

## The connection between purposive information seeking and information encountering: A study of Icelanders' health and lifestyle information seeking

### Abstract

**Purpose** - This paper aims to explore health and lifestyle information seeking behaviour by examining the connection between purposive information seeking and information encountering. **Design/methodology/approach** - Data on purposive seeking and information encountering, gathered from postal surveys in 2002 and 2007, were compared. Random samples of 1,000 Icelanders, aged 18 to 80 were used. The response rate was 51 per cent in 2002 and 47 per cent in 2007. Based on the purposive seeking in 22 sources, k-means cluster analysis was used to draw four clusters of participants: passive, moderately passive, moderately active and active. **Findings** - The results from 2007 and 2002 revealed the same kind of information seeking. The findings indicate that information encountering is an integral feature of information seeking behaviour. Information is encountered more often than sought on purpose by all clusters. Clusters that were active in purposive information seeking were also active in information encountering and those who were passive in either of the two styles of information seeking were also passive in the other. **Research limitations/implications** - The response rates are considered satisfactory in postal surveys. Nevertheless, when missing data in the cluster analysis are also considered it raises a question about the validity of the findings. The findings of the studies, however, are strengthened by the fact that respondents reflect the population fairly well. **Practical implications** - Improved knowledge of information seeking and how different groups within society can be reached more effectively is important for health promotion and public health practice. **Originality/value** - The paper uses quantitative methods to examine the connection between purposive information seeking and information encountering.

### 1. Introduction

A healthy population is one of the key factors in economic growth and prosperity of nations ([56] Subramanian *et al.* , 2002; [3] Ásgeirsdóttir, 2004). It is also known that a relationship exists between people's economical situation and their health, with those belonging to the higher income groups generally having a longer and healthier life ([26] Fuller-Thomson and Gadalla, 2008; [38] Mansyur *et al.* , 2008; [56] Subramanian *et al.* , 2002). Among the factors leading to health inequality is the lifestyle choices people make, with the lifestyles of those belonging to higher socio-economic groups generally being more likely to generate good health than those of people belonging to lower socio-economic groups ([43] Norwegian Directorate of Health, 2008). This raises a question about the possible impact of the recent world economic crisis on the health and wellbeing of individuals. It also calls attention to how vital it is to raise the population's awareness of the significance of healthy lifestyles. Many of the diseases burdening the Icelandic population as well as other western populations have a strong lifestyle component, e.g. unhealthy diet, lack of physical exercise, smoking and alcohol consumption ([52] Public Health Institute of Iceland, 2007; [69] World Health Organization, 2005). Furthermore, the importance of making the right behavioural choices for maintaining health and the joint responsibility of individuals and society in this matter has been emphasised ([3] Ásgeirsdóttir, 2004; [62] Wikler, 2002).

The objective of this article is to provide insight into information seeking behaviour with regard to health and lifestyle information by examining the interaction between purposive information

seeking and information encountering. Health and lifestyle refer to the personal lifestyle choices made by people normally thought of as healthy and the impact this can have on their health and wellbeing ([49] Pálsdóttir, 2009). The means of information seeking and dissemination have undergone huge changes in recent years, and people have multiple options for seeking information about health and lifestyles. Accordingly, the various ways and methods people use to seek information in everyday life have captured researchers' attention. Based on a review of the literature, it is assumed that information seeking can be broadly divided into two information-seeking styles: purposive information seeking, characterized by people deciding they have a knowledge gap and acting on this decision by seeking information lacking; and then there is information encountering, which can be described as instances when, for example, people happen to come across information although they were not seeking it.

### **1.1 Health promotion and the importance of information seeking**

Health behaviour and health promotion have received increasing consideration in recent years. The purpose of health promotion is to enable individuals "to increase control over, and improve, their health" ([68] World Health Organization, 1998). This requires society to provide the necessary means and support to enable all its members to gain the knowledge and skills necessary to take active care of their health. Health information is a vital tool for promoting health and raising the quality of life. According to [5] Bandura (1997) knowledge about health risks and the outcome of health behaviour is a necessary precondition for making behavioural changes. This is supported by [39] Margetts *et al.* (1997), who found a link between having access to sources of information and knowledge about healthy behaviour, and [34] Kassulke *et al.* (1993), who found that those practicing healthier behaviour also make more effort to seek information. Thus, by seeking information on health issues, people have the opportunity to take more responsibility for their own health.

Although there are some signs that an increase in media reporting about health issues can lead to greater public awareness of the importance of healthy behaviour ([14] Epstein *et al.* , 1997), there are also indications that health promotion efforts have not been successful in reaching all groups within populations ([40] Marmot, 1997; [45] Nutbeam, 2000; [7] Bozoni *et al.* , 2006; [41] Martinelli *et al.* , 2008), and that the results of increased publicity about health issues may be enhanced inequality in knowledge between social groups ([27] Gaziano and Horowitz, 2001). One of the main ideas behind health promotion has been the assumption that providing people with information about health risks and healthy behaviour enables them to take more responsibility for their own health and be persuaded to change their habits toward improving their health. Furthermore, the central notion in health promotion strategies has been to increase the possibilities for people to encounter health information by chance, rather than rely on them to seek it purposefully. However, little is known about the interaction of purposive information seeking and

information encountering and the extent to which different groups of people use these information-seeking styles. For example, can it be that certain groups in society prefer to encounter information by chance, while others are more inclined toward purposive seeking? Or do people prefer to seek information purposefully in certain sources or channels, but encounter information more often in other sources?

An improved knowledge of information seeking behaviour and how different groups within society can be reached and information disseminated to them more effectively is important for health promotion and public health practice. It is also of theoretical value to gain more knowledge about purposive seeking and information encountering and how these two styles of information seeking work together.

## **2. Related research**

### **2.1 Purposive information seeking**

Information-seeking behaviour where information seeking is seen as purposive and goal-driven has traditionally been the subject of studies on information seeking behaviour. [65] Wilson (1999) has suggested that information seeking is the outcome of a secondary need which is brought up as the result of a more basic need, created within the person involved, by her work or life roles or the environment she belongs to. He has further pointed out that for people to start information seeking activities they first need to overcome barriers, e.g. personal, interpersonal or environmental, which can hinder them in seeking information.

According to [66] Wilson (2000), active information seeking stands for a behaviour where individuals experience a lack of knowledge and act on this feeling by seeking information, i.e. "purposive seeking for information as a consequence of a need to satisfy some goal" (p. 49). A similar definition has been put forward by [33] Johnson and Meischke (1993) who describe information seeking as "the purposive acquisition of information from selected information carriers" (pp. 343-4). Information seekers are further, divided into four categories or phases: Casual, Purposive-placid, Purposive-clustered, and Directed, with the information seeking becoming more focused at each successive phase.

A number of models, which describe different kind of information seeking activities, have been put forward. The ones that are probably most often discussed (see, e.g. [30] Ingwersen and Järvelin, 2005; [65] Wilson, 1999) are the sense-making theory by [11] Dervin (1992), [12], [13] Ellis's model of information seeking activities (1989 and 1993) and [36] Kuhlthau's (1994) information search process (ISP) model, as well as [64] Wilson's (1981) information seeking model and his revised model of information behaviour ([67] Wilson and Walsh, 1996, [65] Wilson, 1999). In addition, [42] McKenzie's (2003) model of information seeking in everyday life has relevance here.

The sense-making theory is "a set of metatheoretic assumptions and propositions about the nature of information, the nature of human use of information, and the nature of human communication" ([11] Dervin, 1992, pp. 61-2). In daily life people find themselves in situations where they face a knowledge gap, which hinders them in moving on in time and space and to be able to continue their process they need to acquire information. 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 ([11] Dervin, 1992). [12], [13] Ellis's (1989 and 1993) model describes information seeking activities as eight features, that is: starting, chaining, browsing, differentiation, monitoring, extracting, verifying and ending. According to Ellis, the interrelationship of these features depends on the circumstances of each information seeking activity. However, [65] Wilson (1999) has suggested how the features may relate in sequence. [36] Kuhlthau's (1994) ISP model describes information seeking in a series of six stages in a succession, that is Initiation, Selection, Exploration, Formulation, Collection and Presentation. Her model furthermore identifies the range of emotions, thoughts and actions that are connected to each information seeking stage.

Wilson ([67] Wilson and Walsh, 1996; [65] Wilson, 1999) has proposed a general interdisciplinary model which consists of several stages: starting with the context of the information need; activating mechanism that links the information need with the decision to seek information; intervening variables, which may in fact act between the various stages of the model; and the information seeking behaviour, which includes four modes of information seeking. Two of these modes comprise purposive information seeking which is categorized into active search and ongoing search, with ongoing search happening occasionally and with the intention of updating or developing knowledge gathered through active search. 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. [42] McKenzie (2003), on the other hand, in a model of information seeking in everyday life, identifies one type of purposive information seeking, which she describes as seeking information on purpose, in a systematic and strategic way.

## **2.2 Other styles of information seeking: information encountering**

Although it has been customary to describe information seeking as seeking information on purpose, it has, nevertheless, been pointed out that the nature of information seeking behaviour is not restricted to this. In past years a small but a growing number of studies have started examining information seeking behaviour in more detail. Gradually, models of information seeking have recognized information encountering as a part of information seeking behaviour (e.g. [1] Abrahamson and Fisher, 2007; [22] Foster, 2004; [29] Hider, 2006; [42] McKenzie, 2003; [65] Wilson, 1999).

[65] Wilson (1999) talks about passive attention, when people happen to find information although information seeking was not intended, e.g. when using mass media. This can be compared with what [42] McKenzie (2003) calls non-directed monitoring, which refers to information sometimes being found by chance and in unexpected places, and what [63] Williamson (1997) refers to as accidental discovery of information. In addition to passive attention, [65] Wilson (1999) has identified passive searching, i.e. people finding relevant information they are not seeking while searching for other information, while [42] McKenzie (2003) uses the term active scanning, referring to people being aware of the possibility of finding useful information in certain places although they are not seeking specific information.

[15] Erdelez (1997) introduced the term information encountering referring to information being discovered unexpectedly, for instance when information seeking was not intended, or while people are involved in a search for another type of information. Based on attitudes towards and the frequency of encountering, Erdelez further suggested that people could be super-encounterers, encounterers, occasional encounterers and non-encounterers, with an important aspect of the behaviour of super-encounterers being that they sometimes encountered information for other people. Later on [16] Erdelez and Rioux (2000) also investigated information encountering on the web. [42] McKenzie (2003), on the other hand, describes information seeking by proxy, that is when people find information through an intermediary, e.g. a gatekeeper, a friend, or an information source.

[58] Toms (2000) talks about serendipity and suggests that a person's prior knowledge, together with the recognition of what the information provides, usually influences the encounter of the information. Serendipity has also been dealt with by [23] Foster and Ford (2003), who point out the role of the prepared mind and indicate that attitudes, such as "... consciously to be open and receptive to chance information encounters" (p. 335), as well as a "conscious strategic decision to step back and take a broader view" (p. 336), may support making the most of serendipity. [21] Ford *et al.* (2002) found that a holistic approach to information processing is more likely to be connected to exploratory behaviour and the appreciation of serendipity compared to a serialist approach. Other studies have indicated that personality traits, such as curiosity, flexible thinking, and extraversion, are likely to be connected with information encountering ([28] Heinström, 2006).

[23] Foster and Ford (2003) have reviewed a number of papers about information encountering and note that it is not only individual characteristics that play part in information encountering. Retrieval systems may also have a role to play and as digital information retrieval increases it is possible that it may lead to fewer possibilities of encountering information. There are indications that the internet is increasingly being used as a channel of health information (see, e.g. [24], [25] Fox, 2005, 2006; [59] Trotter and Morgan, 2008). However, how increased access to digital health information affects the way that people seek information has not been clear.

Most previous studies on information encountering have employed qualitative methods, mainly with relatively small samples. Furthermore, 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. This article presents results from a larger study using quantitative methods, which aims at examining the trend of health and lifestyle information behaviour in Iceland in the period 2002 to 2007. The focus in the article will be on exploring the connection between purposive information seeking and information encountering by comparing results in two sets of data gathered in 2002 and 2007 (see also [46], [47] Pálsdóttir, 2005, 2007).

### **3. Method**

#### **3.1 Data collection**

The data were gathered as postal surveys during the autumn of 2002 ([46] Pálsdóttir, 2005) and spring of 2007. For both data sets the sample consisted of 1,000 people, aged 18 to 80, randomly selected from the National Register of Persons in Iceland. The response rate was 51 per cent in 2002 and 47 per cent in 2007, which is satisfactory for statistical analysis ([4] Babbie, 1979). Tables I and II [Figure omitted. See Article Image.] present a comparison of the characteristics of the respondents with population parameters derived from [55] Statistics Iceland (2007).

Inspection of the confidence intervals in Tables I and II [Figure omitted. See Article Image.] shows that the distribution of age falls within the 95 per cent confidence limits for three out of five age groups. The samples in 2002 and 2007 are therefore deemed to be representative of the Icelandic population regarding age distribution. Examination of the confidence intervals for sex in Tables I and II [Figure omitted. See Article Image.] shows that the distribution of men and women in the studies does not quite reflect the population. Educational level was measured as the highest level of education completed. Three levels were distinguished: primary school includes those who have finished compulsory education (ten years of education); secondary education (14 years) includes those who have completed vocational training, or secondary school; and university education. Inspection of confidence intervals in Tables I and II [Figure omitted. See Article Image.] shows that the ratio of people with secondary education is representative of the population. However, more people with university education and fewer with primary school education responded to the questionnaire, compared with the population.

#### **3.2 Measurements**

The same sets of measurements were used for the data from 2002 and 2007.

- *Socio-demographic information* . This includes variables identified in previous studies in relation to both health behaviour and information behaviour. Among these are: sex, age, marital status, geographical residence, and income. Based on the results of previous analysis of the data, three of the variables will be used in this analysis: sex, age and education.

- *Information-seeking clusters* . Respondents' purposive information seeking was examined by asking: "Have you sought information about health and lifestyle in any of the following sources?". In 2002, a list of 23 information sources was presented, and people were asked to provide answers about every source. Based on the analysis in 2002, one item was removed from the list in 2007 (novels). Apart from that the same list was used in both questionnaires. A five-point response scale was used (very often - never), where 1 is the lowest activity level and 5 is the highest. The information sources were grouped into four information channels, named Media, Health specialists, Internet and Interpersonal sources. The attention is to be able to compare the results about purposive information seeking and information encountering and therefore was the division of the sources into groups done by taking into consideration the outcome of the factor analysis of the information sources which is discussed in the following, under information encountering. Total mean scores were computed for each channel. The information channels were tested for internal reliability, using Cronbach's alpha. Reliability reflects the preciseness of each measure ([10] Cronbach, 1951), and it is deemed that reliability of 0.70 is adequate ([44] Nunnally, 1978). In all cases Cronbach's alpha proved satisfactory: for Media it was 0.88 in 2002 and 0.93 in 2007; for Health specialists it was 0.82 in 2002 and 0.83 in 2007; for Internet it was 0.89 in 2002 and 0.87 in 2007; and for Interpersonal sources it was 0.83 in 2002 and 0.84 in 2007.

- *Information encountering* was examined by asking: "Have you come across information about health and lifestyle in any of the following sources although you were not seeking the information?". The same list of information sources was presented as for the question on purposive information seeking, and people were asked to provide answers on every source on the list. Each question had a five-point response scale (very often - never).

Factor analysis was used to extract latent factors on the questions about information encountering in the data from 2002 and 2007. It was expected that some of the items on the list of 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. The principal component factoring method of extraction was employed to examine the factor structure of each question. In all cases, the criteria for factor loadings were set above 0.4, and oblique rotation (Oblimin) was adopted in all the analyses. For all the analyses, multiple criteria, based on eigenvalue >1.00, a scree test and conceptual interpretability of the factor structure, suggested that extracting three factors would be adequate. Since the information sources in the groups Media, Health specialists, Internet (discussed previously) are identical to the sources belonging to the components provided by the

factor analysis the same names are used, that is the factors were named: Media, Health specialists and Internet. The factors explained 64.6 per cent of the total variance in the data from 2002 and 67.7 per cent in the data from 2007. The scales were checked for internal reliability, which was satisfactory. Cronbach's alpha ranged from 0.81 to 0.91 for the scales from 2002 and from 0.82 to 0.92 for the scales from 2007 (see Tables III and IV [Figure omitted. See Article Image.]).

### 3.3 Data analysis

Rather than analyse the data by the socio-demographic characteristics of the participants, it was decided to use cluster analysis to determine how the participants formed distinct groups, based on their purposive information seeking in 22 information sources. Participants who did not give answers about one or more of the sources were defined as missing cases. Cluster analysis is a multivariate statistical procedure for exploring data sets and attempting to reorganize them into relatively homogeneous clusters, to minimize within-group variation and maximize between-group variation. The intention is for each group to consist of objects resembling each other in some respect while being as different from objects in other groups as possible ([2] Aldenderfer and Blashfield, 1984; [19] Everitt *et al.* , 2001). This method can provide a perspective on the data different from traditional analysis of sociodemographic variables ([19] Everitt *et al.* , 2001; [50] Pors, 2003).

In 2002 the cluster analysis was performed in two steps. The first step involved an agglomerative hierarchical clustering method, the Ward's method, which is a Euclidian distance method ([19] Everitt *et al.* , 2001) and has been shown to outperform most other methods in identifying the number of clusters ([2] Aldenderfer and Blashfield, 1984). This method was used to produce a dendrogram illustrating a cluster fusion in order to identify the possible number of existing clusters. The next step in the analysis involved  $k$  -means clustering method, based on Euclidian distances. The  $k$  -means method has the advantage of not requiring individuals to be irrevocably allocated to a cluster. To improve the statistical fit of the solution, individuals are reassigned iteratively to clusters until each person is closer to the mean of their cluster than to any other cluster mean ([19] Everitt *et al.* , 2001). This method is therefore likely to create more homogeneous clusters than, e.g. hierarchical clustering methods. The  $k$  -means method requires the number of clusters to be specified beforehand. Ward's method indicated that three to four clusters might exist and in order to follow the recommendation to use the highest number of clusters, a four-cluster solution was drawn by the  $k$  -means method using the iterate and classify option within SPSS, version 11 ([19] Everitt *et al.* , 2001). Based on theoretical reasons built on analysis of the data in 2002 a four-cluster solution was also drawn in 2007 by the same  $k$  -means method ([2] Aldenderfer and Blashfield, 1984; [19] Everitt *et al.* , 2001; [46] Pálsdóttir, 2005). To assess the clusters preferences for the information channels Media, Health specialists, Internet and Interpersonal sources and to further test for statistically significant differences across the clusters a *post-hoc* test



was conducted for each information source and statistical differences in the total mean scores across the clusters examined.

The analysis of information encountering in the Media and Health specialists was performed with ANOVA and a *post-hoc* test (Tukey) conducted to examine significant differences across the clusters. One of the assumptions of ANOVA is that the observations are normally distributed on the dependent variable ([37] Kohout, 1984). Since the distribution of 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. Respondents who encounter information on the internet more often were given the value 1, and respondents who encounter information on the internet less often were given the value 0. The passive cluster was used as a comparison group to measure the other clusters against.

#### **4. Results**

Based on participants' health and lifestyle and purposive information seeking in 22 information sources, four clusters were drawn by cluster analysis.

The clusters were called (1) passive, (2) moderately passive, (3) moderately active and (4) active, with reference to their purposive information seeking activity in 2002 (see Table V [Figure omitted. See Article Image.]).

##### **4.1 Socio-demographic characteristics of the information seeking clusters**

The results about the socio-demographic characteristics of the information seeking clusters are shown in Tables VI and VII [Figure omitted. See Article Image.].

Tables VI and VII [Figure omitted. See Article Image.] show the difference by sex across the clusters, with women being in a majority in all the clusters in 2002 ( $\chi^2 (3) = 23.78, p = 0.001$ ) and 2007 ( $\chi^2 (3) = 38.74, p = 0.001$ ), except for the passive cluster, where there are more men. The age division of the clusters in 2002 ( $\chi^2 (12) = 48.76, p = 0.001$ ) and 2007 ( $\chi^2 (12) = 40.29, p = 0.001$ ) shows that the active and moderately passive clusters have a higher rate of young participants than the moderately active and the passive clusters, which have a fairly even age distribution and a higher rate of members from the older age groups than the other two clusters. The results for educational difference across the clusters in 2002 ( $\chi^2 (6) = 24.07, p = 0.001$ ) and 2007 ( $\chi^2 (6) = 18.40, p = 0.010$ ) show that the moderately passive cluster is the most educated one, with the highest rate of members with university education and the lowest with primary school education. The active cluster has the next most education. The passive cluster has the least education, with the lowest percentage of members having a university degree.

##### **4.2 Results for purposive information seeking**

A comparison of the results for purposive information seeking across the clusters in 2002 and 2007 is presented in Table VIII [Figure omitted. See Article Image.].

In 2002 the moderately active cluster was found to seek information more often than the moderately passive cluster, although the difference across the cluster was relatively small. This had changed in 2007, with those in the moderately passive cluster seeking information more often than those in the moderately active cluster. However, for reasons of comparison it was decided to keep the names of the clusters as they were in 2002.

#### **4.3 Information encountering**

ANOVA was used to examine differences in information encountering across the clusters in the Media and Health specialists. The results show that the clusters differ significantly for information encountering in the Media in 2002 ( $F(3,456) = 50.8, p < 0.001$ ) and 2007 ( $F(3,378) = 46.57, p < 0.001$ ), as well as for encountering in Health specialists in 2002 ( $F(3,445) = 67.7, p < 0.001$ ) and 2007 ( $F(3,362) = 60.06, p < 0.001$ ). The results are presented in mean figures where, 1 is the lowest information encountering activity and 5 is highest (Table IX [Figure omitted. See Article Image.]).

As can be seen from Table IX [Figure omitted. See Article Image.], the results for information encountering in the Media show that the passive cluster, which encounters information least often, differs significantly from all the other clusters in 2002 and 2007. The moderately passive cluster also differs significantly from the other clusters in 2002, but in 2007 it does not differ significantly from the moderately active cluster. A statistically significant difference was not found across the moderately active and the active clusters in 2002 or 2007 (Tukey,  $p < 0.05$ ). The results for encountering in Health specialists show that the passive cluster differs significantly from the other three clusters in 2002 and 2007. There is also a significant difference across the moderately active and Active clusters in both 2002 and 2007. The moderately passive cluster does not differ significantly from these two clusters in 2002, but in 2007 it differs significantly from the moderately active cluster (Tukey,  $p < 0.05$ ).

The distribution of the variable information encountering on the internet was skewed and therefore ANOVA could not be used in the analysis of it. It was transformed into a dichotomous variable and analysed by using binary logistic regression. The passive cluster was used as a comparison group against which the other clusters were measured. For reasons of comparison, the results are presented in mean figures, see Table X [Figure omitted. See Article Image.].

In the results a value over 1 on Exp (B) indicates that the odds of being an information encounterer increase as the value of the independent variable increases. Values under 0 indicate that the odds of being an information encounterer decrease as the value of the independent

variable decreases. In 2002 a significant difference was found across the passive cluster and the active cluster; Exp (B) is 43.8 (  $p < 0.001$ ), and across the passive cluster and the moderately passive cluster, Exp (B) is 4.26 (  $p < 0.001$ ). The moderately active cluster did not differ significantly from the passive cluster (  $p = 0.254$ ). There was also a significant difference across the passive and active cluster in 2007, Exp (B) is 29.5 (  $p < 0.001$ ) and across the passive cluster and the moderately passive cluster, Exp (B) is 5.7 (  $p < 0.001$ ), while the moderately active cluster did not differ significantly from the passive cluster (  $p = 0.442$ ).

#### **4.4 Comparison of results on purposive information seeking and information encountering**

The study compared the results on purposive information seeking and information encountering in the following information channels: Media, Health specialists and the Internet. The comparison is presented for each cluster in Figures 1-3 [Figure omitted. See Article Image.].

Figures 1-3 [Figure omitted. See Article Image.] show that, with the exception of the internet for the active cluster in 2002, the clusters encounter information more often when they seek it on purpose. In 2002 the difference is greatest for Media for all four clusters, and in 2007 the results are the same, except for the moderately passive cluster, where the difference is identical for Media and the Internet and very similar for Health specialists. Furthermore, particularly among members of the active cluster, there is rich interaction of purposive information seeking and information encountering, while either kind of information seeking behaviour is relatively absent among members of the passive cluster.

#### **5. Discussion and conclusion**

The purpose of the article was to explore information seeking behaviour by examining the interaction between purposive information seeking and information encountering. Prior studies of information seeking have mainly examined purposive seeking and information encountering separately. Moreover, information encountering has mostly been studied using qualitative methods, with relatively small samples of participants. The current study examined the connection between purposive seeking of information on health and lifestyle and information encountering by comparing results from two sets of quantitative data, gathered in 2002 and 2007. It was furthermore decided to use cluster analysis in the study to get a picture of the participants' information seeking behaviour, which is different from the more traditional statistical methods.

The comparison of the results from 2002 and 2007 revealed the same kind of information seeking behaviour by the clusters in the data from 2007 as in the data from 2002. The findings indicate that information encountering is an integral feature of information seeking behaviour occurring on

a regular basis with the study participants. Together these two information-seeking styles form a pattern of information seeking behaviour.

It can be argued that information encountering is a major aspect of information seeking behaviour. Based on the frequency of the respondents' 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. A comparison of the results for purposive seeking and information encountering shows that all four clusters claim to obtain information more often by way of information encountering than by purposive seeking, both in 2002 and in 2007. An exception to this is the active cluster which seeks more information on the internet by purposive seeking (2.92) than by information encountering (2.84) in 2002.

In 2002 the difference between mean figures for purposive seeking activity and information encountering was greatest for Media, in all four clusters. In 2007 the same was found to be true for all the clusters, except for the moderately passive cluster. The mass media generally belong to people's immediate surroundings and form a part of their everyday information environment. Consequently, the possibilities of encountering information in the Media may be greater than with Health specialists or on the internet, and it may therefore be regarded as natural that the difference between information encountering and purposive seeking is greater for the Media than the other channels.

When the results for purposive seeking and information encountering were compared, a pattern emerged, showing the same kind of differences across the four clusters for both styles of information seeking. The comparison revealed that those who were active at purposive information seeking were also active at information encountering and that those who were passive at either of the two styles of information seeking were also passive at the other. Table XI [Figure omitted. See Article Image.] presents an overview of the comparison.

Table XI [Figure omitted. See Article Image.] shows that the passive clusters have the lowest activity of both purposive information seeking and information encountering in all three channels in 2002 and in 2007, while the active clusters have the highest information seeking activity in all channels by both types of information seeking. The moderately passive and moderately active clusters follow the same trend; for each cluster the activity for purposive seeking and information encountering is identical for every information channel. These findings suggest that it may be particularly difficult to reach certain groups in society, and that simply disseminating more information about health and lifestyle is not likely to bring about positive achievements by all social groups. Instead, more creative solutions will be needed to reach certain groups of the population.

The knowledge gap hypothesis proposed by [18] Ettema and Kline (1977) underlines that in order to seek 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 (e.g. [8] Chew and Palmer, 1994; [17] Eriksson-Backa, 2003; [48] Pálsdóttir, 2008; [54] Rimal *et al.* , 1999). It has also been pointed out that it may be possible that motivational factors have underlying social structural factors, and that, for example, a connection between topical interest and education may exist ([60] Viswanath and Finnegan, 1996). 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 this, as well as 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 issues than those with a lower level of education ([6] Beier and Ackerman, 2003; [35] Kenkel, 1990), and that women generally seek more health information than men (see, e.g. [9] Connell and Crawford, 1988; [34] Kassulke *et al.* , 1993; [53] Rakowsky *et al.* , 1990).

Furthermore, recent studies have pointed out that if educational campaigns are to reach the more vulnerable groups in society, they need to employ more strategic approaches ([57] Thomas *et al.* , 2009), and that health promotional efforts specifically targeted at certain groups in society are more likely to be effective ([32] Johnson and Dickson-Swift, 2008). Inequality in lifestyle factors among social groups might become even greater in the immediate future because health-related lifestyles are linked to socioeconomic status ([43] Norwegian Directorate of Health, 2008). This can in turn have serious implications since many of the diseases burdening Western societies have a strong lifestyle component ([52] Public Health Institute of Iceland, 2007; [69] World Health Organization, 2005). If people do not acquire sufficient information about health and lifestyle, they will not be able to gain the knowledge needed to make appropriate changes in their health behaviour. Health promotional initiatives, which are successfully targeted at the more disadvantaged social groups can have a large potential for health improvements related to lifestyle and thereby to public health. The challenge is to reach the most vulnerable social groups effectively and raise their awareness of the available information.

The study is not without limitations. For each study the sample consisted of 1,000 people. The data were collected as postal surveys and in each case one reminder letter was sent and two telephone calls made to non-responders. This resulted in response rates of 51 per cent in 2002 and 47 per cent in 2007, which can be considered satisfactory in a postal survey. Nevertheless, when missing data in the cluster analysis are also considered it raises a question about the validity of the findings. On the other hand, the findings of the studies are strengthened by the fact that the samples of respondents were compared to population parameters and found to reflect the population fairly well.

It is important for the future prosperity of nations that all members of the populations have an opportunity to be healthy. Increasing the possibility of all social groups gaining the information

necessary to make decisions about their behavioural choices, based on knowledge and facts, is the first vital step in that direction. The findings here of a pattern of behaviour combining the two information seeking approaches is interesting and can have practical implications for understanding better how people seek information about health and lifestyle. However, the connection between purposive information seeking and information encountering deserves more attention and further work is needed to explore it.

The study reported was funded by the University of Iceland Research Fund. The author wishes to acknowledge the contribution of The Social Science Research Institute, University of Iceland, for assistance and statistical advice during data collection and analysis.

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