Friðriksson, 1992).

Hafstad and Aarø (1997) have examined the effects of mass media campaign against smoking among adolescents. Their findings indicate that whether the affective responses were positive or negative, they stimulated interpersonal discussions amongst the adolescents, which in turn predicted a positive behavioural outcome among smokers. Kurtz et al. (2003) conducted a study among economically disadvantaged women living in the US. They found that women who smoked were also less knowledgeable about the unhealthy effects associated with smoking than women who did not smoke.

It is also interesting to note that during the period 1967 to 1996, the smoking prevalence among Icelanders, age 30 years or older, decreased. Among men, it was

found that for the youngest age group, smoking had decreased from 65% in the beginning of the period to 42% at the end of it, and for the oldest age group, it had decreased from 45% to 19%. Smoking prevalence had decreased to a smaller extent among women. Among women in the youngest age group, it had decreased from 50% to 35%, and for the oldest group, from 30% to 20%. Although reasons such as physical symptoms and cost of smoking were mentioned, the main reason for quitting smoking was reported to be the respondents' concerns about their health, a reason which also seemed to become increasingly more important in the latter half of the period (Nikulás Sigfússon et al., 2003).

What the knowledge gap hypothesis as proposed by Ettema and Kline (1977) underlines is that first of all, in order to acquire information, people need to have some motivation to do so. As a motivational factor, the importance of having an interest in the topic has been supported by results from a number of studies (Chew and Palmer, 1994; O'Keefe, Boyd and Brown, 1986; Rimal, Flora and Schooler, 1999; Shiloh, Ben-Sinai and Keinan, 1999). Other factors, such as importance and threat, concern and salience, cognitive schemata and individual participation have also been mentioned. On the other hand, it has also been pointed out that it may be possible that motivational factors have underlying social structural factors. Studies have, for example, noted that a connection between motivational factors, such as topical interest, and education may exist (Viswanath and Finnegan, 1996).

Secondly, the hypothesis by Ettema and Cline (1977) suggests that if information is to be effective, it must have a functional value for the group of people that it is directed towards. In order for people to gain something from the information, they need to be able to put it in the context of their own information need, and integrate it into their daily life. Otherwise, the information may not be of much use.

Nutbeam (2000) has noted that the history of health educational programmes demonstrates that simply presenting information about health behaviour to people is insufficient. In order to be able to reach different groups in society and provide

people with help to acquire the necessary skills to be able to make decisions about positive health behaviour, the social systems that the behavioural choices are made within need to be taken into account. According to him, behaviour change theories that were developed in the 1980s, such as the theory of planned behaviour by Azjen and Fishbein and the social cognitive theory by Bandura, have improved the understanding of how intrapersonal factors such as knowledge and beliefs, the social environment and behaviour, work together in a complex relationship. Enhancements of people's self-efficacy, that is, the belief that they have the ability to act on the information provided and perform the necessary changes in their behaviour, has been pointed out as an important factor in this context. Hence, health information must contain more than advice about behaviours, as people must also be persuaded that they have the means to act upon it (Ajzen, 1985; Bandura, 1997; Rimal, 2001; Rimal, Flora and Schooler, 1999).

4 Information behaviour

The following chapter is meant to explore various aspects of information behaviour. The chapter starts by discussing the concept information behaviour. This is continued by a discussion of conceptual frameworks and after that the concept of information need. It then turns to discussing factors associated with the concept information behaviour, that is, motivation to information behaviour, information seeking, barriers in information behaviour, and the concept of relevance.

4.1 The concept of information behaviour

The literature on information seeking and use studies expresses a difference in the meaning and utilisation of the term information behaviour. Pettigrew, Fidel and Bruce (2001) have defined it as "how people need, seek, give and use information in different contexts, including the workplace and everyday living" (p. 44). Their definition resembles the one that Wilson (2000) has presented, who defines information behaviour as "the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking and information use" (p. 49). By including two separate styles of information seeking, active information seeking and passive information seeking, the definition mirrors the viewpoint of a small but increasing number of studies, that have in the past years begun to explore information seeking in more detail.

Solomon (1997a, 1997b) has described the patterns of information behaviour as dynamic and nonlinear and stated that people do not think of information and information behaviour in isolation from what they are coping with at a given time, as information behaviour forms a part of everything that happens in someone's information world. He draws attention to information behaviour in connection with

sense making and the impact of social cognitive factors. "...the way that people develop meaning is influenced through their sense making styles, which brings together the influence of organisational norms and roles with the cognitive, affective, conative (action instincts) of people" (Solomon, 1997b, p. 1137). The social environment creates constraints on sense making through norms and roles, but it also helps with sense making, as people develop understanding or meaning through interaction with others (Solomon, 1997b).

Wilson (Wilson and Walsh, 1996) has further proposed a general interdisciplinary model where he attempts to describe human information behaviour.

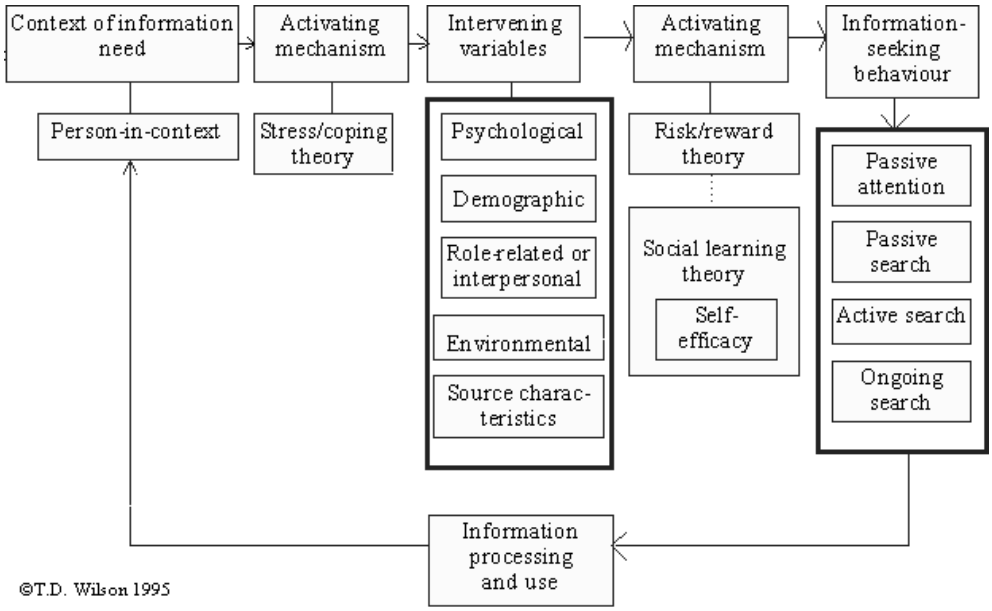


Figure 2: Information behaviour: an inter-disciplinary perspective (Wilson & Walsh, 1996, Chapter 7.1). Published with permission from the author.

His model, which presents both cognitive and social mechanisms that influence information behaviour, consists of several stages: starting with the context of the information need or what he calls the person-in-context; an activating mechanism that links the information need with the decision to seek information, where stress/coping

theory is suggested but also other sources of motivation are possible; intervening variables, which may in fact act between the various stages of the model and can impose barriers to engage in information seeking or to information processing; an activating mechanism, where risk/reward theory is suggested, but also social learning theory, that is, a person's belief that information seeking is worth pursuing and that she is capable enough and which serves to initiate the action of information seeking; and the information seeking behaviour, which includes four modes of information seeking. The act of information seeking, finally, leads to information processing and use of information and links back to the context or situation of the information need (Wilson and Walsh, 1996).

4.2 The cognitive viewpoint

The cognitive viewpoint focuses on the processing of information and on identifying the cognitive characteristic involved. In a review of the literature on information needs and uses in the mid-1980s Dervin and Nilan (1986) suggested that a new conceptual framework might be emerging within the literature of user studies, where the characteristics of the users, rather than the systems, is in focus. This change was confirmed four years later in a literature review by Hewins (1990), who claimed that most of the information need and use studies in the period 1986-1989 are engaged with cognitive processes, where the user is central to the study. Likewise, Allen (1991), in a review chapter on cognitive research and design in information science since 1985, stated that the literature of information science and technology is to a great deal pervaded by cognitive research. This shift in research focus towards the cognitive approach can be traced back to the mid-1970s when publications from several researchers started to appear, proposing the cognitive viewpoint in studies of information science (see e.g. Belkin, 1978; Belkin, Oddy and Brooks, 1982a, 1982b; Brookes, 1977; De May, 1977.

Although a single definition of what the cognitive viewpoint stands for does not exist, there seems to be a mutual understanding about what this approach involves. De Mey (1977) considers the cognitive viewpoint to be "…that any *processing of information*, whether perceptual or symbolic, is *mediated* by a system of categories or concepts which, for the information-processing device, are a *model* of his *world*" (pp. xvi-xvii). Belkin (1990) has suggested that the cognitive viewpoint is concerned with how an individual's state of knowledge interacts with what he receives, perceives or produces. Also, Ingwersen (1995) noted that the cognitive approach is concerned with explaining "… a *subjective* and profoundly *dynamic cognitive style* of information processing and cognition, ideally resulting in continuous changes of the models and the current state of knowledge for each device" (p. 163). These descriptions of the cognitive approach are also in accordance with Wilson (1984), who stated that the central idea of the cognitive viewpoint is the notion of "human perception, cognition and structures of knowledge" (p. 197). Wilson, furthermore, draws attention to the importance of the concepts "understanding" and "meaning", which he points out to be underlying elements of the cognitive viewpoint. He argues that, "Meaning is involved not only in all aspects of information generation, transfer and use, but also in the way people define themselves, their lives and their action" (p.197).

Ingwersen (1995) has further suggested that within the cognitive approach, the meaning of the concept of information is two-fold. He states that when a person receives a message, it needs to be perceived, recognised or associated with his current state of knowledge before it can transform his present state of knowledge. In that sense, information is both something that is created by the change of the knowledge structure and also what causes a reconstruction in the knowledge structure.

The cognitive viewpoint, therefore, centres on identifying the characteristic features of a person that can explain variations in her information behaviour, where the main concern is the cognitive processing of information and a subsequent change of the mental image of the world and the knowledge structures. What this approach also

suggests is that a person's information behaviour is a dynamic, constantly changing condition.

4.3 The social approach

The impact of social life upon information seeking and evaluation of information or information sources is being emphasised in studies that use the social approach. In a review of the developments in conceptual frameworks in information behaviour literature since 1986, Pettigrew, Fiedel and Bruce (2001) noted that a change in research interest had occurred, with studies that emphasise the social aspects of information behaviour starting to appear more prominently at the beginning of the 1990s.

Chatman is described as the originator of a shift in focus from mainly cognitive aspects to studies that focus on the social aspects of information behaviour. Her studies have resulted in series of theories and concepts for studying information behaviour in the context of everyday life. While her theories focused in the beginning on the issue of information poverty, they have since developed towards studying issues related to information behaviour in a more general sense. The first one, the theory of information poverty, evolved from a number of studies in which she drew on several theories from the social sciences. The theory of information poverty explains information behaviour where people are aware of relevant and valuable information which might be of use to them. The information, however, is not being sought out because the social cost of doing so is perceived to be too high (Chatman, 1985, 1990, 1991a).

Later, Chatman (1999) developed the theory of life in the round, which states that everyday life information behaviour is affected by the boundaries of the small world that people live in. According to the theory, the members will seek out only information that they believe is necessary in order to function within their small

world, while information that is deemed as not necessary for their small world is ignored.

Apart from the concept of small world (Chatman, 1991b), other key concepts have developed through Chatpman's studies (2000) on which she has based her theory of normative behaviour, that is, social norms, worldview, social types and information behaviour. Social norms are a set of standards that guide the members of the small world about patterns of behaviour and tell them what kinds of actions are expected of them, and what kind of behaviour is appropriate. Chatman further states that each person has a worldview that is shaped by the norms of the social world that he or she lives in. Worldview is a system of mutual beliefs that people belonging to the same small world have about the world around them and which affects their information behaviour. In dealing with their everyday life, people seek and use information according to the influences of their social environment. Their information behaviour is affected by what is believed to be normative behaviour in their small world. What people sharing the same worldview choose to pay attention to and be reactive against, and what they disregard, is affected by their effort at fulfilling the standards of their social world. In other words, if members of a social world believe that seeking information is appropriate within a particular context, they will attempt to do so. If they view that information seeking will not support a normative way of life, they will not engage in it.

Social types, which form the fourth concept of the theory of normative behaviour, are persons that can be identified by certain characteristics that differentiate them from other people belonging to the small world. Descriptions of the characteristics of social types form a set of guidelines for social actions that people can use to predict the kind of behaviour that can be expected from others, and also how they themselves should behave against the specific social types (Chatman, 2000). A similar idea has been put forward by Wilson (1984), who has suggested Alfred Schultz's (1946) concept of ideal types as a useful tool for explaining information behaviour. Although not identical to Chatman's idea of social types, they nevertheless have some

similarities. Schultz's idea consists of three main ideal types, the man on the street, the well-informed citizen and the expert. Each ideal type has a system of relevance's that is formed by the practical nature of the tasks that she is dealing with, and which influence the choice of information. Consistent with their system of relevance's, the various ideal types may have different beliefs about what is important to them. For instance, the man on the street and the expert may not consider themselves in need of the same kind of information or regard the same information as useful. According to Wilson, the idea of these three ideal types, together with Schultz's example of the four ideal types that are meant to act as sources of socially-acquired knowledge (the eyewitness, the insider, the analyst and the commentator), may help to explain how knowledge can be socially distributed.

4.4 The social cognitive approach

The practices that people create in their everyday lives are shaped partly by the influences that they receive from their social environment (Bandura, 2001). In the process of making behavioural choices, people are motivated to decrease any punishment from the environment and to increase reinforcement, that is, to make decisions that are valued by their social environment. Social systems differ in the way they place value on various issues as well as the practices around the issues (Bandura, 1997, 2002). For example, the message obtained by members of some social systems may be that it is desirable for people to acquaint themselves about topics such as health and lifestyle, and therefore, paying attention to and seeking information about it may be considered a habit worth pursuing. Whereas the messages within other social systems may be entirely different, placing a lower value on these topics, and consequently, seeking information may not be considered important. Thus, the nature of the messages about how desirable it is considered to engage in information seeking may depend on the types of social environment that people select and construct. This is not to say that behaviour is controlled only by

immediate gratification, because people are also capable of making choices based on a moral framework or making temporary or long-term behaviour plans and working towards goals that are built on diversely valued reinforcements. It also follows that the internal standards that people set for themselves are being modified according to changes in their knowledge (Bandura, 1997). Educational level can therefore be seen as a cognitive as well as a social factor.

The cognitive viewpoint is primarily concerned with how the mind of a person functions and explaining how cognitively based characteristics, which are unique to each person, affects his or her information behaviour. The social approach, on the other hand, addresses people as social beings and focuses on analysing the social context of information behaviour. Recently, Hjørland (2002) has suggested a socio-cognitive perspective, which he argues is "...interested in individual cognition but approaches this from the social context" (p. 359). The main idea behind this perspective seems to correspond, at least to some extent, with those of the social cognitive theory (see discussion in Chapters 2.5-2.5.3.4). Rather than looking at either cognitive activities or social activities of a person in isolation, the social cognitive theory takes both approaches into account. In doing so, the social cognitive theory goes beyond the cognitive and social approaches and accepts that cognitive activities are embedded in the social practices of the small world, or the social system, that a person lives in.

The present study aims at classifying people on the basis of their purposive information seeking behaviour and at further describing the characteristics of the different groups in relation to other aspects of their information behaviour, as well as their health behaviour and self-efficacy beliefs. As such, the thesis takes a social cognitive approach, but it is also based on concepts and ideas drawn from a review of the literature of information science.

4.5 The information need

Several authors have argued that there is a lack of a generally agreed-upon definition of the concept information need. However, a meaning which seems to be shared by most of them is what Wilson (1981) has noted, that an information need is something that exists in the mind of the person involved, and therefore, it can only be understood through her behaviour or reports. Wilson (1981) also points out that within psychology, the concept of need is divided into three categories of personal needs, that is physiological needs, for instance, the need for food or water; emotional or affective needs, such as the need for attainment or domination; and cognitive needs, for example, the need to make plans or learn something new. These categories of needs are interrelated so that a need belonging to one category, or the lack of fulfilling it, may trigger a need in another category. Wilson further states that an information need is a secondary-order need caused by the wish to fulfil a need of primary order.

Within the literature of information science, several attempts have been made to describe what constitutes an information need. Taylor (1968) has described information need as a cognitive development that happens in four levels. At each level, new information is added that can be used to shape and reform the need, so that the final version is somewhat different from the original one. This development starts with a "visceral need", which can be no more than a vague feeling of dissatisfaction. At this level, an information need may exist only unconsciously and is therefore inexpressible. As people move to the next level, they develop what is called a "conscious need", that is, a mental picture of what is needed has been developed, although still ill-defined, and the need can therefore be expressed only in ambiguous terms. The third level is a "formalized need", when a clear and formal expression of the problem can be made. And the fourth and final level is a "compromized need", when people have redeveloped their statement of the information need, with the organisations of the available information systems in mind.

The concept of information need is explained in a similar way by Belkin, Oddy and Brooks (1982a, 1982b). They proposed the ASK concept, where an information need is defined as an individual state of mind, with the person involved discovering an anomalous state of knowledge (ASK). The ASK concept describes the information need as something that is disordered or "messy", with the person involved not being able to describe exactly what is needed. It follows that by gaining information, the anomalies in the person's state of knowledge may either be resolved, or a change has occurred in it and a new ASK has been developed.

According to Brenda Dervin's Sense-Making theory (1992, 1999), an information need is the need to make sense of the world. In daily life, people find themselves in various situations in which they need to make their way through time and space. In doing so, they constantly need to deal with problems in which their existing knowledge is not sufficient, that is, they discover "cognitive gaps". The strategies used by people to get their questions answered serve as a bridge over the knowledge gap because they allow them to make sense of the experience, and thereby move on. According to the Sense-Making approach, information is considered to be the sense that the individual makes of her experiences. It is also assumes that the answers that the individual is getting, labelled as the "outcome", are sometimes experienced as being useful and sometimes are seen as non-useful or even hurtful.

Krikelas (1983) has defined information as "any stimulus that reduces uncertainty" and information need is defined by him as "a recognition of the existence of this uncertainty in the personal or work-related life of an individual" (p. 6). Like Taylor (1968), he discusses the term unconscious information need and argues that in the context of information seeking, it usually implies recognition of uncertainty that does not lead to an action. Krikelas classifies information needs as either "immediate", that is, information needs that lead to information seeking, or "deferred", in which case it will lead to information gathering behaviour. By information gathering, it is meant that the information, or the stimuli, is accepted in the memory and recalled when needed, or also, it can be "an attempt to continually construct a cognitive

environmental "map" to facilitate the need to cope with uncertainty" (p. 9). Also, Yoon and Nilan (1999) discuss the concept of uncertainty and note that information need has been defined in relation to uncertainty in most studies of information seeking that use the cognitive approach. Uncertainty is described by them as the opposite of certainty and refers to what people do not know about a certain topic as well as the awareness of not having the knowledge. In other words, uncertainty is a knowledge gap, or an anomalous state of knowledge, or an information need. Certainty, on the other hand, refers to what is known to people, or what people believe is known to them, for example "experience, knowledge, beliefs, goals and plans" (p. 872).

The definitions above describe information need as a fluid, constantly changing phenomenon, affected by the discovery and processing of new information. However, although the concept of an information need is often discussed in relation to cognitive factors, its social aspects have also been noted. Wilson (1981) has stated that an information need is created by a person's social roles and the social environment that she needs to operate within.

Allen (1997), on the other hand, draws attention to the socio-cognitive aspects of an information need and argues that it is shaped by individual differences and situational factors acting together. He identifies two types of information needs: an information need that takes place at an individual level and an information need that takes place within a group, and states that "Each need must be considered as part of a network of related needs, arising both in individuals and in groups" (p. 121). What Allen points out is that people are, at the same time, individuals and members of groups. Therefore, while an information need happens at an individual level, when the knowledge structures of the person involved fail to produce a solution to the situation at hand, the social context of the situation also influences how the information need is perceived and acted upon.

The terms “need” and “want” are compared by Chatman and Pendleton (1995). They suggest that the a need is connected to being in a state of dependency and argue, that if a person lacks the information she needs, her circumstances are worse than if she possesses the information needed. A want suggests a desire for some kind of a development or an improvement. Having the information wanted is an advantage, although being without it does not mean that the affairs of the person involved are any worse. Also, Sonnenwald (1998) notes the difference between having a lack of knowledge and having an information need. She states that although a person may believe that she lacks knowledge in some area, that fact alone does not necessarily produce a feeling of a need for information.

4.6 Motivation: Interest as a driving force behind information behaviour

Mettlin and Cummings (1982) have argued that if information is to be sought out, or even noticed, it needs to be directed at people’s interest. Information about health that does not relate to issues of concern is not likely to be sought out, or even when it is gathered accidentally, it is not likely that it will be perceived. The need to pay more attention to how motivation, especially interest in a topic, serves as a link between the information need and the decision to seek information, has been stressed by Reagan (1996). In a study where the participant’s level of interest in ten different topics was investigated in relation to their choice of information sources, he found that both the number of information sources sought out and the choice of information sources were related to the participant’s interest in the topic. The greater the participant’s interest, the more information sources he used. He also found indications that different information sources may serve different purposes, as the set of information sources that were preferred varied from topic to topic in relation to the participant’s interest. A low level of interest called for sources that were relatively

easy to use, whereas for a topic of high interest, the participants were prepared to use more complicated information sources.

O'Keefe, Boyd and Brown (1998) have stated that interest is the driving force that motivates people to seek information about health. In a study conducted in eight Midwest communities in the US, where they examined the use of three information channels—television, print, and personal media—they found that interest in preventive health information was a significant predictor of participants' health information seeking and learning about health, in all three information channels. This is also confirmed in a Finnish study by Eriksson-Backa (2003), who found that participants' general interest in health matters was the most important reason for seeking health information. On the other hand, a study by Rimal, Flora and Schooler (1999) reports that interest together with the perceived risk of getting a heart disease explained only 5% of the variance in overall health orientation, that is, participants' health knowledge, their self-efficacy and their health behaviours.

Although interest has been found to relate to information seeking, the direction of the relationship between these two factors is not clear, as they may be interdependent and work in such a way as to stimulate each other. It has been suggested that when people learn more about a specific issue, they also tend to become more interested in it, which in turn can lead them to be more active in gathering information about it (Hyman and Sheatsley, 1947). This is supported by an Icelandic study on health promotion that found that when people were exposed to more information about health prevention, interest in this issue grew. Between 1989 and 1992, there was an increase in the quantity of information about health in the Icelandic media, which is considered to have caused an increase in people's interest in health issues. More people reported listening to health matters on the radio, reading about them in newspapers and magazines and receiving information by attending meetings and lectures in 1992 than in 1989. Furthermore, people still thought that there was a demand for more information (Hrafn V. Friðriksson, 1992). In fact, this is what is depicted in Kuhlthaus (1993) model of the Information Search Process (ISP). The

model describes the information search as a process in six stages: Task initiation, Topic selection, Prefocus exploration, Focus formulation, Information collection, and Search closure, with each stage connected to distinct changes in feelings, thoughts and actions. The model maintains that in the beginning stages, when people are still trying to form a focus on the topic, they tend to be less interested in it. Whereas, after having formed a focus people tend to feel more confident and to experience a growing interest in the topic. It has, however, been pointed out that what the ISP model describes is an idealized search process and that the search process may become nonlinear or even circular as people sometimes reformulate and refocus their topic when they interact with the information that they find (Tang and Solomon, 1998).

4.6.1 The relationship between social cognitive factors and demographic factors and interest in health behaviour

Chew and Palmer (1994) have suggested that interest may be a stronger predictor of health knowledge than education. They investigated how people's level of education on one hand, and their interest in health and nutrition on the other, influenced a change in knowledge after viewing a television programme about health topics. The findings show that, among all educational and interest groups, both people's interest and their knowledge were increased by watching the programme. However, the knowledge that was gained in relation to higher interest was found to be more lasting and stable than knowledge gained in relation to higher education.

Gender has been found to relate to interest in health matters. Roininen et al. (2001), in their study of attitudes and dietary behaviour in Finland, the UK and the Netherlands, found that the respondents' dietary behaviour was related to interest. The higher the respondent's general interest in a healthy food was, the more likely they were to consume a healthy diet. The study also found that interest was related to gender, with women having higher interest in a healthy diet than men. In fact, there

are indications that gender differences in relation to interest in health issues develops early. In a study of the health perceptions of adolescents (age 14 to 19) living in rural areas in the US, a total of 26% of boys reported that they were never interested in information about health, compared to 9% of girls (Misra and Aguillon, 2001). A study by Marcella and Baxter (2001) also reports gender differences. The study found that health issues were ranked among top ten most important issues by citizens in the UK. Women were found to place greater importance on health than men did, and older people were also more interested in health than those who were younger. Interestingly, the findings show that although most people considered themselves well informed about the topic, women considered themselves as less well informed than men.

Gender differences were also reported in a study by Stock, Wille and Kramer (2001). They explored the health behaviour of university students in Germany in order to identify their need for health promotion within the university environment and found that 79.5% of the participants were interested in health-oriented programmes for groups, with women expressing a greater interest in most of the programmes than men. The students were also found to report a high interest in individual counselling, with 24.5% claiming to be interested in counselling for stress management, and 19.3% claiming an interest in programmes about healthy diet. The study, furthermore, found that the students' risk behaviour was predictive of interest in counselling. For women, psycho-social stress explained 14% of the variance of interest in stress management. Whereas for men, a higher score of alcohol abuse was found to explain 15% of the variance of interest in alcohol counselling. Findings about the health information needs of Canadian university students, reported by Katz, Davis and Scott Findlay (2002), are similar. The students were presented with a list of programmes and services and asked how interested they would be in attending them. The findings reported that educational programmes about fitness and healthy lifestyles (58.8%) were ranked highest. Nutrition (57%) and diet management (37.8%), which may have overlapped with the former, also ranked highly and as did information about stress management (52.7%). Similarly, Huntington et al. (2002)

reported that, in a study conducted among adults in UK, the health topics that respondents were most interested in were new treatments, healthy living, and general health, with about 90% of the respondents considering these topics as either very or fairly interesting.

4.6.2 Interest in health information: Different categories of people

Few studies have attempted to categorise people according to their interest in health issues. However, in a study conducted in the UK, Huntington et al. (2002) categorised four groups of information users according to the health topics that related to their interest and the information sources preferred by them. The study found that members of the first group, Active traditional information users, were likely to be young, interested in health information such as medical news, dieting and alternative health topics, and to prefer sources such as health books, newspapers and television. The second group, labelled Passive traditional information users tended to be less well off, female and under the age of 55 years. They were likely to be interested in medical treatment as well as general health, and to prefer information from health professionals. The third type, Electronic isolated users, tended to be male, and to have a responsibility for someone else. They were interested in particular medical conditions, medical news and prescription drugs, and preferred electronic information sources, such as digital television and health phone lines. The fourth group, Electronic sociable users, were likely to be under the age of 35, to be female and to be owners of electronic equipment such as a microwave. They tended to be interested in general health and complementary medicine, and to prefer electronic sources such as the web, together with interpersonal sources such as family and friends.

Shiloh, Ben-Sinai and Keinan (1999) have also conducted a study among professionals from the educational system, where they investigated the combined effects of personal information seeking styles (high or low monitoring style), and

situational factors (control and certainty) on interest about genetic tests. Interest was measured by asking two questions: interest in taking a genetic test and interest in receiving information about genetic tests. The findings revealed that those who had a high monitoring style were more interested than those who were low monitors. Both high and low monitors had highest interest in tests that were more specific, that is, test that could answer whether or not a disease will be developed in the future, and if a treatment could be offered.

4.7 Barriers to information behaviour

Barriers to information behaviour can be imagined or real and may include a range of issues. In a review of studies of knowledge inequalities since 1983, Gaziano (1997) identified a number of hindrances in knowledge acquisition, which she classifies into internal barriers and external barriers. Internal barriers refer to hindrances in relation to attitudes, beliefs and values at an individual level. This includes motivation and interest, involvement and participation in community activities, choice of information sources and the ability to use different media, the role of interpersonal discussion, knowledge accuracy and comprehension and family socialisation. External barriers refer to hindrances related to the distribution of attitudes, beliefs and values on a collective level, such as patterns of family socialisation, membership of ethnic or racial groups, social stratification, and media publicity and access to media.

Wilson (1981, 1997) has identified several categories of barriers for information seeking behaviour: personal barriers such as physiological or demographic characteristics; role related barriers, for example, in relation to the role that people perform at work or in their social life; environmental barriers, for instance, lack of time, geographical location or cultural differences; and source characteristics such as accessibility of the source, its credibility or a preference for specific channels of information. Others have also pointed out that attitude towards information sources

may act as barriers that influence the use of them (Buttriss, 1997). Beliefs about the reliability and trustworthiness of a source are important factors. The confidence that people have in the information source or the content of the information provided has been found to be a hindrance in information behaviour (see, for example, Agada, 1999; Chatman, 1985; Davies et al., 2000; Julien, 1999). The same applies to beliefs about the utility of information in different kinds of sources, with a number of studies mentioning the lack of finding useful information to be an impediment (Dunne, 2002; Mettlin and Cummings, 1982; Taylor, 1991).

Selective exposure has also mentioned as a possible barrier. That is, people may choose to seek information that confirms what they already know, supports their prior opinions or relates to issues of their interest, and to avoid exposure to information that conflicts with their beliefs. Hyman and Sheatsley (1947) found support for this in public opinion studies in the US, but others have also discussed selective exposure as a barrier in relation to health information behaviour (see, for example Mettlin and Cummings, 1982; Wilson, 1997).

The literature about cancer information has been reviewed by Mettlin and Cummings (1982), who describe a number of hindrances that have been found to inhibit health communication. They point out that information about cancer may cause fear; that information aimed at promoting a long-term healthy behaviour needs to motivate people that see themselves as healthy; that delivering information that tells people why it is necessary for them to change their behaviour is not enough as the information also needs to include useful instructions about how, where and when the behaviour can be performed; that information is being presented through many different channels which may result in people receiving conflicting information; and that information about cancer is often complex and technical. The last point, difficulties in understanding information, has been found to be a barrier in several studies (see, for example, Agada, 1999; Gaziano, 1997; McKenzie, 2002).

In a study of information behaviour of pregnant women, McKenzie (2002) identified three kinds of hindrances in relation to practitioner-patient communication. Barriers that originated with the information seeker included a failure to understand information that was provided. Barriers that originated with the information provider were described as a failure of connecting with the information source and revealed itself in the practitioner being unwilling or unable to give an answer, or using vague or oblique forms of closing the conversation. Barriers originating with both participants included instances when the women had some questions but failed to ask them. This could, for example, happen in a situation when it was believed that the practitioner was to busy to discuss the problem, or when the women felt that they should not be bothered by questions. A restriction in access to information has also been pointed out as a hindrance by others. In a study of the information use environment of African-American gatekeepers, Agada (1999) found that on some occasions, it was believed that information that was needed existed, but was not accessible, either because the gatekeepers did not know where to look for it or could not afford it, or because it was believed that access to the information was restricted by person's who control the system (outsiders) (see also Dunne, 2002; Gaziano, 1997; Wilson, 1981, 1997).

It further seems that not having an overview of where specific information can be found may be a problem, at least to some groups, as studies have reported a lack of knowledge of where to seek information, or having to seek information in too many places, as a barrier (Davies et al., 2000; Julien, 1999). In a study of hindrances that battered women face when seeking for information, Dunne (2002) identified three categories of barriers: personal barriers, responsive barriers and situational barriers. Personal barriers include problems in finding an information source and a lack of knowledge about what kind of help was offered at the different information agencies. Responsive barriers are, for example, "feelings of responsibility, privacy, guilt and shame" that hindered the women in seeking information. But also reluctance to add to the problems of family members that already dealt with other problems, and fear that their own situation might get worse, or that those who offered help might get

harmed if it was discovered that they had sought information. Situational barriers include, for example, being isolated from both formal and informal information sources, the failure of the information agencies to provide information that met the needs of the women and reluctance from the side of health professionals and police to get involved with what they considered a private matter, and thereby to assist the women in finding the information or help that they needed.

The findings of Davies et al. (2000) are somewhat similar to those above. They studied the health needs of male college students and found that although the men knew about important health needs, they also identified several barriers as reasons for not seeking out counselling advice or health services. These included the need to be independent and not being willing to expose their vulnerability to others; lack of knowledge about the counselling and health services that were offered, as well as incorrect information about the services; lack of time to reflect on health topics or seek out the service; underestimating the health risks associated with their habits; and lack of trust in the competence of those who provide the services, both with regard to technical competencies and also with regard to competencies to provide service that meets the needs of students with diverse cultural backgrounds or sexual orientation.

Julien (1999) has examined hindrances that Canadian adolescents face when seeking information in order to make decisions about their career. She found that knowing how to seek information was not a problem for the majority of respondents, as only 10.6% of them reported that they did not know how to find the information they needed. However, a total of 59.6% said that they found it difficult to find out everything that they needed to know about the issue. Also, a total of 39.7% reported that they needed to seek information in too many places, and 24.4% did not feel confident about asking for information. A total of 37.6% of respondents said that they did not know where to go to get the information, and 13.2% thought that no place existed where they could find the information that they needed. Other barriers were also identified, such as not knowing what questions to ask, lacking confidence in those who were sought out for help, and time constraints.

Cultural barriers have been found to inhibit both information seeking and health behaviour. This has been found to be true also for groups where lack of education or knowledge do not comprise a barrier. Sligo and Jameson (2000) investigated hindrances in relation to use of cervical screening among New Zealand Pacific women. They found that the topic was so sensitive to the women that it was almost a taboo to discuss it. Social norms, with cultural and religious constraints, thus created a form of social isolation that inhibited both information behaviour around this issue and also the use of the cervical screening services. Similarly, Chatman (1996) has pointed out the role of social norms in information behaviour. She has noted that constraints that consist in the small world that people belong to may cause social barriers that hinder the flow of information.

4.8 Relevance judgements

The concept of relevance has been identified as a fundamental concept in relation to information behaviour and has as such been heavily discussed. Reviews of the literature on relevance can, for example, be found by Saracevic (1975), Schamber, Eisenberg and Nilan (1990), Schamber (1994) and Mizzaro (1997). In spite of the significance of relevance, it has proved difficult to define the concept. The discussion about relevance has, to some extent, circled around the difference that exists between ideas about two main classes of relevance, that is topicality or "system view" and relevance as judged by the user (see, for example, Harter, 1992; Schamber, 1994).

In a summary of the literature that focuses on writings dealing with relevance from the viewpoint of human information behaviour, Schamber (1994) concludes that the concept of relevance has been used in three different views: a system view, an information view and a situational view. The system view is regarded as an objective view. It refers to the information request where the judgement of whether a document

is relevant or not is based on "a direct match between query terms and document terms within a system" (p. 7). The information view and situational view, on the other hand, are considered subjective and thought of as user-oriented views. The information view has to do with how people judge the "conceptual relatedness between a request and a document" (p. 7). The situation view, which is regarded as highly subjective, deals with the judgements made by the users of how likely it is that the information found will be helpful in solving their information problems. It refers to the "relationship between information and the user's information problem situation" (p. 8).

The terms topical relevance and pertinence are discussed by Harter (1992). Topical relevance is described as a predefined relationship between a document and a request, where the request is meant to represent the information need, while pertinence refers to the connection between the information need and the document and can only be judged by the user. Harter proposes the concept of psychological relevance and suggests that information that does not meet the requirement of topical relevance may even be more valuable than those that do, if they allow for a new understanding of the matter at hand and cause a change in the knowledge structure. The same perception is discussed by Janes (1994), who compares topicality and utility, which he considers to be opposites. He argues that "Documents that have absolutely no relation to the topic could be useful (in clarifying a user's ideas, sending them off in a different direction or confirming what they don't want to see), and documents which are exactly spot on the topic could be totally useless (documents the user has already seen or perhaps even written)" (p. 161).

Although Spink, Greisdorf and Bateman (1998) agree with this notion, they approach the matter somewhat differently. They report findings from a series of relevance studies where, instead of using a binary scale such as relevant or not relevant, they identified four regions of relevance judgements, that is: not relevant; partially not relevant; partially relevant; and relevant, and argue that information that is highly relevant may not be as useful as information that is partially relevant. Especially for

people with little knowledge of the topic, information that is partially relevant may be important, "providing users with new information and directions that may lead them through further stages of their information seeking process toward a possible resolution of their information problem" (p. 612). This finding about the dynamic aspect of relevance judging is supported by Kuhlthaus Information Search Process model. Kuhlthau (1993) has shown that in order to resolve an information need people seek for information in stages over time, with each stage connected to a certain state of knowledge and an information problem stage. During the information search process, when people move from one stage to another, their information problems are modified. For those who are in their initial search stage, with a low topical knowledge and a fairly ill-defined information problem, partially relevant information may be as potentially important information as highly relevant information. Highly relevant information, on the other hand, may serve to reinforce people's existing state of knowledge and thereby does nothing more than maintain their current state of information problem, rather than leading to a shift in it (Spink, Greisdorf and Bateman, 1998).

Saracevic (1996, p. 203) describes relevance as "a very basic human cognitive notion in frequent, if not even constant, use by our minds when interacting within and without in cases when there is a matter at hand." He maintains that there exists an intuitive understanding of the term relevance which has to do with people's assessment of the "appropriateness or effectiveness" of the information that they find, in relation to the issue that they are dealing with at that moment. He further states that when the term relevance is applied in a more specialised meaning, these characteristics must be included. This general understanding of relevance entails that people make relevance judgements in a dynamic way. People's judgements of what is or is not relevant to them are contextual in their nature and change as people's knowledge structures and their intentions change.

Schamber, Eisenberg and Nilan (1990) have reviewed the literature from a period of over 30 years, or since the discussion of relevance started to appear, with the main

objective to examine the meaning of relevance and the role that relevance plays in information behaviour. The conclusion that they draw about the nature of relevance is as follows:

1. Relevance is a multi-dimensional cognitive concept whose meaning is largely dependent on users' perceptions of information and their own information need situations.
2. Relevance is a dynamic concept that depends on users' judgements of the quality of the relationship between information and information need at a certain point in time.
3. Relevance is a complex but systematic and measurable concept if approached conceptually and operationally from the user's perspective. (Schamber, Eisenberg and Nilan, 1990, p. 774).

Basically, as presented by Schamber, Eisenberg and Nilan (1990), both multi-dimensionality and the dynamic nature of relevance have to do with differences in knowledge structure. Multi-dimensionality refers to the fact that because two persons have different knowledge structures, they may judge the relevance of the same information in a different way, even if they are in the same situation. The dynamic nature of relevance means that relevance judgements are constantly changing. The same person may judge information as relevant at a certain point of time, whereas if her knowledge structure has undergone a change, the same information may not be considered as relevant at another point of time.

4.8.1 Classifications of relevance

Saracevic (1996) has proposed an interdependent system of relevance's which is encompassed by five manifestations of relevance that interact within and between themselves: 1. system or algorithmic relevance; 2. topical or subject relevance; 3.

cognitive relevance or pertinence; 4. situational relevance or utility; and 5. motivational or affective relevance. Two of these manifestations are of special interest here. Cognitive relevance stands for the relation between the information and the knowledge state of the person and the cognitive information need, where cognitive correspondence, informativeness, information novelty and information quality is suggested as a possible criteria. The other is situational relevance or utility, which refers to how well the information relates to the situation or the problem that the person is dealing with, suggesting criteria such as the usefulness of the information for decision making and the appropriateness of the information for problem solving, or reducing uncertainty.

A modification of Saracevic's (1996) model has been recommended by Cosijn and Ingwersen (2000), who argue that the modified model should include a manifestation of socio-cognitive relevance, instead of motivational manifestation. Socio-cognitive relevance, which is highly context dependent, is influenced by interaction with others within the socio-cultural environment. According to the authors, socio-cognitive relevance should be assessed by "…the relation between the situation, the work task or problem at hand in a given socio-cultural context and the information objects, as perceived by one or several cognitive agents" (p. 541).

Tang and Solomon (2001) compared findings from two empirical studies, one with undergraduate students as participants and the other with doctoral students, and found that the importance of some relevance criteria were evaluated differently by these two user groups. The difference was suggested to depend on differences in the topic and the tasks of the two user groups. Based on the findings, the authors proposed a dual classification scheme for criteria. The first scheme classifies criteria by their nature, that is: objective, relating to the characteristics of a document as an entity; and subjective, relating to criteria associated with a person's interpretations. The second classification scheme divides criteria according to their functionality: with primary criteria being those that are essential for relevance judgements; and secondary criteria as those that are used to assist in the relevance decision making. The authors,

furthermore, propose that the use of criteria shifts, from a relatively strong objective orientation, to an added subjective emphasis, as users move from record evaluation to full-text evaluation of the documents. This finding can be related to Kuhlthau's model of the search process, where people started by judging information on the basis of topicality, while on later stages of the search process the relevance judgements are made on the basis of pertinence, or how well the information relate to their problem situation. Also interesting in this context is Spink, Greisdorf and Batemans (1998) study, where they state that information that are judged as highly relevant may serve to maintain or reinforce people's existing knowledge state rather than changing it, whereas partially relevant information that provide people with new information may be a better help as they to help people to move on. Thus, the information search and relevance process is dynamic in its nature. During information retrieval and information processing a change occurs in the persons knowledge state, her information need is redefined and consequently her relevance judgements develop.

4.8.2 Criteria of relevance

Relevance criteria are the values that people use when they decide whether or not information is relevant to their information need. These criteria have been subject of a number of studies. In the period 1959-1976, studies of relevance criteria were primarily involved with analyses of topical criteria, judged by experts. Since 1977, a new study approach appeared, with users being involved in the judgements and the relevance criteria going beyond topicality (Mizzaro, 1997). In a review of relevance studies, Schamber (1994) collected a list of eighty factors related to relevance judgements, which she categorised into six broad categories: 1. judges; 2. requests; 3. documents; 4. information systems; 5. judgment conditions; and 6. choice of scale. She further identified eight user criteria studies from the period 1988-1994, but came to the conclusion that with few exceptions, the relevance criteria identified by these studies had already been suggested in the previous studies.

In a study among professional users of weather information, Schamber (1994) had identified 10 criteria mentioned by her participants, which she categorised into three groups: 1. information (accuracy, currency, specificity, geographic proximity); 2. source (reliability, accessibility, verifiability); and 3. presentation (dynamism, presentation quality, clarity). Barry (1994) examined relevance criteria mentioned by users in an academic setting in relation to printed information. She identified 23 relevance criteria, which she grouped into seven categories: 1. the information content of the document; 2. user's previous experience and background; 3. user's beliefs and preferences; 4. other information and sources within the information environment; 5. the sources of the documents; 6. the document as a physical entity; 7. and the user's situation. Later, Barry and Schamber (1998) compared and contrasted the findings from their studies. The comparative study identified 10 categories that were common to both studies, while six categories were only identified by Barry, and a further three categories were only identified by Schamber's study. The criteria that fell outside of the collective range were considered to be "due to the differences in situational contexts and research task requirements" (p. 234). The fact that there was an extensive overlap among criteria identified in these two studies with different kind of users, information problem situations and types of information sources and formats, indicates that a collective range of criteria may exist which is "representative of user criteria as a whole" (p. 234).

Tang and Solomon have (1998) examined the cognitive change in the perception of relevance of a single person, a graduate student doing a class assignment. They found that changes happened in her knowledge structure as she moved through stages of the information search and relevance judgements and that different relevance criteria were related to the different stages. In the beginning of the search and the relevance judgement process the documents were categorised according to different degrees of relevance: relevant, possibly relevant and not relevant. Topical judgement was used the most at this stage and was, in fact, found to be the most important indicator, while criteria such as type of article and also criteria pertaining to Barry's second relevance category, user's previous experience and background, were used to sort out

information that were judged as relevant but not appropriate. Thus, the criteria that were used belong to Barry's first and second categories. In later stages, the documents were categorised as: relevant, useful and not relevant. Relevant documents were those that she intended to cite in the assignment, while useful documents were those that had been judged as relevant at the initial stage and supported her knowledge construction, even though they were no longer pertinent to the topic.

Greisdorf (2003), who has conducted a series of studies together with Spink (see Spink, Greisdorf and Bateman, 1998; Greisdorf and Spink, 2000; Greisdorf and Spink, 2001), reports findings that are somewhat similar. According to him, the major relevance criteria's are topicality, pertinence and utility. Greisdorf suggests that the evaluation of relevance happens as a multi-stage process, a "bottom-up perspective," and argues that there exists a continuum, with people being most likely to evaluate topicality of the information, then pertinence and after that, the usefulness of the information.

5 Health and lifestyle information seeking and preference for health information sources

The following chapter will discuss health and lifestyle information seeking and the preference for information channels and sources. The chapter starts by discussing different styles of information seeking. It then presents an overview of studies of health information seeking where information sources are categorized into three information channels, that is the media, Internet and interpersonal sources. After that, an overview of studies that examine health information seeking and preference for information sources in relation to social-cognitive and demographic factors will be presented. The same factors that were found to impact health behaviour seem to influence people's motivations and ability to take advantage of information about health and lifestyles. Differences in the emphasis of these factors, depending on the findings of previous studies, are presented in the following. The discussion about educational factors focuses mainly on differences in relation to preferences for information sources, while factors such as information need and caretaking will be put forward in the discussion of gender. Age seems to be an neglected factor in studies that focus on health information behaviour but when it has been examined it is mainly in relation to information source preference. Also, self-efficacy has not gained much interest as only a few studies examine it in relation health information behaviour.

5.1 Information seeking

The various ways that people use to seek information in their everyday life has captured the attention of researchers. Recently, McKenzie (2003) developed a two-dimensional model of everyday life information seeking, where she emphasises the

social context of information seeking. The two stages of the information seeking processes that the model consists of are:

1. Making connections. This stage explores the practices and barriers that are involved when a person identifies, or is being identified by, information sources or potential sources, and makes a contact, directly or through a referral, with the sources.
2. Interacting with sources. This stage explores the practices and barriers that are involved when a person interacts with information sources after having identified them and established a contact.
   (McKenzie, 2003).

In both stages of the information seeking processes, four modes of information seeking practices may appear: active seeking, active scanning, non-directed monitoring and by proxy. Also, according to the model, people's information practices can, in some cases, move iteratively from one mode to another (McKenzie, 2003). These modes of information seeking will be discussed in the following two sections (5.1.1-5.1.2), in relation to findings from other studies that have focused on information seeking behaviour.

5.1.1 Purposive information seeking

The type of information seeking behaviour where information seeking is seen as a purposive, goal-driven activity has been the traditional subject of studies on information seeking behaviour. According to Wilson (2000), active information seeking stands for a behaviour where individuals experience a lack of knowledge and act on it by seeking information, or "the purposive seeking for information as a consequence of a need to satisfy some goal" (p. 49). A similar definition has been put forward by Johnson and Meischke (1993), who describe information seeking as "the

purposive acquisition of information from selected information carriers, …" (p. 343-344).

In his model of information behaviour (see Chapter 4.1) Wilson has further categorised active information seeking into active search and ongoing search, with ongoing search happening occasionally and with the intention of updating or developing knowledge gathered through active search (Wilson and Walsh, 1996). McKenzie (2003), on the other hand, in her model of everyday life information seeking, identifies one type of active information seeking, which she describes as a behaviour when information is being sought on purpose, in a systematic and strategic way.

5.1.2 Other styles of information seeking

Although it has been customary to describe information seeking in the way of purposive seeking, it has, nevertheless, been pointed out that the nature of information seeking behaviour is not restricted to it. In the past years, other styles of information seeking behaviour have started to elicit the interest of researchers. Wilson (Wilson and Walsh, 1996) talks about passive attention, which refers to instances when people happen to come across information, as for example when the use of mass media results in information acquisition, although information seeking was not intended. This recognition is comparable with the distinction made between incidental information acquisitions or accidental information discovery, as opposed to purposeful information seeking, discussed by Williamson (1997). Williamson, in a study of older adults in Australia, found that people often came unexpectedly across information that they found interesting or useful, in situations where information gathering was not intended and people were not even aware of an information gap beforehand, for instance, while using the media or communicating with other people. This can also be compared to what McKenzie (2003) refers to as non-directed

monitoring, which refers to information sometimes being found by chance and in unexpected places.

In addition to passive attention, Wilson (Wilson and Walsh, 1996) has identified passive search, that is, "when one type of search (or other behaviour) results in the acquisition of information that happens to be relevant to the individual" (p. 562). McKenzie (2003) compares this with what she terms active scanning which refers to people being aware of the possibility of finding useful information in certain places, although they are not seeking specific information. Also interesting in this context is the term information encountering introduced by Erdelez (1997), referring to information being discovered accidentally, for instance, the occasions when people unexpectedly happen to come across information that they find useful or interesting while involved in a search for another type of information, or in situations when information seeking was not intended. The information found this way can relate to the general interest of the person involved, or to a specific problem of hers. The information can be encountered in various information environments, for instance, while using media, on the Web, in libraries or during any other activities that involve information behaviour. Erdelez further suggests that, on the basis of attitudes towards information encountering and frequency of the information encountering experiences, people can be identified as super-encounterers, encounterers, occasional encounterers and non-encounterers. Also, an important aspect of the behaviour of super-encounterers was that the information encountering was not restricted to their own information needs, as they sometimes encountered information for other people whom they knew and shared the information with.

Erdelez, together with Rioux (2000), further investigated the characteristics of information encountering and sharing of information for others on the Web among undergraduate students from several disciplines and graduate-level students in library and information science, with a relatively high level of Web use. Almost one-third of the participants were found to encounter information for others frequently, with graduate students (54%) reporting it more often than undergraduates (23%). The

information was encountered in a mixture of information environments, with the Web being where the information is most frequently encountered, followed by traditional personal contact and the print environment. However, when it came to passing the information on to others, personal communication was most often used, followed by the use of e-mail. McKenzie (2003), on the other hand, describes information seeking by proxy, that is when people find information through an intermediary, for example a gatekeeper, a friend or an information source.

Toms (2000) talks about serendipitous retrieval, that is when people who have no prior intention to seek information retrieve useful information by chance. According to Toms, a person's prior knowledge generally influences the encounter of the information, although not necessarily so, together with the person's recognition of what the text provides. She compared two groups of digital newspaper readers: a group that was instructed to seek answers to predefined questions by using a search tool and a group that was instructed to read or browse through the newspaper without a pre-defined goal. The former group was found to read through the paper with the intention of finding information only on the topic they were searching for. The second group tended to concentrate on the things that evoked their interest. While browsing or searching for information, people went from one topic to another and, while doing so, recognised informative or interesting information. That is, when not guided by a prior goal, people were more likely to have serendipitously discover inforation, and this information was more likely to be encountered unexpectedly.

Serendipity has also been dealt with by Foster and Ford (2003), who describe it as a "…phenomenon arising from both conditions and strategies – as both a purposive and a non-purposive component of information seeking and related knowledge acquisition" (p. 321). In a study among interdisciplinary researchers from a range of academic backgrounds, they focused on both the process of discovering information by serendipity, as well as the impact of the information thus discovered. Different types of serendipitous encounters were categorised as finding information not previously known to exist, or in sources not expected to include the kind of

information discovered; or conversely, information of unexpected value, either when looking into sources that were believed to contain potentially useful information, or by chance. The impact of the information could be a reinforcement of the existing problem solution, but also that the information could lead the project in unexpected directions. Although Forster and Ford note that serendipity is unpredictable and can not be directly controlled, they also point out the role of the "prepared mind" and indicate that certain attitudes, such as "…consciously to be open and receptive to chance information encounters" (p. 335), as well as methods such as a "conscious strategic decision to step back and take a broader view" (p. 336), may support people to make the most of serendipity.

Also, Savolainen's (1995) examination of everyday life information seeking (ELIS), where he introduced the concepts of "way of life" and "mastery of life", is interesting is this context. People's way of life refers to how they organise their everyday life experiences. It relates to the order of things and the fairly regular way that people monitor the activities that occur around them. In their daily life, people engaged in activities that are meant to ensure that the way of life or the order of things is meaningful. Mastery of life refers to both passive or active methods that people use to take care of their way of life and thereby keep important things in a meaningful order. Passive mastery of life involves making sure that things happen in a more or less expected manner, while active mastery of life happens in cases when the order of things has been disturbed and people need to engage in problem solving in order to restore the order. According Savolainen, people's information seeking habits are one of the elements involved in how they take care of their life. When a way of life is thought of as being relatively stable and people are content with monitoring their life in a way that ensures that things are kept in order, mastery of life, and hence information seeking, can be thought of as being passive. Active mastery of life, in contrast, happens in cases when the order of things has been disturbed and people need to engage in problem solving, for example, by seeking information that can help to restore the order.

5.2 Information source horizons

People have multiple options when they select sources to seek information about health and lifestyles from. With an increasing variability of sources, it has also become more important to pay attention to what information sources are being favoured by whom, and the criteria that are being used when people choose between the different sources (Dutta-Bergman, 2004; Savolainen and Kari, 2004).

Sonnenwald (1998) speaks about an information horizon, which defines what sources people select when they decide to seek information. The information horizon, which may consist of a range of information sources, can be shaped socially. That is, people's social environment may influence their beliefs about what sources it is appropriate to use in each case, for example, what information sources can be considered as reliable. The information horizon can also be determined by the individual. For instance, people's knowledge about what information sources can be used in each situation, as well as their personal preferences for information sources, may have an impact on their choices.

Savolainen and Kari (2004) have further elaborated on the construct of information horizons in the context of everyday life information seeking. According to them, it is within the framework of people's perceived information environment that the information source horizons are constructed. The information environment is referred to as a general and relatively stable picture that people have in their mind of the channels and sources of information that they know of and may have used in the past. Information source horizons are created through an evaluation of the relevance of the sources and channels that exist within the information environment, where several criteria may interact, as well as by selecting the sources that are considered to be most appropriate for the situation at hand. Moreover, the information source horizons are divided into zones of importance. Sources that are judged to be the most relevant are

placed in a zone closest to people, and those that are considered as least relevant are positioned furthest away. Information horizons are, furthermore, described as being of two kinds: stable and dynamic. Horizons that stand for the ways that information sources are being judged, independent of the situation, are considered to be relatively stable. Whereas horizons that are constructed for the problem or the situation that people are dealing with at a particular time, are more dynamic and changeable.

In the following review, information sources are categorised into three information channels, that is, sources that belong to the mass media, sources that belong to the Internet, and interpersonal sources.

5.3 The media as an information channel

The distribution of health information by the media has been shown to be significant. When investigating use of health information sources in several European countries, as well as in the US, Datamonitor (2002) found that a total of 73% of the participants had used the media (television, books and magazines) to seek health information.

The television has been reported to be an especially important source of health information. Dutta-Bergman (2004), for instance, found in an investigation of US consumers' health information seeking, that television was a primary source of information, with 82.9% of respondents mentioning it as one of the three sources from were they most often learned about health issues. Newspapers and magazines that also ranked high were mentioned by 77.6% of participants, and family and friends were mentioned by 71.1%, while the radio was only mentioned by 23.6%, and the Internet by 12.5%. Similarly, a study by The American Dietetic Association (2000) reported that television was the main source for nutritional information for 48% of respondents (down from 57% from a survey in 1997). Second in frequency were magazines, which were cited by 47%. Other sources were used much less, with

a total of 18% claiming to use newspapers, 12% reference/general books, 11% family and friends, 11% doctors, 6% the Internet and 5% radio. Also, according to the findings of a study by The National Health Counsel in the US, television was a primary source of health news, mentioned by a total of 40% of participants. This was followed by doctors (36%), magazines and journals (35%) and newspapers (16%) (Johnson, 1998). Also, findings from a Danish study, investigating the distribution of information about cardiovascular risk factors, revealed that the mass media was the main source of health information, with 91% of the participants claiming to have received health information from television and radio, and 83% having read about them in the newspapers (Osler, Lous and Rasmussen, 1992).

O'Keefe, Boyd and Brown (1998) conducted a study in eight upper Midwest communities in the US, examining which information channels people claimed to learn most about health prevention from. They, too, found that the highest rated channel was television, and that television programmes, including commercials, public service ads, entertainment programmes, news and programmes such as talk shows, together explained 27% of the variance of information channel preference. This was followed by personal media, which accounted for 16% of the variance, consisting of health professionals, educational material such as brochures, posters and newsletters, books about health, computer health sources, and family and friends. The third factor was printed material, including magazines and newspapers, which accounted for 9% of the variance.

Although many studies have shown that television is the main source of health information, the findings of The International Food Information Council (1994) are somewhat different. Magazines and newspapers (46%) were found to be the most cited sources of information, while television (22%) was the second most used source of information, and books were only mentioned by 10% of respondents. Similarly, a study on health promotion in Iceland reported that television was the second most used source of information. The study found that people received information mostly from the newspapers and that this was followed by the television. Fewer people read

about health matters in magazines and pamphlets, or listened to the radio, and people received the least information by attending meetings and lectures (Hrafn V. Friðriksson, 1992).

The purpose of health information seeking may also influence the choice of sources. For instance, the choice of those who look for information about a specific disease, and those who seek more general health information, may be different. In a study done by Carlson (2000) among Swedish cancer patients, it was found that of information sources that were sought outside the hospital, medical books (68%) were ranked highest in importance. This was followed by television (61%), narratives (55%), and papers and magazines (53%). The observations made by Guillaume and Bath (2003) in a study of the effect of health scares of MMR vaccination on the information needs of parents (mostly mothers) also indicate that different information channels may indeed serve different purposes. The study found that the mass media was regarded as the main source for initial information about the health scare. But when following the initial information, the parents choose to seek information from health care professionals and leaflets.

Furthermore, it has been pointed out that the combined effects of more than one information channel may be more influential than the effects from one channel. A Finnish study, based on data collected during a period of eight years (1989-1996), investigated the effects of exposure to mass media and interpersonal health communication on attempts to stop smoking. The study found that although interpersonal communication had more effect than the media, the highest impact was reached through exposure to information from both channels (Korhonen et al., 1998).

Findings from an Australian study indicate that the choice of information sources by people who are active in their information seeking and those who are not active may differ. Both groups reported seeking health information in magazines. However, those who belonged to the group who claimed to make an effort to seek information

were more likely to seek also in books and newspapers than those who did not make such an effort (Kassulke et al., 1993).

The relationship between health orientation and the choice of health information channels has also provoked interest. In a study by Dutta-Bergman (2004) among Americans, she compared the preference for information channels with her respondents' scores on four indicators of health orientation: health consciousness, health information orientation, health-oriented beliefs and health activities. Her findings indicate that those who are more health oriented may prefer certain information sources, such as newspapers, magazines, the Internet, and an interpersonal network, while sources such as television and radio may be more preferred by those who are less health oriented. Dutta-Bergman, (2005) also found indications that people's dietary habits, their media habits and health information seeking habits may connect. The more time people spent reading newspapers and magazines, the more likely they were to seek health information in sources beyond their doctor. Health consciousness was found to act as a mediator on the positive relationship between information seeking and the use of newspapers and magazines. The same relationship, however, was not found for television viewing.

Thus, the media is a much used information channel and in particular the television has been reported to be an important source of health information. However, studies have also noted the importance of other sources of the media. What information sources are chosen may depend on peoples social cognitive factors (Solomon, 1997b), it can be affected by where they are positioned in the process of seeking meaning (Guillaume and Bath, 2003), the nature of the information problem that they are seeking for an understanding of (Carlson (2000), or the choice of information sources may possibly by affected by the cultural environment (Hrafn V. Friðriksson, 1992).

5.4 The Internet as an information channel

In the past years, researchers have shown a growing interest in health information seeking through the Internet, with a number of studies indicate that the Internet is increasingly being used as a channel of health information.

Datamonitor (2002) conducted a survey among adults in several European countries (France, Germany, Italy, Spain, the UK) and in the US, and found that 57% of the respondents had used the Internet to seek= health information, compared with 76% who sought =information from their physician, 73% who used the media (television, books and magazines) and 53% who consulted their family and friends.

Although the Internet may not be the main source of health information, there are indications that those who are Internet connected may seek health information more often than those who don't have Internet access. A study conducted in California found that respondents who had Internet access were more likely to seek health information (56%) than those who did not have access (41%). Of the overall sample in the study, 19% had used the Internet as a source of health information, while the proportion for respondents who had Internet access was 37%. This is compared with a total of 85% of the overall sample, and 83% of the group of respondents with Internet access, who claimed to have turned to physicians or health care providers for health information. Also, 31% of the overall sample had used printed media (newspapers, magazines and journals), while the proportion for respondents with an Internet connection was 40%, and a total of 32% of all the respondents had sought information in books, compared to 36% of Internet users (Pennbridge, Moya and Rodrigues, 1999).

The findings above are in contradiction to those of Cotton and Gupta (2004) who have compared the use of information sources among people who claim to seek health information online, and those who don't use the Internet to seek information. Their

findings indicate that Internet users may be using traditional offline information sources to a lesser extent than those who don't use the Internet to seek information. The offline group was found to have a higher usage of sources for health information than the online group, except for friends and relatives, where the online group scored higher. The difference between the two groups was greatest for the use of health magazines, with 61% of the offline group reporting to use them, compared to 38% of the online group. For the use of television and radio, the difference was also high, with 51% of the offline group reporting to use it, compared to 29% of the online group. On the other hand, for both the online and the offline health information seekers, the primary choice of information sources was health professionals (doctors and nurses), with about 80% of respondents in both groups reporting that they used them.

Since 2000, Pew Internet & American Life Project has studied adult Americans' use of the Internet to seek health information. The results show a steady rise in online health information seeking. In 2000, the findings show that 55% of those who had access to the Internet used it to seek health information (Fox et al., 2000). In 2002, it was found that 62% of Internet users had sought health information online (Fox and Rainie). In 2003, it was reported that 80% of Internet users had sought health information online (Fox and Fallows). Experienced Internet users were more likely to have sought health information online than newcomers. A total of 77% of people with 1-3 years of experience of Internet use had sought health information, compared with 59% of those with less than a year experience of Internet use (Fox and Fallows, 2003).

However, the above-mentioned studies found that most people seem to seek information about health topics only infrequently, with 58% of users saying that they sought information every few months or less often in 2002 (Fox and Rainie), and 78% claiming to seek information every few months or less often in 2003 (Fox and Fallows). These findings can be compared with those of Cotton and Gupta (2004), who found that 55% of online health information seekers had sought information

once or twice during the past year, and that 45% had sought health information three times or more often during the past year. The findings of Huntington et al., (2002) are also interesting in this context. They conducted a study among digital television subscribers in the UK and reported that the web was considered to be the least important source of health information by their respondents, with 58% of them claiming the web to be not at all important, or not very important.

The findings from the Pew Internet & American Life Project show that, in 2000, a total of 55% of those who had access to the Internet had used it to seek health information, but mainly in relation to an illness. This led the authors to conclude that the Internet may perhaps not be used for educational reasons by people interested in health promotion (Fox et al., 2000). On the other hand, in 2002, information about diet and nutrition, and information about exercise or fitness ranked high on the list of health topics, with a total of 65% of online health information seekers having sought information about these issues (Fox and Rainie, 2002). In 2003, it was found that a total of 44% of the health seekers had sought information about diet, nutrition, vitamins or nutritional supplements, and 36% for exercise or fitness. Information about problems with drugs or alcohol (8%) and how to quit smoking (6%), on the other hand, ranked low (Fox and Fallows, 2003).

5.4.1 Characteristics of health information seekers that use the Internet

The characteristics of those who seek health information on the Internet have been examined by Cotton and Gupta (2004). Their findings describe the online health information seekers as being younger, having a higher income, and being more educated, as compared to those who seek health information only offline.

Also, Huntington, Nicholas and Williams (2003) have examined different factors in relation to health information seeking on the Internet, and attempted to draw profiles

of different groups of information seekers. They used an analysis of the preferred site features to identify three groups of user characteristics. First, a group of users who valued the breath, depth and trust of the content, where it was found that those who visited many sites rated the content lower than those who visited fewer sites. Second, a group of users who favoured advertisements, shopping and e-mail facilities, with users who belonged to the younger age groups scoring higher than the older age groups, and women scoring higher than men. And third, a group of users who valued the speed of delivery and ease of navigation, with women being more likely than men to be pleased with these system attributes, and irregular users scoring lower than frequent users. Furthermore, through an analysis of the user's topic of interest, the study identified four different interest groups; 1) the alternative remedy group, who was interested in information about natural health and complementary medicine, and tended to consist of women under the age of 34 who also were likely to be seeking for information for others; 2) the staying fit and healthy group, who was interested in information about healthy living and general health, where people who were currently healthy scored highly; 3) the keep-up-to-date group, who was interested in medical news and research; 4) and, the ill but want-to-know more group, who was interested in prescription drugs and new treatments, and which tended to consist of individuals that were currently sick or caring for others.

5.4.2 Advantages of using the Internet for information seeking

Studies have asked about the advantages of using the Internet for information seeking. The findings seem to indicate that ease of access and privacy are key issues.

A study of Americans' use of the Internet to seek health information reports that 93% of the respondents considered the convenience of using the Internet as an important reason. The information can be reached from wherever people are logged on and at the times that suits the user. A total of 83% of respondents claimed that the wide

amount of information that can be sought from the Internet is an important aspect, and a total of 80% considered it important that the information can be sought anonymously (Fox et al., 2000). Savolainen and Kari (2004) report similar findings from a Finnish study of how people evaluate the Internet in information seeking for self-development issues. They found that the main reason why people preferred to use the Internet is convenience, that is, the information is easy to access and time can be saved by using the Internet. Other reasons why the Internet was favoured were currency of the information, a broad range of information offered and the possibility to complement sources on the Internet with other types of sources. Less attention was, however, paid to the quality of the sources (accuracy, reliability and usefulness).

Convenience was also considered the main advantage of the Internet in a study by Williams, Huntington and Nicholas (2003), where they examined factors related to British citizens' use of the Internet for health information seeking. Convenience stood for factors such as that the Internet is accessible from one's home and constantly open, but also that the use of it is private and anonymous. Anonymity and privacy were also major factors in a Canadian study that investigated what influenced the Internet use of young people (age 10-28). The quality of the Internet access was found to be a key theme in the study. Four factors that affected the quality of the access were identified, that is: privacy to look up information about personal or sensitive topics; gate-keeping, through filtering software or decision processes about access to specific sites; timeliness; and functionality, such as lack of bandwidth and Internet access sites (Skinner, Biscope and Poland, 2003).

Savolainen (2004) has, furthermore, examined how people describe the Internet in relation to everyday life information seeking and identified three repertoires, with people moving from one repertoire to another as they speak. The Enthusiastic repertoire is evident as competent Internet users focus on the possibilities of the Internet and discuss these possibilities in positive terms, such as it being fast and easy. This repertoire has the highest valuation of the benefits of using Internet sources. The Realistic repertoire is described as "deliberative problem-solvers", who

evaluate the benefits of using Internet sources in relation to the use situation. The Critical repertoire is described by a reserved view of the qualities of Internet sources and the poor organisation of sources on the Internet.

5.5 Interpersonal sources as an information channel

It has been suggested that rather than relying mainly on formal information channels when transferring health information to the community, it might prove more productive to make use of interpersonal channels. This has especially been emphasised in order to reach to those who belong to the lower socio-economic groups (Rimal, 2001). Studies that focus on the use of information sources have indicated that people often tend to prefer interpersonal sources (see e.g. Krikelas, 1983), particularly when seeking practical information (Savolainen, 1995), or in personal situations (Julien and Michels, 2000). The last mentioned point was also confirmed in a study conducted by Sligo and Jameson (2000), where it was found that New Zealand Pacific women preferred interpersonal sources, such as discussions with health professionals, friends or at community group meetings, rather than print or electronic media, in order to gather information about cervical screening, an issue that was considered by them to be a very sensitive one.

Studies indicate that health professionals are often cited as a source of information. Cotton and Gupta (2004) found health professionals (doctors and nurses) to be a main source of information, with about 80% of their respondents (both Internet users and non-users) claiming to seek information from them. This is comparable with findings from a Californian study reporting that 85% of all respondents, and 83% of the group of respondents with Internet access, had turned to physicians or health care providers for health information (Pennbridge, Moya and Rodrigues, 1999). Also, Datamonitor (2002) found that 76% of participants from several countries in Europe and the US had turned to their physician for health information. Furthermore, in a study among digital television subscribers in the UK, Huntington et al. (2002) found that health

professionals, especially doctors, were considered as the most important sources, with 79% of the respondents regarding their doctor as a very important source of information.

Family members and friends are also consulted for health information. Pennbridge, Moya and Rodrigues (1999) found that a total of 45% of their overall sample, and 35% of Internet users, had sought information from family members or friends. Datamonitor (2002) reported similar findings. They found that 53% of their respondents had consulted family and friends for health information. Huntington et al. (2002) report that a total of 37% of their respondents considered family or friends as a very important information source.

The importance of interpersonal sources is also supported in a study among older adults, conducted by Pugh, Kropf and Greene (1994), who found that interpersonal sources were most frequently used to learn about health issues, with 90% of participants reporting that they had heard about health matters from others, such as friends (37%), children (32%), spouses (27%) or siblings (15%).

5.6 Why are different information sources preferred?

Findings from studies that focus on the choice of information sources offer several reasons as to why people seem to favour interpersonal sources belonging to their nearest environment when dealing with problems or questions in their everyday life.

A number of studies imply that the explanation may be due to the abilities of the person involved when it comes to interpreting information from formal sources, such as the media and sources on the Internet. It has, for example, been suggested that the possibilities of an interactive communication, where issues that are unclear can be questioned and explained during a conversation, may provide for a better

understanding of information (Mettlin and Cummings, 1982; Taylor 1991). There are also indications that, after having sought information elsewhere, people tend to turn to friends or relatives close to them for explanations, so that the information will make sense in the context of their own life (Agada, 1999; Suls, 1982). It therefore seems that seeking information from an interpersonal source can lead to a better understanding of the information and that this may serve as a motivation for people to use interpersonal sources rather than formal sources. Furthermore, the Sense-Making theory maintains that people are continuously faced with "cognitive gaps" when they make their way through time and space and that, depending on their situation, different strategies and information sources can help to make sense of the situation (Dervin, 1992, 1999). In some cases, putting the information problem into words and talking about it with others may help people to develop meaning and thereby serves as a bridge over the gap.

The reliability of the information has also been mentioned as an explanation, especially in studies of source preference among people with low income. According to Chatman (1985), the reason why people evaluate information from interpersonal sources as more reliable than information from formal sources may be two-fold. First, it refers to beliefs about the reliability of the knowledge of the persons involved. People seek information from other persons that are believed to "know what they are talking about" (p. 108). Second, it refers to the reliability of the persons themselves, with people turning to others that are believed to be trustworthy. Agada's (1999) findings also support the notion of a lack of reliability attached to information from formal sources, or an interpersonal source unknown to the information seeker. His findings suggest that people want to "cross-check" information from these sources with a person trusted by them. However, others have pointed out that, although interpersonal sources belonging to people's nearest environment can in some cases offer useful information, the consequences can also be unsafe, with the possibility of people being offered misleading information and advice (Suls, 1982), or information that "may be impressionistic, situation specific and sometimes false" (Valente, Poppe and Merritt, 1996, p. 381).

It has also been noted that people may consider interpersonal information as more useful than information gathered from formal sources, for example, because information from interpersonal sources have often been fitted towards the information need. Agada's (1999) findings suggest that people from a low-income environment prefer to seek information from someone they know and whom they expect to see things from their point of view, persons who can be trusted to select the information according to the need. The context of the information is believed to be more relevant if it is received from those who have the same understanding and share their worldview. Taylor (1991) has also suggested that information produced by discussions, where people have the opportunity "to clarify both need and response" (p. 228), may be of a greater utility than information from formal sources.

Studies have further pointed out that the ease of access to information may be an important factor (Taylor, 1991). Interpersonal sources, it seems, are seen as more accessible than formal sources. Spink and Cole (2001) agree with this, but point out that the availability of sources may also be determined by the characteristics of the group of persons studied. Taylor (1991) has noted that accessibility may have to do with something more than "physical access", but rather how people perceive "validity and utility of information, and perhaps above all, with a sense that personal dialogue will help to clarify both need and response, and therefore provide more useful information" (p. 228). It therefore appears that ease of access has, at least in some cases, to do with interpersonal sources being perceived as more useful than formal information sources, which seem to be seen as both "physically and psychologically" too distant (Spink and Cole, 2001; Taylor, 1991, p. 228).

5.7 The relationship between social cognitive factors, demographic factors and information behaviour

It has been noted that the possibilities of making use of the existing sources of information may be determined by social-cognitive factors. Factors such as self-efficacy, education, gender and age have been shown to connect with differences in information seeking and preferences for different information sources.

5.7.1 Self-efficacy and the connection to health information behaviour

Although self-efficacy has been extensively examined in relation to health behaviour, the connection between self-efficacy and health information seeking has not gained much interest. However, self-efficacy has been shown to act as a mediator between a person's perceptions of the risk of getting a heart disease and their communication profile. People that scored high on their self-efficacy beliefs were found to discuss health matters and seek significantly more health-related information than those who scored low on self-efficacy beliefs (Rimal, 2001).

Arora et al. (2002) also report the mediating effects of self-efficacy. They conducted a study among women diagnosed with breast cancer by using the Perceived Health Competence Scale (PHCS). The women were questioned about their emotional, functional and social/family well-being and also about access barriers to health information: the need for information without knowing were to get it, not being able to afford the time or effort to get information and not being able to pay for information needed. The study found empirical support for the mediating effects of self-efficacy on the relationship between barriers to accessing health information and the women's health outcome. In other words, it was found that health information is likely to affect people's well-being by enhancing their expectations about being able to deal efficiently with their health situation.

Self-efficacy beliefs have also been examined in relation to several information behaviour factors in a longitudinal study among patients from 12 coronary intensive care units in Ontario, Canada. After controlling for the effects of variables such as age, marital status, severity of illness, family income and gender, the findings show that people who were more satisfied with health information provision had higher self-efficacy beliefs, they engaged in more preventive health behaviours and were more satisfied with their health care (Stewart et al., 2004).

5.7.2 Education and the connection to health information behaviour

Education has been found to be an important factor in relation to health information behaviour. There are indications that the possibilities of making use of the existing sources of health information may be determined by people's level of education. Better-educated people have been found to seek more health information than people with less education, and the range of information sources used by them consists of a greater variety. Kenkel (1990) studied consumer health information in Chicago and found that people with a higher level of education were associated with more health information. This is consistent with findings reported by Muha and Smith (1989), who reported that people with more education were also more likely to have used multiple information sources to seek health information. The results of a study by Bishop et al., (1999) that investigated a group of low-income but better-educated women are similar. The women were found to be active seekers of information, using a wide collection of information sources.

Those who are better educated have also been found to be more knowledgeable about health issues than people with less education (Kenkel, 1990). Beier and Ackerman (2003) reported a study where they tested participants health knowledge by using ten scales for different areas of health. Their findings show that education is positively correlated with all of the health knowledge scales. Similarly, a study by Barr (1986),

who investigated two physically active groups of women, female marathon runners and women participating in a fitness class, found that there was a positive relationship between the women's level of education and both their general nutrition knowledge and knowledge about nutrition in relation to activity.

Rimal, Flora and Schooler (1999) reported education to be a consistent predictor of overall health orientation. People with higher levels of formal education were found to have greater possibilities to take advantage of the information environment, they were more knowledgeable about health matters and their attitude towards making a change in their health behaviour was more positive than people who had a lower level of education.

5.7.2.1 Education and preference for information sources

There are also indications that those who are better educated may have a preference for printed sources rather than for television or interpersonal sources. According to the findings of Marcella and Baxter (2001), those who hold professional and managerial occupations are more likely to use newspapers to obtain information on current affairs issues such as health, while manual and unskilled workers use the television as their main information source. This is confirmed in findings from O'Keefe, Boyd and Brown (1998), who reported that those who are better educated and wealthier learn more about health from magazines and newspapers, while people with less education learn more from the television. Findings from Chatman's (1985) study of well-educated urban women with low income further show that the print media was considered as a more credible, more useful and a more preferred source than the television. Also, Wade and Schramm (1969) analysed data from national surveys in the US and found that the more educated people were, the more likely they were to use newspapers and magazines to seek health information, and in turn, as people had less education, the more likely they were to use the television.

People with a higher level of education have also been found to use the Internet differently from those with a lower level of education. Carlson (2000) studied Swedish cancer patients in order to find out the degree to which they sought information from sources outside the hospital. Her study showed that people with a higher level of education had sought more information from the Internet than those who had a lower level of education. Fox and Rainie (2002) and Fox (2003) have reported that people with a college education were more likely to seek health information on the Internet than those with a lower educational level. Furthermore, Fox et al. (2000) reported that people with a college education and younger people were more likely than others to have sought information from multiple web sites. Also, those who are better educated have been found to be more concerned about the reliability of information on the Internet. A total of 61% of people with a college education reported having checked web sites for information about who was providing the health information, compared to 46% of people with a high school education or less (Fox et al., 2000).

Those who belong to the more disadvantaged groups in society, on the other hand, have been described as seeking information less often and using a more limited selection of information sources in their everyday life (Chatman, 1987; Agada, 1999), and there are also indications that they depend more on interpersonal sources from their nearest environment, rather than formal sources (Greenberg and Dervin, 1970; Spink and Cole, 2001).

This is supported by Chatman (1987; see also Agada, 1999), who in her studies on the information behaviour of people living in low-income environments, found that opinion leaders were providers of information. Opinion leaders were found to be better educated and to use the various information channels more than others. Even though the rest of the group had the same access to information channels, people still turned to their opinion leaders when they were in need of information. Chatman and Pendleton (1995) have suggested that there exists an information-poor lifestyle, where

the information poor (insiders) search for, use and share information in a different way from the information rich (outsiders). Insiders live in a world where norms decide what information is important and what is not, and where outsiders, even though being in a similar situation and having similar problems as themselves, are not sought out for information and advice. There are indications that certain groups within the society form patterns of communication that prevent them from seeking information or using certain information sources. The role of gatekeepers is also interesting in this context. It has frequently been defined in two different ways. The first definition describes gatekeepers as persons who are in control of access to information resources, and as persons more likely to function as a hindrance to information. The other definition designs gatekeepers with a role of helping the change or use of information, and defines gatekeepers as individuals able to assist health care professions in providing information to those who are at risk in the society (Metoyer-Duran, 1993).

5.7.3 Gender and the connection to health information behaviour

Eckermann (2000) has examined how gendered understanding of health can contribute to the assessment of health and well-being. She discusses the importance of paying attention to gender in relation to health promotion, and argues that gender is a crucial factor in the difference between people's health and experience of well-being. Studies have indeed found a link between gender and information needs. Fox and Fallows (2003) found that women (48%) seek more information for topics such as diet and nutrition than men (39%), but reported that interest in topics such as fitness and exercise was more equal among men (34%) and women (38%). Also, Stewart et al. (2004) conducted a longitudinal study among patients from 12 coronary intensive care units in Canada and found differences between the genders in relation to their information needs. Women were found to be more likely than men to want

information on angina and high blood pressure, while men, on the other hand, were more likely to want information about sexual function.

A number of studies have reported women to be more likely to seek information about health than men. This was found to be true in a study by Rakowski et al. (1990), who examined both information seeking behaviour and health behaviour, and found that women were more likely than men to seek health information. This is further supported by Connell and Crawford (1988), who did a study in Pennsylvania and found that women received more health information than men from a variety of sources. Also, a study by Kassulke et al. (1993) conducted in three Australian towns found an association between information seeking and gender, with more women (49.4%) reporting that they had made a special effort to seek health information than men (34.1%). Furthermore, gender differences regarding health information seeking have been determined not only among adults. In a study of American adolescents age 14 to 18 years, it was found that girls sought significantly more information about health than did boys (Newell-Withrow, 1986). Thus, there are indications that the difference found in health information seeking by gender may be due to socialisation, with women learning from an early age to be more concerned about health than men.

Women have also been reported to prefer different kinds of information sources than men. Findings reported by a Danish study showed that women were more likely to have used printed sources than men (Osler, Lous and Rasmussen, 1992). Likewise, an Australian study by Kassulke et al. (1993) found that women sought more health information in magazines than men, who, on the other hand, sought more information in television or radio than women. This is also similar to the findings of O'Keefe, Boyd and Brown (1998) that show women to be more likely to have learned about health from newspapers and magazines than men. The study, furthermore, found that women were more likely to have learned about health from what is referred to as personal media, that is, health care professionals, various educational sources such as brochures or books and computer information, as well as family and friends. In addition, a study conducted in Iceland found that women obtained more health

information from television or magazines than men, but when it came to newspaper reading, no difference was found between the genders (Hrafn V. Friðriksson, 1992).

Gender differences have also been found in relation to use of Internet sources. Nicholas et al. (2001) have examined the use of touch screen health information kiosks in the UK and found that more women (59%) than men (41%) had used the kiosks to seek information. Women were, furthermore, found to be more likely than men to regard the information that they found as useful. Fox et al. (2000) reported that, among Americans with access to the Internet, a total of 63% of women had used it to seek health information, compared to 46% of men. Women were also found to be more likely than men to be concerned about the reliability of information on the Internet. In 2002, women (72%) were still found to be more likely to seek health information online than men (51%) (Fox and Rainie, 2002). In 2003, the ratio of women that used the Internet to seek health information had gone up to 85%, compared to 75% of men. In addition, women were more likely to have sought information on multiple health topics than men (Fox, 2003).

It should however be noted that although the above mentioned findings indicate that a difference may exist between the genders, these studies do not offer an explanation of what factors may be the cause of this gender difference.

5.7.3.1 Health information seeking and the role of caretaking

There is not only increasing evidence to suggest that women seek more health information than men, but also that their information seeking is not restricted to their own information needs, as it also involves the caretaking of their family. Fox et al. (2000) found that although men and women did not differ with regard to how likely they were to use the Internet to seek information for their parents or other relatives, women (16%) were twice as likely as men (7%) to seek information for a child. According to findings by Fox and Fallows (2003) in a later study, a total of 57% of

Internet users had looked for health information for others the last time they searched online, with women (62%) still being more likely to have sought health information for others than men (50%).

Pennbridge, Moya and Rodrigues (1999) report similar findings from a Californian study. They found that 47% of the respondents had sought health information for themselves or their families. Gender was shown to be a factor, with women (52%) being more likely to seek information for others than men (37%). Also, a study among users of a British cancer information service reports that 80% of those who sought information were women, compared with 18% of men. The findings further show that a total of 32% of those who sought information claimed to be doing so for themselves, and that 39% were seeking for information for relatives (Slevin et al., 1988).

A study conducted in all the Nordic countries supports the notion that women are in the role of the caretaker of the family regarding health. The findings report that the utilisation of the health care services for children and adolescents varied by their parent's socio-economic group, with the strongest factor associated with this being the educational level of the children's mother (Halldórsson et al., 2002). According to Jarva (1998), this feature also becomes evident when the Nordic welfare state is examined. She states that the main characteristics of the Nordic welfare states are feminine in their nature. That is to say, the welfare state has taken over functions that traditionally belonged to women and used to be attended to within homes and the family, more than anywhere else within society.

5.7.3.2 Gender differences in relation to the use of health services

A study by Beier and Ackerman (2003) that investigated knowledge about health by using ten scales for different areas of health reports that women were more

knowledgeable than men in all health areas. Kenkel (1990) also found that women tended to be more informed about health issues than men. Furthermore, the study found that the probability of people using medical care was increased by having health information, and that those who were poorly informed were inclined to underestimate the ability of medical care in treating illness.

Studies have indeed found women to use health care services more than men do. Green and Pope (1999) examined data from a household survey that was conducted in 1970-1971 in the US and linked it with records of health services utilisation for a period of 22 years, from 1970-1991. Their findings show, after controlling for factors that were likely to cause a gender-related difference, that gender consistently predicted utilisation of health services. This finding is also confirmed in a study by Bertakis et al. (2000), who studied gender differences among patients at a university medical centre in California. After controlling for factors such as health status, age and other socio-demographic status, women were found to use more medical services and to have higher medical expenditures than men. Ladwig et al. (2000) report similar findings. They investigated gender differences in utilisation of medical health care in Germany in relation to symptom reporting. Except for the group that reported the highest count of symptoms, the observation from the study showed that a significant gender gap existed in medical utilisation, with women using the service more than men, independent of the symptoms that were reported.

The previously mentioned findings are, furthermore, in line with the outcome of Gabbard-Alley's (1995) review of studies on health communication that were published in the years 1968 to 1993. Gabbard-Alley reports that evidence has been shown about women being more knowledgeable about health issues than men, and that women have been found to be more likely to protect their health than men. The review also found that women were more likely than men to take responsibility for the health care of their family than men. She concludes that: "Evidence exists to indicate that women tend to be more concerned about health and that this is a learned gender difference" (p. 44). One explanation of the difference between the genders

may lie in the way that current family life is structured. If it is structured in such a way that women are more likely than men to undertake the role of staying home and take care of the children, then perhaps they may also be expected to take more responsibility for the tending to the needs of the family in relation to health behaviour.

5.7.4 Age and the connection to health information behaviour

Findings about age-related differences in connection with use of information sources that belong to the media are inconsistent. In Denmark, older people have been found to be more likely to read about health issues than younger people (Osler, Lous and Rasmussen, 1992). This is consistent with a study by O'Keefe, Boyd and Brown (1998), who found that older people reported learning more about health from printed sources, such as magazines and newspapers, whereas younger people reported learning more from television. Icelandic findings have shown that older people read more about health issues in the newspapers and watch more health programmes on television than younger people, who read more about health topics in magazines (Hrafn V. Friðriksson, 1992). Also, findings from an Icelandic study on media use in general revealed that there is a difference between age groups. The older age groups, that is, people in the age group of 68 to 80, use the radio and television more than the younger groups, with the difference being greater in the use of the radio. The difference between age groups, on the other hand, is smaller when it comes to reading the newspapers (Stefán Ólafsson, Karl Sigurðsson and María J. Ammendrup, 1999).

However, this is contradictory to findings from a Swedish study reporting that younger cancer patients had sought for information by reading narratives and articles about cancer in the newspapers to a greater degree than older patients (Carlson, 2000). Further, a study of health information seeking in Pennsylvania found that older men received much less information than younger men, whereas the amount of information that women received decreased only slightly with increasing age. The

study also found that the youngest and the oldest age groups obtained the most health information from printed sources, while middle-aged people obtained the most information from the television (Connell and Crawford, 1988).

An investigation among older adults living in the US showed that interpersonal channels were most frequently used, with 90% of respondents reporting that they had heard about health matters from others. However, formal channels such as mass media were also used, as a total of 75% of respondents had learned about health issues by reading about them and 63% reported receiving health information by watching television programmes (Pugh, Kropf and Greene, 1994).

Age differences in relation to health information seeking on the Internet have also received attention. Fox et al. (2000) reports findings from a study of adult Americans who use the Internet to seek health information. People between 30-64 years old were found to use the Internet more often to seek information than younger or older respondents. The same findings were reported in 2002; the middle age group was found to be more likely to seek health information online than those who belonged to the younger or older age groups (Fox and Rainie, 2002). And in 2003, those who were younger than 65 years were found to be more likely to seek health information on the Internet in general than those who are older (Fox and Fallows, 2003).

Findings from a study on information seeking on the Internet among adults in Europe and in the US, on the other hand, suggest that older people seek health information on the Internet less often than younger people. The study found that a total of 34% of people age 18-54 sought health information on the Internet, compared with 27% of people age 55-64 and 14% of people age 65 and over (Datamonitor, 2002). Also, findings from a study by Gordon, Capell and Madhok (2002) among British patients attending a rheumatology clinic show that the median age for those who had sought information on the Internet was 48 years compared with 62 years for those who had not used the Internet for information seeking.

6 Methods and data

The following chapter presents the data and methods used in the empirical study. Methods of data collection and sample characteristics are presented, followed by a description of the questionnaire used in the study. Finally, the methods of data analysis are explained.

6.1 Collecting the data

The study was carried out as a postal survey. The sample, representing the adult population in Iceland, consists of 1000 people at the age of 18 to 80, randomly selected from the National Register of Persons. The data was gathered during the period of September 25th and throughout December 2002. One reminder letter was sent and two telephone calls made to non-responders. Of the 1000 people in the sample, 507 responded. Response rate was 50.8%.

6.2 Sample characteristics

Demographic characteristics of the sample were compared with population parameters derived from Statistics Iceland (Hagstofa Íslands, 2003). Information about the division of gender, age and geographical residence are from December 1st 2002. Information about educational division,is in the form of mean figures from the years 1999 to 2001, which were the most recently available. The main change during these years is that a growing proportion of the population, among both men and women, finished their education at the university level. Characteristics of gender, age, education and geographical residence in the sample, compared with the population, are presented in Table 1.

Table 1: Characteristics of gender, age, education and residence in the sample compared with the population

Demographic characteristics	Sample (%)	Variation (%)		Population (%)
Gender				
Men	45.4	+/- 4.3	41.0-49.7	50.0
Women	54.6	+/- 4.3	50.3-59.0	50.0
Total	100.0			100.0
Age [1]				
18-29	22.6	+/- 3.7	18.9-26.3	15.1
30-39	20.8	+/- 3.6	17.2-24.4	20.3
40-49	22.0	+/- 3.7	18.4-25.7	21.1
50-59	16.0	+/- 3.2	12.7-19.2	25.4
60-80	18.6	+/- 3.4	15.2-22.0	18.1
Total	100.0			100.0
Education				
Primary	31.6	+/- 4.1	27.5-35.7	43.9
Secondary	44.2	+/- 4.3	39.9-48.5	43.9
University	24.2	+/- 3.7	20.5-27.9	12.2
Total	100.0			100.0
Residence				
Capital area	58.6	+/- 4.3	54.3-62.9	63.17
Small town	35.1	+/- 4.2	30.9-39.2	31.77
Rural area [2]	6.3	+/- 2.3	4.2-8.5	5.06
Total	100.0			100.0

It was determined that the sample was representative of the Icelandic population regarding division of age and division of geographical residence. The response rate for women (54.6%) was higher than for men (45.4%) and was not within 95% confidence limits. The sample was therefore not representative of the population regarding the division of gender. However, when the sample was weighted for

[1] The age division in the population is from 16 years to 74 years, but in the sample the age division is from 18 years to 80 years.

[2] The definition of rural areas by Statistics Iceland is an area of a particular size where the number of inhabitants is less than 200.

gender this did not change the results of the data analysis. Therefore, all results regarding gender will be presented as unweighted. Educational level was measured as the highest level of completed education. Three levels were distinguished: primary school, which includes those who have finished compulsory education (10 years of education); secondary education (14 years), which includes both those who have completed vocational training and also those who have completed secondary school; and university education. More people with university education (24.2% of the sample), and fewer people with primary school education (31.6% of the sample), responded to the questionnaire compared with the division in the population. The ratio of people with secondary education (44.2% of the sample) is representative of the division in the population. When examined by gender, the division between educational groups in the sample compared with the population is the same as presented above.

6.3 The questionnaire

The questionnaire used in the study consists of four major sections (see Appendix 1). Before the questionnaire was sent out it was distributed to a small number of people who were asked to fill it out and make comments if something was felt to be unclear, or even lacking. Some minor changes in the wording of questions and the response scales were made according to the suggestions that were made.

6.3.1 Socio-demographic information

The first section of the questionnaire collects data about respondent's socio-demographic background and includes variables that previous research has shown influences both health behaviour and information behaviour. Among these are: gender, age, marital status, household size, geographical residence, education,

occupation, income, and information about parents' occupation (see Appendix 1, questions 1-10).

6.3.2 Information behaviour

The second and main section of the questionnaire is focused on respondents' everyday information behaviour. This part of the study assesses respondents' motivation to seek information about health and lifestyle, and how often this sort of information is sought. It also assesses respondents' ways of information seeking, and from where they gather the information. Respondents' relevance judgements of information that can be found from different sources, and an examination of possible barriers to information behaviour is also included. Each part of this section is described more closely below.

6.3.2.1 Motivation

Motivation to seek information about health and lifestyle is assessed by asking two questions. The respondents were asked about their interest in the topic health and lifestyle. The respondents were also asked how often they talked about health and lifestyle with others. Both questions contained a 5-point response scale (Very interested/Very often – No interest at all/Never). Respondents were also asked about their reasons for talking with others about health and lifestyle. The question contained a 6-point response scale (see Appendix 1, questions 11 and 13-14).

6.3.2.2 Information seeking activity and preference for information sources

The study assesses how often, by what ways of information seeking, and from where the respondents gathered information about health and lifestyle. Respondents were asked how often they sought information about health and lifestyle. Differences in information seeking activity were explored by asking questions about two different information seeking styles, that is purposive information seeking and information encountering (see e.g. Erdelez, 1997; Williamson, 1997; Wilson, 1997, 2000). The information source preference of the respondents, as well as the information seeking activity of the respondents, with reference to the two different information seeking styles, were assessed for a variety of sources. Included are what has traditionally been referred to as formal sources, such as: printed sources, the mass media and sources on the Internet. Questions about interpersonal sources are also included, that is, when information is passed on by individuals, usually by way of conversation.

A list of 23 information sources was presented in the questionnaire. For each source, questions about purposive information seeking and information encountering were asked. Each question had a 5-point response scale (Very often – Never**;** see Appendix 1, questions 12 and 15-16).

6.3.2.3 Relevance judgements

The respondents' evaluation of the relevance of information was assessed by asking questions about two relevance factors: the usefulness and reliability of information. The list of 23 information sources that had previously been used for the questions about information seeking activity was presented again. For each source, questions about the usefulness of the information and the reliability of the information were asked. In each case the questions had a 5-point response scale (Very useful/Very

reliable – Don't know; see Appendix 1, questions 17-18). The questions were meant to represent two of the manifestations of relevance identified by Saracevic (1996). Situational relevance, or utilty, refers to how well the information found relates to "the situation, task, or problem at hand" (p. 214). Cognitive relevance, or pertinence, refers, on the other hand, to the relation between information, knowledge state, and cognitive information need, where information quality is suggested as a possible criteria.

6.3.2.4 Barriers in information behaviour

Finally, this section contains a set of 10 questions about possible barriers that previous studies have identified and may act as hindrances in information behaviour (see e.g. Agada, 1999; Buttriss, 1997; Davies et al., 2000; Julien, 1999; Mettlin and Cummings, 1982; Wilson, 1981, 1997). These include, for example, questions about the respondents' evaluations of cost hindrances (time and money), lack of awareness of information that may exist, beliefs about the availability of information, opinions about the accessibility of information, opinions about how trustworthy the information is, and the ability to interpret or understand the information that is found?. The questions were in the form of statements with each statement having a 5-point response scale (Strongly disagree – Strongly agree; see Appendix 1, questions 19-28).

6.3.3 Self-efficacy beliefs

The third section of the questionnaire examines the respondents' general sense of competence concerning the effectiveness of their health related actions. Self-efficacy beliefs are people's judgements about whether or not they will be able to carry out certain behaviour, and if so, how successful they will be. The emphasis is not on

people's skills but on what they believe that they can do with their skills under different circumstances. Another type of expectancy that needs to be taken into consideration is outcome expectancy, which can be described as a judgment of the likely results of performing a certain task (Bandura, 1997). The Perceived Health Competence Scale (PHCS) is used to measure the respondents' beliefs in their abilities to control their health. The PHCS is an 8-item scale referring to both outcome expectancies and behavioural expectancies. Each question has a 5-point response scale (Strongly disagree –Strongly agree; see Appendix 1, questions 29-36). The scale was developed by Smith, Wallston and Smith (1995) in response to the authors' recognition that a measurement at an intermediate level of specificity, designed to assess the degree to which an individual feels capable of effectively managing his or her health, would be useful in studies investigating a range of diverse but related behaviours of healthy lifestyle. If a person scores highly on the scale, it is an expression of the belief that she is capable of controlling her own health. The scale has been tested by the authors in five studies, using different types of samples. In these studies, a test of the internal reliability of the scale with Cronbach's alpha, proved to be high, ranging between 0.82 and 0.90. The aim of this section of the questionnarie was to be able to examine the relationship between respondents' information behaviour, their self-efficacy beliefs, and their health behaviour.

6.3.4 Health behaviour

The fourth section of the questionnaire examines the respondents' self-perceived health status by asking how they would rate their physical health on a 5-point response scale (Very good – Very poor). The respondents are also asked about three major classes of health-related behaviour, that is: substance use (alcohol and tobacco), exercise, and diet (consumption of low fat food products, fruits and vegetables). These health practices were selected because they stand for a spectrum of health behaviours that represent the main focus of health promotion in Iceland in recent years (Sigríður Jakobínudóttir and Anna Björg Aradóttir, 1996; Grænn lífseðill til að

bæta heilsu og líðan, 1997). The objective with this section of the questionnaire is to be able to examine the relationship between respondents' information behaviour, their self-efficacy beliefs and their health behaviour. All questions are on a 5-point response scale (see Appendix 1, questions 37-43).

6.4 Methods of data analysis

The aim of this study is to explore the connection between information behaviour and self-efficacy beliefs and examine how this relates to health behaviour. The statistical analyses were performed using SPSS version 11. The following section describes the methods of data analysis. First, methods used to analyse the variables that relate to information behaviour will be described (see 6.3.2 above); second, the analysis of the relationship between self-efficacy and information behaviour is described (see 6.3.3 above); and finally the analysis of health behaviour will be described.

6.4.1 Analysis of information behaviour

Cluster analysis was conducted to determine how the respondents formed clusters, based on how often they sought for information about health and lifestyle by way of purposive information seeking. The characteristics of the clusters were analysed by examining their relations to a number of variables from the first two sections of the questionnaire (see 6.3.1 and 6.3.2). The following sections describe the cluster analysis that was performed based on respondents' purposive information seeking, as well as a factor analysis that was conducted on questions about information encountering, relevance judgements, and information behaviour barriers (see Appendix 1, questions 16, 17, 18 and 19-28, respectively).

6.4.1.1 Cluster analysis: Information behaviour

Cluster analysis was used to determine how the respondents formed distinct statistical groups, based on how often they sought for information about health and lifestyle by way of purposive information seeking. Cluster analysis is a multivariate statistical procedure that explores data sets and attempts to reorganize them into relatively homogeneous groups or clusters, in such a way that within-group variation is minimized and between-group variation maximized. The intention is that each group should consist of objects that resemble each other in some respect and are as different from objects in other groups as possible (Aldenderfer and Blashfield, 1984; Everitt, Landau and Leese, 2001). The method gives an opportunity to provide a picture which is different from traditional analysis of the data with sociodemographic variables (Pors, 2003). The respondents were asked the following question: How often do you seek information about health and lifestyle in the information sources presented? A list of 23 information sources was presented with the question and people were asked to give an answer to how often they had sought for information from every source on the list (see Appendix 1, question 15).

Two stages of cluster analysis were performed. The first step involved an agglomerative hierarchical clustering method (Ward's method), which is a Euclidian distance method (Everitt, Landau and Leese, 2001). This method was used with the intention of producing a dendogram illustrating the cluster fusion in order to identify the possible number of existing clusters. The dendrogram did not give a clear picture of how many clusters might exist. However, it suggested the presence of three to four clusters. The next step in the analysis involved a k-means clustering method, based on Euclidian distances. K-means is an iterative partitioning method, which does not require the individuals to be allocated to a cluster irrevocably. In order to improve the statistical fit of the solution the method reassigns individuals iteratively to clusters until each person is closer to the mean of their cluster than to any other cluster mean (Everitt, Landau and Leese, 2001). The k-means method requires that the number of clusters is specified beforehand. As the results from the Ward's dendogram did not

provide a specific answer about the number of clusters, it was decided to start by drawing both a three-cluster solution and a four-cluster solution, using the Iterate and Classify option within SPSS. The four-cluster solution was considered to be theoretically more interesting as it gave an opportunity for a more detailed analysis of information behaviour. It was therefore chosen for further analysis in the empirical study. This decision is, furthermore, in line with the recommendation that, when different numbers of clusters are suggested, the highest number of clusters should be used (Everitt, Landau and Leese, 2001). A total of 471 participants were classified in the clusters. Table 2 shows the number of cases in each cluster.

Table 2: Number of cases in each cluster

Cluster 1	77
Cluster 2	90
Cluster 3	112
Cluster 4	192
Valid cases	471
Missing cases	36

The clusters were labeled (1) Active cluster, (2) Moderately passive cluster, (3) Moderately active cluster and (4) Passive cluster, with reference to their purposeful information seeking activity. In order to further test for statistically significant differences across the clusters and to allow a more accurate comparison of the mean scores for each information source across the clusters, a post-hoc test was conducted for each of the 23 information sources that the respondents were questioned about.

To validate the clustering classification and describe the characteristics of the clusters, their relations to a number of external variables from the first two sections of the questionnaire were measured. This method has been suggested as a validation test of cluster solutions by Aldenderfer and Blashfield (1984). Socio-demographic characteristics were measured for gender, age and education. Information behaviour was measured by several questions covering motivation to seek information related to interest in health and lifestyle and discussion activity about this topic; information seeking activity; information encountering; relevance judgements relating to

usefulness of the information and reliability of the information; and barriers to information behaviour.

The relationship between the clusters and each external variable was analysed in three steps.

1. The relationship between the clusters and the dependent variable was measured by use of ANOVA and a post-hoc test (Tuckey) conducted to examine significant differences across the clusters. When the dependent variable was skewed, a binary logistic regression was used[3].
2. The relationship between the dependent variable and three main background variables, gender, age and education, was measured by an appropriate significance test (t-test, F-test or chi-square)[4].
3. Finally, in order to better examine the relationship between the dependent variable, and the clusters, a multiple analyses that controlled for the background variables, which were significantly related to the dependent variable was employed. Factorial analysis of variance (FANOVA), or binary logistic regression, was used in the final model. A post-hoc test (Tuckey) was used to examine significant differences across the clusters.

In the analysis of questions about information encountering and relevance judgements, the scales Media, Health specialists and Internet, which had been constructed by use of factor analysis, were used (see 6.4.1.2 below). Additionally, for the analysis of questions about barriers in information behaviour, scales constructed by factor analysis, named Cognitive barriers and Physical barriers, were used (see 6.4.1.2 below).

[3] Binary logistic regression will be described in more detail in the chapters that present results where this method is being used.
[4] The choice of the variables gender, age and education is based on results of previous analysis of the data.

6.4.1.2 Factor analysis

Exploratory factor analysis was used to extract latent factors on the questions about information encountering and relevance judgements, that is the usefulness and the reliability of information (see 6.3.2.2 and 6.3.2.3, Appendix 1, questions 16-18). The Principal Axis Factoring method of extraction was employed to examine the factor structure of each question. This method was chosen above Principle Component Analysis as the aim was to extract latent factors rather than to simply reduce the data set (Fabrigar et al., 1999). It was expected that some of the items on the list of 23 information sources presented were measuring the same factor or different aspects of the same factor, and that a scale could be used to measure each factor. Factor analysis was also used to extract factors on the set of 10 questions about barriers in information behaviour (see 6.3.2.4, Appendix 1, questions 19-28).

In all cases, the criteria for factor loadings were set above 0.3 so that each factor would explain at least 9% of the distribution of the variables. An oblique rotation (Oblimin) was adopted in all the analyses as the correlations among the three retained factors were moderate ($r \geq .30$). The magnitude of the correlations indicates the appropriateness of employing an oblique rotation. For all the analyses, a multiple criteria based on eigenvalue > 1.00, a scree test and conceptual interpretability of the factor structure, suggested the adaquecy of extracting three factors (see Appendix 3 for scree tests). Factor analysis on the questions about information encountering and relevance judgements will be described, followed by factor analysis of questions about information behaviour barriers.

6.4.1.2.1 Information encountering and relevance judgements: Media, Health specialists and Internet

Factor analysis was performed separately on the three questions; information encountering, judgements about the usefulness of information, and judgements about the reliability of information. For each question, three scales were constructed from the factors as a measure of information encountering, judgements of information usefulness and judgements of information reliabilty. The scales were named: Media, Internet, and Health specialists. Together, the factors explained 57% or more of the total variance of each question (see Table 3-5).

As shown in Tables 3-5, the three factors have very similar factor loadings on each question. According to CoAmreys criteria (Tabachnick and Fidell, 1989), 79% of the factors have excellent factor loadings (>0.71), very good (>0.63) or good loadings (>0.55). However, 21% of the factors have loadings under 0.55. Most of the items load cleanly on one of the three factors. Factor 1 (Media) comprises items 14, 12, 10, 9, 13, 8, 11, and 1 on both of the questions pertaining to relevance judgements. Factor 1 is almost identical on information encountering, however, item 8 does not load on this factor. Factor 2 (Internet) has identical loadings on all the questions but loadings on factor 3 (Health specialists) are a bit more varied between questions. A few items have double loadings, especially on judgements about the reliability of information. For these items, more subjective criteria were used to determine their inclusion or exclusion in the scales divised. In particular, face validity of the scales and inconsistencies in factor loadings from one question to another were taken into consideration. According to the above criteria, item 3 (Other Journals) on information encountering (see Table 3) and item 7 (Novels) on judgements on the reliability of information (see Table 5) were excluded from the scales because they did not load on one of the three factors on the other questions. Using the same criteria, item 1 on judgements about the usefulness of information (table 4) was regarded as part of Media, even though it had identical loadings on the Health specialists scale. Futhermore, on judgements about the reliability of information, the

Media scale comprised items 12 and 13 even though it also had loadings on Health specialists and item 21 was regarded as part of the Internet scale. The scales were measured for internal reliability. Internal reliability of the scales was satisfactory, Cronbach's alpha ranges from 0.84 to 0.92 (see Tables 3-5).

Table 3: Oblimin rotated factor pattern on the information encountering items.

Items	**Media**	**Internet**	**Health specialists**
12. TV or radio documentary programs	0.82		
13. TV or radio discussion programs	0.82		
9. TV or radio news	0.74		
10. TV or radio entertainment programs	0.64		
14. TV or radio advertisements	0.47		
11. TV or radio sports programs	0.38		
1. Newspapers	0.32		
20. Internet journals or newspapers		0.89	
19. Internet discussion- or newsgroups		0.82	
23. Advertisements on the Internet		0.81	
22. Websites by others than the health authorities		0.80	
21. Websites by the health authorities		0.74	
4. Brochures from health authorities			-0.84
2. Health journals			-0.75
6. Encyclopaedias or Medical books			-0.73
5. Brochures from others than health authorities			-0.47
16. Discussions with health professionals			-0.45
3. Other journals			-0.39
15. Schools, through education			-0.33
Total variance explained (%)	57.5	-	-
Cronbach's alpha	0.88	0.91	0.84

Note: Loadings less than 0.30 in absolute value were blanked out

Table 4: Oblimin rotated factor pattern on the judgements about the usefulness of information items.

Items	Media	Internet	Health specialists
14. TV or radio advertisements	0.77		
12. TV or radio documentary programs	0.73		
10. TV or radio entertainment programs	0.69		
9. TV or radio news	0.66		
13. TV or radio discussion programs	0.66		
8. Newspaper or journal advertisements	0.64		
11. TV or radio sports programs	0.59		
1. Newspapers	0.36		-0.36
22. Websites by others than the health authorities		0.88	
20. Internet journals or newspapers		0.87	
19. Internet discussion- or newsgroups		0.86	
23. Advertisements on the Internet		0.82	
21. Websites by the health authorities		0.70	
4. Brochures from health authorities			-0.82
2. Health journals			-0.72
6. Encyclopaedias or Medical books			-0.70
16. Discussions with health professionals			-0.61
5. Brochures from others than health authorities			-0.46
15. Schools, through education			-0.39
Total variance explained (%)	57.4	-	-
Cronbach's alpha	0.90	0.92	0.85

Note: Loadings less than 0.30 in absolute value were blanked out

Table 5: Oblimin rotated factor pattern on judgements about the reliability of information items.

Items	Media	Internet	Health specialists
14. TV or radio advertisements	0.80		
8. Newspaper or journal advertisements	0.74		
10. TV or radio entertainment programs	0.69		
9. TV or radio news	0.66		
13. TV or radio discussion programs	0.59		-0.32
1. Newspapers	0.59		
11. TV or radio sports programs	0.53		
12. TV or radio documentary programs	0.51		-0.50
20. Internet journals or newspapers		0.88	
19. Internet discussion- or newsgroups		0.87	
22. Websites by others than the health authorities		0.86	
23. Advertisements on the Internet		0.85	
21. Websites by the health authorities		0.71	-0.31
16. Discussions with health professionals			-0.77
4. Brochures from health authorities			-0.75
2. Health journals			-0.65
6. Encyclopaedias or Medical books			-0.58
7. Novels	0.45		0.54
15. Schools, through education			-0.46
Total variance explained (%)	58.7	-	-
Cronbach's alpha	0.90	0.92	0.87

Note: Loadings less than 0.30 in absolute value were blanked out

6.4.1.2.2 Information behaviour barriers: Cognitive barriers and Physical barriers

In order to compute scales based on the set of 10 questions about barriers in information behaviour (Appendix 1, questions 19-28), factor analysis was conducted with Principal Axis Factoring with oblimin rotation. Two factors with an eigenvalue greater than 1.00 were extracted, accounting for 56.3% of the total variance. The final scale consisted of 10 items, all of which load greater than 0.4 on their respective factor. Factor 1 which was labeled Cognitive barriers consisted of seven items and

accounted for 46.0% of the total variance. Factor 2 was labeled Physical barriers, it consisted of three items and accounted for 10.3% of the total variance.

Table 6: Oblimin rotated factor pattern on information behaviour barriers.

Item	Cognitive barriers	Physical barriers
27. It´s difficult to find useful information on preventive healthcare services	0.80	
26. Information on health and lifestyle is often complicated and difficult to understand	0.79	
28. Specialists don´t always agree about the best way to protect health so I don´t know what information I can trust	0.60	
25. There isn´t enough information on health and lifestyle available in Icelandic	0.57	
20. Information on health and lifestyle which I might need exists, but I don´t have access to it	0.52	
21. I don´t know where to look for information on health and lifestyle	0.44	-0.26
19. I think information I might need on health and lifestyle doesn´t exist	0.42	
22. It´s difficult for me to seek information on health and lifestyle outside my home		-0.81
23. I can´t afford to obtain information on health and lifestyle		-0.78
24. I don´t have time to seek information on health and lifestyle		-0.46
Total variance explained (%)	46.0	-
Cronbach's alpha	0.83	0.77

The first factor, labeled Cognitive barriers, consisted of seven items. Factor loadings on this factor ranged from .42 to .80. Three items pertaining to Cognitive barriers refer to respondents' capabilities of evaluating the relevance of information, one item refers to the impact of language skills or educational capabilities and three items refer to beliefs about access to information. The second factor, labeled Physical barriers, consists only of three items with factor loadings ranging from -.46 to -.81. The items of the Physical barriers all refer to the situation that people live in, that is difficulties in getting away from home to look for information, as well as cost hindrances in

relation to time and finances. Although these factors are here as barriers, it is important to note that the same factors that may act as a hindrance of information behaviour for one person, can encourage information behaviour for another. According to CoAmreys criteria (Tabachnick and Fidell, 1989), 60% of the factors have excellent factor loadings (>0.71), very good loadings (>0.63) or good loadings (>0.55). The remaining factor loadings, or 40%, are under 0.55 in magnitude. Internal reliability of the scales is satisfactory; Cronbach's alpha is 0.83 for Cognitive barriers and 0.77 for Physical barriers.

6.4.2 Analysis of self-efficacy beliefs

With the purpose of analysing the self-efficacy beliefs of the information behaviour clusters, a cluster analysis was conducted based on the respondents' self-efficacy beliefs and the relationship between the self-efficacy clusters and the information behaviour clusters examined by chi-square. The Perceived Health Competence Scale (PHCS) was used to create the clusters (see 6.3.3). The PHCS scale was tested for internal reliability which proved satisfactory; Cronbachs alpha was 0.85.

As in the previous cluster analysis, Ward's method was used in the first step to create a dendogram showing the possible number of clusters. The k-means method was then used to draw the clusters. A dendogram produced by the Ward's method indicated that three to four clusters might exist. In order to follow the recommendation to use the highest number of clusters, a four-cluster solution was drawn by k-means clustering method (Everitt, Landau and Leese, 2001). A total of 503 participants were classified in the clusters. The number of cases in each cluster is shown in table 7.

Table 7: Number of cases in each cluster

Cluster 1	76
Cluster 2	104
Cluster 3	116
Cluster 4	207
Valid cases	503
Missing cases	4

The clusters were labeled: (1) Low self-efficacy cluster, (2) Moderate low self-efficacy cluster, (3) Moderate high self-efficacy cluster and (4) High self-efficacy cluster, with reference to the strength of self-efficacy beliefs. In order to test further, for statistically significant differences across the self-efficacy clusters, a post-hoc test was conducted for each statement of the PHCS scale.

6.4.3 Analysis of health behaviour

Finally, the study examines the relationship between the information behaviour clusters and health behaviour, as well as the relationship between the self-efficacy clusters and health behaviour. Several questions were asked about respondents' health behaviour and statistically significant relationships were found for questions about exercise activity and diet (see Appendix 1, questions 37-43). Because the variables were skewed, they were transformed into dichotomous variables and binary logistic regression used in the analysis.

The relationship between the clusters and each health behaviour variable was analysed in three steps:

1. First, the relationship between the clusters and the dependent variable was measured by binary logistic regression.
2. Next, the relationship between the dependent variable and the background variables gender, age and education, was measured by chi-square and correlation coefficients.

3. The final step involved a model that controlled for the background variables that related significantly to the dependent variable, using binary logistic regression.

7 Results from the empirical study

The aim of this study is to examine patterns of everyday information behaviour regarding information about health and lifestyle, as well as the relationship between information behaviour, beliefs of self-efficacy and health behaviour. This section presents results from the empirical study in three main sections. In the first section results of the information behaviour cluster analyses will be presented. The second secton presents results of the analysis of the relationship between self-efficacy and information behaviour. The final section presents results of the analysis of the relationship between information behaviour, self-efficacy and health behaviour.

7.1 Analysis of the information behaviour clusters

A set of four clusters was drawn, based on respondents' purposive seeking for information about health and lifestyle. The cluster analysis method is described in 1.4.1.1. The section starts by presenting results about the purposive information seeking of the clusters and their information source preferences. After that, results about the socio-demographic characteristics and the information behaviour characteristics of the clusters will be presented.

Table 8 presents an overview of the mean scores for purposive information seeking across the information behaviour clusters.

Table 8: Mean scores for purposive information seeking across the information behaviour clusters

Information channels and sources	Passive cluster (N=192)	Moderately passive cluster (N= 90)	Moderately active cluster (N=112)	Active cluster (N=77)
Media[5]	1.73 [a]	2.13 [b]	3.11 [c]	3.07 [c]
Newspapers	1.88 [a]	2.49 [b]	3.59 [c]	3.35 [c]
Newspaper or journal advertises	1.69 [a]	1.75 [a]	3.05 [b]	3.16 [b]
TV or radio news	1.85 [a]	2.43 [b]	**3.86 [d]**	**3.51 [c]**
TV or radio entertainment programs	1.70 [a]	1.76 [a]	3.24 [b]	3.00 [b]
TV or radio sport programs	1.72 [a]	1.92 [a]	2.89 [b]	2.89 [b]
TV or radio documentary programs	**2.17 [a]**	2.94 [b]	**3.79 [c]**	**3.51 [c]**
TV or radio discussion programs	**1.99 [a]**	2.77 [b]	**3.57 [c]**	3.42 [c]
TV or radio advertises	1.58 [a]	1.68 [a]	3.00 [b]	3.12 [b]
Journals	1.59 [a]	2.42 [b]	2.70 [b]	3.31 [c]
Novels	*1.11 [a]*	*1.13 [a]*	1.38 [b]	*1.38 [b]*
Health specialists[6]	1.58 [a]	2.78 [b]	2.63 [b]	3.01 [c]
Health journals	1.61 [a]	2.74 [b]	2.97 [b c]	3.28 [c]
Brochures from health authorities	1.89 [a]	**2.99 [b]**	3.22 [b]	3.06 [b]
Brochures from others than health authorities	1.47 [a]	2.17 [b]	2.44 [b]	3.01 [c]
Encyclopaedias or Medical books	1.44 [a]	2.79 [c]	2.32 [b]	3.08 [c]
Schools, through education	1.38 [a]	**3.01 [c]**	2.20 [b]	3.18 [c]
Discussions with health professionals	1.69 [a]	2.92 [b]	2.57 [b]	*2.84 [b]*

[5] Media was tested for internal reliability. Cronbach's alpha was 0.88, which is satisfactory.

[6] Health specialists was tested for internal reliability. Cronbach's alpha proved satisfactory, or 0.82.

Internet[7]	1.19 [a]	1.51 [b]	1.20 [a]	2.92 [c]
Internet discussion- or newsgroups	*1.10* [a]	*1.26* [a]	*1.06* [a]	*2.60* [b]
Internet journals or newspapers	*1.21* [a]	1.61 [b]	*1.16* [a]	3.23 [c]
Websites by the health authorities	1.24 [a]	1.93 [b]	1.43 [a]	3.06 [c]
Websites by others than the health authorities	1.27 [a b]	*1.51* [b]	*1.23* [a]	3.12 [c]
Advertises on the Internet	*1.10* [a]	*1.24* [a]	*1.09* [a]	*2.60* [b]
Interpersonal sources[8]	2.09 [a]	3.37 [b]	3.55 [b c]	3.76 [c]
Discussions with family, relatives or close friends	**2.22** [a]	**3.50** [b]	**3.68** [b]	**3.78** [b]
Discussions with others (e.g. work mates or sport trainers)	**1.95** [a]	**3.22** [b]	3.44 [b c]	**3.75** [c]

Point range is 1-5, where 1 is lowest and 5 is highest.

Total mean scores are presented for the information channels: Media, Health specialists, Internet and Interpersonal sources.

Mean scores are presented for each information source. A cluster mean is significantly different from another mean (Tukey, $p<0.05$) if they have different superscripts. A cluster mean with two superscripts is not statistically different from the means of two of the other clusters. For example, for information seeking in Health journals the Moderately active cluster is marked as [bc] which means that the cluster does not differ significantly from the Moderately passive cluster and the Active cluster, but a statistically significant difference exists across the Moderately active cluster and the Passive cluster.

The four highest mean scores of each cluster are marked in bold and the four lowest mean scores in italics.

[7] Internet was tested for internal reliability and Cronbach's alpha was 0.89.

[8] Interpersonal sources were tested for internal reliability and Cronbach's alpha was 0.83.

In order to be able to assess preferences for information channels, total mean scores were computed for each channel and post hoc tests performed to examine statistical differences in the total mean scores across the clusters. It needs, however, to be kept in mind that post hoc tests have not been performed to examine differences in channel preferences within the clusters. Nevertheless, by examining the total mean scores together with a set of the four highest mean scores for specific information sources, it is believed that assumptions can be made about each cluster's preference for information channels.

7.1.1 The Passive cluster: Purposive information seeking and preference for information sources

The Passive cluster is the largest cluster, consisting of 192 individuals. This cluster consists of more men (56.8%) than women (43.2%). The findings also show that the age division is fairly even in this cluster. More participants with a lower educational attainment belong to the Passive cluster than to any of the other clusters. Thus, the typical member of this cluster is a male with a low education. (See 7.1.6.1, Table 9).

Members of the Passive cluster are the ones that are least often engaged in purposive seeking, but when they seek information, they prefer Interpersonal information sources, together with sources in the Media. The total mean score for the Media (1.73) is somewhat higher than for sources by Health specialists (1.58). The lowest total mean score was for sources on the Internet (1.19) which is not appreciated highly by the Passive cluster.

The Interpersonal sources, which are characterised by providing information by lay persons, are relatively important to the Passive cluster, particularly when compared to Health specialists sources and sources on the Internet. Of the mean scores for all the information sources, the mean scores for seeking information from family, relatives

or close friends (2.22), rank as highest, and information seeking through discussions with others (1.95) rank in fourth place.

Besides Interpersonal sources, members of the Passive cluster favor popularised professional sources, that is, sources containing information from health professionals that is presented in such a way that they can easily be understood by lay persons. Documentary programs (2.17) and discussion programs (1.99) about health and lifestyle in the Media rank in the second and third place. Brochures from the health authorities (1.89) are also appreciated by them.

Thus, members of the Passive cluster are generally low in information seeking activity and they only seek information to a very limited extent. When they do so, they choose traditional everyday information sources, which can be easily accessed. The mass media generally belongs to people's everyday environment and it's information sources are easily available. The same applies to Interpersonal sources. It therefore does not demand a special effort to gather information from sources that belong to these information channels.

7.1.2 The Moderately passive cluster: Purposive information seeking and preference for information sources

Ninety individuals form the Moderately passive cluster. This cluster contains more women (57.8%) than men (42.2%) and it also has a higher rate of individuals from the younger age groups than from the older age groups. Members of the Moderately passive cluster are better educated than members of other clusters.

Members of the Moderately passive cluster favor sources by Health specialists (2.78) in addition to Interpersonal information sources (3.37). The Media (2.13) is preferred to a lesser extent. Seeking information from family, relatives or close friends (3.50) ranks highest in this cluster and information seeking through discussions with others

(3.22) ranks in the second place. Health specialist sources, through schools or education (3.01) and brochures from health authorities (2.99), rank in the third and the fourth place, respectively.

Although the total mean score for the Internet is the lowest one (1.51), Internet sources nevertheless belong to the information source horizon of the Moderately passive cluster. The mean score for websites by health authorities (1.93) is, for example, somewhat higher than the mean scores for some of the sources that belong to the Media. Members of the Moderately passive cluster use modern information channels, but they do so in a selective way as the sources are carefully chosen. Sources from health professionals are preferred by them, also when they use the Internet to seek information.

The consistency in choice of sources is also evident for information seeking in the Media. When members of the Moderately passive cluster seek information in the Media they favor sources such as documentary programs (2.94) or discussion programs (2.76) where they are likely to find information with the professional opinion, although in a popularised form.

Members of this cluster are selective in their choice of information sources and they aim for the experts' opinion. They seem to focus more on gathering information of high quality than collecting larger amounts of information from a wide range of sources. Moreover, the preference of the Moderately passive cluster is not limited to ordinary everyday sources such as the Media or Interpersonal sources. Rather, they engage in information seeking that, in general, demands more effort to acquire the information they want.

7.1.3 The Moderately active cluster: Purposive information seeking and preference for information sources

The Moderately active cluster is the second largest cluster, with a total of 112 individuals belonging to it. Although this cluster resembles the Passive cluster in that it's age division is fairly even, the gender division of the clusters is different, with the Moderate cluster consisting of more women (60.7%) than men (39.3%). Members of the Moderately active cluster are also somewhat better educated than members of the Passive cluster.

Participants belonging to the Moderately active cluster prefer information from sources in the Media (3.11), together with Interpersonal sources (3.55). The Media is clearly very important for members of this cluster, as the sources that belong to it are all favored highly, with novels (1.37) being the only exception. Of all information sources, mean scores for sources in the Media, that is TV or radio news (3.86) and TV or radio documentary programs (3.79), rank in the first and second place, and Newspapers (3.59) rank in the fourth place. The mean score for seeking information from Interpersonal sources, that is from family, relatives or close friends (3.68) ranks in the third place.

Health specialist sources (2.63) are used to a smaller extent by members of this cluster, although a closer look reveals that popularised professional sources, such as brochures from health authorities (3.22) and health journals (2.97) are appreciated. Sources on the Internet, on the other hand, are not favored by members of the Moderately active cluster. The total mean score for the Internet is 1.20, which is considerably lower than for the other information channels.

While members of the Moderately active cluster are active in seeking for information, they are also conservative in their choice of information sources. They appreciate sources that belong to their nearest surroundings and do not require much effort to seek,, such as Interpersonal sources and the Media. Sources found in more

unconventional information channels, such as the Internet, are at the edge of the information source horizon of this cluster, and are only rarely used.

7.1.4 The Active cluster: Purposive information seeking and preference for information sources

The Active cluster comprises the smallest number of individuals, or a total of 77. Compared with the other clusters, its members are younger than members of the other clusters. This is also the second best educated cluster and it has the highest ratio of women (74.0%). Hence, a typical member of this cluster is a better-educated woman.

Participants belonging to the Active cluster are characterised by seeking information more frequently than other cluster members. Members of the Active cluster also have the highest preference for Interpersonal sources (3.76). Of all the information sources, the scores for seeking information from family, relatives or close friends (3.78), rank as highest, and information seeking through discussions with others (3.75) ranks as second. Sources in the Media, such as TV and radio news (3.51), together with documentary programs (3.51), and discussion programs (3.42) rank third, fourth and fifth respectively. While this may indicate that members of the Active cluster are Media oriented, the total mean scores for the information channels, besides Interpersonal sources, are very similar. This in turn suggests that members of the Active cluster have a preference for a broad spectrum of information sources. Sources found from the more unconventional information channels, such as the Internet, are not an exception. In particular, there is no difference in the use of brochures from health authorities (3.06) and websites by health authorities (3.06). Also, newspapers or journals on the Internet (3.23) are used to a similar extent as newspapers (3.35) and journals (3.31) in the traditional printed form.

Although members of the Active cluster distinguish themselves, not only by being keen information seekers, but also by being flexible in choice of information sources,

a more precise examination shows that novels (1.38) are the source that is appreciated the very least by them, followed by advertisements on the Internet (2.60) and discussion- or newsgroups (2.60). There is, however, a substantial difference between the mean scores of novels as a source of health information and the other two sources. Discussions with health professionals (2.84) and sports programs in the Media (2.89) are also sources that members of the Active cluster have a somewhat lower preference for. This is not to say that these two information sources are seldom used by them, indeed the mean scores indicate the opposite, but rather that compared to other information sources they are not favored as highly.

Hence, members of the Active cluster are enthusiastic seekers of information, with a broad information source horizon. Rather than limiting their choice of information sources to a few, they seek information from a wide range of sources.

7.1.5 Summary

The results regarding purposive information seeking activity indicate that a clear distinction exists across the Passive cluster and the Active cluster. Members of the Passive cluster seek information about health and lifestyle the least often, while members of the Active cluster seek information the most often.

Apart from these differences in activity, the main distinction regarding information seeking activity seems to be in information seeking from sources on the Internet. The Active cluster is the one that seeks information from all sources on the Internet the most often. The mean scores for the clusters indicate that the difference between the Active cluster and the other three clusters is considerable.

However, while differences exist across the clusters, they all show the highest total mean scores for Interpersonal sources. Interpersonal sources, therefore, clearly

belong at the forefront of the information source horizons of all the clusters. Also, popularised professional sources are appreciated highly by all clusters.

Members of the Active cluster are keen information seekers, with a broad information horizon. With the exeption of Interpersonal sources the total mean scores and the mean scores for information sources show that they utilize most of the information sources to a similar extent rather than focus on only a few. The total mean scores show that members of the Active cluster seek information from all channels significantly more often than members of other clusters, with the exception of the Media sources where they do not differ significantly from the Moderately active cluster. Aside from Interpersonal sources, the Active cluster sought, for the most part, information from a variety of different information sources to a similar extent.

Although there are substantial differences in information seeking activity across the Moderately active cluster and the Passive cluster, the information source horizons of these two clusters are identical. Second to Interpersonal sources, both clusters prefer to seek information in the Media. Thus, sources in traditional everyday information channels that can be easily accessed, are appreciated by them and belong at the forefront of their information source horizons. A more precise look reveals that the same sources within the Media category (e.g., documentary programs and discussion programs, as well as newspapers and TV or radio news) are highly favored by members of these clusters. . The same trend can be seen for Health specialist sources, where brochures from health authorities are preferred by both clusters, whereas information seeking through schools or education is preferred the least. Members of these two clusters are also alike in that they rarely seek information from sources on the Internet. Furthermore, it is, interesting to notice that the Passive and the Moderately active clusters do not differ significantly with regard to information seeking activity on the Internet, although these clusters do so for all other information sources.

The Moderately passive cluster separates itself from the other clusters by favoring Health specialist sources the most, after Interpersonal sources. This cluster also distinguishes itself from the Passive cluster and the Moderately passive cluster by seeking significantly more often information on the Internet. The total mean scores indicate that the Moderately passive cluster seeks slightly less often information than the Moderately active cluster. The difference is mainly in information seeking in the Media, where the Moderately active cluster seeks significantly more often information, and where the total mean scores indicate a substantial distinction across the clusters. There is, on the other hand, not a significant difference between these two clusters when it comes to information seeking from Health specialist but with a few exceptions. The Moderately active cluster scores significantly higher on information seeking in encyclopedias or medical books, and the Moderately passive cluster scores higher on information seeking through schools or education .

However, the most important difference between the Moderately active and the Moderately passive clusters stems from the different information source horizons of these clusters, but not information seeking activity. Members of the Moderately passive cluster appreciate information by professionals and choose to seek in Health specialists sources, rather than in the Media. Furthermore, the Internet also belongs to their information source horizon. Thus, members of the Moderately passive cluster are engaged in more challenging information seeking than the Moderately active cluster.

7.1.6 Description of the characteristics of the information behaviour clusters

In order to describe the characteristics of the information behaviour clusters, their relations to a number of questions were analyzed (see 6.4.1).

7.1.6.1 Socio-demographic characteristics

The socio-demographic characteristics of the information behaviour clusters were tested and significant relations found with the variables gender, age and education. Results from the analysis are presented in Table 9.

Table 9: Socio-demographic characteristics of the information behaviour clusters

Demographic characteristics	Passive (%)	Moderately passive (%)	Moderately active (%)	Active (%)
Gender				
Men	56.8	42.2	39.3	26.0
Women	43.2	57.8	60.7	74.0
Total	100.0	100.0	100.0	100.0
Age				
18-29	17.4	27.3	16.4	48.1
30-39	20.1	22.7	22.7	23.4
40-49	25.0	25.0	21.8	16.9
50-59	14.7	15.9	18.2	10.4
60-80	22.8	9.1	20.9	1.3
Total	100.0	100.0	100.0	100.0
Education				
Primary school	37.7	19.1	33.9	22.1
Secondary school	45.0	40.4	43.8	46.8
University	17.3	40.4	22.3	31.2
Total	100.0	100.0	100.0	100.0

$\chi^2(3)=23.78$, p=.001
$\chi^2(12)=48.76$, p=.001
$\chi^2(6)=24.07$, p=.001

The table shows that there is a gender difference across the clusters. Women are a majority in all the clusters, except for the Passive cluster where there are more men than women. The gender difference is greatest in the Active cluster where 74% of the cluster members are women and 26% are men. The age division of the clusters shows that the Active cluster has the highest rate of young participants, with almost half of its members belonging to the age group 18-29. There is also a tendency towards younger people being more prevalent in the Moderately passive cluster, with a total of

50% of the cluster members belonging to the age groups 18-29 and 30-39. The age distribution in the Moderately active cluster and the Passive cluster is similar, both clusters having a fairly even age distribution and a higher rate of members from the older age groups than the other two clusters. There is also an educational difference across the clusters. Members of the Passive cluster have the lowest education. This cluster has the highest rate of members with primary school education and the lowest rate of members with a university degree. The Moderately passive cluster is the best educated one, with the highest rate of members with university education and the lowest rate of members with primary school education. Furthermore, the Active cluster has the second best education with a higher rate of members with a university degree and lower rate with primary school education than the Moderately active cluster.

7.1.6.2 Motivation towards information behaviour

Motivation was assessed by asking two questions. The respondents were asked how interested they were in the topic health and lifestyle, and they were also asked how often they discussed this topic with others (Appendix 1, questions 11 and 13; see Appendix 4 for distribution of the variables). Results about interest in health and lifestyle will be presented, followed by a presentation of the results about discussion activity.

7.1.6.2.1 Interest in the topic health and lifestyle

Statistically significant differences were found in interest in information about health and lifestyle across the clusters, by use of *ANOVA* ($F(3,455)=50.5$, $p<.001$). The results are presented in Figure 3.

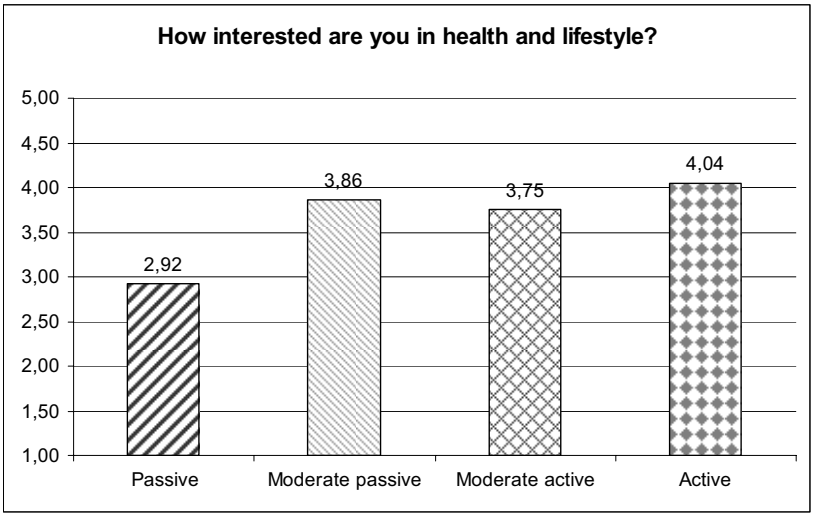


Figure 3: Interest in information about health and lifestyle across the information behaviour clusters

The Passive cluster was found to differ significantly from the other three clusters. Statistically significant differences were, on the other hand, not found across the Moderately active cluster, the Moderately passive cluster or the Active cluster (Tuckey, $p<.05$).

Next, interest in information about health and lifestyle was tested against each of the background variables gender, age and education.

A statistically significant relationship was found between gender and interest $t(492)=-6.0$, $p<.001$). Women (3.69) are more interested in information about health and lifestyle than men (3.20).

Education also relates with interest in information about health and lifestyle. Those who have higher education were found to be more interested than those who have lower education ($F(2,489)=7.5$, $p<.001$). Respondents who have primary school education (3.25) are significantly less interested in this topic than both respondents with secondary school education (3.52) and respondents with university education (3.68).

A statistically significant relationship was not found between age and interest ($F(4,477)=1.5$, $p=.207$).

Finally, a Factorial analysis of variance (*FANOVA*) model, controlling for gender and education, was used to examine differences in interest in information about health and lifestyle across the information behaviour clusters.

Table 10: Differences in interest in health and lifestyle across the clusters, controlling for gender and education

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	118.41	6	19.73	30.44	0.000	0.29
Gender	12.50	1	12.50	19.27	0.000	0.04
Education	5.30	2	2.65	4.09	0.017	0.02
Clusters	75.32	3	25.11	38.72	0.000	0.21
Error	291.75	450	0.65			
Total	5963.00	457				
Corrected Total	410.16	456				
A	R Squared = .289 (Adjusted R Squared = .279)					

Table 10 shows that, controlling for gender and education, statistically significant differences exists across the clusters ($p<.001$). Members of the Passive cluster (2.92) are significantly less interested in the topic health and lifestyle than members of the Moderately active cluster (3,75), members of the Moderately passive cluster (3.85) and members of the Active cluster (4.04) (Tuckey, $p<.05$).

Furthermore, the overall model explains 29% of the variance of interest (Eta squared) and the information behaviour clusters explain 21% of the variance (Eta squared). Additionally, the variables gender ($p<.001$) and education ($p<.05$) were statistically significant.

7.1.6.2.2 Discussions about health and lifestyle

Respondents were asked how often they discussed the topic health and lifestyle with others. Statistically significant differences were found across the clusters ($F(3,453)=67.0$, $p<.001$). Figure 4 presents results from this question.

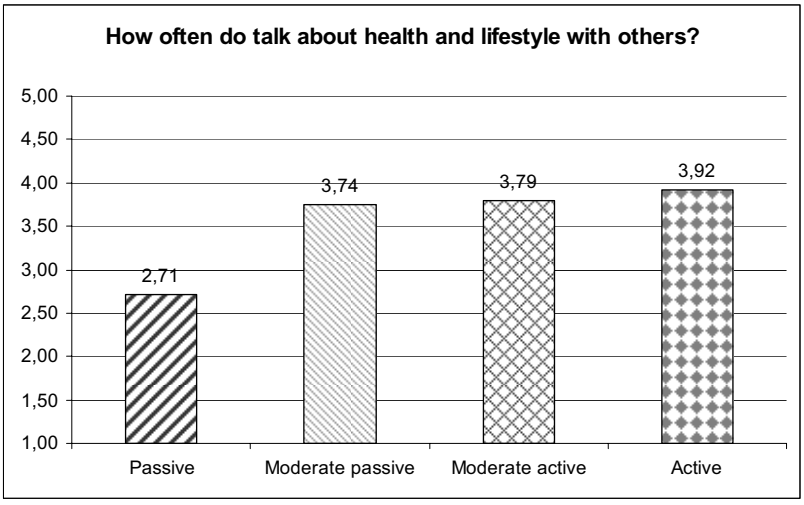


Figure 4: Discussions about health and lifestyle across the information behaviour clusters

The Passive cluster differs significantly from all the other three clusters with regard to discussions about health and lifestyle. Statistically significant differences were not found across the Moderately active cluster, the Moderately passive cluster and the Active cluster (Tuckey, $p<.05$).

The next step was to test discussion activity against gender, age and education.

The results show a statistically significant relationship between gender and discussion activity $t(489)=-5.6$, $p<.001$). Women (3.57) discuss this topic more often with others than men (3.08).

Statistically significant relations were also found between the variables education and discussion activity ($F(2,486)=7.8$, $p<.001$). The results show that respondents with a university education (3.61) discuss health and lifestyle significantly more often with others than respondents with primary school education (3.13). Respondents with secondary school education (3.35) do not differ significantly from the other two educational groups.

The relationship between the variables age and discussion activity was not statistically significant ($F(4,474)=2.0$, $p=.094$).

The last step was to examine differences in discussion activity across the information behaviour clusters by using a Factorial analysis of variance (FANOVA) model, controlling for gender and education.

Table 11: Differences in discussions about health and lifestyle across the clusters, controlling for gender and education

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	143.52	6	23.92	37.38	0.000	0.33
Gender	8.03	1	8.03	12.55	0.000	0.03
Education	4.22	2	2.11	3.30	0.038	0.02
Clusters	104.28	3	34.76	54.32	0.000	0.27
Error	286.70	448	0.64			
Total	5602.0	455				
Corrected Total	430.23	454				
a R Squared = .334 (Adjusted R Squared = .325)						

As can be seen from Table 11, statistically significant differences exists across the information behaviour clusters ($p<.001$), controlling for gender and education. Members of the Passive cluster (2.71) discuss the topic health and lifestyle significantly less often than members of the Moderately passive cluster (3.73), the Moderately active cluster (3.79) and the Active cluster (3.92) (Tuckey, $p<.05$).

The table further shows that the overall model explains 33% of the variance of discussion activity (Eta squared) and the clusters explain 27% of the variance (Eta

squared). Additionally, gender ($p<.001$) and education ($p<.05$) are statistically significant.

7.1.6.3 Information seeking

The clusters were drawn from a set of 23 specific information sources on the basis of respondents' purposive information seeking. However, it is also interesting to examine how the clusters behave when asked about health and lifestyle information seeking in general. Without referring to any specific information sources, the respondents were asked how often they sought information about health and lifestyle (Appendix 1, question 12; see Appendix 4 for distribution of the variable). A statistically significant difference was found across the clusters ($F(3,455)=72.8$, $p=.001$). The results are presented in Figure 5.

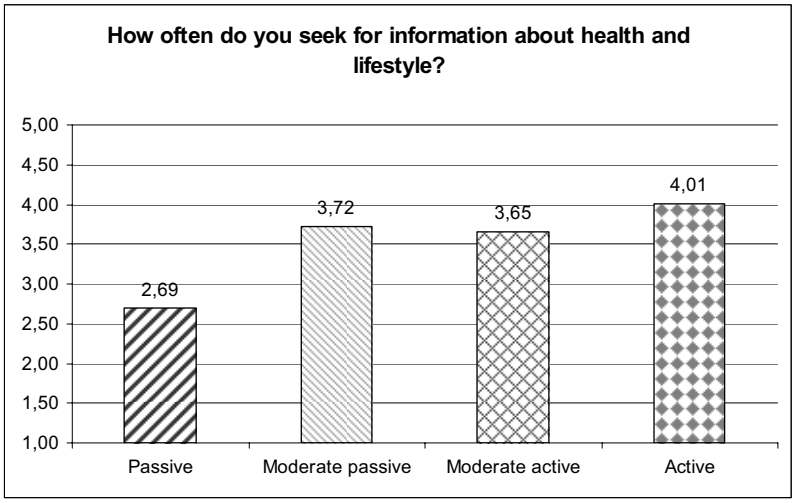


Figure 5: Information seeking across the information behaviour clusters

The Passive cluster differs significantly from the other three clusters, and so does the Active cluster. There is, on the other hand, not a statistically significant difference

across the Moderately passive cluster and the Moderately active cluster (Tuckey, $p<.05$).

Information seeking activity was next tested against gender, age and education.

Gender was found to relate significantly to information seeking ($t(492)=-6.4$, $p<.001$). Women (3.58) seek more often for information about health and lifestyle than men (3.03).

Age ($F(4,477)=.2$, $p=.932$) and education ($F(2,489)=2.9$, $p=.057$) were not significantly related to information seeking.

Finally, a Factorial analysis of variance (FANOVA) model, controlling for gender, explored differences in information seeking across the clusters.

Table 12: Differences across the clusters in seeking for information about health and lifestyle, controlling for gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	150.80	4	37.70	63.82	0.000	0.36
Gender	14.95	1	14.95	25.31	0.000	0.05
Clusters	112.33	3	37.44	63.39	0.000	0.30
Error	268.18	454	0.59			
Total	3667.00	459				
Corrected Total	418.98	458				
a R Squared = .360 (Adjusted R Squared = .354)						

Table 12 shows that, controlling for gender, statistically significant differences exist across the clusters in information seeking ($p<.001$). Members of the Passive cluster (2.69) seek information the least often while members of the Active cluster (4.01) seek information the most often.. However, members of the Moderately passive cluster (3.72) and members of the Moderately active cluster (3.65), do not differ significantly from each other (Tuckey, $p<.05$).

Moreover, the overall model was found to explain 36% of the variance in information seeking (Eta squared) and the clusters were found to explain 30% of the variance (Eta squared). Gender (p<.001) was statistically significant as well.

7.1.6.4 Information encountering

This section examines how often and where members of different clusters look for information in relation to information encountering. Information encountering and preference for information channels were measured for three information channels; Media, Health specialists and Internet, by use of scales constructed through factor analysis (see 6.4.1.2, Appendix 1 question 16; see Appendix 4 for distribution of the variables). Results about information encountering in the Media will be presented to begin with, followed by results about information encountering from Health specialists, and finally information encountering on the Internet will be presented.

7.1.6.4.1 Media

ANOVA was used to examine differences across the clusters in information encountering in the Media, and statistically significant differences were found (F(3,456)=50.8, p<.001). Figure 6 presents the results.

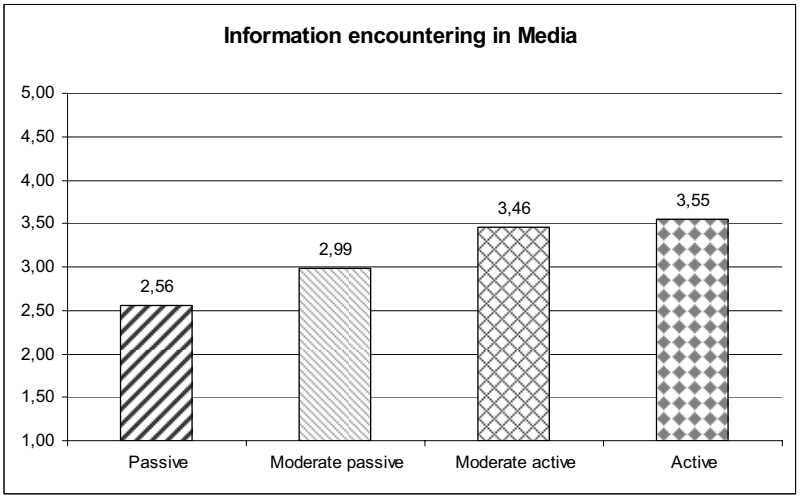


Figure 6: Information encountering in the Media across the information behaviour clusters

The Passive cluster differs significantly from all the other clusters, and so does the Moderately passive cluster. A statistically significant difference was not found across the Moderately active cluster and the Active cluster (Tuckey, $p<.05$).

Information encountering in the Media was subsequently tested against gender, age and education.

Gender relates significantly to information encountering ($t(464)=-4.1$, $p<.001$). Women (3.16) encounter information about health and lifestyle in the Media more often than men (2.85).

Youth and information encountering in the Media goes hand in hand ($F(4,449)=7.8$, $p<.001$). Younger respondents, that is respondents in the age groups 18-29 (3.23) and 30-39 years old (3.20), encounter information about health and lifestyle in the Media significantly more often than respondents in other age groups. Respondents who are 60 years and older (2.66) encounter information in the Media the least often. Respondents in the age group 40-49 (2.85) and 50-59 (3.07) do not differ significantly from each other (Tukey, <.05).

Education did not relate significantly to information encountering in the Media ($F(2,461)=.7$, $p=.499$).

The last step was to use a Factorial analysis of variance (FANOVA) model to examine differences in information encountering in the Media across the information behaviour clusters, controlling for gender and age[9]. Table 13 presents the results of the model.

Table 13: Differences across clusters in encountering information about health and lifestyle in the Media, controlling for gender and age

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	92.30	5	18.46	36.35	0.000	0.29
Gender	3.23	1	3.23	6.36	0.012	0.01
Clusthop	62.87	3	20.96	41.27	0.000	0.22
Age	8.60	1	8.60	16.94	0.000	0.04
Error	224.43	442	0.51			
Total	4408.23	448				
Corrected Total	316.73	447				
A	R Squared = .291 (Adjusted R Squared = .283)					

Table 13 shows that controlling for gender and age, a significant difference exists across the clusters ($p<.001$). However, as age was entered as a covariance, a post-hoc test for the clusters was not possible.

The overall model explains 29% of the variance of information encountering in the Media (Eta squared) and the clusters explain 22% of the variance (Eta squared). Both gender ($p<.05$) and age ($p<.001$) related significantly to information encountering.

[9] Age was used as an interval variable, instead of categorical, because of too few participants in some of the age groups.

7.1.6.4.2 Health specialists

Differences in information encountering in Health specialist sources across the information behaviour clusters were tested by *ANOVA*. The results that were statistically significant ($F(3,458)=71.4$, $p<.001$) are presented in Figure 7.

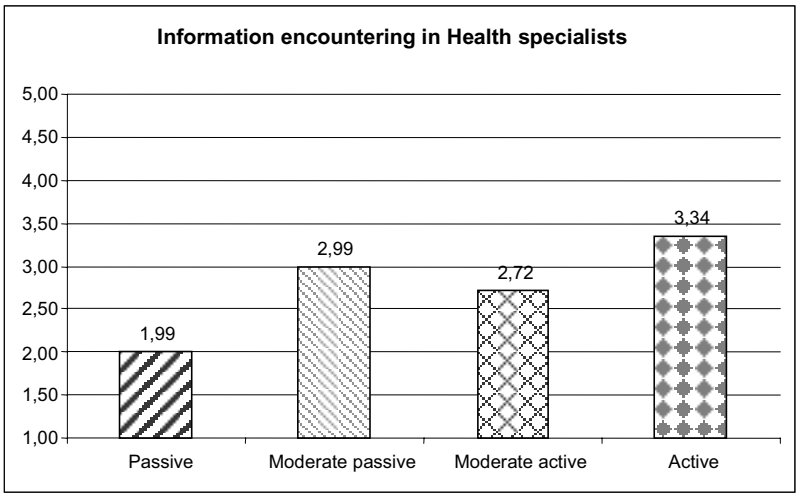


Figure 7: Information encountering in Health specialist sources across the information behaviour clusters

The Passive cluster differs significantly from the other three clusters and so does the Active cluster. There was not a statistically significant difference across the Moderately passive and Moderately active clustes (Tuckey, $p<.05$).

The next step was to test information encountering in Health specialist sources against gender, age and education.

Gender related significantly to information encountering ($t(466)=-5.1$, $p<.001$). Women (2.77) encounter information about health and lifestyle by Health specialists more often than men (2.35).

Age was also significantly related to information encountering ($F(4,451)=6.4$, $p<.001$). Those who belong to the oldest age group, that is respondents who are 60

years and older (2.18), are the ones who encounter information about health and lifestyle from Health specialists least often. For respondents who are age 18-29 the mean score is 2.85, for those who are 30-39 it is 2.68 and for those who are 50-59 it is 2.59. Respondents in the age group 40-49 (2.54) do not differ significantly from other age groups (Tukey, <.05).

Additionally, education and information encountering were, significantly related ($F(2,463)=9.5$, $p<.001$). Respondents who have a higher education, that is respondents with a university degree (2.89), encounter information in Health specialist sources more often than respondents with primary school education (2.41), or secondary school education (2.53). Respondents with primary school and secondary school education do not differ significantly from each other (Tuckey, $p<.05$).

Lastly, a Factorial analysis of variance *(FANOVA)* model, controlling for gender, age and education, was used to examine differences in information encountering in Health specialist sources, across the clusters[10]. Table 14 presents the results of the model.

Table 14: Differences across the clusters in encountering information about health and lifestyle in Health specialist sources, controlling for gender, age and education

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	137.18	7	19.60	35.38	0.000	0.36
Gender	6.74	1	6.74	12.17	0.001	0.03
Clusters	79.83	3	26.61	48.04	0.000	0.25
Education	4.70	2	2.35	4.25	0.015	0.02
Age	3.57	1	3.57	6.45	0.011	0.01
Error	243.71	440	0.55			
Total	3394.31	448				
Corrected Total	380.89	447				
a R Squared = .360 (Adjusted R Squared = .350)						

[10] Age was used as an interval variable, instead of a categorical variable because of too few participants in some of the age groups.

Table 14 shows that, controlling for gender, age and education, a statistically significant difference exists across the clusters (p<.001). It was not possible to conduct a post-hoc test for the clusters as age was entered as a covariance.

The overall model explained 36% of the variance of information encountering (Eta squared) and the clusters explain 25% of the variance (Eta squared). In addition, gender (p<.001), age (p<.05) and education (p<.05), were statistically significant.

7.1.6.4.3 Internet

The variable information encountering on the Internet was skewed. It was transformed into a dichotomous variable and therefore binary logistic regression was used in the analysis. The main variables in the analysis are the following:

Information encountering on the Internet: This variable was dichotomized. Respondents who encounter information on the Internet were given the value 1, and respondents who did not encounter information on the Internet were given the value 0.

Consequently, the results can be interpreted so that a value over 1 on Exp (B) indicates that the odds of being an information encounterer gets greater as the value of the independent variable gets higher. Values under 0 indicate that the odds of being an information encounterer get smaller as the value of the independent variable gets lower.

Information behaviour clusters: The Passive cluster was used as a comparison group against which the other clusters were measured.

Education: Respondents with university education were used as a comparison group.

Results

Binary logistic regression was used to test for differences in information encountering on the Internet across the clusters. The results are presented in Figure 8.

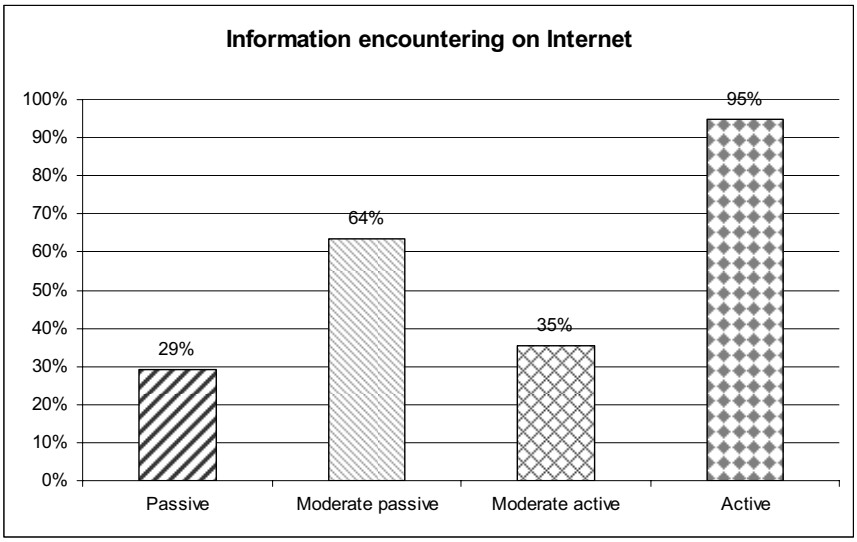


Figure 8: The odds of encountering information about health and lifestyle on the Internet across the information behaviour clusters

The results show a statistically significant difference across the Passive cluster and the Active cluster, Exp (B) is 43.8 ($p<.001$). There is also a significant difference across the Passive cluster and the Moderately passive cluster, Exp (B) is 4.26 ($p<.001$).

Information encountering on the Internet was next tested against gender, age and education.

Women are more likely to encounter information about health and lifestyle on the Internet than men. A total of 52.1% women against 42.9% men were found to encounter information in sources on the Internet ($\chi^2(1)=3.95$, $p<.05$).

Older people are less likely to encounter information about health and lifestyle on the Internet than younger people (r=-.402, p<.001).

The higher the educational level of the respondents, the more frequently they encountered information about health and lifestyle on the Internet ($\chi^2(2)$=16.87, p<.001). A total of 62.9% of respondents with a university education had encountered information on the Internet, against 47.4% of respondents with secondary school education and 37.3% of respondents with primary school education.

A binary logistic regression model, controlling for gender, age and education, was finally used to examine differences in information encountering across the clusters. The results are presented in Table 15.

Table 15: Differences across the clusters in encountering information about health and lifestyle in sources on the Internet, controlling for gender, age and education

	B	S.E.	Wald	*df*	*Sig.*	Exp(B)
Clusters				3	0.000	
Passive x Active	3.26	0.56	44.36	1	0.000	26.01
Passive x Moderately active	0.11	0.28	34.31	1	0.691	1.12
Passive x Moderately passive	1.12	0.31	0.16	1	0.000	3.07
Education			13.51	2	0.017	
University x Primary	-0.87	0.32	8.10	1	0.006	0.42
University x Secondary	-0.61	0.29	7.61	1	0.033	0.54
Gender (male=0)	0.04	0.24	4.57	1	0.877	1.04
Age (interval)	-0.05	0.01	0.02	1	0.000	0.95
Constant	2.02	0.47	37.91	1	0.000	7.55

Table 15 shows that, controlling for gender, age and education, a statistically significant difference exists across the Passive cluster and the Active cluster, Exp (B) is 26.01. The results indicate that the odds of encountering information about health and lifestyle on the Internet are higher for members of the Active cluster than for members of the Passive cluster. There is also a statistically significant difference across the Passive cluster and the Moderately passive cluster, Exp (B) is 3.07. The odds of encountering information are higher for members of the Moderately passive cluster than for members of the Passive cluster.

There is a statistically significant difference between respondents with university education and primary school education, Exp (B) is .42, and also, between respondents with university education and secondary school education, Exp (B) is .54. Additionally, age is statistically significant, Exp (B) is .95.

7.1.6.5 Relevance judgements: Usefulness of information

The chapter presents results about judgements of the usefulness of information about health and lifestyle in the Media, from Health specialists and on the Internet (see Appendix 1, question 17; see Appendix 4 for distribution of the variables).

7.1.6.5.1 Media

ANOVA was used to examine differences of judgements about the usefulness of information about health and lifestyle in the Media across the clusters. Statistically significant differences were found ($F(3,298)=8.4$, $p<.001$). The results are presented in Figure 9.

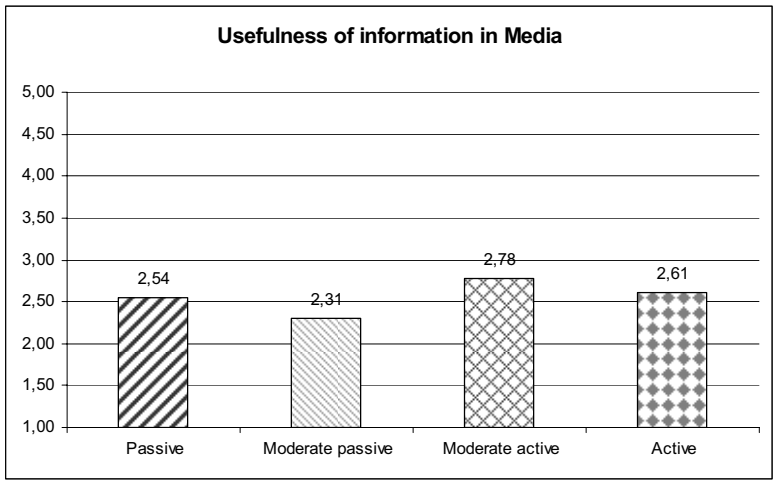


Figure 9: Judgements of the usefulness of information about health and lifestyle in the Media across the information behaviour clusters

The Moderately passive cluster differs significantly from both the Moderately active cluster and the Active cluster. The difference between the Passive cluster and the other clusters does not reach significance (Tukey, p<.05).

Next, judgements of the usefulness of information were tested against gender, age and education.

The usefulness of information about health and lifestyle in the Media is emphasized more by lower educated respondents ($F(2,306)=5.2$, $p<.01$). Respondents with secondary school education (2.66) consider this information more useful than respondents with university education (2.41). Respondents with a primary school education (2.60) do not differ significantly from the other two educational groups (Tukey, $p<.05$).

Age ($F(4,299)=1.9$, $p=.104$) and gender ($t(308)=-1.3$, $p=.159$) did not relate significantly to judgements of the usefulness of information in the Media.

The last step was to use a Factorial analysis of variance (FANOVA) model, controlling for education, to examine differences in judgements of the usefulness of

information in the Media, across the clusters. Table 16 presents the results of the model.

Table 16: Differences across the clusters in judgements of the usefulness of information about health and lifestyle in sources of the Media, controlling for education

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Corrected Model	11.03	5	2.21	6.97	0.000	0.11
Education	2.75	2	1.37	4.34	0.014	0.03
Clusters	7.60	3	2.53	8.00	0.000	0.08
Error	93.37	295	0.32			
Total	2099.19	301				
Corrected Total	104.40	300				
a R Squared = .106 (Adjusted R Squared = .090)						

The table shows that, controlling for education, a statistically significant difference exists across the Moderately passive cluster and the other three clusters, in judgements of the usefulness of information in the Media ($p<.001$). Members of the Moderately passive cluster (2.30) are the ones that find information about health and lifestyle in the Media least useful. This cluster differs significantly from the Passive cluster (2.54), the Active cluster (2.61) and the Moderately active cluster (2.78; Tukey, $p<.05$).

Additionally, the overall model explains 11% of the variance of judgements of usefulness of information (Eta squared) and the information behaviour clusters explain 8% of the variance. The variable education ($p<.05$) related significantly to judgements on the usefulness of information in the Media as well.

7.1.6.5.2 Health specialists

ANOVA revealed statistically significant differences across the clusters in judgements of the usefulness of information about health and lifestyle from Health specialists ($F(3,281)=3.0$, $p<.05$). The results are presented in Figure 10.

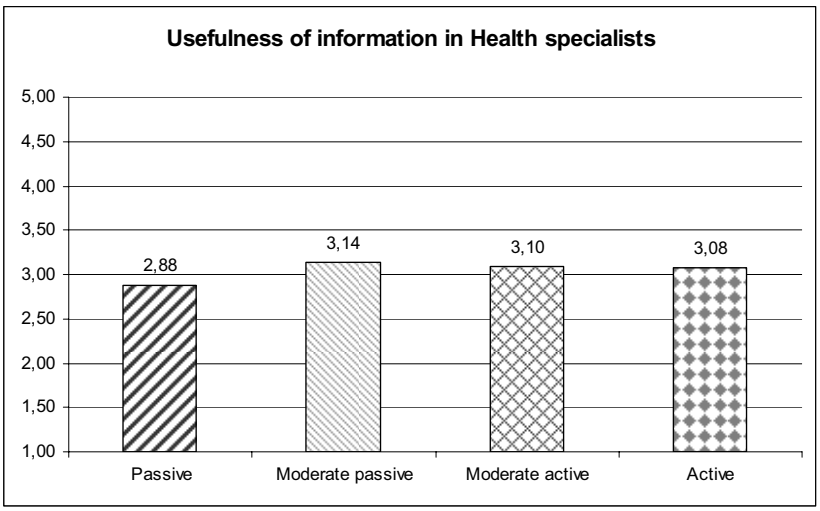


Figure 10: Judgements of the usefulness of information about health and lifestyle in Health specialist, sources across the information behaviour clusters

A significant difference was found between the Passive cluster and the Moderately passive cluster. Neither the Active cluster nor the Moderately active cluster were found to differ significantly from the other clusters (Tuckey, $p<.05$).

The next step was to test gender, age and education against judgements of the usefulness of information from Health specialists.

Gender was found to relate significantly to judgements of the usefulness of information about health and lifestyle from Health specialists ($t(289)=-4.7$, $p<.05$), with women (3.18) considering information from Health specialists more useful than men (2.86).

Neither age ($F(4,281=.138$, $p=.968$) nor education ($F(2,287=1.3$, $p=.264$) related significantly to judgements of the usefulness of the information.

Finally, a Factorial analysis of variance *(FANOVA)* model controlling for gender, examined differences in judgements of the usefulness of information from Health specialists across the information behaviour clusters.

Table 17: Differences across the clusters in judgements of the usefulness of information about health and lifestyle from Health specialists, controlling for gender

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Corrected Model	7.93	4	1.98	6.42	0.000	0.08
Gender	5.05	1	5.05	16.35	0.000	0.06
Clusters	1.55	3	.52	1.68	0.172	0.02
Error	86.41	280	.31			
Total	2740.78	285				
Corrected Total	94.34	284				
R Squared = .084 (Adjusted R Squared = .071)						

As can be seen from Table 17, the clusters were not found to differ significantly in their judgements of the usefulness of information about health and lifestyle from Health specialists (p=.172) when controlling for gender. Mean figure for the Passive cluster is 2.88, the Moderately passive cluster 3.14, the Moderately active cluster 3.10 and the Active cluster 3.08 (Tuckey, p<.05).

The overall model explains 8% of the variance of the usefulness of judgements (Eta squared). Additionally, gender was statistically significant (p<.001).

7.1.6.5.3 Internet

Significant differences across the clusters in judgements of the usefulness of information about health and lifestyle on the Internet were revealed by ANOVA (F(3,117)=3.5, p<.05). The results are presented in Figure 11.

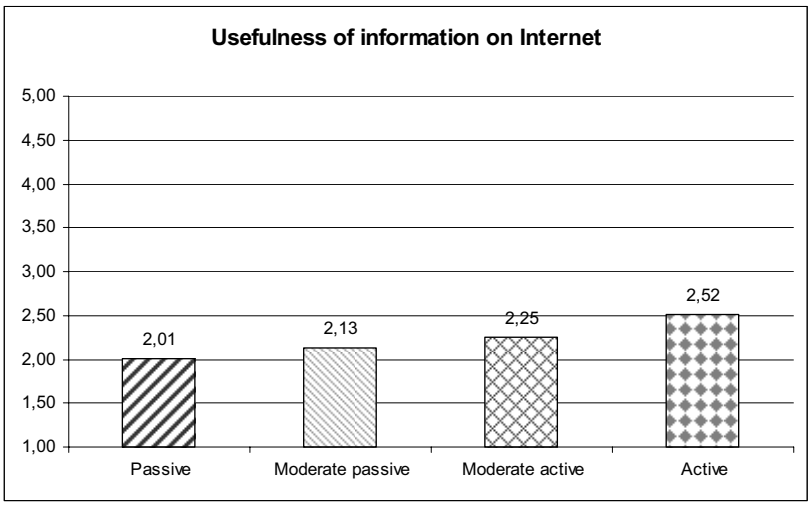


Figure 11: Judgements of the usefulness of information about health and lifestyle on the Internet across the information behaviour clusters

A significant difference was found between the Passive cluster and the Active cluster. Neither the Moderately passive cluster nor the Moderately active cluster were found to differ significantly from the other clusters (Tuckey, $p<.05$).

Judgments of the usefulness of information from sources on the Internet were tested against gender, age and education.

Gender related significantly to judgements of the usefulness of information ($t(121)=-2.2$, $p<.05$), with women (2.42) considering information about health and lifestyle on the Internet as more useful than men (2.14).

Education was also found to relate significantly to judgements of the usefulness of information ($F(2,120)=4.3$, $p<.05$). Respondents with secondary school education (2.48) consider information about health and lifestyle on the Internet more useful than respondents with primary school education (2.06). Respondents with university education (2.16) do not differ significantly from the other two educational groups (Tukey, $p<.05$).

Age did not relate significantly to judgements of the usefulness of information ($F(4,116)=.2$, $p=.933$).

Factorial analysis of variance (FANOVA), controlling for gender and education, was used to examine differences across the clusters in judgements of the usefulness of information on the Internet.

Table 18: Differences across the clusters in judgements of the usefulness of information about health and lifestyle on the Internet, controlling for gender and education

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Corrected Model	11.38	6	1.90	4.07	0.001	0.18
Gender	1.61	1	1.61	3.45	0.066	0.03
Education	5.30	2	2.65	5.69	0.004	0.09
Clusters	3.27	3	1.09	2.34	0.077	0.06
Error	53.09	114	0.47			
Total	688.56	121				
Corrected Total	64.47	120				
R Squared = .176 (Adjusted R Squared = .133)						

Table 18 shows that differences across the clusters were not statistically significant in judgements of the usefulness of information on the Internet ($p=.077$) when controlling for gender and education. Mean figure for the Passive cluster is 2.01, the Moderately passive cluster 2.13, the Moderately active cluster 2.25 and the Active cluster 2.52 (Tuckey, $p<.05$).

The overall model explains 18% of the variance of judgements of the usefulness of information (Eta squared). The variable education was statistically significant ($p<.01$).

7.1.6.6 Relevance judgements: Reliability of information

The respondents were asked how reliable they found information bout health and lifestyle in the Media, from Health specialists and on the Internet (Appendix 1, question 18; see Appendix 4 for distribution of the variables).

7.1.6.6.1 Media

Statistically significant differences across the clusters in judgements of the reliability of information about health and lifestyle in the Media were revealed by *ANOVA* ($F(3,237)=10.5$, $p<.001$). Figure 12 presents the results.

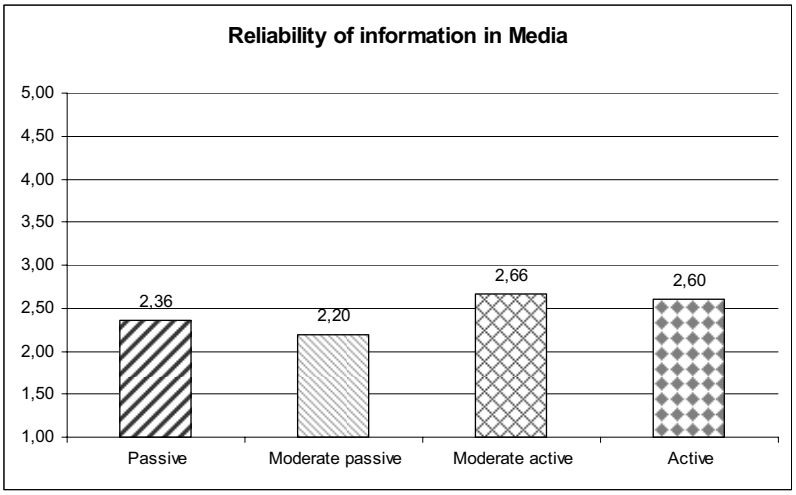


Figure 12: Judgements of the reliability of information about health and lifestyle in the Media across the information behaviour clusters

There was a significant difference across the Active and the Moderately active cluster on one hand and the Passive cluster and the Moderately passive cluster on the other. The Active and the Moderately active clusters were not found to differ significantly from each other. Nor did the Passive cluster and the Moderately passive cluster differ significantly (Tuckey, $p<.05$).

Judgements about information reliability were subsequently tested against gender, age and education.

Respondents with lower education consider information about health and lifestyle in the Media more reliable than those with higher education ($F(2,242)=5.4$, $p<.01$). Respondents with secondary education (2.57) deemed information in the Media more reliable than respondents with university education (2.31). Respondents with primary school education (2.48) did not differ significantly from the other two educational groups (Tuckey, $p<.05$).

Neither gender ($t(244)=-1.1$, $p=.262$) nor age ($4,236)=669$, $p=.614$) related significantly to judgements about information reliability.

Finally, a Factorial analysis of variance (FANOVA) model, controlling for education, explored differences in judgements of the reliability of information in the Media across the clusters. Table 19 presents the results of the model.

Table 19: Differences across the clusters in judgements of the reliability of information about health and lifestyle in the Media, controlling for education

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Corrected Model	10.14	5	2.03	8.39	0.000	0.15
Education	2.27	2	1.13	4.69	0.010	0.04
Clusters	7.35	3	2.45	10.14	0.000	0.12
Error	56.55	234	0.24			
Total	1537.45	240				
Corrected Total	66.68	239				
a R Squared = .152 (Adjusted R Squared = .134)						

Table 19 shows that, controlling for education, there are statistically significant differences across the clusters in judgements of the reliability of information in the Media ($p<.001$). Members of the Active (2.60) cluster and the Moderately active cluster (2.66) consider information in the Media significantly more reliable than

members of the Passive cluster (2.36) and the Moderately passive cluster (2.19) (Tuckey, $p<.05$).

Furthermore, the overall model explains 15% of the variance of judgements of the reliability of information in the Media (Eta squared) and the clusters explain 12% of the variance. Additionally, the variable education related significantly to judgements of reliability ($p<.01$).

7.1.6.6.2 Health specialists

ANOVA revealed statistically significant differences across the clusters in judgements of the reliability of information about health and lifestyle from Health specialists ($F(3,337)=5.0$, $p<.01$). The results are presented in Figure 13.

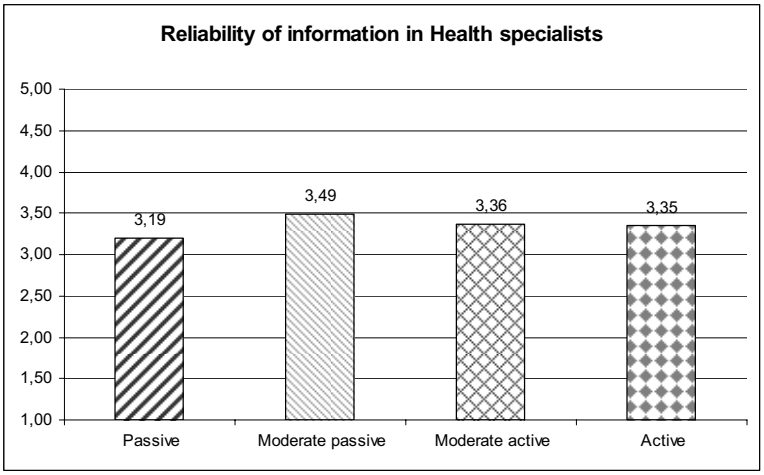


Figure 13: Judgements of the reliability of information about health and lifestyle sources from Health specialists across the information behaviour clusters

The Moderately passive cluster differs significantly from the Passive cluster. The Active cluster and the Moderately active cluster were not found to differ significantly from the other clusters (Tuckey, $p<.05$).

The next step was to test judgements about information reliability against gender, age and education.

Gender relates significantly to judgements about the reliability of information ($t(346)=-2.1$, $p<.05$). Women (3.38) considered information about health and lifestyle from Health specialists more reliable than men (3.27).

Those who have a higher education consider information about health and lifestyle from Health specialists more reliable than those with a lower education ($F(2,343)=6.7$, $p<.001$). Respondents with a university education (3.47) were found to regard this sort of information as more reliable than respondents with primary school education (3.19). Respondents with secondary school education (3.33) did not differ significantly from the other two educational groups.

Age did not relate significantly to judgements about information reliability ($F(4,333)=.397$, $p=.811$).

A Factorial analysis of variance *(FANOVA)* model, controlling for gender and education, was used to examine differences across the clusters in judgements of reliability of information from Health specialists.

Table 20: Differences across the clusters in judgements of the reliability of information from Health specialists, controlling for gender and education

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Corrected Model	7.38	6	1.23	4.86	0.000	0.08
Gender	0.38	1	0.38	1.49	0.223	0.00
Education	3.23	2	1.62	6.37	0.002	0.04
Clusters	2.52	3	0.84	3.31	0.020	0.03
Error	84.15	332	0.25			
Total	3867.87	339				
Corrected Total	91.53	338				
a R Squared = .081 (Adjusted R Squared = .064)						

Table 20 shows that, controlling for gender and education, statistically significant differences exist across the Moderately passive and the Passive clusters (p<.05). Members of the Moderately passive cluster (3.48) consider information about health and lifestyle from Health specialists to be significantly more reliable than members of the Passive cluster (3.19). Members of the Active cluster (3.35) and the Moderately active cluster (3.36) did not differ significantly from the other clusters (Tuckey, p<.05).

The table further shows, that the overall model explains 8% of the variance of judgements of information reliability (Eta squared) and that the clusters explain 4% of the variance (Eta squared). Additionally, the variable education (p<.01) was statistically significant.

7.1.6.6.3 Internet

ANOVA revealed significant differences across the clusters in judgements of the reliability of information about health and lifestyle on the Internet (F(3,128)=4.6, p<.05). Figure 14 presents the results.

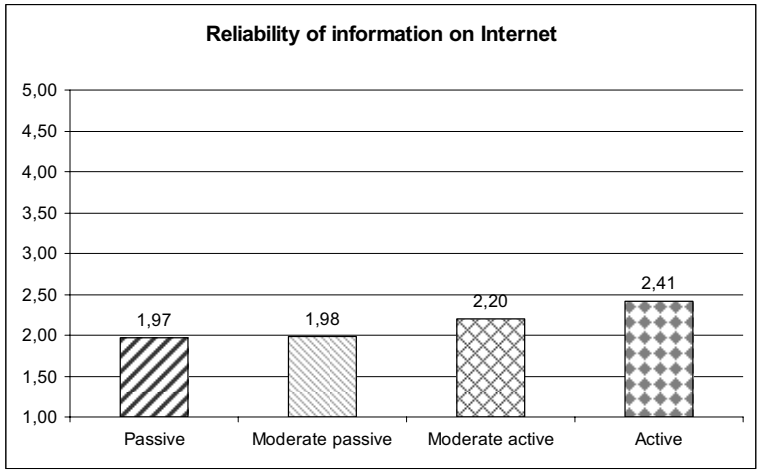


Figure 14: Judgements of the usefulness of information about health and lifestyle on the Internet across the information behaviour clusters

The Active cluster differs significantly from the Passive cluster and the Moderately passive cluster. The Moderately active cluster was not found to differ significantly from the other clusters (Tuckey, $p<.05$).

Judgements about information reliability of sources on the Internet were next tested against gender, age and education.

Lower educated respondents consider information about health and lifestyle on the Internet more reliable than those with higher education ($F(2,133)=5.2$, $p<.01$). Respondents with secondary school education (2.34) were found to consider the information more reliable than respondents with a university degree (2.03). Respondents with primary school education (2.07) did not differ from the other two educational groups.

Neither gender (t(134)=-.478, p=.633) nor age ($F(4,130)=.114$, $p=.977$) related significantly with judgements about information reliability.

Finally, a Factorial analysis of variance (FANOVA) model, controlling for education, was used to examine differences across the clusters in judgements of the reliability of information on the Internet.

Table 21: Differences across the clusters in judgements of the reliability of information on the Internet, controlling for education

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Corrected Model	9.83	5	1.97	5.67	0.000	0.18
Education	4.60	2	2.30	6.63	0.002	0.10
Clusters	5.23	3	1.74	5.03	0.003	0.11
Error	43.72	126	0.35			
Total	683.22	132				
Corrected Total	53.55	131				
a R Squared = .184 (Adjusted R Squared = .151)						

As can be seen from Table 21, statistically significant differences exist across the clusters in judgements of the reliability of information on the Internet ($p<.01$) when

controlling for education. Members of the Active cluster (2.41) deem information on the Internet significantly more reliable than members of the Passive cluster (1.97) and the Moderately passive cluster (1.98). Members of the Moderatly active cluster (2.20) did not differ significantly from the other clusters (Tuckey, $p<.05$).

Furthermore, the overall model explains 18% of the variance of judgements about the reliability of information on the Internet and the clusters explain 11% of the variance. In addition, education related significantly to judgements of the reliability of information on the Internet ($p<.01$).

7.1.6.7 Barriers in information behaviour

Barriers towards information behaviour were measured by a set of 10 questions (Appendix 1, question 19-28; see Appendix 4 for distribution of the variables). Based on the results from a factor analysis of the questions, two scales were computed; Cognitive barriers and Physical barriers (see 6.4.1.2). The results about Cognitive barriers will be presented first and after that the results about Physical barriers.

7.1.6.7.1 Cognitive barriers

ANOVA was used to test differences in Cognitive barriers across the clusters and statistically significant differences emerged ($F(3,463)=6.8$, $p<.001$). The results are presented in Figure 15.

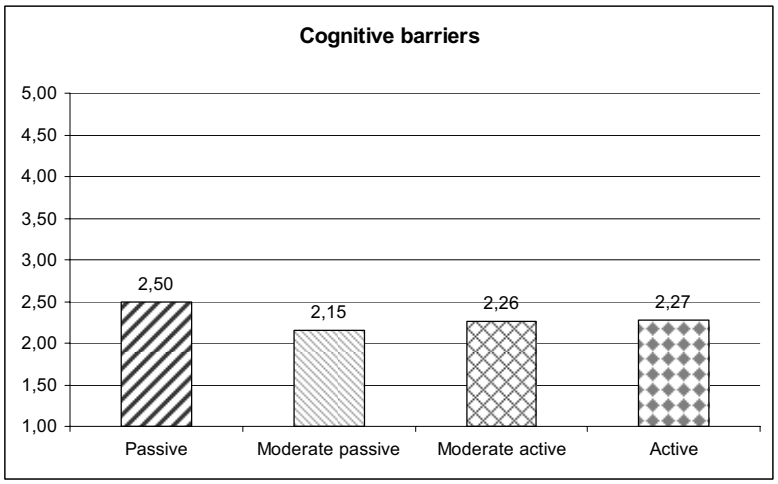


Figure 15: Cognitive barriers across the information behaviour clusters

The Passive cluster differs significantly from the Moderately passive cluster. The Moderately active cluster and the Active cluster do not differ significantly from the other clusters (Tuckey, $p<.05$).

Subsequently, Cognitive barriers were tested against gender, age and education.

Lower educated respondents experience greater cognitive barriers than higher educated respondents ($F(2,495)=7.0$, $p<.001$). Respondents with primary education (2.51) were found to have significantly higher Cognitive barriers than respondents with university education (2.21). Respondents with secondary education (2.34) did not differ significantly from the other two educational groups (Tukey, $p<.05$).

Gender ($t(498)=1.8$ and age ($F(4,483)=2.3$, $p=.058$) did not relate significantly to Cognitive barriers.

A Factorial analysis of variance (FANOVA) model was used to examine differences in Cognitive barriers across the clusters, controlling for education.

Table 22: Differences across the clusters in Cognitive barriers, controlling for education

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Corrected Model	10.99	5	2.20	5.12	0.000	0.05
Clusters	7.00	3	2.33	5.44	0.001	0.03
Education	2.20	2	1.10	2.57	0.078	0.01
Error	197.03	459	0.43			
Total	2754.06	465				
Corrected Total	208.01	464				
A R Squared = .053 (Adjusted R Squared = .043)						

As can be seen from Table 22, there is a statistically significant difference across the Passive and the Moderately passive clusters, while controlling for education (p<.001). Members of the Passive cluster (2.50) experience significantly greater Cognitive barriers than members of the Moderately passive cluster (2.16). Members of the Moderately active cluster (2.26) and the Active cluster (2.27) do not differ significantly from members of the other clusters (Tuckey, p<.05).

Additionally, the table shows that the overall explanation of the model is 5% of the variance of Cognitive barriers (Eta squared) and that the information behaviour clusters explain 3% of the variance (Eta squared).

7.1.6.7.2 Physical barriers

Differences across the clusters on Physical information barriers were examined by use of *ANOVA* and statistically significant results emerged (F(3,462)=4.3, p<.01. Figure 16 presents the results.

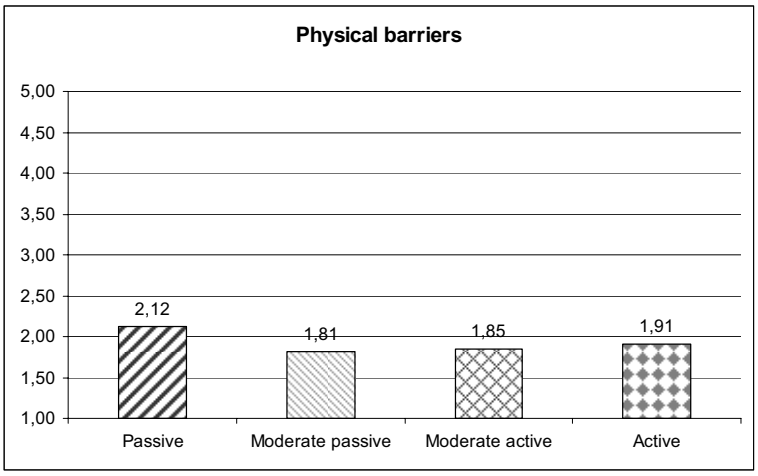


Figure 16: Physical barriers across the information behaviour clusters

Significant differences were found across the Passive cluster and the Moderately passive cluster. The Moderately active cluster and the Active cluster did not differ significantly from the other clusters (Tuckey, $p<.05$).

Physical barriers were next tested against gender, age and education.

Lower educated respondents experience greater Physical barriers than those who have higher education ($F(2,492)=7.9$, $p<.001$). Respondents with a primary education (2.19) were found to have significantly higher Physical barriers than respondents with university education (1.81). The difference between respondents with secondary education (1.94) and the other two educational groups did not reach statistical significance (Tukey, $p<.05$).

In addition, the relationships between Physical barriers and the variables gender ($t(495)=.114$ and age ($F(4,480)=.9$, $p=.479$) were not statistically significant.

The last step was to examine differences of Physical barriers across the clusters by using a Factorial analysis of variance *(FANOVA)* model, controlling for education.

Table 23: Differences across the clusters in Physical barriers, controlling for education

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Corrected Model	13.64	5	2.73	4.36	0.001	0.05
Clusters	6.18	3	2.06	3.29	0.021	0.02
Education	5.56	2	2.78	4.44	0.012	0.02
Error	286.50	458	0.63			
Total	2086.81	464				
Corrected Total	300.15	463				
a R Squared = .045 (Adjusted R Squared = .035)						

Table 23 shows that, when education is controlled for, there is a statistically significant difference in Physical barriers across the Passive cluster and the Moderately passive cluster (p<.05). Members of the Passive cluster (2.12) experience greater Physical barriers than members of the Moderately passive cluster (1.82). Members of the Moderately active cluster (1.85) and members of the Active cluster (1.91) do not differ significantly from members of the other clusters (Tuckey, p<.05).

The table further shows that the model explains 5% of the variance of Physical barriers (Eta squared) and that the information behaviour clusters explain 2% of the variance (Eta squared). Education was furthermore significant.

7.1.6.8 Cluster descriptions: Summary of the socio-demographic characteristics and information behaviour characteristics

The chapter summarizes results of the socio-demographic characteristics and the information behaviour of the clusters. First, results for each cluster are described separately. Subsequently, the main results about information behaviour are compared with the results about purposive information seeking. Differences in the information behaviour of the clusters are presented in Table 24.

Table 24: Differences in information behaviour across the clusters

Information behaviour	Passive cluster (N=192)	Moderately passive cluster (N= 90)	Moderately active cluster (N=112)	Active cluster (N=77)
Motivation to information behaviour				
Interest in health and lifestyle	2.92 [a]	3.85 [b]	3.75 [b]	4.04 [b]
Discussions about health and lifestyle	2.71 [a]	3.73 [b]	3.79 [b]	3.92 [b]
Information seeking[11]	2.69 [a]	3.72 [b]	3.65 [b]	4.01 [c]
Information encountering				
Media				
Health specialists				
Internet	Differs statistically from Moderately passive cluster and Active clusters	Higher odds than Passive cluster, Exp (B) 3.07	Does not differ statistically from Passive cluster	Higher odds than Passive cluster, Exp (B) 26.01
Relevance judgements				
Usefulness of information				
Media	2.54 [b]	2.30 [a]	2.78 [b]	2.61 [b]
Health specialists	No statistical differences	No statistical differences	No statistical differences	No statistical differences
Internet	No statistical differences	No statistical differences	No statistical differences	

[11] Respondents were asked how often they sought for information, without referring to a specific information sources.

Reliability of information				
Media	2.36 [a]	2.19 [a]	2.66 [b]	2.60 [b]
Health specialists	3.19 [a]	3.48 [b]	3.36 [a b]	3.35 [a b]
Internet	1.97 [a]	1.97 [a]	2.20 [a b]	2.41 [b]
Barriers to information behaviour				
Cognitive barriers	2.50 [a]	2.16 [b]	2.26 [a b]	2.27 [a b]
Physical barriers	2.12 [a]	1.82 [b]	1.85 [a b]	1.91 [a b]

Differences are presented in mean scores or odds ratio.

Point range for mean scores is 1-5, where 1 is lowest, and 5 is highest.

A cluster mean is significantly different from another mean (Tukey, $p<0.05$) if they have different superscripts. A cluster mean with two superscripts is not statistically different from the means of two of the other clusters.

Statistically significant differences were found across the clusters for information encountering in the Media, and also for information encountering in sources from Health specialists. However, because age was entered as a covariance in the final model of analysis, post-hoc tests for the clusters were not possible.

Statistically significant differences were not found across the clusters in judgements of usefulness of information from Health specialists and on the Internet.

7.1.6.8.1 The Passive cluster

Of the four clusters, members of the Passive cluster are the least motivated towards information behaviour. Members of the Passive cluster are both significantly less interested in health and lifestyle and they discuss this issue significantly less often than members of the other three clusters. Members of the Passive cluster are also the ones that seek information about health and lifestyle the least often, when asked without referring to specific information sources. Furthermore, they encounter information on the Internet less often then members of both the Active cluster and the Moderately passive cluster.

When it comes to judging the relevance of information in the different information channels, members of the Passive cluster do not differ from members of the Active and the Moderately active clusters regarding evaluation of the usefulness of information in Media. Nontheless, they find information in the Media (2.36) less reliable than members of the other clusters. Furthermore, the mean scores indicate that the Passive cluster evaluates the reliability of information from Health specialists (3.19) more highly than information in the Media (2.36), and on the Internet (1.97).

Additionally, members of the Passive cluster experience significantly higher information behaviour barriers, both Cognitive barriers and Physical barriers, than members of the Moderately passive cluster. However, a significant difference across the clusters does not emerge.

7.1.6.8.2 The Moderately passive cluster

Members of the Moderately passive cluster seek information less often than members of the Active cluster, but more often than members of the Passive cluster. Nevertheless, they do not differ significantly from the Moderately active cluster.

Observation of the mean scores for relevance judgements indicates that informationfrom Health specialists (3.48) is regarded as highly reliable compared with information in the Media (2.19) and on the Internet (1.97). In particular, the Moderately passive cluster differs from the other clusters when it comes to judging the relevance of information in the Media. Its members consider this information as significantly less useful than members of the other three clusters, and they also consider the information less reliable than both the Active and the Moderately active cluster.

7.1.6.8.3 The Moderately active cluster

Members of the Moderately active cluster seek information less often than members of the Active cluster but more often than members of the Passive cluster. When it comes to encountering information on the Internet, the Moderately active cluster does not differ significantly from the Passive cluster.

The mean scores for relevance judgements show that information from Health specialists (3.36) has kept its place as the most highly reliable source, when compared with information in the Media (2.66) and on the Internet (2.20). Information in the Media is evaluated in the same way by the Moderately active cluster as by the Active cluster. They find this information more useful than the Moderately passive cluster, and they also find information in the Media more reliable than both the Moderately passive and the Passive clusters.

7.1.6.8.4 The Active cluster

Of all the clusters, members of the Active cluster are the ones that seek information most often. They also encounter information on the Internet more often than the Passive cluster.

As with the other clusters, the mean scores of the Active cluster indicate that information from Health specialists (3.35) is considered highly reliable when compared to the Media (2.60) and the Internet (2.41). Additionally, a comparison of the relevance judgements of all the clusters reveals that members of the Active cluster find information in the Media, and on the Internet, as significantly more reliable than both the Moderately passive and the Passive clusters, but they do not differ from the Moderately active cluster.

7.2 Relations to self-efficacy

This section presents results about the respondents' self-efficacy beliefs regarding their health behaviour. K-means clustering method was used to determine how the respondents formed distinct clusters based on their self-efficacy beliefs. A set of four clusters were drawn: High self-efficacy, Moderate/high self-efficacy, Moderate/low self-efficacy, and Low self-efficacy (see 6.4.2; see Appendix 4 for distribution of the variable). With the purpose of analysing the self-efficacy beliefs of the information behaviour clusters, the relationship between the self-efficacy clusters and the information behaviour clusters was examined by chi-square.

7.2.1 The self-efficacy clusters

To examine the self-efficacy clusters more closely, a post-hoc test was conducted for each statement of the PHCS scale. The results are presented in table 25. It should be added that the mean PHCS scores, in most cases, are above midpoint. This is consistent with results from previous studies, indicating that people are generally confident about their ability to control their health in a successful way (Smith, Wallston and Smith, 1995).

Table 25: The mean scores of the clusters for statements on the self-efficacy scale

Health self-efficacy statements	Low self-efficacy (N=76)	Moderate low self-efficacy (N= 104)	Moderate high self-efficacy (N=116)	High self-efficacy (N=207)
I handle myself well with respect to my health	2.76 [b]	2.41 [a]	3.59 [c]	3.74 [c]
No matter how hard I try, my health just doesn't turn out the way I would like (R)	2.36 [a]	3.75 [c]	2.95 [b]	4.25 [d]
It is difficult for me to find effective solutions to the health problems that come my way (R)	1.93 [a]	3.54 [c]	3.21 [b]	4.34 [d]
I succeed in the projects I undertake to improve my health	3.04 [a]	3.21 [a]	3.80 [b]	4.10 [c]
I'm generally able to accomplish my goals with respect to my health	2.21 [a]	2.62 [b]	3.31 [c]	3.75 [d]
I find my efforts to change things I don't like about my health are ineffective (R)	2.51 [a]	2.96 [b]	3.53 [c]	4.06 [d]
Typically, my plans for my health don't work out well (R)	2.36 [a]	2.51 [a]	3.56 [b]	4.07 [c]
I can look after my health as well as most other people	3.10 [a]	3.69 [b]	3.77 [b]	4.16 [c]

Differences are presented in mean scores or odds ratio. Point range for mean scores is 1-5, where 1 is lowest, and 5 is highest.
A cluster mean is significantly different from another mean (Tukey, $p<0.05$) if they have different superscripts.
Scores for statements with an R in the parenthesis were reversed.

The Low self-efficacy cluster is the smallest cluster, consisting of 76 members. This cluster has the lowest mean scores for all statements, with the exception of one. The Moderate/low self-efficacy cluster consists of 104 members. This cluster has the lowest mean scores for three of the statements, the second lowest scores for another three statements, and the second highest mean scores for two statements. The combination of the mean scores of the Moderate/low self-efficacy cluster is not as clear as the combination for the Low self-efficacy cluster. Nevertheless, the Moderate/low self-efficacy cluster has higher self-efficacy beliefs. The Moderate/high self-efficacy cluster, which is similar in size as the Moderate/low self-efficacy cluster, consists of 116 members. Members of this cluster have the second lowest mean scores for five of the statements and the second highest scores for three of the statements. Thus, the Moderate/high self-efficacy cluster scores higher than the Moderate/low cluster on five of the statements. The High self-efficacy cluster is the largest cluster consisting of 207 members. This cluster has the highest scores for four of the statements and the second highest for four of the statements.

7.2.1.1 Socio-demographic characteristics of the self-efficacy clusters

The socio-demographic characteristics of the self-efficacy clusters were tested for gender, age and education effects. A statistically significant relationship between gender and the self-efficacy clusters ($\chi^2(3)=.36$, $p=.948$) was not found, but age and education related significantly to the self-efficacy clusters. The results are presented in Table 26.

Table 26: Socio-demographic characteristics of the self-efficacy clusters (%)

Characteristics	Low self-efficacy	Moderate low self-efficacy	Moderate high self-efficacy	High self-efficacy
Age				
18-29	30.7	17.0	21.1	23.8
30-39	21.3	27.0	9.6	24.3
40-49	18.7	23.0	17.5	24.8
50-59	9.3	19.0	15.8	17.2
60-80	20.0	14.0	36.0	9.9
Total	100.0	100.0	100.0	100.0
Education				
Primary school	40.8	42.3	35.7	20.4
Secondary school	47.4	37.5	44.3	46.1
University	11.8	20.2	20.0	33.5
Total	100.0	100.0	100.0	100.0

$\chi^2(12)=46.81, p=.001$
$\chi^2(6)=29.62, p=.001$

The Low self-efficacy cluster has the highest rate of respondents from the youngest age group, 30.7% of the Low self-efficacy cluster members are under age 30, against 17% in the Moderate/low self-efficacy cluster, 21.1% in the Moderate/high self-efficacy cluster and 23.8% in the High self-efficacy cluster.

The Moderate/high self-efficacy cluster has the highest rate of respondents from the oldest age group. Of members belonging to the Moderate/high self-efficacy cluster, 36% are 60 years or older, while 20% in the Low self-efficacy cluster are of this age, 14% in the Moderate/low self-efficacy cluster and 9.9% in the High self-efficacy cluster.

As can be seen from the table, there is an educational difference across the clusters. The High self-efficacy cluster is the best educated one, with the highest rate of respondents with a university education and the lowest rate of respondents with a primary school education. The Low self-efficacy cluster is the least educated, with the lowest rate of respondents who have a university education. The Moderate/high self-efficacy cluster is better educated than the Moderate/low self-efficacy cluster.

The rate of respondents with secondary education is higher and the rate of respondents with primary school education is lower in the Moderate/high self-efficacy cluster than in the Moderate/low self-efficacy cluster.

7.2.2 The self-efficacy beliefs of the information behaviour clusters

The relationship between the self-efficacy clusters and the information behaviour clusters was examined and a statistically significant relationship was revealed. The results are presented in a cross table (Table 27) that shows the rate of the self-efficacy clusters respectively; the Passive cluster, the Moderately passive cluster, the Moderately active cluster and the Active cluster.

Table 27: Rate of members of the self-efficacy clusters in the Passive cluster, the Moderately passive cluster, the Moderately active cluster and the Active cluster (%)

	Passive cluster	Moderately passive cluster	Moderately active cluster	Active cluster
Low self-efficacy cluster	14.2	12.3	18.9	15.6
Moderate/low self-efficacy cluster	25.8	20.0	19.8	9.1
Moderate/high self-efficacy cluster	21.6	14.4	24.3	28.6
High self-efficacy cluster	38.4	53.3	36.9	46.8
Total	100.0	100.0	100.0	100.0
Number	190	90	111	77

($\chi^2(9)=17.70$, $p<.05$)

The highest rate of members in all the information behaviour clusters, comes from the High self-efficacy cluster, although the rate is highest in the Moderately passive cluster, followed by the Active cluster. Likewise, the lowest rate of members in all the clusters is in the Low self-efficacy cluster.

However, a clearer picture can be presented by highlighting the difference between high self-efficacy beliefs and low self-efficacy beliefs in the information behaviour clusters. This can be done by looking at the combined rate of members from the High self-efficacy and the Moderate/high self-efficacy clusters and comparing it with the combined rate of the Low self-efficacy and Moderate/low self-efficacy clusters. If this method is used, the Active cluster has the highest self-efficacy beliefs, with a total of 75.4% of its members coming from the High self-efficacy and Moderate/high self-efficacy clusters, against 67.7% in the Moderately passive cluster, 61.2% in the Moderately active cluster, and 60% in the Passive cluster. Members of the Passive cluster and the Moderately active cluster have almost identical self-efficacy beliefs. Members of the Passive cluster have slightly lower self-efficacy beliefs than members of the Moderately active cluster, however, the difference across these clusters is very small.

Thus, members of the Active cluster and the Moderately active cluster have higher self-efficacy beliefs than members of the Moderately passive cluster and the Passive cluster. This was found to be true whether it was assessed by the rate of members from the High self-efficacy cluster, or by the combined rate of members from the High self-efficacy and the Moderate/high self-efficacy clusters.

The results therefore indicate that members of the Active and the Moderately passive clusters believe more strongly that controlling one's health is likely to lead to a favorable outcome and that one is able to do so successfully, than members of the Passive and the Moderately active clusters.

7.3 Relations to health behaviour

This section presents results about the health behaviour of members of the information behaviour clusters, as well as results about the health behaviour of members of the self-efficacy clusters. The respondents were asked a number of questions about their health behaviour. Statistically significant relationships were found between the information behaviour clusters and exercise activity (see Appendix 1, question 43; see Appendix 4 for distribution of the variable) and between the information behaviour clusters and diet (see Appendix 1, question 42; see Appendix 4 for distribution of the variable). The same variables related significantly to the self-efficacy clusters. The dependent variables exercise and diet were skewed and therefore the variables were transformed into dichotomous variables and binary logistic regression used in the analysis.

Variables of interest

The main variables in this part of the analysis are the following:

Exercise activity was examined by asking the respondents how often they exercised until they get breathless, their heartbeat gets stronger or they sweat (Appendix 1, questions 43). The variable exercise was dichotomized as regular exercisers and non-regular exercisers. Respondents were given the value 0 if they exercised regularly; those who did not exercise regularly were given the value 1. Therefore, the results can be interpreted so that a value over 1 on Exp (B) indicates that the odds of being a non-exerciser gets greater as the value of the independent variable gets higher. Value under 1 indicates that the odds of being a non-exerciser gets smaller as the value of the independent variable gets lower.

Dietary behaviour was examined by asking the respondents how often they consumed light food products (e.g. low fat milk and cheese, fish or low fat meat) rather than more fatty food products (Appendix 1, questions 42). The variable diet was

dichotomized as consumers of light food products and non-consumers of light food products. Respondents who are light food product consumers were given the value 0; non-consumers were given the value 1. In the results, a value over 1 on Exp (B) indicates that the odds of being a non-consumer of light food products gets greater as the value of the independent variable gets higher. A value under 1 indicates that the odds of being a non-consumer get smaller as the value of the independent variable gets lower.

Information behaviour clusters: The Passive cluster was used as a comparable group which the other clusters were measured against.

Self-efficacy clusters: The High self-efficacy cluster was used as a comparable group.

Education: Respondents with a university education were used as a comparable group.

Results about the health behaviour of the information behaviour clusters will be presented, followed by a presentation of the results about the health behaviour of the self-efficacy clusters.

7.3.1 Health behaviour in the information behaviour clusters

7.3.1.1 Exercise activity

The analysis starts by testing for differences in exercise activity across the information behaviour clusters by using binary logistic regression. The results are presented in Figure 17.

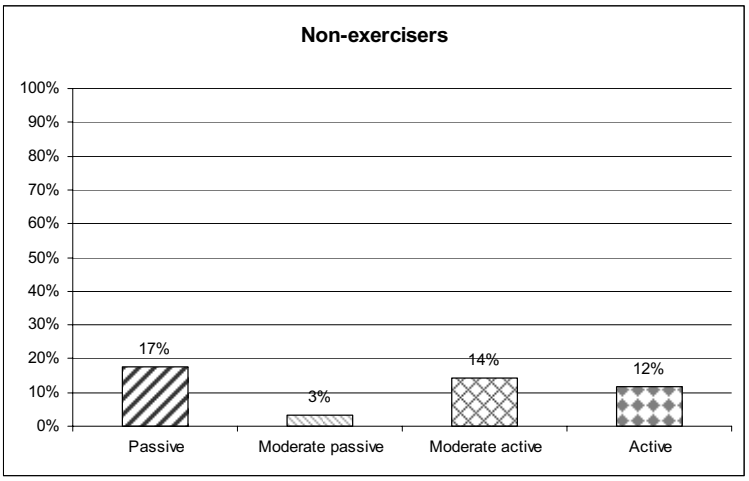


Figure 17: odds of being a non-exerciser across the information behaviour clusters

A statistically significant difference was found across the Passive cluster and the Moderately passive cluster, Exp (B) is .163 ($p<.01$).

Next, gender, age and education were tested against the variable exercise.

The relationship between exercise and gender was statistically significant ($\chi^2(1)=5.76$, $p<.05$). Women (16.6%) were more likely to be non-exercisers than men (9.3%).

The relationship between exercise and age was also statistically significant ($r=-.103$, $p<.05$). There was a weak negative correlation between age and exercise, indicating that older respondents are more likely to be non-exercisers than younger respondents.

The relationship between education and exercise was not statistically significant ($\chi^2(2)=5.98$, $p=.05$), although the findings show that a borderline significance emerged.

Finally, a binary logistic regression model, controlling for gender and age, was used to examine differences in exercise activity across the information behaviour clusters.

Table 28: Differences in exercise activity across the information behaviour clusters, controlling for gender and age

	B	S.E.	Wald	*df*	*Sig.*	Exp(B)
Clusters			8.43	3	0.038	
Passive x Active	0.44	0.44	1.03	1	0.311	0.64
Passive x Moderately active	0.32	0.34	0.89	1	0.345	0.72
Passive x Moderately passive	1.79	0.63	8.13	1	0.004	0.17
Gender (male=0)	-0.79	0.31	6.44	1	0.011	2.21
Age (interval)	-0.02	0.01	3.91	1	0.048	1.02
Constant	2.83	0.51	30.60	1	0.000	0.06

Table 28 shows that, controlling for gender and age, the exercise activity of the members of the Passive cluster differs significantly from the exercise activity of the members of the Moderately passive cluster. The results indicate that the odds of being a non-exerciser are greater among members of the Passive cluster than members of the Moderately passive cluster, Exp (B) is 0.17 ($p<.01$). The table also shows that the variables gender ($p<.05$) and age are statistically significant ($p<.05$).

7.3.1.2 Dietary behaviour

Differences in consumption of light food products across the information behaviour clusters were examined by using binary logistic regression. The results are presented in Figure 18.

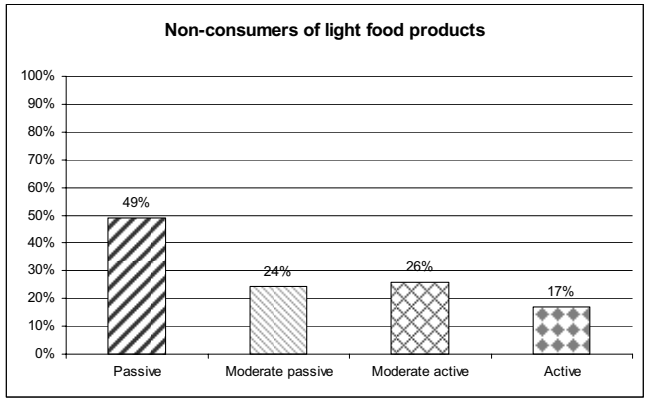


Figure 18: The odds of being a non-consumer of light food products across the information behaviour clusters

The results show a statistically significant difference across the Passive cluster and each of the other clusters. For the Passive cluster and the Active cluster, Exp (B) is .210 (p<.001), for the Passive cluster and the Moderately active cluster, Exp (B) is .361 (p<.001), and for the Passive cluster and the Moderately passive cluster, Exp (B) is. 334 (p<.001).

The next step was to test gender, age and education against the variable diet.

A statistically significant relationship was found between gender and diet (χ^2(1)=15.99, p<.001), men (43%) were more likely to be non-consumers of light food products than women (26%).

The relationship between education and diet was also statistically significant (χ^2(2)=17.09, p<.001). The relationship is linear; those who have a lower level of education are more likely to be non-consumers than those who have a higher level of education, with 44.4% of those who have finished elementary school being non-consumers, 33% of those with secondary school, and 21% of those who have a university degree.
The variable age did not relate significantly to dietary behaviour (r=.008, p=.855)

A binary logistic regression model was used to examine differences in dietary behaviour across the information behaviour clusters, controlling for gender and education.

Table 29: Differences in dietary behaviour across the information behaviour clusters, controlling for gender and education

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
Clusters			22.54	3	0.000	
Passive x Active	-1.29	0.35	13.80	1	0.000	0.27
Passive x Moderately active	-0.91	0.27	11.55	1	0.001	0.40
Passive x Moderately passive	-0.86	0.30	8.37	1	0.004	0.42
Gender (male=0)	-0.72	0.21	11.44	1	0.001	0.49
Education			8.63	2	0.013	
University x Primary	0.87	0.30	8.45	1	0.004	2.39
University x Secondary	0.46	0.28	2.62	1	0.105	1.58
Constant	-0.25	0.28	0.79	1	0.374	0.78

Table 29 shows that, while controlling for gender and education, the dietary behaviour of those who belong to the Passive cluster differs significantly from the behaviour of those who belong to any of the other clusters. The odds of being a non-consumer of light food products are greater for members of the Passive cluster, than for members of the Active cluster, Exp (B) is .275 (p<.001), for members of the Moderately active cluster, Exp (B) is .404 (p<.001), and for members of the Moderately passive cluster, Exp (B) is .424 (p<.01). The results also show that the variables gender (p<.001) and education are statistically significant (p<.05).

7.3.2 Health behaviour in the self-efficacy clusters

7.3.2.1 Exercise activity

Differences in exercise activity across the self-efficacy clusters were examined by binary logistic regression. The results are presented in Figure 19.

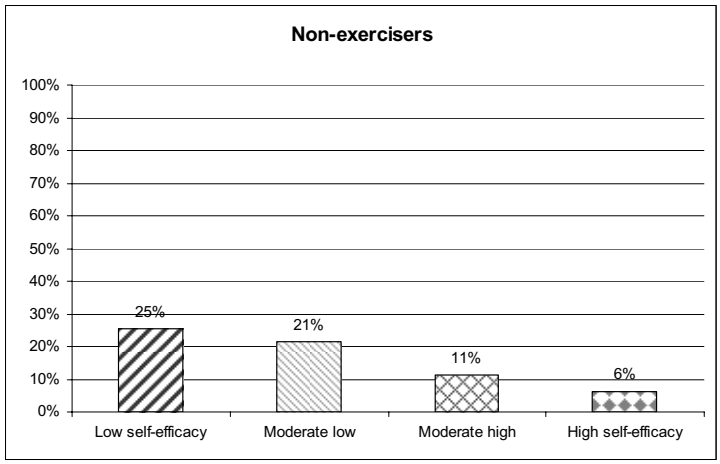


Figure 19: The odds of being a non-exerciser across the self-efficacy clusters

The results show a statistically significant difference across the High self-efficacy cluster and the Low self-efficacy cluster, Exp (B) is 5.009 (p<.001). There is also a statistically significant difference across the High self-efficacy cluster and the Moderate/low self-efficacy cluster, Exp (B) is 4.010 (p<.001).

Gender, age and education had previously been tested against exercise (see 7.3.1.1). Gender ($\chi^2(1)=5.76$, p<.05) and age (r=-.103, p<.05) were found to relate significantly to exercise, while the relationship between education and exercise ($\chi^2(2)=5.98$, p=.05) did not reach significance.

Finally, a binary logistic regression model was used to examine differences in exercise activity across the self-efficacy clusters while controlling for gender and age.

Table 30: Differences in exercise across the self-efficacy clusters, controlling for gender and age

	B	S.E.	Wald	*df*	*Sig.*	Exp(B)
Clusters			23,54	3	0,000	
High self-efficacy x Low self-efficacy	1,73	0,41	18,05	1	0,000	5,62
High self-efficacy x Moderate low self-efficacy	1,43	0,39	13,45	1	0,000	4,19
High self-efficacy x Moderate high self-efficacy	0,51	0,43	1,40	1	0,237	1,67
Gender (male=0)	0,72	0,30	6,00	1	0,014	2,06
Age (interval)	0,02	0,01	5,61	1	0,018	1,02
Constant	-4,07	0,53	59,60	1	0,000	0,02

Table 30 shows that, controlling for gender and age, the exercise activity of the members of the Low self-efficacy cluster differs significantly from the exercise activity of the members of the High self-efficacy cluster. The results indicate that the odds of being a non-exerciser are greater for members of the Low self-efficacy cluster than for members of the High self-efficacy cluster, Exp (B) is 5.62 (p<.001). A statistically significant difference was also found across the High self-efficacy cluster and the Moderate/low self-efficacy cluster. The odds of being a non-exerciser are greater for members of the Moderate/low self-efficacy cluster than for members of the High self-efficacy cluster, Exp (B) is 4.19 (p<.001). The table also shows that the variables gender (p<.05) and age are statistically significant (p<.05).

7.3.2.2 Dietary behaviour

Differences across the self-efficacy clusters in consumption of light food products were examined by binary logistic regression. The results are presented in Figure 20.

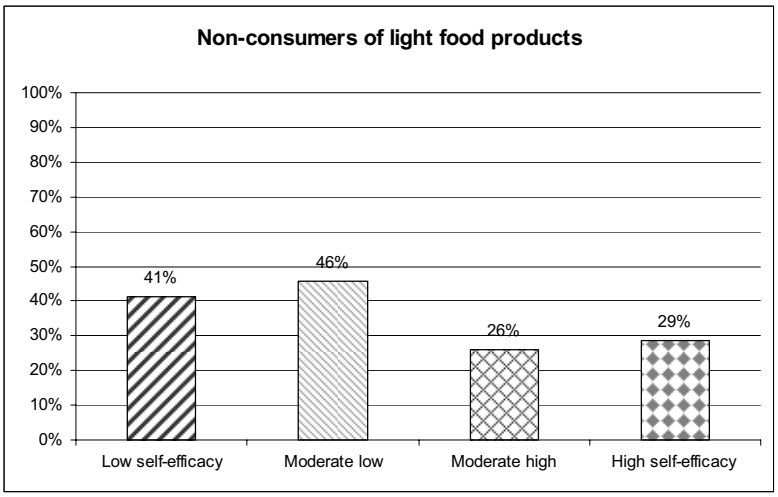


Figure 20: The odds of being a non-consumer of light food products across the self-efficacy clusters

The results show a statistically significant difference across the High self-efficacy cluster and the Low self-efficacy cluster, Exp (B) is 1.743 ($p<.05$). There is also a statistically significant difference across the High self-efficacy cluster and the Moderate/low self-efficacy cluster, Exp (B) is 2.077 ($p<.01$).

Gender ($\chi^2(1)=15.99$, $p<.001$) and education ($\chi^2(2)=17.09$, $p<.001$) had previously been found to relate significantly to exercise, while the relationship between age and exercise ($r=.008$, $p=.855$) was not statistically significant (see 7.3.1.2).

A binary logistic regression model, controlling for gender and education, was used to examine differences in dietary behaviour across the self-efficacy clusters.

Table 31: Differences in dietary behaviour across the information behaviour clusters, controlling for gender and education

Variables	B	S.E.	Wald	*df*	*Sig.*	Exp(B)
Clusters			9,88	3	0,020	
High self-efficacy x Low self-efficacy	0,34	0,29	1,30	1	0,254	1,40
High self-efficacy x Moderate low self-efficacy	0,56	0,26	4,64	1	0,031	1,76
High self-efficacy x Moderate high self-efficacy	-0,31	0,27	1,27	1	0,261	0,74
Gender (male=0)	-0,81	0,20	16,27	1	0,000	0,44
Education			15,07	2	0,001	
University x Primary	1,11	0,29	14,53	1	0,000	3,03
University x Secondary	0,57	0,28	4,24	1	0,040	1,76
Constant	-1,00	0,27	14,02	1	0,000	0,37

Table 31 shows that the dietary behaviour of the members of the High self-efficacy cluster differs significantly from the behaviour of the members of the Moderate/low self-efficacy cluster when gender and education are controlled for. The odds of a being non-consumer of light food products are greater for members of the Moderate/low self-efficacy cluster than for members of the High self-efficacy cluster, Exp (B) is 1.76 ($p<.05$). The results also show that the variables gender ($p<.001$) and education are statistically significant ($p<.001$).

7.3.3 Summary

The behaviour of the Passive cluster was found to be less healthy than the behaviour of the other three clusters. The odds of being a non-consumer of light food products were greater for the Passive cluster than for any of the other clusters. Furthermore, the odds of being a non-exerciser were greater for the Passive cluster than for the Moderately passive cluster. It therefore seems that members of the Moderately passive cluster lead a healthier life than others, and that the behaviour of the Passive cluster is the least healthy.

The behaviour of the High self-efficacy cluster was found to be healthier than the behaviour of both the Moderate/low self-efficacy cluster and the Low self-efficacy cluster. The odds of being a non-exerciser were greater for both the Moderate/low self-efficacy cluster and the Low self-efficacy cluster, than for the High self-efficacy cluster. Additionally, the odds of being a non-consumer of light food products were greater for the Moderate/low self-efficacy cluster than for the High self-efficacy cluster. There was, on the other hand, not a significant difference across the health behaviour of the High self-efficacy cluster and Moderate/high self-efficacy cluster.

8 Discussion

The aim of this study was to gather knowledge about how different groups of Icelanders take advantage of information about health and lifestyle in their everyday life. Based on the frequency of the respondent's purposive information seeking, four groups of information behaviour clusters were drawn by using a k-means cluster analysis, that is: Passive cluster, Moderately passive cluster, Moderately active cluster and Active cluster. These clusters were found to differ not only regarding their purposive information seeking activity but also in relation to their information source horizons. To validate the clustering classification and further describe the characteristics of the clusters their relations to a number of variables related to information behaviour was examined. Although the examination did not reveal exactly the same kind of difference across the clusters as in purposive seeking, it nevertheless shows that the four clusters differ in various ways. The results indicate that four distinct information behaviour clusters do exist. The clusters were further examined for differences in health self-efficacy beliefs and health behaviour. The analysis of the clusters information behaviour and their health behaviour was performed in three steps with the final analysis controlling for the effects of background variables gender, education and age. In the following text the most important results of the study will be discussed. The focus will be on the distinctive characteristics of the four clusters but a comparison of them will also be presented.

8.1 Results

The main finding of the study is that a relationship was found between health and lifestyle information behaviour, health behaviour and health self-efficacy.

An overview of the results about differences in health and lifestyle information behaviour, health self-efficacy and health behaviour across the clusters is presented in Table 32.

Table 32: Differences across the clusters: information behaviour, health self-efficacy and health behaviour

Characteristics	Passive cluster (N=192)	Moderately passive cluster (N= 90)	Moderately active cluster (N=112)	Active cluster (N=77)
Purposive information seeking[12]				
Media	1.73 [a]	2.13 [b]	3.11 [c]	3.07 [c]
Health specialists	1.58 [a]	2.78 [b]	2.63 [b]	3.01 [c]
Internet	1.19 [a]	1.51 [b]	1.20 [a]	2.92 [c]
Interpersonal sources	2.09 [a]	3.37 [b]	3.55 [b c]	3.76 [c]
Socio-demographic characteristics				
Gender	More men than women	More women than men	More women than men	Mostly women
Education	Lowest education	Highest education	Low education	Well educated
Age	Even age distribution	Rather young	Even age distribution	Youngest
Motivation to information behaviour				
Interest in information about health and lifestyle	2.92 [a]	3.85 [b]	3.75 [b]	4.04 [b]
Discussions about health and lifestyle	2.71 [a]	3.73 [b]	3.79 [b]	3.92 [b]
Information seeking[13]	2.69 [a]	3.72 [b]	3.65 [b]	4.01 [c]

[12] Total mean scores are presented for the information channels: Media, Health specialists, Internet and Interpersonal sources.
[13] Respondents were asked how often they sought information, without referring to specific information sources.

Information encountering				
Media				
Health specialists				
Internet	Differs statistically from Moderate passive and Active clusters	Higher odds than Passive cluster, Exp (B) 3.07	Does not differ statistically from Passive cluster	Higher odds than Passive cluster, Exp (B) 26.01
Barriers to information behaviour				
Cognitive barriers	2.50 [a]	2.16 [b]	2.26 [a b]	2.27 [a b]
Physical barriers	2.12 [a]	1.82 [b]	1.85 [a b]	1.91 [a b]
Relevance judgements				
Usefulness of information				
Media	2.54 [b]	2.30 [a]	2.78 [b]	2.61 [b]
Health specialists	No statistical difference	No statistical difference	No statistical difference	No statistical difference
Internet	No statistical difference	No statistical difference	No statistical difference	No statistical difference
Reliability of information				
Media	2.36 [a]	2.19 [a]	2.66 [b]	2.60 [b]
Health specialists	3.19 [a]	3.48 [b]	3.36 [a b]	3.35 [a b]
Internet	1.97 [a]	1.97 [a]	2.20 [a b]	2.41 [b]

Self-efficacy	Low self-efficacy	High self-efficacy	Low self-efficacy	High self-efficacy
Health behaviour				
Non-exercisers	Higher odds than Moderately passive cluster, Exp (B) 3.07	Differs statistically from Passive cluster	Does not differ statistically from Passive cluster	Does not differ statistically from Passive cluster
Non-consumer of light food products	Higher odds than Active cluster, Exp (B) .275, Moderately active cluster, Exp (B) .404, and Moderately passive cluster, Exp (B) .424	Differs statistically from Passive cluster	Differs statistically from Passive cluster	Differs statistically from Passive cluster

Differences are presented in mean scores or odds ratio.

Point range for mean scores is 1-5, where 1 is lowest, and 5 is highest.

A cluster mean is significantly different from another mean (Tukey, $p<0.05$) if they have different superscripts. A cluster mean with two superscripts is not statistically different from the means of two of the other clusters.

Statistically significant differences were found across the clusters for information encountering in the Media, and for information encountering in sources by Health specialist. However, because age was entered as a covariance in the final analysis, post-hoc tests were not possible. .

8.1.1 Purposive information seeking

The results related to purposive information seeking show that of all the clusters the Passive cluster is the one that is the least often engaged in seeking information about health and lifestyle, and the Active cluster is the one that seeks the information most often. The fact that the Passive cluster consists of more men than women, and is furthermore the lowest educated cluster, whereas the Active cluster consists mainly of women and is the second best educated cluster, is in line with findings from previous studies, which have shown that people with a higher educational level are more likely to seek health information and to be more knowledgeable about health than those with a lower level of education (Beier and Ackermans, 2003; Kenkel, 1990), and that women generally seek more health information than men (see for example Connell and Crawford, 1988; Kassulke et al., 1993; Rakowski et al., 1990). Health information seeking has further been linked to women's traditional role as caretakers of the health and wellbeing of their family (Pennbridge, Moya and Rodrigues, 1999; Fox, 2003; Fox et al., 2000).

Respondents were also asked about information seeking without referring specifically to the different kind of information sources. The results show a similar pattern as the results about purposive information seeking, although not completely identical. As with purposive seeking, the Passive cluster was found to seek information least often and the Active cluster the most often.

8.1.2 Information encountering

An examination of information encountering on the Internet found the same difference across the clusters as in the results about purposive seeking (see table 32). The analysis about information encountering in the Media, and in sources by Health specialists, revealed that statistically significant differences exist across the clusters,

although it was not possible to conduct post-hoc tests. Nevertheless, results from the first step of analysis, where cluster differences were examined without controlling for the effects of the background variables, show the same pattern as the results from purposive information seeking. For information encountering in the Media, it was found that the Passive cluster is the one that encounters information least often and the Moderately active cluster and the Active cluster the most often. The Passive cluster is the one that encounters information by Health specialists least often and the Active cluster the most often, whereas the Moderately passive cluster and the Moderately active cluster do not differ significantly. The results from purposive seeking in the Media, and in sources by Health specialists, show the same difference across the clusters as described here.

Furthermore, the findings indicate that information encountering is an integral feature of information seeking behaviour, which occurs on a regular basis by members of all the clusters. Together these two information seeking styles, purposive seeking and information encountering, form a pattern of information seeking behaviour. A comparison of the results about purposive information seeking and information encountering shows that the clusters claim to obtain more information by way of information encountering than by purposive seeking. An exception from this is the Active cluster which gathers more information on the Internet by purposive information seeking than by information encountering. Figures 21 to 23 present a comparison of purposive seeking and information encountering in the information channels.

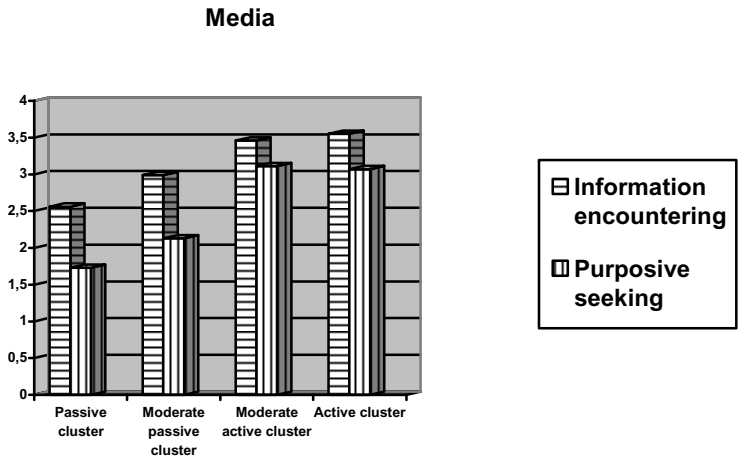


Figure 21: Comparison of information encountering and purposive information seeking in the Media[14]

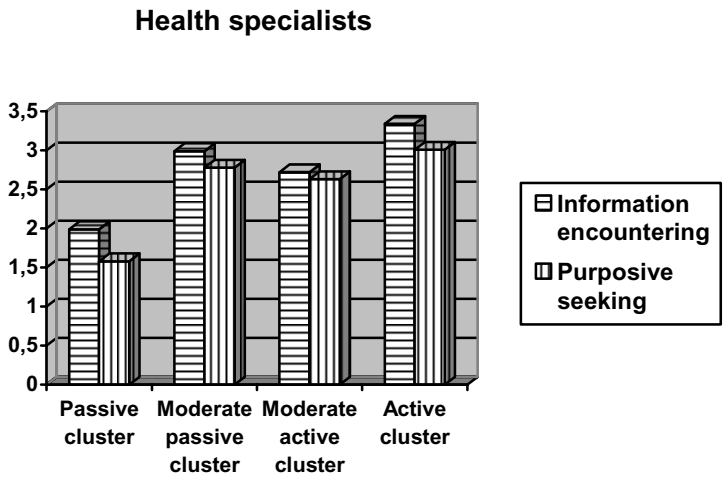


Figure 22: Comparison of information encountering and purposive information seeking in the Health specialists[15]

[14] The effects of the variables gender, age and education are not being controlled for in the analysis

[15] The effects of the variables gender, age and education are not being controlled for in the analysis

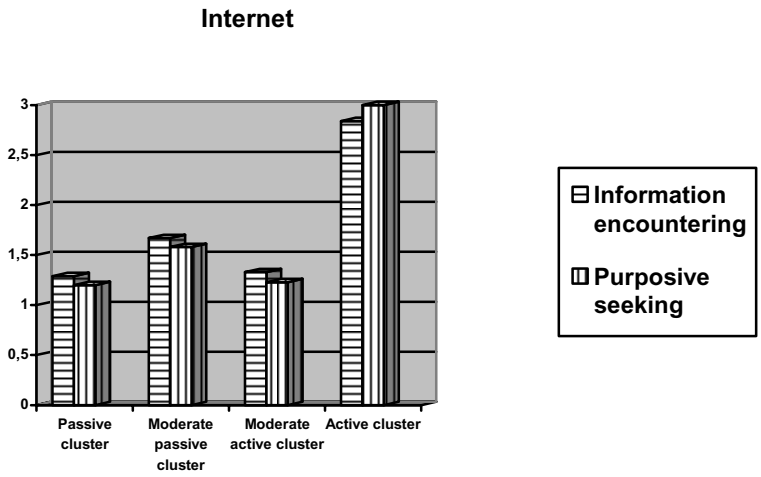


Figure 23: Comparison of information encountering and purposive information seeking on the Internet[16]

When differences between the frequencies of information encountering and purposive seeking are compared for the information channels the results show that the distinction is greatest for the Media. The Media generally belongs to people's daily environment and as a consequence the possibilities of encountering information there are greater than from sources by Health specialists or on the Internet, which usually demand more effort to reach. It is therefore a natural outcome that the difference between information encountering and purposive seeking is greater for the Media than the other channels.

8.1.3 Information source horizons

Use of sources may also be considered as part of information seeking as shown in previous sections and the four information behaviour clusters are characterised not only by their information seeking activity but also by their information source

[16] The effects of the variables gender, age and education are not being controlled for in the analysis

horizons. In this section a more detailed picture of the source preferences of the clusters will be presented. Although differences exist in information source preferences across the clusters, they all have in common that Interpersonal sources are most highly appreciated and belong at the forefront of their information source horizons. This confirms findings from previous studies that indicated that people often favour Interpersonal sources (see for example, Datamonitor, 2002; Huntington et al., 2002; Krikelas, 1983; Pennbridge, Moya and Rodrigues, 1999; Pugh, Kropf and Greene, 1994). Several reasons have been suggested as an explanation for why Interpersonal sources are preferred. It has been pointed out that Interpersonal sources may provide an opportunity for questions and explanations and information by them can therefore be more easily interpreted (Agada, 1999; Mettlin and Cummings, 1982; Suls, 1982; Taylor, 1991). It has also been noted that Interpersonal sources may be considered more reliable than other sources (Agadas, 1999; Chatman, 1985), while others have pointed out that information from Interpersonal sources can be imprecise or misleading (Suls, 1982; Valente, Poppe and Merritt, 1996). Interpersonal sources have also been considered more useful (Agadas, 1999; Taylor, 1991) and more easily accessed than other sources (Taylor, 1991). In addition, popularised professional sources were favoured by all the clusters.

The Passive cluster

The Passive cluster was found to be conservative in choice of information sources and appreciated most information in channels that generally belong to peoples nearest environment and can therefore be easily accessed, that is Interpersonal sources and the Media. In the Media, especially popularised professional sources, such as documentary programs and discussion programs in television or radio, are favoured. More unconventional sources, such as those on the Internet are rarely sought for information. This confirms what previous studies have reported. Of all the clusters, the Passive cluster is the least educated and with a higher rate of members from the oldest age groups and a lower rate of members from the youngest age group, than both

the Active cluster and the Moderately passive cluster. People who have a lower education (O'Keefe, Boyd and Brown, 1998; Wade and Schramm, 1969), or are less health oriented (Dutta-Bergman, 2004), have been shown to prefer the mass media, especially the television as a source of health information. Studies have also found that people with less education seek health information on the Internet less often than those who are better educated (Carlson, 2000; Cotton and Gupta, 2004; Fox and Fallows, 2003; Fox and Raine, 2002; Fox et al., 2000) and that those who belong to oldest age groups seek health information on the Internet less often than those who belong to the youngest age group (Carlson, 2000; Cotton and Gupta, 2004; Fox, 2003; Datamonitor, 2002).

The Moderately passive cluster

Previous studies have often reported health professionals to be favoured as a source of health information (See for example, Cotton and Gupta, 2004; Datamonitor, 2002; Huntington et al., 2002; Pennbridge, Moya and Rodrigues, 1999). This was also the case with members of the Moderately passive cluster, who were found to appreciate sources by Health specialists, together with Interpersonal sources, the most. Also, when members of the Moderately passive cluster seek information in the Media, it was found to be mainly from documentary or discussion programs, where information with experts opinions are likely to be found. Likewise, among Internet sources the opinion of professionals is valued, as websites by the health authorities are especially favoured. Thus, members of the Moderately passive cluster are consistent and focused in their choice of information sources and they seem to know where to seek for the kind of information they prefer. In order to obtain the information they desire they are willing to engage in information seeking that can be considered as more demanding, such as from Internet sources. The Moderately passive cluster was found to seek information by way of purposive seeking to a lesser extent than both the Moderately active cluster and the Active cluster. When this finding is combined with the fact that of all the clusters, the Moderately passive cluster is the one with the highest

educational level, it does not agree with previous studies, which have shown that those who are more educated seek health information more often than those who have less education (Bishop et al., 1999; Muha and Smith, 1989; Kenkel, 1990). The information seeking behaviour of the Moderate passive and the Active clusters can be compared to Heinström´s study of university students. The study describes the categories of Deep divers and Broad scanners. Deep divers are described as students that put an effort into their information seeking and aim more at finding information of high quality than to seek for a large quantity of information, while Broad scanners were found to seek information from a broad selection of sources (Heinström, 2002). While members of the Active cluster seem to focus on collecting a large amount of information from a wide range of sources, members of the Moderately passive cluster seek information to a much lesser extent, but they do so in a more goal oriented way and with the aim of acquiring information of high quality.

The Moderately active cluster

The Moderately active cluster preferred information in the Media, in particular popularised professional sources, like documentary programs and discussion programs in television or radio. Sources on the Internet, on the other hand, were seldom used. Thus, although members of the Moderately active cluster were found to be the second most active in information seeking they do not engage in more challenging information seeking, but rather prefer to gather information from sources that do not demand special effort to access. Previous studies have shown that those with lower educational attainment prefer to seek health information in the mass media (O'Keefe, Boyd and Brown, 1998; Wade and Schramm, 1969) and they seek health information on the Internet less often than those who are better educated (Carlson, 2000; Cotton and Gupta, 2004; Fox and Fallows, 2003; Fox and Raine, 2002; Fox et al., 2000). Results have also found that the oldest age group seeks health information on the Internet less often than the youngest age group (Carlson, 2000; Cotton and Gupta, 2004; Fox, 2003; Datamonitor, 2002). The Moderately active cluster has the second

lowest educational level and this cluster has also a higher rate of people from the oldest age group than the Moderate passive and the Active clusters.

The Active cluster

Members of the Active cluster were found to have a preference for a broad selection of information sources. Apart from Interpersonal sources they were found to appreciate the different information channels similarly. Hence, of all the clusters, the Active cluster is being characterised by seeking information about health and lifestyle most frequently and also has the broadest information horizon. This finding can be related to those previous studies, which have shown that those who are active in information seeking also use more sources to seek information than those who are less active information seekers (Kassulke et al., 1993). Previous studies have also found that people with a higher level of education seek health information more frequently, and from a wider collection of sources, than those who have a lower educational attainment (Bishop et al., 1999; Muha and Smith, 1989; Kenkel, 1990). Being flexible in choice of information sources, however, also means that members of the Active cluster are not very selective in their choice of information sources. Members of the Active cluster were furthermore characterised by a preference for Internet sources. A considerable difference was found between Active cluster members and the members of the other three clusters. This study confirms the findings of Pennbridge, Moya and Rodrigues (1999), who indicated that those who use the Internet for information seeking are also likely to seek health information more frequently than those who don't. This is, however, in contradiction of the findings of Cotton and Gupta (2004) who reported Internet users seek information in traditional offline information sources less frequently than those who don't use the Internet to seek information. The preference of the Active cluster for Internet sources can furthermore be related to previous studies, which describe those who use the Internet for health information seeking as being more educated (Carlson, 2000; Cotton and Gupta, 2004; Fox et al., 2000; Fox and Raine, 2002; Fox and Fallows, 2003) and younger (Cotton and Gupta,

2004; Datamonitor, 2002; Fox, 2003; Gordon, Capell and Madhok, 2002), although some studies indicate that the middle age group may be more likely to use the Internet for health information seeking (Fox et al., 2000; Fox and Rainie, 2002). Previous studies have also shown that women use the Internet more than men to seek health information (Fox et al., 2000; Fox and Rainie, 2002; Fox and Fallows, 2003; Nicholas et al., 2001).

The relatively low preference for Internet sources by the other clusters is noteworthy, especially since the ratio of citizens with Internet access in Iceland is among the highest in the world. In 2000, a total of 77.8% of Icelanders had access to the Internet, 77.9% women and 77.7% men (Forsætisráðuneytið, 20.10.2000). In 2005, it was found that a total of 86% of Icelanders use the Internet and 84% of Icelandic homes have access to the Internet (Notkun heimila og einstaklinga á tæknibúnaði og Interneti árið 2005, 24.6.2005). The results, nevertheless, are in line with findings from Datamonitor (2002) who examined the use of the Internet for health information seeking in several European countries and the US and reported Internet sources to be used less than other information sources. However, more recent studies have shown the use of the Internet for health information seeking has risen steadily (Fox et al., 2000; Fox and Rainie, 2002; Fox and Fallows, 2003) although most people seem to seek information infrequently about health topics on the Internet (Cotton and Gupta, 2004; Fox and Rainie, 2002; Fox and Fallows, 2003).

8.1.4 Relevance judgements

Results about relevance judgements can be compared with the information source preference of the clusters. Members of all the clusters considered information by Health specialists to be both the most useful and reliable information. Yet, the Passive cluster and the Moderately active cluster preferred to seek information in the Media rather than by Health specialists and the Active cluster preferred information in the

Media, by Health specialists and on the Internet to a similar extent. Thus, there was an inconsistency between the preference for information sources and the relevance judgements of these clusters. Only the relevance judgements of members of the Moderately passive cluster were found to be in harmony with their information source preference.

8.1.5 Motivation to information behaviour

Health and lifestyles are issues that members of the Passive cluster seem to be unconcerned about. Of all the clusters the Passive cluster is the one that is the least motivated to information behaviour. Compared with the other clusters, members of the Passive cluster lack interest in information about this topic, and as can then be assumed, they seldom get involved in discussions about health and lifestyle. Moreover, the Passive cluster was found to have significantly higher information behaviour barriers, both Cognitive barriers, and Physical barriers, than the Moderately passive cluster. Hence, there are indications that of the four clusters, the Passive cluster is the one that has the least encouraging information behaviour profile. Previous studies have identified interest in a topic as an important reason for seeking information (Eriksson-Backa, 2003; O'Keefe, Boyd and Brown, 1986; Reagan, 1996). However, it has also been noted that by being associated with information about health and lifestyle and by gaining more knowledge about this topic might also work in such a way as to enhance peoples interest, which then may lead to an increase in their information seeking (Hyman and Sheatsley, 1947), or cause people to become more confident and focused in their information seeking (Kuhlthau, 1993).

8.1.6 The relationship between information behaviour, self-efficacy and health behaviour

The study sought to explore the relationship between information behaviour, self-efficacy and health behaviour. Previous studies have found people with high self-efficacy beliefs discuss health topics in relation to heart disease more often, and seek information about this matter more often, than those who have low self-efficacy beliefs (Rimal, 2001). Those who have high self-efficacy beliefs have also been found to engage in more preventive health behaviour, and to be more satisfied with the health information that they receive, as well as with the health care that they are offered (Stewart et al., 2004). It has further been found that health information can enhance people's beliefs about their own ability to deal with their health condition (Arora et al., 2002). In this study self-efficacy was measured by the Perceived Health Competence Scale (PHCS). Although the scale was not designed for measuring self-efficacy beliefs in relation to information behaviour, it was believed to be of interest to use it to examine the self-efficacy beliefs of the information behaviour clusters. The results indicate that members of the Active and the Moderately passive clusters believe more strongly that they are capable of controlling their health in a successful way and that this will lead to a favourable health outcome, than members of the Passive and the Moderately active clusters. In addition, results about health behaviour show that members of the Passive cluster are the ones that have the least healthy behaviour while members of the Moderately passive cluster were found to behave in the healthiest way. It therefore seems that seeking information most often, and having the broadest information source horizon, as is the case with the Active cluster, does not necessarily associate with the best health behaviour. Rather, the findings indicate that information seeking that happens less often but in a more focused way, accompanied by a selective choice of information sources, goes hand in hand with the healthiest behaviour. When the relationship between self-efficacy and health was examined the study further found that those who have high self-efficacy beliefs have a more healthy behaviour than those who have low self-efficacy beliefs. These results can be related to previous findings which indicate that people who are associated with

more information about health are also more knowledgeable about health topics (Margetts et al., 1997). Better knowledge about health issues has, furthermore, been related to a healthier behaviour (Måns, 1991; Osler and Schroll, 1995; Osler, Lous and Rasmussen, 1992). Also, those who seek information more often have been found to have a lower prevalence of risky behaviour, for example unhealthy diet and lack of exercise (Kassulke et al., 1993). Moreover, Nutbeam (2000) has noted that by explaining how intrapersonal factors, the environment and behaviour work together, theories that include self-efficacy as a component have improved the understanding of how health behaviour is being shaped. Previous studies have found higher self-efficacy beliefs to be related to more positive health habits (Von Ah et al., 2004). Self-efficacy beliefs have, for example, been found to be important in creating intentions to eat healthy food and in transforming the intentions into an actual behaviour (Hertog et al., 1993; Schwartzer and Fuchs, 1996). Also, those who are more physically active have been reported to have higher self-efficacy beliefs than those who are less physically active (Stevens et al., 2003).

8.2 Conclusions

The study sought to explore the relationship between people's health and lifestyle information behaviour and their health self-efficacy beliefs, and to examine how this relates to their health behaviour. The results of the empirical study give the following answers to the research questions in the study.

Question 1: Is there a relationship between purposive information seeking about health and lifestyle and other aspects of information behaviour, and if so, what is the nature of this relationship?

The respondents in the study were drawn into four distinct clusters based on their purposive information seeking, that is: Passive cluster; Moderately passive cluster;

Moderately active cluster; and Active cluster. The names of the clusters refer to the frequency of information seeking. The relationship between the clusters and a number of variables regarding information behaviour was examined. The same difference was found across the clusters for information encountering as for purposive information seeking. The findings indicate that purposive information seeking and information encountering together form a pattern of information seeking behaviour. Apart from all the clusters preferring Interpersonal sources the most, the clusters were found to differ regarding their preference for sources of health information. The Passive cluster preferred the Media, the Moderately passive cluster preferred Health specialists, the Moderately active cluster preferred the Media and the Active cluster was found to prefer sources in the different information channels similarly. When the relevance judgements of the clusters were compared with their information source preference only the relevance judgements of the Moderately passive cluster were found to be consistent with their information source preference. Members of this cluster were found to prefer information in sources by Health specialists and they also considered them as more reliable and useful than information in the Media or on the Internet.

As could be expected, low motivation to information behaviour was related to the lowest information seeking activity. Likewise, high information behaviour barriers were related to the lowest information seeking activity. The lowest information behaviour barriers, on the other hand, were not related to the most active information seeking behaviour (like the Active cluster) but instead to information seeking that was combined with a consistent choice of information sources in addition to a critical evaluation of information (like the Moderately passive cluster).

Question 2: Is there a relationship between information behaviour and health behaviour, and if so, what is the nature of this relationship?

The study found that the behaviour of the Passive cluster, which was the least healthy, was related to an information behaviour that combined the lowest frequency of

information seeking with the lowest motivation and higher information behaviour barriers, in addition to a preference for information from sources that do not require much effort to access. More frequent information seeking was related to more healthy behaviour, which is the case for the Moderate active and the Active clusters. However, the best health behaviour was not related to the most frequent information seeking but information seeking that happens less often, in more focused way, accompanied by critical selection of information, as with the Moderately passive clusters.

Question 3: Is there a relationship between information behaviour and health self-efficacy beliefs, and if so, what is the nature of this relationship?

The study results showed that the self-efficacy beliefs of the Active cluster and the Moderately passive cluster are higher than the self-efficacy beliefs of the Passive and the Moderately active clusters. Of all the clusters, the Active cluster was found to be the one that is most often engaged in information seeking, which confirms findings of previous studies that have related high self-efficacy beliefs with more frequent health information seeking (Rimal, 2001; Stewart, Abbey, Shnek, Irvine and Grace, 2004). Although the frequency of information seeking differs across these two clusters, they have in common that their members engage in information seeking that is more challenging than the Passive and the Moderately active clusters, which indicates a strong relation between interest in information seeking and a belief of being in control of mastery of life.

Question 4: Is there a relationship between health self-efficacy beliefs and health behaviour, and if so, what is the nature of this relationship?

The study results show that health self-efficacy is related to health behaviour. Of all the clusters, the Moderately passive cluster was the one that had the healthiest behaviour habits. The Passive cluster, on the other hand, was found to have the least healthy behaviour. This is in confirmation with former studies have shown that those who have higher self-efficacy beliefs are more likely to practice healthy dietary behaviour (Hertog et al., 1993; Melanson et al., 2004; Schwartzer and Fuchs (1996) and to be more physically active (Stevens et al., 2003; Von Ah et al., 2004).

The main characteristics of the clusters are summarized in Table 33 which gives an overview of the relationship between information behaviour, self-efficacy and health behaviour within each cluster.

Table 33: The main characteristics of the clusters: information behaviour, self-efficacy beliefs, health behaviour and socio-demographic characteristics

Self efficacy	Information seeking activity: High	Information seeking activity: Low
High	**Active cluster** Number of members = 77. Mainly women, young, well educated. Enthusiastic information seekers. Information source horizon: Broad selection of sources. A moderately healthy behaviour.	**Moderately passive cluster** Number of members = 90. More women than men, rather young, highest educational level. Lowest information behaviour barriers. Information horizon: Health specialists and Interpersonal sources. Goal oriented and critical selection of information sources. Harmony between relevance judgements and choice of information sources. The healthiest behaviour.
Low	**Moderately active cluster** Number of members = 112. More women than men, even age distribution, low educational level. Information horizon: Media and Interpersonal sources. Traditional, easily available information sources. A moderately healthy behaviour.	**Passive cluster** Number of members = 192. More men than women, even age distribution, lowest educational level. Low motivation. Highest information behaviour barriers. Least active as information seekers. Information horizon: Media and Interpersonal sources. Traditional, easily available information sources. The least healthy behaviour.

The results of the study indicate that it is not the frequency of information seeking but information seeking, which is accompanied by a critical approach in the selection of information sources, together with high self-efficacy beliefs, that relates to a healthy behaviour.

The results of the empirical study give additional evidence that health and lifestyle information behaviour and health self-efficacy beliefs are interrelated, and that both information behaviour and self-efficacy beliefs relate significantly to health behaviour. Based on these results and the knowledge drawn from the previous literature it is suggested that health and lifestyle information behaviour, health self-efficacy beliefs, and health behaviour are interrelated. This suggestion is presented visually in Figure 24.

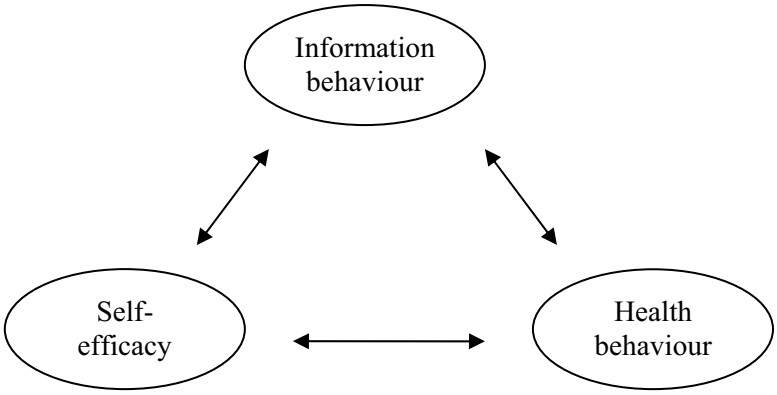


Figure 24: The relationship between information behaviour, self-efficacy and health behaviour

The model suggests that an interaction exists between information behaviour, self-efficacy and health behaviour. These three factors of the model both shape and are being shaped by each other.

8.3 Applications of the results

Before this study little was know about Icelandic citizen's information behaviour. The present study aimed at gathering knowledge about how different groups of Icelanders are able to take advantage of information about health and lifestyle in their everyday life. By enhancing the knowledge of different information behaviour profiles and how it relates to peoples self-efficacy beliefs and health behaviour, the result of the study may be used to develop new ideas of how to reach to different groups of people in the society in a more efficient way.

8.4 Suggestions for future studies

The study found that combinations of information behaviour habits, self-efficacy beliefs and health behaviour habits could be related to four distinctive clusters of respondents: the Passive cluster; the Moderately passive cluster; the Moderately active cluster and the Active cluster. The results can be generalised to the Icelandic population. It would be interesting to examine if the same patterns can be identified in other populations, or in other contexts.

Of the four clusters the Moderately passive cluster appeared as the most interesting from on information behaviour point of view. More intensive research is needed to understand their behaviour better. What are their learning styles? What is it that motivates them to be so analytical and critical in their information behaviour? It would be interesting to examine in more detail the various ascpects of the social cognitive characteristics and information behaviour of people that belong to this cluster. In addition, seeking a more profound knowledge of the information behaviour of people in all four clusters would be useful and might aid in designing public health information educational initiatives as well as targeting outreach to particular segments of the Icelandic populations.

The connection between purposive information seeking and information encountering has not received much attention as previous studies have mostly examined these two information seeking styles separately. The finding here of a pattern of behaviour combining the two approaches is interesting and more work is needed to explore further the connection between purposive information seeking and information encountering.

National culture issues also raise an interesting question. By taking a closer look at them possible explanations might be raised that may shed some light on differences in information behaviour and/or health behaviour between nations.

The results of the present study show that with the exception of one group of participants, members of the Active cluster, the Internet is not being used frequently to seek information about health and lifestyle. Other studies have shown a steady rise of health information seeking on the Internet. It would be interesting to examine whether or not there has been a change in the use of the Internet for health and lifestyle information seeking and if so how, as well as how the nature of what is available on the Internet has changed.

9 References

Aarø, L.E. (1986). *Health Behaviour and Socioeconomic Status: A SurveyAmong the Adult Population in Norway*. Bergen: University of Bergen. (Doctoral dissertation).

Abel, T.; McQueen, D.V.; Bakett, K. and Currie, C. (1992). Patterns of unhealthy eating behaviours in a middle aged Scottish population. *Scottish Medical Journal*, 37:170-174.

Agada, J. (1999). Inner-city gatekeepers: An exploratory survey of their information use environment. *Journal of the American Society for Information Science*, 50(1):74-78.

Ajzen, I. (1985). From intentions to action: a theory of planned behaviour. In: Kuhl, J. and Beckman, J. (eds.). *Action Control: From Cognitions to Behaviours*. New York: Springer, 1985, pp. 11-39.

Aldenderfer, M.S. and Blashfield, R.K. (1984). *Cluster Analysis*. Sage University Papers: Iowa. (Quantitative Applications in the Social Sciences, 44).

Allen, B.L. (1991). Cognitive research in information science: implications for design. *Annual Review of Information Science and Technology (ARIST)*, 26:3-37.

Allen, B. (1997). Information needs: a person-in-situation approach. In: Vakkari, P.; Savolainen, R. and Dervin, B. (eds). *Information Seeking in Context: Proceedings of an International Conference on Research in Information Needs, Seeking and Use in Different Contexts, 14-16 August, 1996 Tampere, Finland.* London: Taylor Graham, 1997, pp. 111-122.

Almeida-Filho, N.; Lessa, I.; Magalhaes, L.; Araújo, M.J.; Aquino, E.; Kawachi, I. and James, S.A. (2004). Alcohol drinking patterns by gender, ethnicity, and social class in Bahia, Brazil. *Rev Saúde Pública,* 38(1):45-54.

American Dietetic Association (2000). *Americans´ Food and Nutrition Attitudes and Behaviors-American Dietetic Association´s Nutrition and You: Trends 2000*. Retrieved March 7th 2005, from: http://www.eatright.org/Public/Media/PublicMedia_10333.cfm.

Antonovsky, A. (1979). *Health, Stress, and Coping: New Perspectives on Mental and Physical Well-Being*. San Francisco: Jossey-Bass.

Arora, N.K.; Johnson, P.; Gustafson, D.H.; McTavish, F.; Hawkins, R.P. and Pingree, S.e (2002). Barriers to information access, perceived health competence, and psychosocial health outcomes: test of a mediation model in a breast cancer sampel. *Patient Education and Counseling*, 47:37-46.

Ausems, M.; Mesters, I.; Breukelen van G. and De Vries, H. (2003). Do Dutch 11-12 years olds who never smoke, smoke experimentally or smoke regularly have different demographic backgrounds and perception of smoking? *European Journal of Public Health*, 13:160-167.

Backett, K.C. and Davison, C. (1995). Lifecourse and lifestyle: the social and cultural location of health behaviours. *Social Science & Medicine*, 40(5):629-638.

Baker, L.M. (1996). A study of nature of information needed by women with multiple sclerosis. *Library & Information Science Research*, 18:67-81.

Baker, L.M. and Pettigrew, K.E. (1999). Theories for practitioners: two frameworks for studying consumer health information seeking behaviour, *Bulletin of Medical Library Association*, 87:444-450.

Ball, K. and Crawford, D. (2005). Socioeconomic status and weight in adults: a review. *Social Science & Medicine*, 60:1987-2010

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist,* 44(9):1175-1184.

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control.* New York: W.H. Freeman.

Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health*, 13:623-649.

Bandura, A. (2000). Exercise of human agency through collective efficacy. *Current Directions in Psychological Science*, 9(3):75-78.

Bandura, A. (2001). Social Cognitive theory of mass communication. *Media Psychology*, 3(3):265-299.

Bandura, A. (2002). Growing primacy of human agency in adaptation and change in the electronic era. *European Psychologist*, 7(1):2-16.

Barbeau, E.; Krieger, N. and Soobader, M. (2004). Working Class matters; socioeconomic disadvantage, race/ethnicity, gender, and smoking in NHIS 2000. *American Journal of Public Health*, 94(2):269-278.

Barr, S.I. (1986). Nutrition knowledge and selected nutritional practices of female recreational athletes. *Journal of Nutrition Education*, 18(4):167-174.

Barry, C.L. (1994). User-defined Relevance criteria: an exploratory study. *Journal of the American Society for Information Science*, 45(3):149-159.

Barry, C.L. and Schamber, L. (1998). Users´criteria for relevance evaluation: a cross-situational comparison. *Information Processing & Management*, 34(2/3):219-236.

Becker, M.H. and Rosenstock, I.M. (1987). Comparing social learning theory and the health belief model. In: Ward, W.B. (ed.). *Advances in Health Education and Promotion*, vol 2. Greenwich, CT.: JAI, 1987, pp. 245-249.

Belkin, N.J. (1978). Progress in documentation. *Journal of Documentation*, 34(1):55-85.

Belkin, N.J. (1990). The cognitive viewpoint in information science. *Journal of Information Science*, 18: 11-15.

Belkin, N.J.; Oddy, R.N. and Brooks, H.M. (1982a). ASK for information retrieval: part I. Background and theory. *Journal of Documentation*, 38(2):61-71.

Belkin, N.J.; Oddy, R.N. and Brooks, H.M. (1982b). ASK for information retrieval: part II. Results of a design study. *Journal of Documentation*, 38(3):145-164.

Bendtsen, P.; Lejman, M. and Bjurulf, P. (2002). Sociodemographic gender differences in patients attending a community-based alcohol treatment centre. *Addictive Behaviors*, 27:21-33.

Beier, M.E. & Ackerman, P.L. (2003). Determinants of health knowledge: an investigation of age, gender, abilities, personality, and interests. *Journal of Personality and Social Psychology*, 84:439-447.

Bertakis, K.D.; Azari, R.; Helms, J.; Callahan, E.J. and Robbins, J.A. (2000). Gender differences in the utilization of health care services. *The Journal of Family Practice*, 49(2):147-152.

Bishop, A.P.; Tidline, T.J.; Shoemaker, S. and Salela, P. (1999). Public libraries and networked infomation services in low-income communities. *Library & Information Science Research*, 21(3):361-390.

Bosma, H.; Vand de Mheen; Dike, H. and Mackenbach, J.P. (1999). Social class in childhood and general health in adulthood: questionnaire study of contribution of psychological attributes. *British Medical Journal*, 318:18-22.

Booth, M.L.; Bauman, A.; Owen, N. and Gore, C. (1997). Physical activity preferences, preferred sources of assistance, and perceived barriers to increased activity among physically inactive Australians. *Preventive Medicine*, 26:131-137.

Brannon, L. and Feist, J. (2000). *Health Psychology: An introduction to Behavior and Health* (4th ed.). Australia: Wadsworth.

Brookes, B.C. (1977). The developing cognitive viewpoint in information science. In: De Mey, M.; Pinxten, R.; Poriau, M.; Vandamme, F. (eds.). *International Workshop on the Cognitive Viewpoint*. Ghent: University of Ghent, 1977, pp. 195-203.

Burke, L.E.; Dunbar-Jacob, J.; Orchard, T.J. and Sereika, S.M. (2005). Improving adherence to a cholesterol-lowering diet: a behaviour intervention study. *Patient Education and Counseling*, 57(1):134-142.

Buttriss, J.L. (1997). Food and nutrition: Attitudes, beliefs, and knowledge in the United Kingdom. *American Journal of Clinical Nutrition*, 65:1985S-1995S.

Carlson, M. (2000). Cancer patients seeking information from sources outside the health care system. *Support Care Cancer*, 8:453-457.

Chandola, T. (2001). Ethnic and class differences in health in relation to British South Asians: using the new national statistics socio-economic classification. *Social Science & Medicine*, 52:1285-1296.

Chatman, E.A. (1985). Information, mass media use and the working poor. *Library & Information Science Research*, 7:97-113.

Chatman, Elfreda A. (1987). The Information World of Low-Skilled Workers. *Library & Information Science Research*, 9:265-283.

Chatman, E.A. (1990). Alienation theory: application of a conceptual framework to a study of information among janitors. *RQ*, 29(3):355-368.

Chatman, E.A. (1991a). Channels to a larger social world: older women staying in contact with the great society. *Library & Information Science Research*, 13:281-300.

Chatman, E.A. (1991b). Life in a small world: applicability of gratification theory to information-seeking behavior. *Journal of the American Society for Information Science*, 42(6):438-449.

Chatman, E.A. (1996). The impoverished life-world of outsiders. *Journal of the American Society for Information Science*, 47(3):193-206.

Chatman, E.A. (1999). A theory of life in the round. *Journal of the American Society for Information Science*, 50(3):207-217.

Chatman, E.A. (2000). Framing social life in theory and research. *The New Review of Information Behaviour Research: Studies of Information Seeking in Context*, 1:3-17.

Chatman and Pendleton (1995). Knowledge gap, information-seeking and the poor. *The Reference Librarian*, 49/50:135-145.

Chew, F. and Palmer, S. (1994). Interest, the knowledge gap, and television programming. *Journal of Broadcasting & Electronic Media*, 38(3):271-287.

Claussen, B.; Davey Smith, G. and Thelle, D. (2003). Impact of childhood and adulthood socioeconomic position on cause specific mortality: the Oslo mortality study. *Journal of Epidemiology and Community Health*, 57(1):40-45.

Cockerham, W.C. (2005). Health lifestyle theory and the convergence of agency and structure. *Journal of Health and Social Behaviour*, 46(1):51-67.

Connell, C.M. and Crawford, C.O. (1988). How people obtain their health information: A survey in two Pennsylvania counties. *Public Health Reports*, 103(2):189-195.

Cosijn, E. and Ingwersen, P. (2000). Dimensions of relevance. *Information Processing & Management*, 36(4):533-550.

Cotton, S.R. and Gupta, S.S. (2004). Characteristics of online and offline health information seekers and factors that discriminate between them. *Social Science & Medicine*, 59(9):1795-1806.

Datamonitor (2002). *Growth in Number Seeking Health Info Online: Nua Surveys*. Retreived September 23rd 2003, from: http://www. Nua.com/surveys.

Davies, J.; McCrae, B.P.; Frank, J.; Dochnahl, A.; Pickering, T.; Harrison, B.; Zakrzewski, M. and Wilson, K. (2000). Identifying male college students´ perceived health needs, barriers to seeking help, and recommendations to help men adopt healthier lifestyles. *Journal of American College Health*, 48(6):250-267.

De May, M. (1977). The cognitive viewpoint: its development and its scope. In: De Mey, M.; Pinxten, R.; Poriau, M.; Vandamme, F. (eds.). *International Workshop on the Cognitive Viewpoint*. Ghent: University of Ghent, 1977, pp. xvi-xxxii.

Denton, M.; Prus, S. and Walters, V. (2004). Gender differences in health: a Canadian study of the psychosocial, structural and behavioural determinants of health. *Social Science & Medicine*, 58:2585-2600.

Dervin, B. and Nilan, M. (1986). Information needs and uses. *Annual Review of Information Science and Technology (ARIST)*, 21:3-33.

Dervin, B. (1992). From the mind's eye of the user: the sense-making qualitative-quantitative methodology. In: Glazier, J.D. and Powell, R.R. (eds.). *Qualitative Research in Information Management*. Englewood, CO: Libraries Unlimited, 1992, pp. 61-84.

Dervin, B. (1999). On studying information seeking methodologically: the implications of connecting metatheory to method. *Information Processing & Management*, 35:727-750.

Dijkstra, A.; Roijackers, J. and DeVries, H. (1998). Smokers in four stages of readiness to change. *Addictive Behaviors,* 23(3):339-350.

Dijkstra, A.; Sweeney, L. and Gebhardt, W. (2001). Social cognitive determinants of drinking in young adults: beyond the alcohol expectancies paradigm. *Addictive Behaviors*, 26:689-706.

Dishman, R.K.; Motl, R.W.; Saunders, R.; Felton, G.; Ward, D.S.; Dowda, M. and Pate, R.R. (2004). Self-efficacy partially mediates the effect of a school-based physical-activity intervention among adolescent girls. *Preventive Medicine*, 38:628-636.

Dunne, J.E. (2002). Information seeking and use by battered women: a "person-in-progressive-situations" approach. *Library & Information Science Research*, 24(4):343-355.

Dutta-Bergman, M.J. (2004). Primary sources of health information: comparisons in the domain o fhealth attitudes, health cognitions, and health behaviours. *Health Communication*, 16(3):273-288.

Dutta-Bergman, M.J. (2005). Developing a profile of consumer intention to seek out additional information beyond a doctor: the role of communicative and motivation variables. *Health Communication*, 17(1):1-16.

Eckerman, L. (2000). Gendering indicators of health and well-being: is quality of life gender neutral? *Social Indicators Research*, 52:29-54.

Einar Þór Þórarinsson; Þórður Harðarson; Helgi Sigvaldason and Nikulás Sigfússon (2002). Samband skólagöngu, líkamshreyfingar og lífslíkna. *Læknablaðið*, 88(6). Retrieved June 25th, from: http://www.laeknabladid.is/2002/6/fraedigreinar//nr/147/

Emil L. Sigurðsson (1996). Heilsuefling: Samantekt á niðurstöðum þjóðmálakönnunar á vegum verkefnisstjórnar um Heilsueflingu. In: *Heilsuefling*. Reykjavík: Landlæknisembættið, pp. 46-55. (Heilbrigðisskýrslur. Fylgirit 1996; nr. 2).

Erdelez, S. (1997). Information encountering: A conceptual framework for accidental information discovery. In: Vakkari, P.; Savolainen, R. and Dervin, B. (eds). *Information Seeking in Context: Proceedings of an International Conference on Research in Information Needs, Seeking and Use in Different Contexts, 14-16 August, 1996 Tampere, Finland*. London: Taylor Graham, 1997, pp. 412-421.

Erdelez, S. and Rioux, K. (2000). Sharing information encountered for others on the Web. *The New Review of Information Behaviour Research: Studies of Information Seeking in Context*, 1:219-233.

Eriksson-Backa, K. (2003). *In Sickness and in Health: How Information and Knowledge Are Related to Health behaviour*. Åbo: Åbo Akademis Förlag - Åbo Akademi University Press. (Doctoral thesis).

Ettema, J.S. and Kline, F.G. (1977). Deficits, differences, and ceilings: contingent conditions for understanding the knowledge gap. *Communication Research*, 4:179-202.

Everitt, B.S., Landau, S. and Leese M. (2000). *Cluster Analysis* (4th ed.). London: Arnold.

Fabrigar, L. R., Wegener, D. T., MacCullum, R. C., and Stahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods,* 4:272-299.

Fontaine, K.R. and Cheskin, L. (1997). Self-efficacy, attendance, and weight loss in obesity treatment. *Addictive Behaviors*, 22(4):567-570.

Forsætisráðuneytið (20.10.2000). *Aðgengi að Internetinu haustið 2000: Niðurstöður rannsóknar um aðgang að Interneti í september árið 2000 sem Pricewaterhouse Coopers vann fyrir Verkefnisstjórn um upplýsingasamfélagið*. Reykjavík: Forsætisráðuneytið. Retrived June 24th 2005, from: http://www3.forsaetisraduneyti.is/utgefid-efni/nr/78

Foster, A. and Ford, N. (2003). Serendipity and information seeking: an empirical study. *Journal of Documentation*, 59(3):321-340.

Fox, S. and Fallows, D. (2003). *Internet Health Resources: Pew Internet & American Life Project*. Retriewed 15.2.2005, from: http://www.pewinternet.org/

Fox, S. and Rainie, L. (2002). *Vital Decisions: How Internet Users Decide What Information to Trust When They or Their Loved Ones are Sick: Pew Internet & American Life Project*. Retriewed February 15th 2005, from: http://www.pewinternet.org/

Fox, S.; Rainie, L.; Horrigan, J.; Lenhart, A.; Spooner, T.; Burke, M.; Lewis, O.; Carter, C. (2000). *The Online Health Care Revolution: How the Web helps Americans Take Better Care of Themselves: Pew Internet & American Life Project*. Retriewed September 23th 2003, from: http://www.pewinternet.org/

Gabbard-Alley, A.S. (1995). Health Communication and gender: a review and critique. *Health Communication*, 7(1):35-54.

Gauntlett, David (2002). *Media, Gender and Identity: an Introduction*. Routledge, London. Extracts available at www.theory.org.uk.

Gaziano, C. (1997). Forecast 2000: widening knowledge gaps. *Journalism and Mass Communication Quarterly*, 74(2):237-264.

Gaziano, C. and Horowitz, A.M. (2001). Knowledge gap on cervical, colorctal cancer exists among U.S. women. *Newspaper Research Journal*, 22(1):12-27.

Geleijnse, J.M.; Kok, F.J. and Grobbee, D.E. (2004). Impact of dietary and lifestyle factors on the prevalence of hypertension in Western populations. *European Journal of Public Health*, 14(3):235-239.

Gerrit, A.J.; Rijt, Van Der; Westerik, H. (2004). Social and cognitive factors contributing to the intention to undergo a smoking cessation treatment. *Addictive Behaviors*, 29:191-198.

Gibney, M.J.; Kearney, M. and Kearney, J.M. (1997). Introduction: IEFS pan-EU survey of consumer attitudes to food, nutrition and health. *European Journal of Clinical Nutrition*, 51(suppl. 2):2.

Ginman, M. (2000). Health information and quality of life. *Health Informatics*, 6:181-188.

Gordon, M.M, Capell, H.A. and Madhok, R. (2002). The use of the Internet as a resource for health information among patients attending a rheumatology clinic. *Rheumatology*, 41:1402-1405.

Green, C.A. and Pope, C.R. (1999). Gender, psychosocial factors and the use of medical services: a longitudinal analysis. *Social Science & Medicine*, 48(10):1363-1372.

Greenberg, B. and Dervin, B. (1970). Mass communication among urban poor. *Public Opinion Quarterly*, 34(2):224-236.

Greisdorf, H. (2003). Relevance thresholds: a multi-stage predictive model of how users evaluate information. *Informtion Processing & Management*, 39(3):403-423.

Greisdorf, H. and Spink, A. (2000). Recent relevance research: implications for information professionals. *Online Information Review*, 24(5):389-395.

Greisdorf, H. and Spink, A. (2001). Median measure: an approach to IR systems evaluation. *Information Processing & Management*, 37:843-857.

Guðmundur Þorgeirsson (2003). Áhættuþættir og forvarnarstarf. *Læknablaðið*, 89(11). Retriewed June 26th 2004, from: http://www.laeknabladid.is/2003/11/ritstjornargreinar//nr/1424/

Guillaume, L.R. and Bath, P.A. (2003). The impact of 'health scares' on parents information needs and preferred information sources: a case study of the mmr vaccine scare. In: Bath, P.A.; Höglund, L. and Maceviciute, E. (eds.). *iSHIMR 2003: Procedings of the Eighth International Symposium on Health Information Management Research: 1-3 June 2003 Borås, Sweden. Borås: Swedish School of Library and Information Science*. [Borås]: Swedish School of Library and Information Science, 2003, pp. 67-84.

Hafstad, A. and Aaro, L.E. (1997). Activating interpersonal influence through provocative appeals: evaluation of a mass media-based antismoking campaign targeting adolescents. *Health Communication*, 9:253–272.

Hagstofa Íslands (29.7.2005). *Hagtölur*. Retriewed July 31st 2005, from: http://www.hagstofa.is/

Halldórsson, M.; Kunst, A.E.; Köhler, L. and Mackenbach, J.P. (2002). Socioeconomic differences in children´s use of physician services in the Nordic countries. *Journal of Epidemiology and Community Health*, 56(3):200-2004.

Hallörsson, M.; Kunst, A.E.; Köhler, L. and Mackenbach, J.P. (2000). Socioeconomic inequalities in the health of children and adolescents: a comparative study of the five Nordic countries. *European Journal of Public Health*, 10(4):281-288.

Hardarson, T.; Gardarsdóttir, M.; Gudmundsson, K. TH.; Thorgeirsson,' G.; Sigvaldason,' H. and Sigfússon, N. (2001). The relationship between educational level and mortality: The Reykjavík Study. *Journal of Internal Medicine*, 249(6):495-502.

Harter, S.P. (1992). Psychological relevance and information science. *Journal of the American Society for Information Science*, 43(9):602-615.

Heinström, Jannica (2002). *Fast Surfers, Broad Scanners and Deep Divers: Personality and Information-Seeking Behaviour*. Åbo: Åbo Akademis Förlag - Åbo Akademi University Press. (Doctoral thesis).

Hertog, J.K.; Finnegan, J.R.; Rooney, B.; Viswanath, K. and Potter, J. (1993). Self-efficacy as a target population segmentation strategy in a diet and cancer risk reduction campaign. *Health Communication*, 5(1):21-40.

Hevey, D.; Smith, M. and McGee, H.M. (1998). Self-efficacy and health behaviour: a review. *The Irish Journal of Psychology*, 19(2-3):248-273.

Hewins, E.T. (1990). Information need and use studies. *Annual Review of Information Science and Technology (ARIST)*, 25:145-172.

Hjørland, B. (2002). Epistemology and the socio-cognitive perspective in information science. *Journal of the American Society for Information Science and Technology*, 53(4):257-270.

Hólmfríður Þorgeirsdóttir; Laufey Steingrímsdóttir; Örn Ólafsson and Vilmundur Guðnason (2001). Þróun ofþyngdar og offitu meðal 45-64 ára Reykvíkinga á árunum 1975-1994. *Læknablaðið*, 9(87). Retrieved June 25th 2004, from: http://www.laeknabladid.is/2001/9/fraedigreinar//nr/1018/

Hrafn V. Friðriksson (1992). *Forvarnakönnun 1992 : Forvarnir langvinnra sjúkdóma, fjölmiðlar og heilbrigðisfræðsla, heilsufarseftirlit og áhættuþættir, lífsbreytingar og samanburður við samskonar könnun frá 1989*. [Reykjavík]: Heilbrigðis- og tryggingamálaráðuneytið. (Heilbrigðis- og tryggingamálaráðuneytið. Rit ; 3)

Huntington, P.; Nicholas, D.; Williams, P. and Gunter, B. (2002). Characterising the health information consumer: an examination of digital television users. *Libri*, 52:16-27.

Huntington, P.; Nicholas, D. and Williams, P. (2003). Characterising and profiling health web user and site thypes: going beyond "hits". *Aslib Proceedings*, 55(5/6):277-289.

Hyman, H.H. and Sheatsley, P.B. (1947). Some reasons why information campaigns fail. *The Public Opinion Quarterly*, 11(3):413-423.

Ingwersen, P. (1995). Information and information science. In: Allen, Kent (ed.). *Encyclopedia of Information Science*, 56, supplement 19. New York: Marcel Dekker, 1995, pp. 137-174.

International Food Information Counsel (1994). *IFIC Review: How Americans Are Making Food Choices*. Retriewed November 29th 1999, from: http://ificinfo.health.org/review/ir-choic.htm

Iversen, G.R. and Norpoth, H. (1987). *Analysis of Variance*. London: Sage Publications.

Janes, J.W. (1994). Other people´s judgements: a comparison of users´and others´ judgements of document relevance, topicality, and utility. *Journal of the American Society for Information Science*, 45(3):160-171.

Jarva, V. (1998). Gendered society, gendered futures. *Futures*, 30(9):901-911.

Johnson, T. (1998). Shettuck lecture: medicine and the media. *The New England Journal of Medicine*, 339(2):87-92.

Johnson, D.J. and Meischke, H. (1993). A comprehensive model of cancer-related information seeking applied to magazines. *Human Communication Research*, 19(3):343-367.

Johnson, D.J.; Andrews, J.E. and Allard, S. (2001). A model for understanding and affecting cancer genetics information seeking. *Library and Information Seeking Research*, 23(4):335-349.

Julien, H.E. (1999). Barriers to adolescents´information seeking for career decision making. *Journal of the American Society for Information Science*, 50(1):48-48.

Julien, H. and Michels, D. (2000). Source selection among information seekers: Ideals and realities. *Canadian Journal of Information and Library Science / La Revuew canadienne des sciences de l'information et de blibliothéconomie*, 25(1):1-18.

Kaplan, G.A. and Salonen, J.T. (1990). Socioeconomic conditions in childhood and ischaemic heart disease during middle age. *British Medical Journal*, 301:1121-1123.

Kassulke, D.; Stenner-Day, K.; Coory, M. and Ring, I. (1993). Information-seeking behaviour and sources of health information: associations with risk factor status in an analysis of three Queensland electorates. *Australian Journal of Public Health*, 17(1):51-57.

Katz, A.; Davis, P. and Scott Findley, S. (2002). Ask and ye shall plan: a health needs assessment of a university population. *Canadian Journal of Public Health*, 93(1):63-66.

Kenkel, D. (1990). Consumer health information and the demands for medical care. *The Review of Economics and Statistics*, LXXII(4):587-595.

Kline, P. (2000). *An Easy Guide to Factor Analysis*. London: Routledge.

Kline, R.L. and Terry, D.R. (1986). Differences in beliefs about heart disease risk factors between men and women. *Journal of The American Dietetic Association*, 86(6):786-788.

Klumbiene, J.; Petkeviciene, J.; Helasoja, V.; Prättälä, R. and Kasmel, A. (2004). Sociodemographic and health behaviour factors associated with obesity in adult populations in Estonia, Finland and Lithuania. *European Journal of Public Health*, 14(4):390-394.

Kodl, M.M. and Mermelstein, R. (2004). Beyond modeling: parenting practices, parental smoking history, and adolescent cigarette smoking. *Addictive Behaviors*, 29:17-32.

Korhonen, T.; Uutela, A; Korhonen, H.J.; and Puska, P. (1998). Impact of mass media and interpersonal health communication on smoking cessation attempts: a study in North Karilia, 1989-1996. *Health Communication*, 3(2):105-119.

Krikelas, J. (1983). Information-seeking behaviour: patterns and concepts. *Drexel Library Quarterly*, 19(2):5-20.

Kuhlthau, C.C. (1993). *Seeking Meaning: A Process Approach to Library and Information Services*. Norwood, N.J.: Ablex.

Kurtz, M. E.; Kurtz, J. C.; Contreras D. and Booth, C. (2003). Knowledge and attitudes of economically disadvantaged women regarding exposure to environmental tobacco smoke. *European Journal of Public Health*, 13(2):171-176.

Kviz, F. J.; Clark, M. A.; Crittenden, K. S.; Warnecke, R. B. and Freels, S. (1995). Age and Smoking Cessation Behaviors. *Preventive Medicine*, 24(3):297-307

Ladwig, K.H.; Marten-Mittag, B.: Formanek, B. and Dammannh, G. (2000). Gender differences of symptom reporting and medical health care utilization in the German population. *European Journal of Epidemiology*, 16: 511-518.

Laufey Steingrímsdóttir; Hólmfríður Þorgeirsdóttir and Stefanía Ægisdóttir (1990). *Könnun á matarræði Íslendinga 1990: 1. Helstu niðurstöður*. Reykjavík: Manneldisráð Íslands. (Rannsóknir Manneldisráðs Íslands, III).

Laufey Steingrímsdóttir; Hólmfríður Þorgeirsdóttir and Stefanía Ægisdóttir (1992). *Könnun á matarræði Íslendinga: 2. Mataræði og mannlíf*. Reykjavík: Manneldisráð Íslands. (Rannsóknir Manneldisráðs Íslands, III).

Lennernäs, M.; Fjellstrom C.; Becker W.; Giachetti, I.; Schmitt, A.; Remaut de Winter, A. and Kearney, A. (1997). Influences on food choice perceived to be important by nationally-representative samples of adults in the European Union. *European Journal of Clinical Nutrition*, 51(suppl. 2):9-15.

Leventhal, H. (1973). Canging attitudes and habits to reduce risk factors in chronic disease. *The American Journal of Cardiology*, 31:571-580.

Mackenbach, J.P.; Huisman, M.; Andersen, O.; Bopp, M.; Borgan, J.; Borrell, C.; Costa, G.; Deboosere, P.; Donkin, A.; Gadeyne, S.; Minder, C.; Regidor, E.; Spadea, T.; Valkonen, T. and Kunst A. (2004). Inequalities in lung cancer mortality by the educational level in 10 European populations. *European Journal of Cancer*, 40:126-135.

Maddux, J.E. and Rogers, R.W. (1983). Protection motivation and self-efficacy: a revised theory of fear appeals and attitude change. *Journal of Experimental Social Psychology*, 19:469-479.

Maibach, E. and Murphy, D.A. (1995). Self-efficacy in health promotion research and practice: conceptualization and measurement. *Health Education Research: Theory and Practice*, 10(1):37-50.

Marcella, R. and Baxter, G. (2001). Citizenship information needs in the UK: results of a national survey of the general public by personal doorstep interview. *Aslib Proceedings*, 52(3):115-123.

Margetts, B.M.; Martinz, J.A.; Saba, A.; Holm, L. and Kearney, M. (1997). Definitions of ´healthy` eating: a pan-EU survey of consumer attitudes to food, nutrition and health. *European Journal of Clinical Nutrition*, 51(suppl. 2):23-29.

Maríanna Garðarsdóttir; Þórður Harðarsson; Guðmundur Þorgeirsson; Helgi Sigvaldason and Nikulás Sigfússon (1998). Samband menntunar og dánartíðni með sérstöku tilliti til kransæðasjúkdóma: hóprannsókn hjartaverndar. *Læknablaðið*, 84(12):913-920.

Måns, R. (1991). Levnadsvanor. In: Diderichsen, F.; Östlin, P; Dahlgren, G. and Hogstedt, C. (eds.). *Klass och ohälsa: en antologi om orsaker till den ojämlika ohälsan*. [Stockholm]: Tiden/Folksam, 1991, pp. 144-163.

McGinnis, M.J. and Foege, W.H. (1993). Actual causes of death in the United States. *JAMA*, 270(18):2207-2212.

McKenzie, P.J. (2002). Communcation barriers and information-seeking counterstrategies in accounts of practitioner-patient encounters. *Library & Information Science Research*, 24:31-47.

McKenzie, P.J. (2003). A model of information practices in accounts of everyday-life information seeking. *Journal of Documentation*, 59(1):19-40.

Melanson, K.J.; Dell'Olio, J.; Carpenter, M.R. and Angelopoulos, T. (2004). Changes in multiple health outcomes at 12 and 24 weeks resulting from 12 weeks of exercise, counseling with or without dietary counseling in obese adults. *Nutrition*, 20(10):849-856.

Mettlin, C. and Cummings, M. (1982). Communication and behavior change for cancer control. *Progress in Clinical & Biological Research*, 83:135-148.

Metoyer-Duran, C. (1993). Information gatekeepers. *Annual Review of Information Science and Technology (ARIST)*, 28:111-150.

Misra, R. and Aguillon, S. (2001). Predictors of health behaviors in rural adolescents. *Health Education*, 101(1):22-30.

Mizzaro, S. (1997). Relevance: the whole history. *Journal of the American Society for Information Science*, 48(9):810-832.

Monneuse, M.O., F. Bellisle and G. Koppert (1997). Eating habits, food and health related attitudes and beliefs reported by French students. *European Journal of Clinical Nutrition*, 51:46-53.

Monteiro, C.A.; Moura, E.C.; Wolney, L.C. and Popkin, B.M. (2004). Socioeconomic status and obesity in adult populations of developing countries: a review. *World Health Organization. Bulletin of the World Health Organization*, 82(12):940-946.

Muha, C. and Smith, K.S. (1989). The use and selection of sources in information seeking: the cancer information service experience. Part 8. *Journal of Health Communication*, 3(3):109-120.

Newell-Withrow, C. (1986). Identifying health seeking behaviors: a study of adolescents. *Adolescence*, XXI(83):641-658.

Netz, Y. and Raviv, S. (2004). Age differences in motivational orientation toward physical activity: an application of social-cognitive theory. *The Journal of Psychology*, 138(1):35-48.

Newell-Withrow, C. (1986). Identifying health seeking behaviors: a study of adolescents. *Adolescence*, XXI(83):641-658.

Nicholas, D.; Huntington, P.; Williams, P. and Vickery, P. (2001). Health information: an evaluation of the use of touch screen kiosks in two hospitals. *Health Information and Libraries Journal*, 18:213-219.

Nielsen, N.R.; Schnohr, P.; Jensen, G. and Gronbæk, M. (2004). Is the relationship between type of alcohol and mortality influenced by socio-economic status? *Journal of Internal Medicine*, 255:280-288.

Nikulás Sigfússon; Gunnar Sigurðsson; Helgi Sigvaldason and Vilmundur Guðnason (2003). Breytingar á reykingavenjum miðaldra og eldri Íslendinga síðastliðin þrjátíu ár og ástæður þeirra: niðurstöður úr hóprannsóknum Hjartaverndar. *Læknablaðið*, 89(6). Retrieved June 25th, from: http://www.laeknabladid.is/2003/6/fraedigreinar//nr/1329/

Notkun heimila og einstaklinga á tæknibúnaði og Interneti árið 2005 (24.6.2005). *Hagtíðindi*, 90(33):1-55. Retrived June 31st 2005, from: http://www.hagstofa.is/lisalib/getfile.aspx?ItemID=1326

Nutbeam, D. (2000). Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, 15(3):259-267.

Oei, T. and Morawska, A. (2004). A cognitive model of binge drinking: the influence of alcohol expectancies and drinking refusal self-efficacy. *Addictive Behaviors*, 29:159-179.

O'Keefe, G.J.; Boyd, H.H. and Brown, M.R. (1998). Who learns preventive health care information from where: cross-channel and repertoire comparisons. *Health Communication*, 10(1):25-36.

Oliver, A. and Nutbeam, D. (2003). Addressing health inequealities in the United Kingdom: a case study. *Journal of Public Health Medicine*, 25(4):281-287.

Osler, M.; Lous, J. and Rasmussen, N.K. (1992). Knowledge, attitudes and cardiovascular risk-factors in Danish adults. Scandinavian Journal of Social Medicine, 20(3):151-157.

Osler, M. and Schroll, M. (1995). Lifestyle and prevention of ischaemic heart disease in Denmark: changes in knowledge and behaviour 1982-1992. *European Journal of Public Health*, 5:109-112.

Pennbridge, J.; Moya, R. and Rodrigues, L. (1999). Questionnaire survey of California consumers´ use and rating of sources of health care information including the Internet. *Western Journal of Medicine*, 171(5/6):302.

Pettigrew, K.E.; Fidel, R. and Bruce, H. (2001). Conceptual frameworks in information behavior. *Annual Review of Information Science and Technology (ARIST)*, 35:43-78.

Pitsavos, C.; Panagiotakos, D.B.; Lentzas, Y. and Stefanadis, C. (2005). Epidemiology of leisure-time physical activity in socio-demographic, lifestyle and psychological characteristics of men and women in Greece: The ATTICA Study. *BMC Public Health*, 5(37). Retrieved May 25th, from: ISI Web of knowledge.

Pors, Niels Ole (2003). Loyalty and scepticism among members of a professional union: the case of the Union of Librarians in Denmark. *New Library World*, 104(1184/1185):20-28.

Prättälä, R.; Berg, M.A. and Puska, P. (1992). Diminishing or increasing contrasts? Social class variation in Finnish food consumption patterns, 1979-1990. *European Journal of Clinical Nutrition*, 46:279-287.

Prättälä, R.; Groth, M.V.; Oltersdorf, U.S.; Roos, G.M.; Sekula, W. and Toumainen, H.M. (2003). Use of butter and cheese in 10 European countries: a case of contrasting educational differences. *European Journal of Public Health*, 13:124-132.

Public Health Agency of Canada (29.11.2002). *Healthy Lifestyle: Strenghening the Effectiveness of Lifestyle Approaches to Improve Health.* Retrieved February 12th 2005, from: http://www.phac-aspc.gc.ca/ph-sp/phdd/docs/healthy/chap1.html

Pugh, K.L.; Kropf, N.P. and Greene, R.R. (1994). Planning health education for older adults: the use of a health model and interview data. *Gerontology and Geriatrics Education*, 15(2):3-17.

Rakowsky, W.; Assaf, A.R.; Lefebvre, R.C.; Lasater, T.M.; Niknian, M. and Caraleton, R.A. (1990). Information -seeking about health in a community sample of adults: correlates and assoications with other health-related practices. *Health Behaviour Quarterly*, 17(4):379-393.

Reagan, J. (1996). The "repertoire" of information sources. *Journal of Broadcasting*, 40(1):112-121.

Reagan, J. and Collins, J. (1987). Sources for health care information in two small communities. *Journalism Quarterly*, 64(2-3):560-563, 676.

Reime, B.; Novak, P.; Born, J.; Hagel, E. and Wanek, V. (2000). Eating Habits, health Status, and concern about health: a study among 1641 employees in the German metal industry. *Preventive Medicine*, 30(4):295-301.

Rimal, R.N. (2001). Perceived risk and self-efficacy as motivators: understanding individuals´long-term use of health information. *Journal of Communication*, 51(4):633-654.

Rimal, R.N.; Flora, J.A. and Schooler, C. (1999). Achieving improvements in overall health orientation: effects of campaign exposure, information seeking, and health media use. *Communication Research*, 26(3):322-348.

Roininen, K.; Tuorila, H.; Zandstra, E.H.; de Graaf, C.; Vehkalahti, K.; Stubenitsky, K. and Mela, D.J. (2001). Differences in health and taste attitudes and reported behaviour among Finnish, Dutch and British consumers: a cross-national validation of the Health and Taste Attitude Scales (HTAS). *Appetite*, 37:33-45.

Saracevic, T. (1975). Relevance: a review of and a framework for the thinking on the notion in information science. *Journal of the American Society for Information Science*, 26(6):321-343.

Saracevic, T. (1996). Relevance reconsidered ´96. In: Ingwersen, P. and Pors, N.O. (eds.). *CoLIS2: Second International Conference on Conceptions of Library and Information Science: Integration in Perspective: October 13-16, 1996*. Copenhagen: The Royal School of Librarianship, 1996, pp. 201-218.

Sarafino, E.P. (1994). *Health Psychology: Biopsychosocial Interactions* (2nd ed.). New York: John Wiley & Sons, Inc.

Savolainen, R. (1995). Everyday life information seeking: findings and methodological questions of an empirical study. In: Beaulieu, M. and Pors, N.O. (eds.). *Proceedings: the 1st British-Nordic Conference on Library and Information Studies: 22-24 May 1995 Copenhagen*. Copenhagen: The Royal School of Librarianship, 1995, pp. 313-331.

Savolainen, R. (2004). Enthusiastic, realistic and critical: discourses of Internet use in the context of everyday life information seeking. *Information Research*, 10(1):paper 198. Retrieved March 10th 2005, from: http://InformationR.net/ir/10-1/paper198.html

Savolainen, R. and Kari, J. (2004). Placing the Internet in information source horizons: a study of information seeking by internet users in the context of self-development. *Library & Information Science Research*, 26:415-433.

Schamber, L. (1994). Relevance and information behavior. *Annual Review of Information Science and Technology (ARIST)*, 29:3-48.

Schamber, L.; Eisenber, M.B. and Nilan, M. (1990). A re-examination of relevance: toward a dynamic, situational definition. *Information Processing & Management*, 26(6):755-776.

Scholz, U.; Doña, B.G.; Sud, S. and Schwarzer, R. (2002). Is general self-efficacy a universal construct?: psychometric findings from 25 countries. *European Journal of Psychological Assessment*, 18(3):242-251.

Schutz, A. (1946). The well-informed citizen: an essay on the social distribution of knowledge. *Social Research*, 13:463-478.

Schwarzer, R. and Fuchs, R. (1996). Self-efficacy and health behaviours. In: Conner, M.. and Norman, P. (eds.). *Predicting Health Behaviour: Research and Practice With Social Cognition Models*. Buckingham: Open University Press, 1996, pp. 163-195.

Shepherd, R. and Stockley, L. (1987). Nutrition knowledge, attitudes, and fat consumption. *Journal of The American Dietetic Association*, 87(5):615-619.

Shiloh, S.; Ben-Sinai, R. and Keinan, G. (1999). Effects of controllability, predictability, and informatoin-seeking style on interest in predictive genetic testing. *Personality and Social Psychology Bulletin*, 25(10):1187-1195.

Shröder, H.; Rohlfs, I.; Schmeltz, E.M. and Marrugat, J. (2004). Relationship of socioeconomic status with cardiovascular risk factors and lifestyle in a Mediterranean population. *European Journal of Nutrition*, 43(2):77-85.

Sigríður Lára Guðmundsdóttir; Díana Óskarsdóttir; Leifur Franzson; Ólafur Skúli Indriðason and Gunnar Sigurðsson (2004). Samband líkamlegrar þjálfunar við þyngdarstuðul, fitumassa og gripstyrk í íslensku þýði. *Læknablaðið*, 90(6). Retrieved June 25th, from: http://www.laeknabladid.is/2004/6/fraedigreinar//nr/1621/

Sigríður Jakobínudóttir and Anna Björg Aradóttir (1996). Heilsuefling, aðferðir og áherslur. In: *Heilsuefling*. Reykjavík: Landlæknisembættið, 1996, pp. 7-16. (Heilbrigðisskýrslur. Fylgirit 1996; nr. 2).

Skinner, H.; Biscope, S. and Poland, B. (2003). Quality of internet access: barrier behind internet statistics. *Social Science & Medicine*, 57:875-880.

Slevin, M.L.; Terry, Y.; Hallett, N.; Jefferies, S.; Launder, S.; Plant, R.; Wax, H. and McElwain, T. (1988). BACUP-the first two years: evaluation of a national cancer information service. *Brithis Medical Journal*, 297(6649):669-672.

Sligo, F.X. and Jameson, A.M. (2000). The knowledge-behavior gap in use of health information. *Journal of the American Society for Information Science*, 51(9):858-869.

Smith, G.D.; Hart, C.; Blane, D. and Hole, D. (1998). Adverse socioeconomic conditions in childhood and cause specific adult mortality: prospective observational study. *British Medical Journal*, 316(7145):1631-1635.

Smith M.S.; Wallston K.A. and Smith C.A (1995). The development and validation of the perceived health competence scale. *Health Education Research,* 10(1):51-64.

Solomon, P. (1997a). Discovering information behavior in sense making. II. The social. *Journal of the American Society for Information Science*, 48(12):1109-1126.

Solomon, P. (1997b). Discovering information behavior in sense making. III. The person. *Journal of the American Society for Information Science*, 48(12):1127-1138.

Sonnenwald, D.H. (1998). Evolving perspecitves of human information behaviour: contexts, situations, social networks and informatin horizons. In: Wilson, T.D. and Allen, D.K. (eds.). *Exploring the Contexts of Information Behaviour*. London: Taylor Graham, 1998, pp. 176-190.

Spink, A. and Cole, C. (2001). Information and poverty: information-seeking channels used by African American low-income households. *Library & Information Science Research*, 23(1):45-65.

Spink, A.; Greisdorf, H. and Bateman, J. (1998). From highly relevant to not relevant: examining different regions of relevance. *Information Processing & Management*, 34(5):599-621.

Stevens, M.; Lemmink, K.A.P.M.; van Heuvelen, M.J.G.; de Jong, J. and Rispens, P. (2003). Groning Active Living Model (GALM): stimulating physical activity in sedentary older adults; validation of the behavioural change model. *Preventive Medicine*, 37:561-570.

Stefán Ólafsson; Karl Sigurðsson and María J. Ammendrup (1999). *Lífskjör, lífshættir og lífsskoðun eldri borgara á Íslandi 1988-1999: Kynslóðagreining og samanburður milli landa.* [Reykjavík]: Háskóli Íslands, Félagsvísindastofnun.

Stephens, S.; Cellucci, T. and Gregory, J. (2004). Comparing stage of change measures in adolescent smokers. *Addictive Behaviors*, 29(4):759-764

Stewart, D.E.; Abbey, S.E.; Shnek, Z.M.; Irvine, J. and Grace, S.L. (2004). Gender differences in health information needs and decisional preferences in patients recovering from an acute ischemic coronary event. *Psychosomatic Medicine*, 66:42-48.

Stock, C.; Wille, L. and Kramer, A. (2001). Gender-specific health behaviors of German university students predict the interest in campus health promotion. *Health Promotion International*, 16(2):145-154.

Strecher, V.J.; DeVellis, B.M.; Becker, M.H. and Rosenstock, I.M. (1986). The role of self-efficacy in achieving health behaviour change. *Health Education Quarterly*, 13(1):73-91.

Suls, J. (1982). Social support, interpersonal relations, and health: benefits and liabilities. In: Sanders, G.S. and Suls, J. (eds.). *Social Psychology of Health and Illness*. Hillsdale, NJ: L. Erlbaum Associates, 1982, pp. 255-277.

Tabachnick. B.G. and Fidell, L.S. (1989). *Using Multivariate Statistics* (2nd ed.). Cambridge: Harper & Row.

Tang, R. and Solomon, P. (1998). Toward an understanding of the dynamics of relevance judgment: an analysis of one person´s search behavior. *Information Processing & Management*, 34(2/3):237-256.

Tang, R. and Solomon, P. (2001). Use of relevance criteria across stages of document evaluation: on the complementary of experimental and naturalistic studies. *Journal of the American Society for Information Science and Technology*, 52(8):676-685.

Taylor, R.S. (1968). Question-negotiation and information seeking in libraries. *College and Research Libraries,* 29:178-194.

Taylor, R.S. (1991). Information use environments. *Progress in Communication Science*. Norwood, NJ: Ablex, p. 217-255.

Teasdale, T.W.; Sørensen, T.I.A. and Stunkard, A.J. (1990). Genetic and early environmental componenets in sociodemographic influences on adult body fatness. *BMJ*, 300:1615-1618.

Thomas, J. (1980). The relationship between knowledge about food and nutrition and food choice. In: Turner, M. (ed.) *Nutrition and Lifestyles*. London: Applied Science Publishers, 1980, pp. 157-167.

Thompson, J.L.; Wolfe, V.K.; Wilson, N.; Pardilla, M.N. and Perez, G. (2003). Peronal, social, and environmental correlates of physical activity in Native American women. *American Journal of Preventive Medicine*, 25(3Si):53-60.

Tichenor, P.J.; Donohue, G.A. and Olien, C.N. (1970). Mass media flow and differential growth in knowledge. *Public Opinion Quarterly*, 34:159-170.

Toms, E.G. (2000). Serendipitous information retrieval. *Proceedings of the First DELOS Network Searching and Querying in Digital Libraries, Zurich, Switzerland, December, 11-12, 2000*. Retrived February 2nd 2003, from: http://www.ercim.org/publication/ws-proceedings/DelNoe01/3_Toms.pdf

Tunstall-Pedoe, H.; Kullasmaa, K.; Mahonen, M.; Tolonen, H.; Ruokokoski, E. and Amouyel, P. (May 8th 1999). Contribution of trends in survival and coronar y-event rates to changes in coronary heart disease mortality: 10-year results from 37 WHO MONICA Project populations. *The Lancet*, 353(9164):1547-1557.

Tunstall-Pedoe, H.; Vanuzzo, D.; Hobbs, M.; Mahonen, M.; Cepaitis, Z.; Kuulasmaa, K. and Keil, U. **(**2000). Estimation of contribution of changes in coronary care to improving survival, event rates, and coronary heart disease mortality across the WHO MONICA Project populations. *The Lancet*, 355(Febr. 26):688-700.

Valente, T.; Poppe, P.R. and Merritt, A.P. (1996). Mass media generated interpersonal communcation as sources of information about family planning. *Journal of Health Communication*, 1:259-273.

Varo, J.J.; Marínez-González, M.A.; Irala-Estévez, J. de; Kearney, J.; Gibney, M. and Marínez, J.A. (2003). Distribution and determinants of sedentary lifestyles in the European Union. *International Journal of Epidemiology*, 32(1):138-146.

Vaez, M. and Laflamme, L. (2003). Health behaviours, self-rated health, and quality of life: a study among first-year Swedish university students. *Journal of American College Health*, 51(4):156-162.

Viswanath, K. and Finnegan, J.R. (1996). The knowledge gap hypothesis: twenty-five years later. *Communication Yearbook*, 19:187-227.

Von Ah, D.; Ebert, S.; Ngamvitroj, A.; Park, N. and Kang, D. (2004). Predictors of health behaviours in college students. *Journal of Advanced Nursing*, 48(5):463-474.

Wade, S. and Schramm, W. (1969). The mass media as sources of public affairs, science, and health knowledge. *Public Opinion Quarterly*, 33:197-209.

Wallston, K.A. (1992). Hocus-pocus, the focus isn´t strictly on locus: Rotter´s social learning theory modified to health. *Cognitive Theory and Research*, 16:183-199.

Williams, P.; Huntington, P. and Nicholas D. (2003). Health information on the internet: a qualitative study of NHS Direct Online users. *Aslib Proceedings*, 55(5/6):304-312.

Williamson, K. (1997). The information needs and information-seeking behaviour of older adults: an Australian study. In: Vakkari, P.; Savolainen, R. and Dervin, B. (eds). *Information Seeking in Context: Proceedings of an International Conference on Research in Information Needs, Seeking and Use in Different Contexts, 14-16 August, 1996, Tampere, Finland.* London: Taylor Graham, 1997, pp. 337-350.

Wilson, T.D. (1981). On user studies and information needs. *Journal of Documentation*, 37(1):3-15.

Wilson, T.D. (1984). The cognitive approach to information-seeking behaviour and information use. *Social Science Information Studies*, 4:197-204.

Wilson, T.D. (1997). Information behaviour: an interdisciplinary perspective. *Information Processing & Management*, 33(4):551-572.

Wilson, T.D. (2000). Human information behaviour. *Informing Science*, 3(2). Retrieved January 14th 2002, from: http://inform.nu/Articles/Vol3/v3n2p49-56.pdf

Wilson, T.D. and Walsh, C. (1996). *Information Behaviour: An Inter-Disciplinary Perspective. British Library Research and Innovation Report 10*. Retrieved August 3rd 2005, from: http://informationr.net/tdw/publ/infbehav/

Winkelby, M.A.; Feighery, E.; Dunn, M.; Kole, S.; Ahn, D. and Killen, J.D. (2004). Effects of an advocacy intervention to reduce smoking among teenagers. *Archives of Pediatrics & Adolescent Medicine*, 158(3):269-275.

World Health Organization (1999). *Health Promotion (HPR): Ottawa Charter for Health Promotion: First International Conference on Health Promoting, Ottawa, 21 November 1986.* Retrived December 12th 2002, from: http://www.who.int/about/definition/en/

World Health Organization (2002). *Preamble to the Constitution of the World Health Organization as Adopted by the International Health Conference, New York, 19-22 June, 1946; Signed on 22 July 1946 by the Representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and Entered Into Force on 7 April 1948.* Retriewed: December 21th 2002, from: http://www.who.int/about/definition/en/

World Health Organization (9.3.2003). *Nutrition*. Retriewed: January 15th 2004, from: http://www.who.int/nut/obs.htm

Yancey, A.K.; Wold, C.M.; McCarthy, W.J.; Weber, M.D.; Lee, B.; Simon, P.A. and Fielding, J.E. (2004). Physical inactivity and overweight among Los Angeles County adults. *American Journal of Preventive Medicine*, 27(2):146-152.

Yoon, K. and Nilan, M.S. (1999). Toward a reconceptualization of information seeking research: focus on the exchange of meaning. *Information Processing & Management*, 35(6):871-890.

APPENDIX 1

Appendix 1 contains an english translation of the letter and the questionnaire that was sent out to the study sample.

Survey of the possibilities to obtain Information about health and lifestyle

Dear recipient

A survey is taking place to investigate various factors that may affect people's possibilities to obtain information about health and lifestyle. Furthermore, questions are asked about health, daily routine and several background factors. The survey is conducted by Ágústa Pálsdóttir lector in information- and librarian science at the University of Iceland in cooperation with The Social Science Research Institute.

Your name was randomly selected from a group of people at the age 18 to 80 to which the questionnaire has been sent.

The survey has been approved by The Icelandic Data Protection Authority and all further work on answers and data will be kept according to the The Icelandic Data Protection Authority instructions. Your name will never be displayed during the processing of the results, and no information will be traceable back to any individual.

I hereby ask you to participate in the survey. Please notice that you don't have to answer specific questions or the questionnaire in whole. I would however very much appreciate if you would consider answering all the questions.

The estimated time to answere the questionnaire is 15-30 minutes. Please fill out the included questionnaire and return it as soon as possible. Included is an envelope with pre-paid postage stamp.

Lottery: All people that return the filled out questionnaire to The Social Science Research Institute will be included in a lottery. The winnings are four gift certificates valid in Kringlan, one of the value 20,000 krones and three of the value 15,000 krones each. ***Please keep this letter safe***, it is your lottery ticket. You will find your number at the bottom of the letter. The winning numbers will be published on The Social Science Research Institute website www.fel.hi.is after February 1st 2003. Winnings should be retrieved within one year.

If you need any further information about the survey, please feel free to contact Ágústa Pálsdóttir by telephone at 525-4507 (email agustap@hi.is) or The Social Science Research Institute by telephone at 525-4545 (email felagsvisindastofnun@hi.is).

Best regards,

Ágústa Pálsdóttir Assistant professor of library and information science	Friðrik H. Jónsson Director of The Social Science Institute

Please put an X in the most appropriate boxes. Please tick only one of the boxes for each question, unless otherwise specifically asked for in the question.

1. Are you male or women?
   □1 Male
   □2 Female

2. What year were you born? 19_____

3. What is your marital status?
   □1 Married
   □2 Living together
   □3 Divorsed
   □4 Single
   □5 Widow/widower

4. How many persons is part of your household, including yourself? _____

5. Where do you live?
   □1 The capital area
   □2 Small town
   □3 Rural area

6. What is your level of education?
   □1 Primary school
   □2 Vocational training
   □3 Secondary school, vocational
   □4 Secondary school, academic
   □5 Special school on a university level
   □6 University (3 years or longer: BA, BEd, BS, candidatsexam, MA, MS, doctoral degree
   □7 Other studies, what?
   _____

7. What is your profession?
   - □1 Unskilled work, labour
   - □2 Machine operators and assemblers (e.g. factories, food industry) and drivers
   - □3 Shop sales workers or service workers
   - □4 Industrial work
   - □5 Agriculture or fishery (farmers, fishermen)
   - □6 Clerks
   - □7 Skilled work (e.g. police or assistant nurse)
   - □8 Professionals – or technical work (e.g. lawyers, computer science, librarians)
   - □9 Management or own business
   - □10 Home working (not in a paid work)
   - □11 Unemployed
   - □12 Student
   - □13 Other, what? _____

8. What was the amount of your household income last month? _____

9. What is (was) your fathers' main profession?
   - □1 Unskilled work, labour
   - □2 Machine operators and assemblers (e.g. factories, food industry) and drivers
   - □3 Shop sales workers or service workers
   - □4 Industrial work
   - □5 Agriculture or fishery (farmers, fishermen)
   - □6 Clerks
   - □7 Skilled work (e.g. police or assistant nurse)
   - □8 Professionals – or technical work (e.g. lawyers, computer science, librarians)
   - □9 Management or own business
   - □10 Home working (not in a paid work)
   - □11 Unemployed
   - □12 Student
   - □13 Other, what? _____

10. What is (was) your mothers' main profession?
    - □1 Unskilled work, labour
    - □2 Machine operators and assemblers (e.g. factories, food industry) and drivers
    - □3 Shop sales workers or service workers
    - □4 Industrial work
    - □5 Agriculture or fishery (farmers, fishermen)
    - □6 Clerks
    - □7 Skilled work (e.g. police or assistant nurse)
    - □8 Professionals – or technical work (e.g. lawyers, computer science, librarians)
    - □9 Management or own business
    - □10 Home working (not in a paid work)
    - □11 Unemployed
    - □12 Student
    - □13 Other, what? _____

In the following questions you are asked about issues relating to information about health and lifestyle.

11. How interested are you in information about health and lifestyle
    - □1 Very interested
    - □2 Rather interested
    - □3 Moderately interested
    - □4 Rather small interest
    - □5 No interest at all

12. How often do you seek information about health and lifestyle?
    - □1 Very often
    - □2 Rather often
    - □3 Rather seldom
    - □4 Very seldom
    - □5 Never

13. Do you talk about health and lifestyle with others?

□1 Very often
□2 Rather often
□3 Rather seldom
□4 Very seldom
□5 Never

If you ticked “Never” (13.5) please answer question 15 next.

14. Which of the following reasons for discussing health and lifestyle apply best for you? Please tick <u>one</u> of the possibilities that are offered.

I discuss this issue with others because:

□1 I want to inform others. I feel that it is important to tell them about what I have read or heard.
□2 Their comments on and judgement about what I have read is important to me.
□3 I want to make sure that I have interpreted the information correctly.
□4 I want their comments on what the new knowledge might mean practically.
□5 There is no special reason, I just do it because it is enjoyable to discuss with others.
□6 Nothing of the above mentioned reasons, I do it because

_____
_____

Following are some questions that name sources of information about health and lifestyle. The same list of sources appears at all the questions. Please select the most appropriate choice for you by ticking one of the boxes for each source.

15. Have you sought information about health and lifestyle in any of the following sources? Please select the most appropriate choice by ticking one of the boxes for each source. You are asked to give an answer for all items of the question.

	Very often	Rather often	Rather seldom	Very seldom	Never
A. Newspapers……....	□1	□2	□3	□4	□5
B. Health journals….....	□1	□2	□3	□4	□5
C. Other journals……..…	□1	□2	□3	□4	□5
D. Brochures from health authorities……	□1	□2	□3	□4	□5
E. Brochures from others than health authorities.....	□1	□2	□3	□4	□5
F. Encyclopaedias or Medical books.....	□1	□2	□3	□4	□5
G. Novels……...……..	□1	□2	□3	□4	□5
H. Newspaper or journal advertises	□1	□2	□3	□4	□5
I. TV or radio news……..….	□1	□2	□3	□4	□5
J. TV or radio entertainment programs.....	□1	□2	□3	□4	□5
K. TV or radio sport programs.….	□1	□2	□3	□4	□5
L. TV or radio documentary programs.....	□1	□2	□3	□4	□5
M. TV or radio discussion programs.....	□1	□2	□3	□4	□5
N. TV or radio advertises..…….....	□1	□2	□3	□4	□5
O. Schools, through education.....	□1	□2	□3	□4	□5
P. Discussions with health professionals.....	□1	□2	□3	□4	□5
Q. Discussions with family, relatives or close friends……	□1	□2	□3	□4	□5
R. Discussions with others (e.g. work mates or sport trainers).....	□1	□2	□3	□4	□5
S. Internet discussion- or newsgroups.....	□1	□2	□3	□4	□5
T. Internet journals or newspapers	□1	□2	□3	□4	□5
U. Websites by the health authorities.....	□1	□2	□3	□4	□5
V. Websites by others than the health authorities.....	□1	□2	□3	□4	□5
W. Advertises on the Internet…..	□1	□2	□3	□4	□5

16. Have you come across information about health and lifestyle in any of the following sources although you were not seeking for these information? Please select the most appropriate choice by ticking one of the boxes for each source. You are asked to give an answer for all items of the question.

	Very often	Rather often	Rather seldom	Very seldom	Never
A. Newspapers……....	□1	□2	□3	□4	□5
B. Health journals….....	□1	□2	□3	□4	□5
C. Other journals……..…	□1	□2	□3	□4	□5
D. Brochures from health authorities……	□1	□2	□3	□4	□5
E. Brochures from others than health authorities.....	□1	□2	□3	□4	□5
F. Encyclopaedias or Medical books.....	□1	□2	□3	□4	□5
G. Novels……...…..	□1	□2	□3	□4	□5
H. Newspaper or journal advertises	□1	□2	□3	□4	□5
I. TV or radio news……..….	□1	□2	□3	□4	□5
J. TV or radio entertainment programs.....	□1	□2	□3	□4	□5
K. TV or radio sport programs.….	□1	□2	□3	□4	□5
L. TV or radio documentary programs.....	□1	□2	□3	□4	□5
M. TV or radio discussion programs.....	□1	□2	□3	□4	□5
N. TV or radio advertises..…….....	□1	□2	□3	□4	□5
O. Schools, through education.....	□1	□2	□3	□4	□5
P. Discussions with health professionals.....	□1	□2	□3	□4	□5
Q. Discussions with family, relatives or close friends……	□1	□2	□3	□4	□5
R. Discussions with others (e.g. work mates or sport trainers).....	□1	□2	□3	□4	□5
S. Internet discussion- or newsgroups.....	□1	□2	□3	□4	□5
T. Internet journals or newspapers	□1	□2	□3	□4	□5
U. Websites by the health authorities.....	□1	□2	□3	□4	□5
V. Websites by others than the health authorities.....	□1	□2	□3	□4	□5
W. Advertises on the Internet…..	□1	□2	□3	□4	□5

17. How useful do you find information about health and lifestyle in the following sources? Please select the most appropriate choice by ticking one of the boxes for each source. You are asked to give an answer for all items of the question.

	Very useful	Rather useful	Rather un-useful	Very un-useful	Don´t know
A. Newspapers…….……....	□1	□2	□3	□4	□5
B. Health journals….....	□1	□2	□3	□4	□5
C. Other journals……..….	□1	□2	□3	□4	□5
D. Brochures from health authorities……	□1	□2	□3	□4	□5
E. Brochures from others than health authorities.....	□1	□2	□3	□4	□5
F. Encyclopaedias or Medical books.....	□1	□2	□3	□4	□5
G. Novels……...…..	□1	□2	□3	□4	□5
H. Newspaper or journal advertises	□1	□2	□3	□4	□5
I. TV or radio news……..….	□1	□2	□3	□4	□5
J. TV or radio entertainment programs.....	□1	□2	□3	□4	□5
K. TV or radio sport programs.….	□1	□2	□3	□4	□5
L. TV or radio documentary programs.....	□1	□2	□3	□4	□5
M. TV or radio discussion programs.....	□1	□2	□3	□4	□5
N. TV or radio advertises..…….....	□1	□2	□3	□4	□5
O. Schools, through education.....	□1	□2	□3	□4	□5
P. Discussions with health professionals.....	□1	□2	□3	□4	□5
Q. Discussions with family, relatives or close friends……	□1	□2	□3	□4	□5
R. Discussions with others (e.g. work mates or sport trainers).....	□1	□2	□3	□4	□5
S. Internet discussion- or newsgroups.....	□1	□2	□3	□4	□5
T. Internet journals or newspapers	□1	□2	□3	□4	□5
U. Websites by the health authorities.....	□1	□2	□3	□4	□5
V. Websites by others than the health authorities.....	□1	□2	□3	□4	□5
W. Advertises on the Internet…..	□1	□2	□3	□4	□5

18. How reliable do you find information about health and lifestyle in the following sources? Please select the most appropriate choice by ticking one of the boxes for each source. You are asked to give an answer for all items of the question.

	Very reliable	Rather reliable	Rather un-reliable	Very un-reliable	Don´t know
A. Newspapers……....	□1	□2	□3	□4	□5
B. Health journals….....	□1	□2	□3	□4	□5
C. Other journals……..…	□1	□2	□3	□4	□5
D. Brochures from health authorities……	□1	□2	□3	□4	□5
E. Brochures from others than health authorities.....	□1	□2	□3	□4	□5
F. Encyclopaedias or Medical books.....	□1	□2	□3	□4	□5
G. Novels……...…..	□1	□2	□3	□4	□5
H. Newspaper or journal advertises	□1	□2	□3	□4	□5
I. TV or radio news……..….	□1	□2	□3	□4	□5
J. TV or radio entertainment programs.....	□1	□2	□3	□4	□5
K. TV or radio sport programs.….	□1	□2	□3	□4	□5
L. TV or radio documentary programs.....	□1	□2	□3	□4	□5
M. TV or radio discussion programs.....	□1	□2	□3	□4	□5
N. TV or radio advertises..……....	□1	□2	□3	□4	□5
O. Schools, through education.....	□1	□2	□3	□4	□5
P. Discussions with health professionals.....	□1	□2	□3	□4	□5
Q. Discussions with family, relatives or close friends……	□1	□2	□3	□4	□5
R. Discussions with others (e.g. work mates or sport trainers).....	□1	□2	□3	□4	□5
S. Internet discussion- or newsgroups.....	□1	□2	□3	□4	□5
T. Internet journals or newspapers	□1	□2	□3	□4	□5
U. Websites by the health authorities.....	□1	□2	□3	□4	□5
V. Websites by others than the health authorities.....	□1	□2	□3	□4	□5
W. Advertises on the Internet…..	□1	□2	□3	□4	□5

Here are some statements about issues related to information about health and lifestyle. You are asked to check every statement carefully and let know how you approve or disapprove of these statements by ticking the box that is most appropriate for you.

19. I think that the information about health and lifestyle that I might need don´t exist.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
20. Information about health and lifestyle that I might need exist but I don´t think that I have access to them.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
21. I don´t know where to seek for information about health and lifestyle.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
22. I have difficulties getting away from home to seek for information about health and lifestyle.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
23. I can't afford to obtain information about health and lifestyle	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
24. I don't have time to seek information about health and lifestyle.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
25. There are too few information about health and lifestyle in Icelandic.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much

26. Information about health and lifestyle are often complicated and difficult to understand.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
27. It's difficult to find information that contain useful advice about how to protect ones health.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
28. Health specialists don't always agree about what is best to do to protect ones health and therefore I don't know what information I can trust	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much

Here are some statements about issues related to people´s health. You are asked to check every statement carefully and tell how you approve or disapprove of it by ticking the box that is most appropriate for you. There are no "right" or "wrong" answers. It is important that you answer all the items, so please don´t leave any statement on the list unanswered.

29. I handle myself well with respect to my health.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
30. No matter how hard I try, my health just doesn't turn out the way I would like	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
31. It is difficult for me to find effective solutions to the health problems that come my way.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
32. I succeed in the projects I undertake to improve my health.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much

33. I'm generally able to accomplish my goals with respect to my health.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
34. I find my efforts to change things I don't like about my health are ineffective	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
35. Typically, my plans for my health don't work out well	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much
36. I am able to do things for my health as well as most other people.	□1 Disagree very much □2 Disagree □3 Neither agree nor disagree □4 Agree □5 Agree very much

Following are some general questions about health and daily habits in connection with smoking, use of alcohol and drugs, diet and exercise. Please select the most appropriate choice by ticking one of the boxes for each question.

37. How do you estimate your physical health?
    - □1 Very good
    - □2 Rather good
    - □3 Moderately good
    - □4 Rather bad
    - □5 Very bad

38. How much do you usually smoke?
    - □1 More than 20 cigarettes per day
    - □2 11-20 cigarettes per day
    - □3 1-10 cigarettes per day
    - □4 Less than one cigarette per day
    - □5 I don't smoke

39. How often do you usually consume alcohol?
- □1 Four times in a week or more often
- □2 2-3 times in a week
- □3 2-4 times in a month
- □4 Ones in a month or less often
- □5 Never

40. How often do you usually use drugs?
- □1 Four times in a week or more often
- □2 2-3 times in a week
- □3 2-4 times in a month
- □4 Ones in a month or less often
- □5 Never

41. How often do you usually consume vegetables or fruits?
- □1 Daily
- □2 1-6 times in a week
- □3 1-3 times in a month
- □4 More seldom
- □5 Never

42. How often do you usually consume light food products (for example low fat or skimmed milk, low fat cheese, fish or lean meat) rather than food products that are higher in fat?
- □1 Always
- □2 Often
- □3 Occasionally
- □4 Less often
- □5 Never

43. How often do you exercise so that you get breathless, your heartbeat gets stronger or you sweat?
- □1 Three times in a week or more often
- □2 1-2 times in a week
- □3 2-3 times in a month
- □4 Less often
- □5 Never

Thank you for participating.

APPENDIX 2

Appendix 2 contains the original letter and questionnaire in Icelandic.

Könnun á öflun upplýsinga um heilsu og lífsstíl

Ágæti viðtakandi

Unnið er nú að könnun á ýmsum þáttum sem hafa áhrif á möguleika fólks til að afla sér upplýsinga um heilsu og lífsstíl. Einnig er spurt um heilsufar og daglegar venjur. Könnunin er unnin af Ágústu Pálsdóttur lekor í bókasafns- og upplýsingafræði við Háskóla Íslands í samvinnu við Félagsvísindastofnun Háskóla Íslands.

Nafn þitt kom upp í úrtaki fólks á aldrinum 18 – 80 ára sem meðfylgjandi spurningalisti er sendur til.

Könnunin hefur hlotið leyfi Persónuverndar og verður farið með öll gögn samkvæmt fyrirmælum hennar. Fullkominnar nafnleyndar verður gætt við úrvinnslu könnunarinnar. Nafn þitt mun að sjálfsögðu hvergi koma fram og ekki er hægt að rekja neinar upplýsingar til einstaklinga.

Með þessu bréfi biðjum við þig um að taka þátt í könnuninni. Athugaðu að þér er ekki skylt að svara einstökum spurningum né spurningalistanum í heild. Okkur þætti hins vegar vænt um ef þú gætir séð þér fært að svara öllum spurningunum.

Gera má ráð fyrir að það taki um 15-30 mínútur að svara könnuninni. Vinsamlegast fylltu út spurningalistann og sendu eins fljótt og unnt er. Meðfylgjandi er umslag sem má setja ófrímerkt í næsta póstkassa.

Happdrætti: Allir sem senda okkur útfylltan spurningalista eru sjálfkrafa þátttakendur í happdrætti. Ef þú svarar spurningalistanum og sendir hann til Félagsvísindastofnunar áttu möguleika á vinningi. Vinningar eru fjögur gjafakort í Kringlunni, eitt að upphæð 20.000 og þrjú að upphæð kr. 15.000. ***Geymdu þetta bréf vel***, því það gildir sem happdrættismiði. Þú finnur happdrættisnúmer þitt neðst á bréfinu. Vinningsnúmer verða birt eftir 1. febrúar 2003 á heimasíðu Félagsvísindastofnunar www.fel.hi.is. Vinninga skal vitja innan árs.

Ef þú óskar eftir nánari upplýsingum um einhver atriði sem snerta könnunina er þér velkomið að hafa samband við Ágústu Pálsdóttur í síma 525-4507 (netfang: agustap@hi.is) eða starfsfólk Félagsvísindastofnunar Háskóla Íslands í síma 525-4545 (netfang felagsvisindastofnun@hi.is).

Með von um góðar viðtökur,

Ágústa Pálsdóttir
lektor í bókasafns- og upplýsingafræði, félagsvísindadeild

Friðrik H. Jónsson
forstöðumaður Félagsvísindastofnunar

Settu x í þann reit sem á við. Vinsamlegast merktu einungis við einn lið undir hverri spurningu nema annað sé tekið fram.

1. Ert þú karl eða kona?
   - □1 Karl
   - □2 Kona

2. Hvaða ár fæddist þú? 19_____

3. Hver er hjúskaparstaða þín?
   - □1 Gift/kvæntur
   - □2 Í sambúð
   - □3 Fráskilin/n
   - □4 Einhleyp/ur
   - □5 Ekkja/ekkill

4. Hversu margir eru í heimili hjá þér, að þér meðtöldum? _____

5. Hvar býrð þú?
   - □1 Á höfuðborgarsvæðinu
   - □2 Í kaupstöðum eða öðru þéttbýli á landsbyggðinni
   - □3 Í dreifbýli

6. Hvaða námi hefur þú lokið?
   - □1 Skyldunámi, grunnskóla-, gagnfræða-, eða landsprófi
   - □2 Starfsnámi, s.s. sjúkraliða-, póst-, ritara-, lögreglu-, fisvinnslu-, hús„tjórarnámi eða öðru stuttu starfsnámi
   - □3 Verklegu framhaldsnámi/iðnmenntun, s.s. sveins-, meistara-, vélstjóra-, stýrimannaprófi eða tækniteiknun
   - □4 Bóklegu framhaldsnámi, s.s. verslunarprófi, samvinnuskólaprófi eða stúdentsprófi (ekki á háskólastigi)
   - □5 Prófi úr sérskólum á eða við háskólastig, s.s. myndlistarnámi, iðnfræði eða kerfisfræði
   - □6 Próf á háskólastigi (3ja ára háskólanám eða lengra: BA, BEd, BS, kandidatsnám, MA, MS, doktorsnám)
   - □7 Öðru námi, hvaða?

7. Við hvað starfar þú?
   - □1 Ósérhæfð störf, verkamannavinnu
   - □2 Véla- og vélgæslustörf (s.s. í verksmiðjum, matvælaframleiðslu) og bifreiðastörf
   - □3 Afgreiðslu- eða þjónustustörf
   - □4 Iðnaðarstörf
   - □5 Landbúnaðar- eða sjávarútvegsstörf (bændur, sjómenn)
   - □6 Skrifstofustörf
   - □7 Sérhæfð störf (s.s. lögreglufólk, sjúkraliðar)
   - □8 Sérfræðingar- eða tæknistörf (s.s. lögfræðingar, tölvunarfræðingar, bókasafnsfræðingar)
   - □9 Stjórnunarstörf eða með eigin atvinnurekstur
   - □10 Heimavinnandi (ekki í launuðu starfi)
   - □11 Atvinnulaus
   - □12 Í námi
   - □13 Annað, hvað?

     _____

8. Hversu miklar voru heildartekjur heimilisins í síðasta mánuði? _____ krónur

9. Hvert er/var aðalstarf föður þíns?
   - □1 Ósérhæfð störf, verkamannavinnu
   - □2 Véla- og vélgæslustörf (s.s. í verksmiðjum, matvælaframleiðslu) og bifreiðastörf
   - □3 Afgreiðslu- eða þjónustustörf
   - □4 Iðnaðarstörf
   - □5 Landbúnaðar- eða sjávarútvegsstörf (bændur, sjómenn)
   - □6 Skrifstofustörf
   - □7 Sérhæfð störf (s.s. lögreglufólk, sjúkraliðar)
   - □8 Sérfræðingar- eða tæknistörf (s.s. lögfræðingar, tölvunarfræðingar, bókasafnsfræðingar)
   - □9 Stjórnunarstörf eða með eigin atvinnurekstur
   - □10 Heimavinnandi (ekki í launuðu starfi)
   - □11 Atvinnulaus
   - □12 Í námi
   - □13 Annað, hvað?

     _____

10. Hvert er/var aðalstarf móður þinnar?
    - □1 Ósérhæfð störf, verkamannavinnu
    - □2 Véla- og vélgæslustörf (s.s. í verksmiðjum, matvælaframleiðslu) og bifreiðastörf
    - □3 Afgreiðslu- eða þjónustustörf
    - □4 Iðnaðarstörf
    - □5 Landbúnaðar- eða sjávarútvegsstörf (bændur, sjómenn)
    - □6 Skrifstofustörf
    - □7 Sérhæfð störf (s.s. lögreglufólk, sjúkraliðar)
    - □8 Sérfræðingar- eða tæknistörf (s.s. lögfræðingar, tölvunarfræðingar, bókasafnsfræðingar)
    - □9 Stjórnunarstörf eða með eigin atvinnurekstur
    - □10 Heimavinnandi (ekki í launuðu starfi)
    - □11 Atvinnulaus
    - □12 Í námi
    - □13 Annað, hvað?

      _____

Hér á eftir ert þú beðin(n) um að svara spurningum um nokkur atriði sem lúta að upplýsingum um heilsu og lífsstíl.

11. Hversu mikinn áhuga hefur þú á upplýsingum um heilsu og lífsstíl?
    - □1 Mjög mikinn áhuga
    - □2 Frekar mikinn áhuga
    - □3 Í meðallagi
    - □4 Frekar lítinn áhuga
    - □5 Alls engan áhuga

12. Hversu algengt er að þú leitir að upplýsingum um heilsu og lífsstíl?
    - □1 Mjög algengt
    - □2 Frekar algengt
    - □3 Frekar óalgengt
    - □4 Mjög óalgengt
    - □5 Aldrei

13. Talar þú um heilsu og lífsstíl við aðra?

□1 Mjög oft
□2 Frekar oft
□3 Frekar sjaldan
□4 Mjög sjaldan
□5 Aldrei

Ef þú hefur merkt við "Aldrei" (13.5), ertu vinsamlegast beðin(n) um að svara næst spurningu 15.

14. Hver af eftirfarandi ástæðum fyrir því að tala um heilsu og lífsstíl á best við í þínu tilviki? Vinsamlegast gefðu svar þitt til kynna með því að merkja við einn af þeim möguleikum sem eru í boði.

Ég tala við aðra um þessi málefni vegna þess að:

□1 Ég vil fræða aðra, mér finnst mikilvægt að segja öðrum frá því sem ég hef komast að
□2 Mér finnst mikilvægt að heyra athugasemdir annara og fá þeirra mat á þeim upplýsingum sem ég hef
□3 Ég vil vera viss um að ég hafi skilið þær upplýsingar sem ég hef rétt
□4 Ég vil fá ráðleggingar um hvernig ég get notfært mér upplýsingarnar
□5 Það er engin sérstök ástæða fyrir því, ég geri það vegna þess að mér finnst gaman að tala um allt mögulegt við aðra
□6 Ekkert af ofantöldu, ég geri það vegna þess að

Hér koma nokkrar spurningar þar sem tilgreindir eru fjölmiðlar, staðir, upplýsingaveitur eða aðilar þar sem hægt er að fá upplýsingar um heilsu og lífsstíl. Listinn er sá sami við allar spurningarnar. Vinsamlegast merktu við það sem á best við í þínu tilviki með því að setja einn kross við hvern lið í spurningunum.

15. Hefur þú leitað að upplýsingum um heilsu og lífsstíl á einhverjum af eftirfarandi stöðum? Gefðu svar þitt til kynna með því að setja x í þann kassa sem á best við í þínu tilviki. Þú ert vinsamlegast beðin(n) um að svara öllum liðum spurningarinnar.

	Mjög oft	Frekar oft	Frekar sjaldan	Mjög sjaldan	Aldrei
A. Dagblöðum……	□1	□2	□3	□4	□5
B. Tímaritum um heilbrigðismál…..	□1	□2	□3	□4	□5
C. Öðrum tímaritum……..	□1	□2	□3	□4	□5
D. Bæklingum frá aðilum innan heilbrigðiskerfisins……..……..	□1	□2	□3	□4	□5
E. Bæklingum frá einhverjum öðrum	□1	□2	□3	□4	□5
F. Alfræðiritum eða handbókum um heilbrigðismál.....	□1	□2	□3	□4	□5
G. Skáldsögum…….……	□1	□2	□3	□4	□5
H. Auglýsingum í dagblöðum eða tímaritum.....	□1	□2	□3	□4	□5
I. Fréttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
J. Afþreyingarþáttum í sjónvarpi eða útvarpi	□1	□2	□3	□4	□5
K. Íþróttaþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
L. Fræðsluþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
M. Afþreyingarþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
N. Auglýsingum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
O. Skólum – í gegnum nám.....	□1	□2	□3	□4	□5
P. Með að tala við sérfræðinga úr heilbrigðiskerfinu……....…….	□1	□2	□3	□4	□5
Q. Með að tala við fjölskyldumeðlimi, aðra ættingja eða nána vini……..…..	□1	□2	□3	□4	□5
R. Með að tala við aðra (t.d. kunningja, vinnufél. eða íþróttaþjálf.)	□1	□2	□3	□4	□5
S. Umræðu- eða fréttahópum á Internetinu.....	□1	□2	□3	□4	□5
T. Tímarit eða dagblöð á Internetinu..	□1	□2	□3	□4	□5
U. Vefsíðum gefnum út af aðilum innan heilbrigðiskerfisins…….....	□1	□2	□3	□4	□5
V. Vefsíðum útgefnum af öðrum.....	□1	□2	□3	□4	□5
Þ. Auglýsingum á Interneti.....	□1	□2	□3	□4	□5

16. Hefur þú rekist á upplýsingar um heilsu og lífsstíl á einhverjum af eftirfarandi stöðum þó að þú hafir ekki verið að leita sérstaklega eftir slíkum upplýsingum? Gefðu svar þitt til kynna með því að setja x í þann kassa sem á best við í þínu tilviki. Þú ert vinsamlegast beðin(n) um að svara öllum liðum spurningarinnar.

	Mjög oft	Frekar oft	Frekar sjaldan	Mjög sjaldan	Aldrei
A. Dagblöðum……	□1	□2	□3	□4	□5
B. Tímaritum um heilbrigðismál…..	□1	□2	□3	□4	□5
C. Öðrum tímaritum……..	□1	□2	□3	□4	□5
D. Bæklingum frá aðilum innan heilbrigðiskerfisins……..……..	□1	□2	□3	□4	□5
E. Bæklingum frá einhverjum öðrum	□1	□2	□3	□4	□5
F. Alfræðiritum eða handbókum um heilbrigðismál.....	□1	□2	□3	□4	□5
G. Skáldsögum…….……	□1	□2	□3	□4	□5
H. Auglýsingum í dagblöðum eða tímaritum.....	□1	□2	□3	□4	□5
I. Fréttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
J. Afþreyingarþáttum í sjónvarpi eða útvarpi	□1	□2	□3	□4	□5
K. Íþróttaþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
L. Fræðsluþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
M. Afþreyingarþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
N. Auglýsingum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
O. Skólum – í gegnum nám.....	□1	□2	□3	□4	□5
P. Með að tala við sérfræðinga úr heilbrigðiskerfinu……...…….	□1	□2	□3	□4	□5
Q. Með að tala við fjölskyldumeðlimi, aðra ættingja eða nána vini……..…..	□1	□2	□3	□4	□5
R. Með að tala við aðra (t.d. kunningja, vinnufél. eða íþróttaþjálf.)	□1	□2	□3	□4	□5
S. Umræðu- eða fréttahópum á Internetinu.....	□1	□2	□3	□4	□5
T. Tímarit eða dagblöð á Internetinu..	□1	□2	□3	□4	□5
U. Vefsíðum gefnum út af aðilum innan heilbrigðiskerfisins…….....	□1	□2	□3	□4	□5
V. Vefsíðum útgefnum af öðrum.....	□1	□2	□3	□4	□5
Þ. Auglýsingum á Interneti.....	□1	□2	□3	□4	□5

17. Hversu gagnlegar finnast þér upplýsingar um heilsu og lífsstíl á eftirfarandi stöðum vera? Gefðu svar þitt til kynna með því að setja x í þann kassa sem á best við í þínu tilviki. Þú ert vinsamlegast beðin(n) um að svara öllum liðum spurningarinnar.

	Mjög gagn-legar	Frekar gagnlegar	Frekar ógagnlegar	Mjög ógagnlegar	Veit ekki
A. Dagblöðum……	□1	□2	□3	□4	□5
B. Tímaritum um heilbrigðismál…..	□1	□2	□3	□4	□5
C. Öðrum tímaritum……..	□1	□2	□3	□4	□5
D. Bæklingum frá aðilum innan heilbrigðiskerfisins……..……..	□1	□2	□3	□4	□5
E. Bæklingum frá einhverjum öðrum	□1	□2	□3	□4	□5
F. Alfræðiritum eða handbókum um heilbrigðismál.....	□1	□2	□3	□4	□5
G. Skáldsögum……	□1	□2	□3	□4	□5
H. Auglýsingum í dagblöðum eða tímaritum.....	□1	□2	□3	□4	□5
I. Fréttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
J. Afþreyingarþáttum í sjónvarpi eða útvarpi	□1	□2	□3	□4	□5
K. Íþróttaþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
L. Fræðsluþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
M. Afþreyingarþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
N. Auglýsingum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
O. Skólum – í gegnum nám.....	□1	□2	□3	□4	□5
P. Með að tala við sérfræðinga úr heilbrigðiskerfinu……....…….	□1	□2	□3	□4	□5
Q. Með að tala við fjölskyldumeðlimi, aðra ættingja eða nána vini……..…..	□1	□2	□3	□4	□5
R. Með að tala við aðra (t.d. kunningja, vinnufél. eða íþróttaþjálf.)	□1	□2	□3	□4	□5
S. Umræðu- eða fréttahópum á Internetinu.....	□1	□2	□3	□4	□5
T. Tímarit eða dagblöð á Internetinu..	□1	□2	□3	□4	□5
U. Vefsíðum gefnum út af aðilum innan heilbrigðiskerfisins…….....	□1	□2	□3	□4	□5
V. Vefsíðum útgefnum af öðrum.....	□1	□2	□3	□4	□5
Þ. Auglýsingum á Interneti.....	□1	□2	□3	□4	□5

18. Hversu áreiðanlegar finnst þér upplýsingar um heilsu og lífsstíl á eftirfarandi stöðum vera? Gefðu svar þitt til kynna með því að setja x í þann kassa sem á best við í þínu tilviki. Þú ert vinsamlegast beðin(n) um að svara öllum liðum spurningarinnar.

	Mjög áreiðan-legar	Frekar áreiðanlegar	Frekar óáreiðan-legar	Mjög óáreiðan-legar	Veit ekki
A. Dagblöðum……	□1	□2	□3	□4	□5
B. Tímaritum um heilbrigðismál…..	□1	□2	□3	□4	□5
C. Öðrum tímaritum……..	□1	□2	□3	□4	□5
D. Bæklingum frá aðilum innan heilbrigðiskerfisins……..……..	□1	□2	□3	□4	□5
E. Bæklingum frá einhverjum öðrum	□1	□2	□3	□4	□5
F. Alfræðiritum eða handbókum um heilbrigðismál.....	□1	□2	□3	□4	□5
G. Skáldsögum…….……	□1	□2	□3	□4	□5
H. Auglýsingum í dagblöðum eða tímaritum.....	□1	□2	□3	□4	□5
I. Fréttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
J. Afþreyingarþáttum í sjónvarpi eða útvarpi	□1	□2	□3	□4	□5
K. Íþróttaþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
L. Fræðsluþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
M. Afþreyingarþáttum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
N. Auglýsingum í sjónvarpi eða útvarpi.....	□1	□2	□3	□4	□5
O. Skólum – í gegnum nám.....	□1	□2	□3	□4	□5
P. Með að tala við sérfræðinga úr heilbrigðiskerfinu……....…….	□1	□2	□3	□4	□5
Q. Með að tala við fjölskyldumeðlimi, aðra ættingja eða nána vini……..…..	□1	□2	□3	□4	□5
R. Með að tala við aðra (t.d. kunningja, vinnufél. eða íþróttaþjálf.)	□1	□2	□3	□4	□5
S. Umræðu- eða fréttahópum á Internetinu.....	□1	□2	□3	□4	□5
T. Tímarit eða dagblöð á Internetinu..	□1	□2	□3	□4	□5
U. Vefsíðum gefnum út af aðilum innan heilbrigðiskerfisins…….....	□1	□2	□3	□4	□5
V. Vefsíðum útgefnum af öðrum.....	□1	□2	□3	□4	□5
Þ. Auglýsingum á Interneti.....	□1	□2	□3	□4	□5

Hér koma nokkrar staðhæfingar um atriði sem tengjast upplýsingum um heilsu og lífsstíl. Þú ert beðin(n) um að athuga hverja staðhæfingu vandlega. Síðan skaltu segja til um hversu sammála eða ósammála þú ert þessum staðhæfingum með því að merkja í þann kassa sem lýsir afstöðu þinni best.

19. Ég held að þær upplýsingar um heilsu og lífsstíl sem ég gæti haft þörf fyrir séu ekki til	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
20. Upplýsingar um heilsu og lífsstíl sem ég gæti haft þörf fyrir eru til en ég hef ekki aðgang að þeim	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
21. Ég veit ekki hvar ég get leitað að upplýsingum um heilsu og lífsstíl	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
22. Ég á erfitt með að komast að heiman til að leita að upplýsingum um heilsu og lífsstíl	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
23. Ég hef ekki ráð á að verða mér úti um upplýsingar um heilsu og lífsstíl	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
24. Ég hef ekki tíma aflögu til að leita að upplýsingum um heilsu og lífsstíl	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála

25. Það er of lítið til af upplýsingum um heilsu og lífsstíl á íslensku	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
26. Upplýsingar um heilsu og lífsstíl eru oft flóknar og erfitt að skilja þær	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
27. Það er erfitt að finna upplýsingar með gagnlegum ráðum um heilsuvernd	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
28. Sérfræðingar eru ekki alltaf sammála um hvað sé best að gera til að vernda heilsuna og þess vegna veit ég ekki hvaða upplýsingum ég get treyst	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála

Hér koma nokkrar staðhæfingar um ýmis atriði sem tengjast heilsu fólks. Þú ert beðin(n) um að athuga hverja staðhæfingu vandlega. Síðan skaltu segja til um hversu sammála eða ósammála þú ert þessum staðhæfingum með því að merkja í þann kassa sem lýsir afstöðu þinni best. Það eru engin "rétt" eða "röng" svör. Mikilvægt er að þú svarir öllum atriðunum svo vinsamlegast ekki sleppa úr neinni staðhæfingu á þessum lista.

29. Ég sinni heilsu minni vel	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
30. Það er sama hversu mikið ég reyni, heilsufar mitt verður ekki eins gott og ég vildi	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
31. Það er erfitt fyrir mig að finna lausnir sem duga til að leysa heilsufarsvandamál mín	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
32. Það sem ég geri mér til heilsubótar tekst vel	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
33. Almennt næ ég þeim markmiðum sem ég set mér um heilsu mína	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
34. Tilraunir til að breyta því sem mér líkar ekki við heilsufar mitt eru árangurslausar	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála

35. Áform mín um að bæta heilsu mína ganga venjulega ekki upp	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála
36. Ég get sinnt heilsu minni jafnvel og flestir aðrir	□1 Mjög ósammála □2 Ósammála □3 Hvorki sammála né ósammála □4 Sammála □5 Mjög sammála

Hér á eftir koma nokkrar almennar spurningar um heilsufar og daglegar venjur í tengslum við reykingar, áfengis- og vímuefnanotkun, matarræði og hreyfingu. Vinsamlegast merktu við það sem á best við í þínu tilviki með því að setja einn kross við hverja spurningu.

37. Hvernig telurðu að líkamlegt heilsufar þitt sé?
    - □1 Mjög gott
    - □2 Frekar gott
    - □3 Sæmilegt
    - □4 Frekar slæmt
    - □5 Mjög slæmt

38. Hversu mikið reykir þú að jafnaði?
    - □1 Meira en 20 sígarettur á dag
    - □2 11-20 sígarettur á dag
    - □3 1-10sígarettur á dag
    - □4 Færri en eina sígarettu á dag
    - □5 Ég reyki ekki

39. Hversu oft neytir þú áfengis að jafnaði?
    - □1 Fjórum sinnum í viku eða oftar
    - □2 2-3 í viku
    - □3 2-4 í mánuði
    - □4 Einu sinni í mánuði eða sjaldnar
    - □5 Aldrei

40. Hversu oft neytir þú vímuefna að jafnaði?

□1 Fjórum sinnum í viku eða oftar
□2 2-3 í viku
□3 2-4 í mánuði
□4 Einu sinni í mánuði eða sjaldnar
□5 Aldrei

41. Hversu oft borðar þú grænmeti eða ávexti að jafnaði?

□1 Daglega
□2 1-6 sinnum í viku
□3 1-3 í mánuði
□4 Sjaldnar
□5 Aldrei

42. Hversu algengt er að þú borðir magrar matvörur (t.d. léttmjólk eða undanrennu, magra osta, fisk eða magurt kjöt) frekar en matvörur sem innihalda meiri fitu?

□1 Alltaf
□2 Oft
□3 Af og til
□4 Sjaldan
□5 Aldrei

43. Hve oft hreyfir þú þig þannig að þú mæðist, hjartasláttur aukist verulega eða þú svitnar?

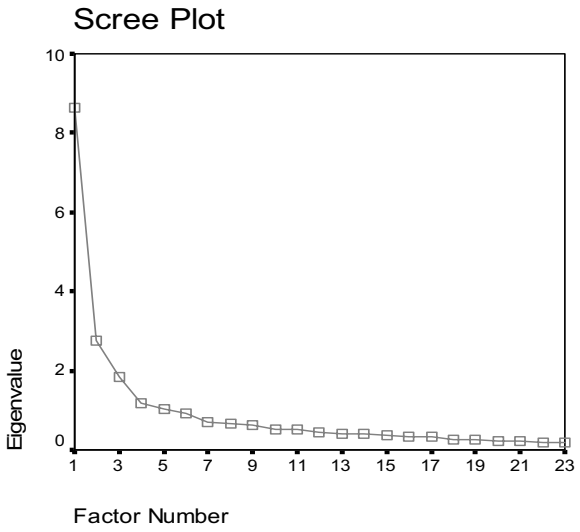
□1 3 í viku eða oftar
□2 1-2 í viku
□3 2-3 í mánuði
□4 Sjaldnar
□5 Aldrei

Kærar þakkir fyrir þátttökuna.

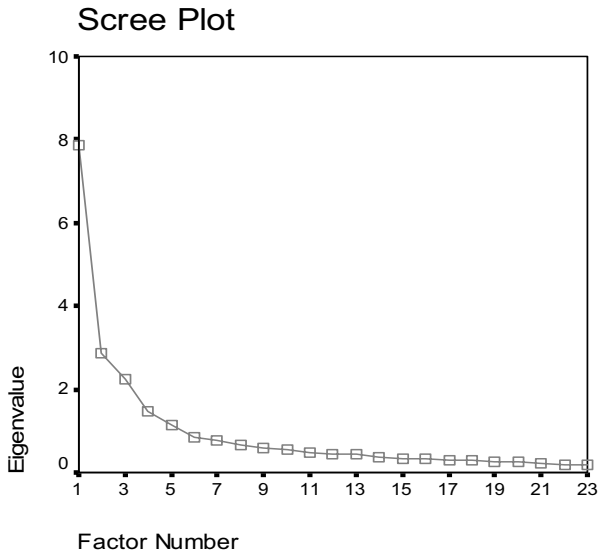
Appendix 3

Appendix 3 contains scree plots for factor analysis for questions 16, 17, 18 and 19-23.

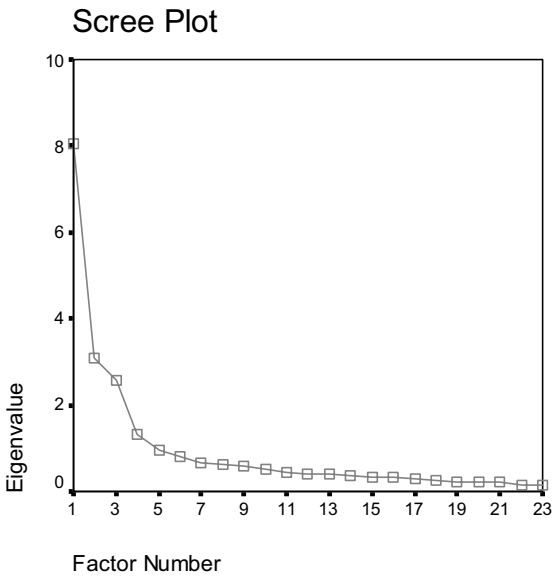
Question 16:



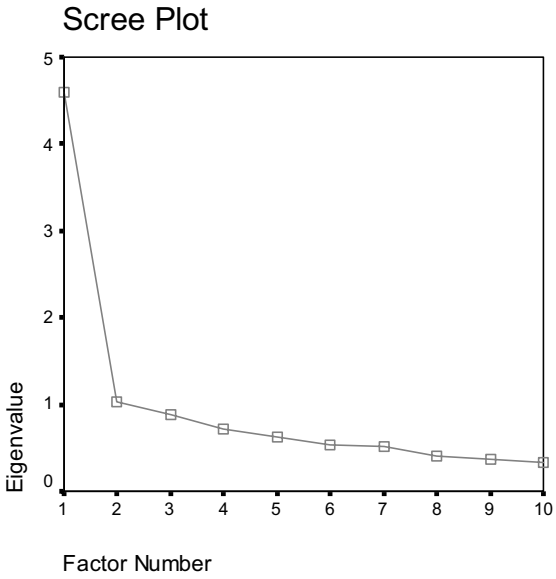
Question 17:



Question 18:



Questions 19-23.



APPENDIX 4

Appendix 4 contains Stem-and-Leaf Plot for the main variables in questions 11-13, 16-36 and 42-43.

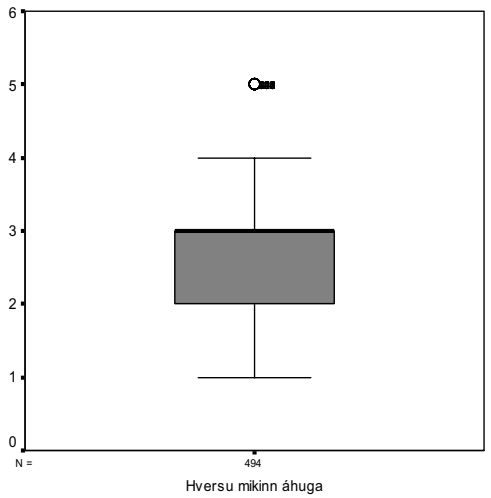
Question 11. Interest in information about health and lifestyle

```
Stem-and-Leaf Plot

 Frequency    Stem &  Leaf

    77,00        1 .  00000000000000
      ,00        1 .
      ,00        1 .
      ,00        1 .
      ,00        1 .
   152,00        2 .  0000000000000000000000000000000
      ,00        2 .
      ,00        2 .
      ,00        2 .
      ,00        2 .
   204,00        3 .  000000000000000000000000000000000000000000000
      ,00        3 .
      ,00        3 .
      ,00        3 .
      ,00        3 .
    49,00        4 .  0000000000
    12,00 Extremes    (>=5,0)

 Stem width:  1,00
 Each leaf:       5 case(s)
```



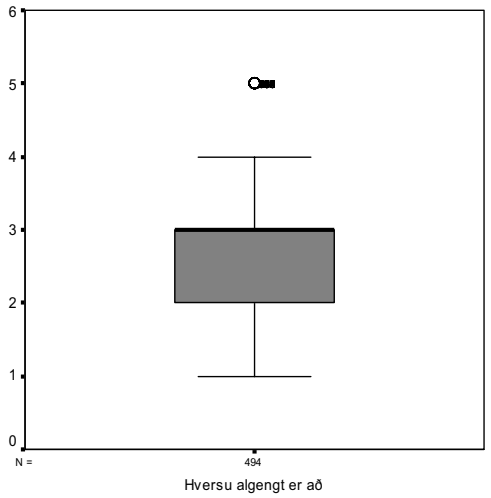
Question 12. Seeking information about health and lifestyle

```
Stem-and-Leaf Plot

 Frequency    Stem &  Leaf

    45,00        1 .  00000000000
      ,00        1 .
      ,00        1 .
      ,00        1 .
      ,00        1 .
   187,00        2 .  0000000000000000000000000000000000000000000000000
      ,00        2 .
      ,00        2 .
      ,00        2 .
      ,00        2 .
   171,00        3 .  000000000000000000000000000000000000000000000
      ,00        3 .
      ,00        3 .
      ,00        3 .
      ,00        3 .
    69,00        4 .  00000000000000000
    22,00 Extremes    (>=5,0)


Stem width:  1,00
 Each leaf:       4 case(s)
```

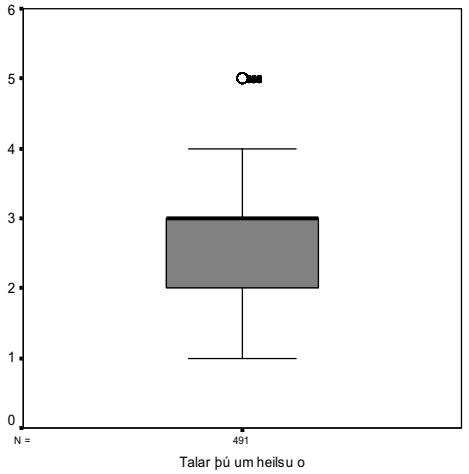


Question 13. Discussions about health and lifestyle

```
Frequency    Stem &  Leaf

    53,00        1 .  00000000000000
      ,00        1 .
      ,00        1 .
      ,00        1 .
      ,00        1 .
   180,00        2 .  000000000000000000000000000000000000000000000000
      ,00        2 .
      ,00        2 .
      ,00        2 .
      ,00        2 .
   164,00        3 .  00000000000000000000000000000000000000000000
      ,00        3 .
      ,00        3 .
      ,00        3 .
      ,00        3 .
    73,00        4 .  000000000000000000
    21,00 Extremes    (>=5,0)


Stem width:  1,00
 Each leaf:       4 case(s)
```



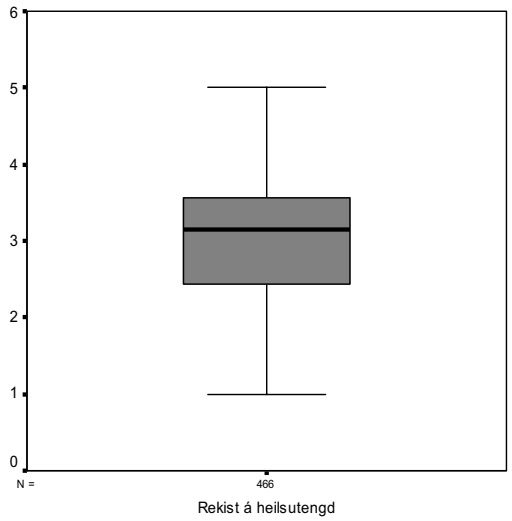
Question 16. Encountering information in the Media:

```
Frequency    Stem &  Leaf

    17,00        1 .  001244
    38,00        1 .  555777788888
    74,00        2 .  00000011111122222223444444
    68,00        2 .  55555557777777788888888&
   122,00        3 .  000000000111111111222222222224444444444&
    84,00        3 .  555555555556777777778888888
    50,00        4 .  0000000001112222&
     9,00        4 .  78&
     4,00        5 .  0

 Stem width:      1,00
 Each leaf:       3 case(s)

 & denotes fractional leaves.
```



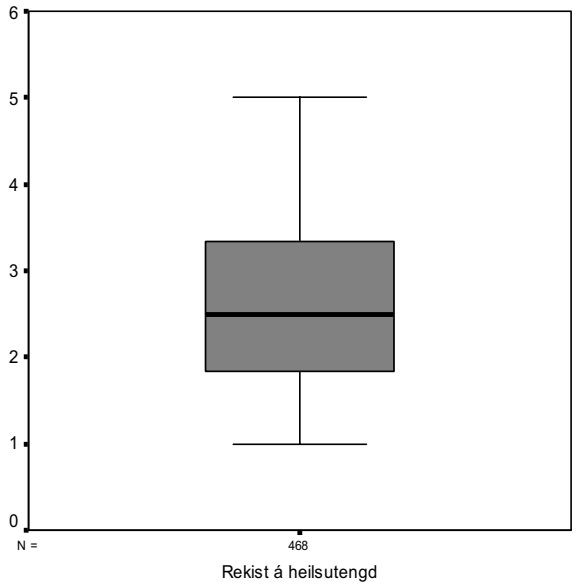
Question 16. Encountering information by Health specialists:

```
Frequency    Stem &  Leaf

    54,00        1 .  000000000111113333333333334
    74,00        1 .  55555555556666666666666888888888888
    91,00        2 .  00000000000000000001111111113333333333334&
    69,00        2 .  55555555555666666666666888888888
    86,00        3 .  000000000000001111111111113333333333333333&
    53,00        3 .  55555555555555666666688888
    26,00        4 .  000000111333&
    14,00        4 .  5556668
     1,00        5 .  &
```

```
Stem width:      1,00
 Each leaf:       2 case(s)

 & denotes fractional leaves.
```

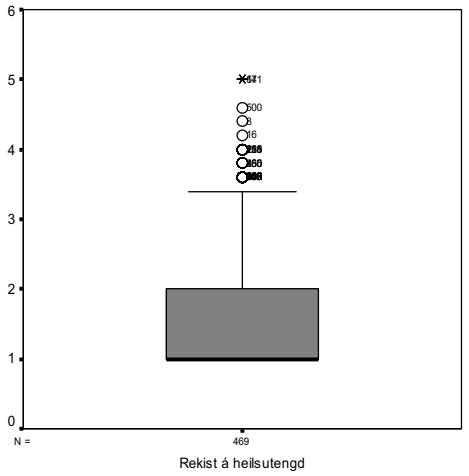


Question 16. Encountering information on the Internet:

```
Frequency    Stem &  Leaf

   244,00        1 .  0000000000000000000000000000000000000000000000000000
    16,00        1 .  222
    21,00        1 .  4444
    14,00        1 .  666
    26,00        1 .  88888
    39,00        2 .  00000000
    19,00        2 .  2222
    10,00        2 .  44
    13,00        2 .  666
    11,00        2 .  88
    16,00        3 .  000
     9,00        3 .  22
     7,00        3 .  4
    24,00 Extremes    (>=3,6)

 Stem width:      1,00
 Each leaf:       5 case(s)
```



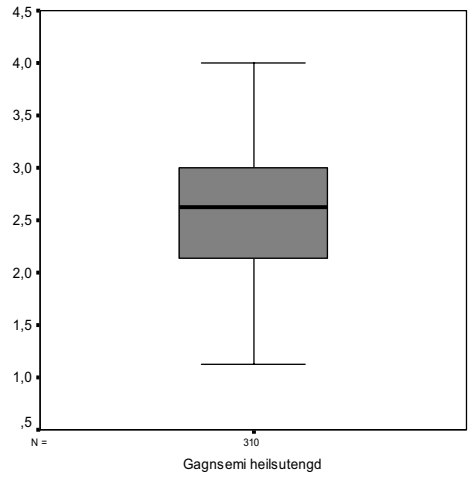
Question 17. Usefulness of information in the Media:

```
Frequency    Stem &  Leaf

     2,00        1 .  1
     9,00        1 .  2333
     7,00        1 .  555&
    16,00        1 .  6667777
     9,00        1 .  8888
    35,00        2 .  00000000011111111
    36,00        2 .  22222222333333333
    37,00        2 .  444444555555555555
    51,00        2 .  666666666777777777777777
    21,00        2 .  8888888888
    49,00        3 .  000000000000000000011111
    15,00        3 .  2223333
     7,00        3 .  555&
     6,00        3 .  67
     5,00        3 .  88
     5,00        4 .  00


Stem width:      1,00
 Each leaf:       2 case(s)

 & denotes fractional leaves.
```

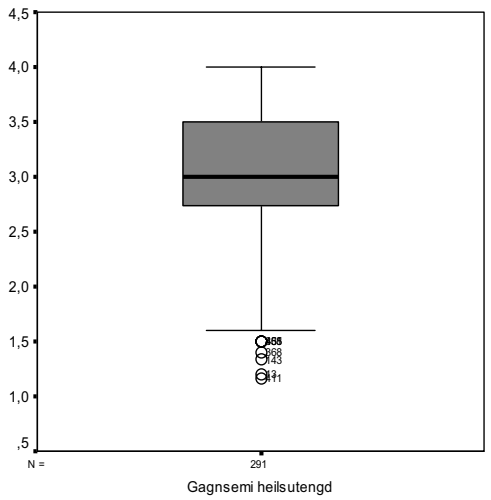


Question 17. Usefulness of information by Health specialists:

```
Frequency    Stem &  Leaf

     7,00 Extremes    (=<1,5)
      ,00        1 .
     2,00        1 .  6
     3,00        1 .  8
    15,00        2 .  0000011
    14,00        2 .  233333
    12,00        2 .  45555
    20,00        2 .  6666666666
    29,00        2 .  88888888888888
    65,00        3 .  00000000000000000000000001111111
    34,00        3 .  22222233333333333
    33,00        3 .  4445555555555555
    33,00        3 .  6666666666666666
    14,00        3 .  8888888
    10,00        4 .  00000

Stem width:      1,00
 Each leaf:       2 case(s)
```

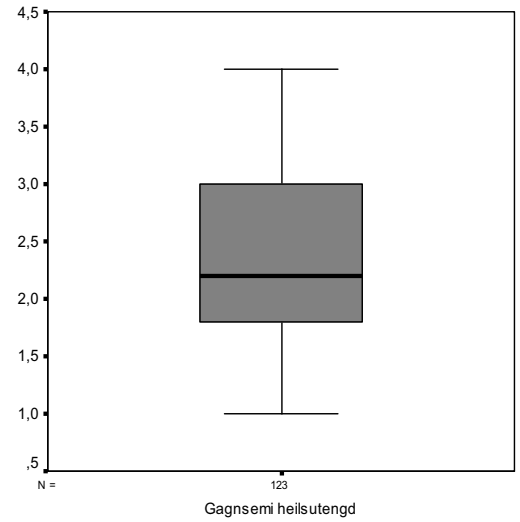


Question 17. Usefulness of information on the Internet:

```
Frequency    Stem &  Leaf

    11,00        1 .  00000000000
     5,00        1 .  22222
     4,00        1 .  4444
     8,00        1 .  66666666
     6,00        1 .  888888
    20,00        2 .  00000000000000000000
    11,00        2 .  22222222222
    10,00        2 .  4444444444
     8,00        2 .  66666666
     3,00        2 .  888
    25,00        3 .  0000000000000000000000000
     7,00        3 .  2222222
     2,00        3 .  44
     1,00        3 .  6
      ,00        3 .
     2,00        4 .  00

Stem width:      1,00
 Each leaf:       1 case(s)
```

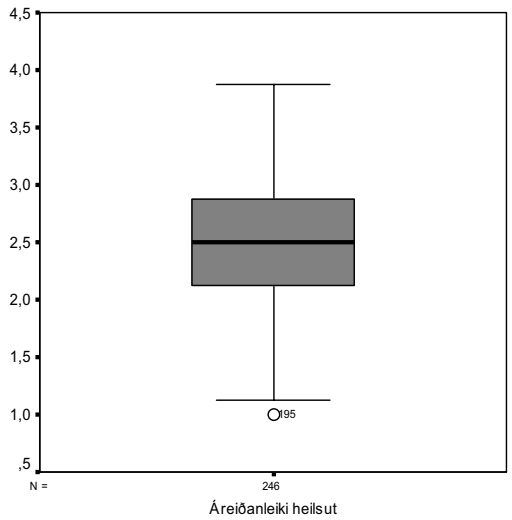


Question 18. Reliability of information in the Media:

```
Frequency    Stem &  Leaf

     1,00 Extremes    (=<1,0)
     1,00        1 .  1
     5,00        1 .  22333
     8,00        1 .  55555555
    14,00        1 .  66666666677777
     9,00        1 .  888888888
    34,00        2 .  00000000000000000000111111111111111
    36,00        2 .  22222222222222333333333333333333333
    26,00        2 .  55555555555555555555555555
    41,00        2 .  66666666666666666666666677777777777777777
    14,00        2 .  88888888888888
    41,00        3 .  00000000000000000000000000000011111111111
    10,00        3 .  2222222333
     4,00        3 .  5555
      ,00        3 .
     2,00        3 .  88


Stem width:      1,00
 Each leaf:       1 case(s)
```



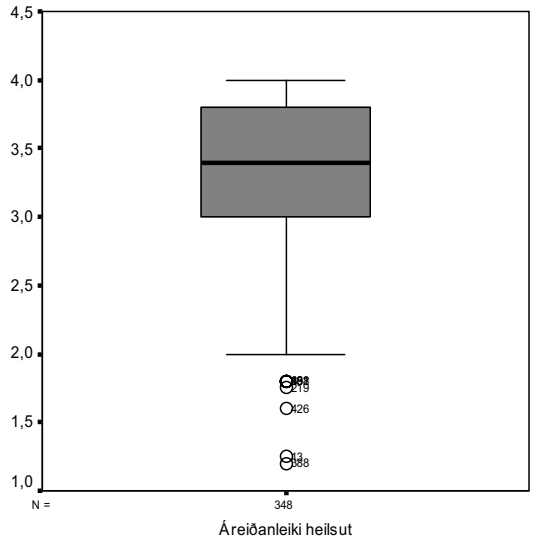
Question 18. Reliability of information by Health specialists:

```
Frequency    Stem &  Leaf

     8,00 Extremes    (=<1,8)
     2,00        2 .  0
     5,00        2 .  22
     4,00        2 .  4&
    17,00        2 .  66666777
    14,00        2 .  8888888
    74,00        3 .  00000000000000000000000000000000000000
    42,00        3 .  22222222222222222222
    35,00        3 .  44444444444455555
    53,00        3 .  66666666666666666666777777
    43,00        3 .  88888888888888888888
    51,00        4 .  000000000000000000000000

Stem width:      1,00
 Each leaf:       2 case(s)

 & denotes fractional leaves.
```

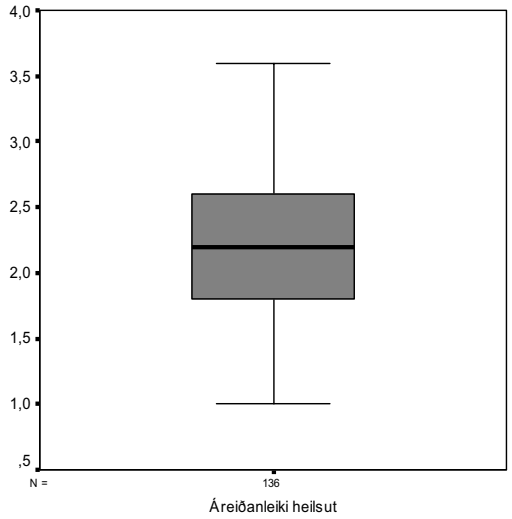


Question 18. Reliability of information on the Internet:

```
Frequency    Stem &  Leaf

     8,00        1 .  00000000
     7,00        1 .  2222222
     9,00        1 .  444444455
     9,00        1 .  666666777
     7,00        1 .  8888888
    26,00        2 .  00000000000000000000000000
    13,00        2 .  2222222222222
    12,00        2 .  444444444455
    14,00        2 .  66666666666677
     4,00        2 .  8888
    20,00        3 .  00000000000000000000
     5,00        3 .  22222
     1,00        3 .  4
     1,00        3 .  6


Stem width:      1,00
 Each leaf:       1 case(s)
```



Questions 19-21 and 25-28. Cognitive barriers:

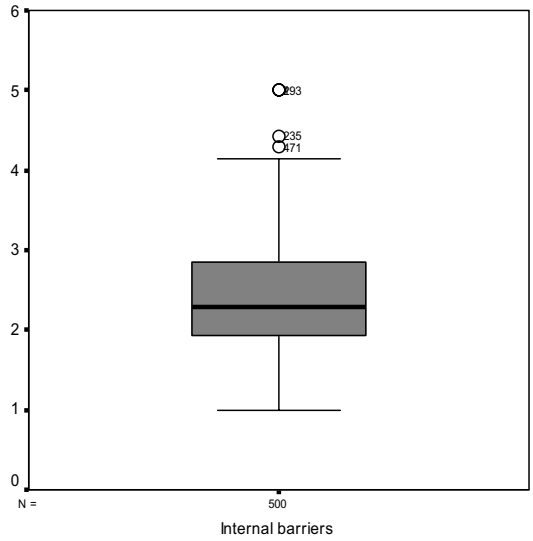
```
Frequency    Stem &  Leaf

    20,00        1 .  000011
    16,00        1 .  22222
    27,00        1 .  444455555
    24,00        1 .  77777777
    38,00        1 .  8888888888888
   102,00        2 .  000000000000000001111111111111111111
    40,00        2 .  2222222222222
    72,00        2 .  444444444444555555555555
    25,00        2 .  677777777
    41,00        2 .  88888888888888
    41,00        3 .  0000000011111
    11,00        3 .  2222
    29,00        3 .  4444455555
     2,00        3 .  7
     6,00        3 .  88
     2,00        4 .  &
     4,00 Extremes    (>=4,3)



Stem width:      1,00
 Each leaf:       3 case(s)

 & denotes fractional leaves.
```



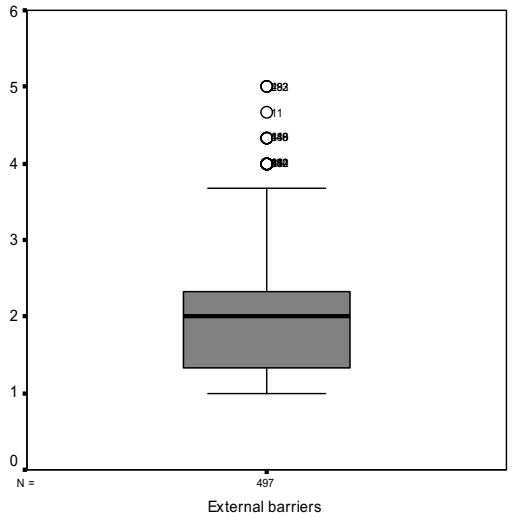
Questions 22, 23 and 24. Physical barriers:

```
Frequency    Stem &  Leaf

   101,00        1 .  00000000000000000000000000000000
    52,00        1 .  33333333333333333
      ,00        1 .
    53,00        1 .  666666666666666666
      ,00        1 .
   138,00        2 .  000000000000000000000000000000000000000000000000
    43,00        2 .  33333333333333
      ,00        2 .
    37,00        2 .  666666666666
      ,00        2 .
    25,00        3 .  00000000
    21,00        3 .  3333333
     1,00        3 .  &
    14,00        3 .  66666
    12,00 Extremes    (>=4,0)


Stem width:      1,00
 Each leaf:       3 case(s)

 & denotes fractional leaves.
```



Questions 29-36. Health self-efficacy:

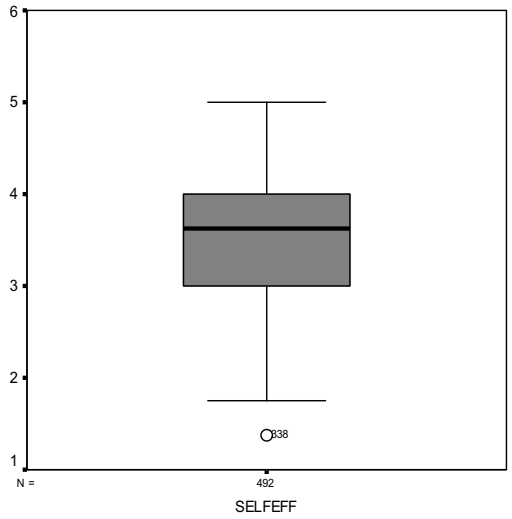
```
SELFEFF Stem-and-Leaf Plot

 Frequency    Stem &  Leaf

     1,00 Extremes    (=<1,4)
     6,00        1 .  8&
    22,00        2 .  12233&
    70,00        2 .  55566677777888888
   114,00        3 .  00000001111112222222233333333&
   153,00        3 .  55555556666666666777777777777888888888
   102,00        4 .  00000000000111111112222333
    23,00        4 .  55678
     1,00        5 .  &

Stem width:      1,00
 Each leaf:       4 case(s)

 & denotes fractional leaves.
```



Questions 42. Diet:

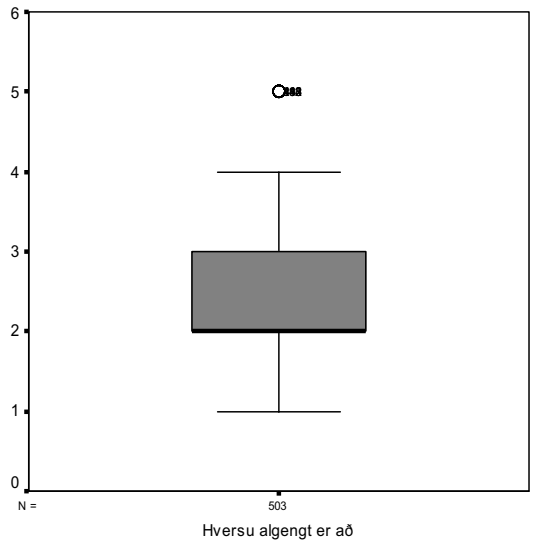
```
Stem-and-Leaf Plot

 Frequency    Stem &  Leaf

    80,00        1 .  0000000000000
      ,00        1 .
      ,00        1 .
      ,00        1 .
      ,00        1 .
   254,00        2 .  00000000000000000000000000000000000000000000000
      ,00        2 .
      ,00        2 .
      ,00        2 .
      ,00        2 .
   117,00        3 .  000000000000000000
      ,00        3 .
      ,00        3 .
      ,00        3 .
      ,00        3 .
    45,00        4 .  0000000
     7,00 Extremes    (>=5,0)



Stem width:  1,0
 Each leaf:       6 case(s)
```

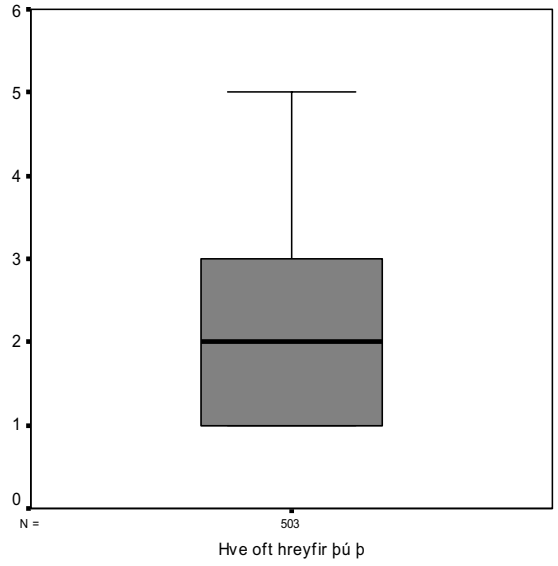


Questions 42. Exercise:

```
Frequency    Stem &  Leaf

   194,00        1 .  00000000000000000000000000000000000000000000000000
      ,00        1 .
   160,00        2 .  0000000000000000000000000000000000000000
      ,00        2 .
    82,00        3 .  00000000000000000000
      ,00        3 .
    55,00        4 .  00000000000000
      ,00        4 .
    12,00        5 .  000
```

```
Stem width:  1,0
 Each leaf:       4 case(s)
```



It is well known that people's lifestyles affect their health and well-being. Nevertheless, in spite of campaigns aimed at educating people about healthy living, there are indications that gaps exist between different groups in society, with some groups able to benefit more from these campaigns than others.

Little is known about how Icelanders behave regarding information about health and lifestyle. How motivated are they to gather information about health and lifestyle, and what barriers shape their information behaviour? How and where is information sought, and how is it evaluated? The aim of this thesis is to gather knowledge about how different groups of Icelanders take advantage of information about health and lifestyle in their everyday life. The thesis sought to explore the interaction between people's information behaviour and their self-efficacy beliefs about health and examine how this interaction relates to their health behaviour. A random sample of 1,000 people, aged 18 to 80, was used in the study. Four information behaviour clusters were drawn, using cluster analysis: a passive cluster, a moderately passive cluster, a moderately active cluster and an active cluster.

The thesis shows that these clusters differ with regard to not only people's information behaviour but also their health self-efficacy beliefs and health behaviour.

Åbo Akademi University Press
ISBN 951-765-272-0