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Lifestyle changes from online information are associated with discussing the information with a doctor

A cross-sectional study among members of the Norwegian Diabetes Association

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1 Foreword

The purpose of this master thesis was to investigate to what extent people with diabetes report lifestyle changes based on online information, and to examine associations between lifestyle changes and sociodemographic factors, health, and discussing the information with a doctor

I chose this project for my master thesis as I have always had an interest in a healthy lifestyle as treatment and prevention of diseases. Therefore, when I was introduced to the DIAcare project through my supervisor Anne Helen Hansen, I was in no doubt that this would be an interesting master project for me.

Through this project I have learned a lot about possibilities within eHealth, including the potential reach and effect on public health. I have also learned about social disparities in health. This is knowledge I think will be very useful to bring with me in my future medical career.

I would like to thank my supervisor, Associate Professor Anne Helen Hansen. She has been a great support and help throughout this master project. This project could not have been completed without her exceptional guidance. I would also like to thank my family and friends for supporting me.

31.08.20

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3 Abstract

Background: The prevalence of diabetes and the use of electronic health (eHealth) are increasing. There are strong indications that lifestyle changes in a positive direction may reduce morbidity and mortality in patients with diabetes. However, little is known about the association between the use of eHealth and lifestyle changes in people with diabetes.

Objective: The objective of this study was to investigate to what extent people with diabetes report lifestyle changes based on online information, and to examine associations between lifestyle changes and sociodemographic factors, health, and discussing the information with a doctor.

Methods: We used email survey data obtained from 1250 members of the Norwegian Diabetes Association aged 18 to 89 years in 2018. Included in the analyses was the 847 persons who were diagnosed with diabetes themselves and had used eHealth within the previous year. We used descriptive statistics to estimate internet triggered lifestyle changes. Logistic regressions were used to estimate the associations between lifestyle changes and gender, age, education, self-rated health, and discussing the information with a doctor.

Results: Lifestyle changes accomplished after online information was reported by 46.9% (397/847) of the participants. The odds for changing lifestyle was more than doubled for those who had discussed information from the internet with a doctor (OR 2.54, CI 1.90-3.40). The odds for lifestyle changes decreased with age over 60 years, and in the age group 30-39 years. Internet-triggered lifestyle changes were not associated with gender, education, or self-rated health.

Conclusions: Our findings suggest that internet can play a significant role in lifestyle changes among people with diabetes. This study underlines the importance of easily available high-quality online information. Our findings also indicate that health-care professionals can play an important role in lifestyle changes additional to health-advice found on the internet.

4 Nomenclature and abbreviations

CI = confidence interval

eHealth = electronic health, the use of information and communication technologies for health

NDA = Norwegian Diabetes Association

NSD = The Norwegian Centre for Research Data

OR = odds ratio

T1D = type 1 diabetes

T2D = type 2 diabetes

5 Background

5.1 Prevalence of diabetes in Norway and globally

Diabetes is recognized as one of the fastest growing global health emergencies of the 21st century. The global prevalence of diabetes was estimated to 463 million (9.3%) in 2019, and is expected to increase to 700 million (10.9%) in 2045 (1). In Norway it is estimated that 244 000 people (4.7%) have diabetes (2). Of those, 28 000 have type 1 diabetes (TD1), and 216 000 have type 2 diabetes (TD2). Data from the Norwegian Prescription Database indicates that the prevalence of diabetes is increasing in Norway, as the number of people using anti-diabetic drugs has increased from 110 751 in 2004 to 207 517 in 2019 (3). In recent years incident use of oral anti-diabetic drugs was stable or decreasing, which may indicate that the increase in diabetes incidence in Norway is levelling off (4). People with diabetes have increased morbidity and mortality compared to the general population (5, 6). Estimates from the Global Burden of Disease study 2015 shows that diabetes is the 10th most important reason for disability adjusted life years (DALYs) in Norway (7). Diabetes is a complex, chronic illness requiring continuous medical care with multifactorial risk-reduction strategies beyond glycemic control (8). Most patients do not reach the combined treatment goals regarding HbA1c, systolic blood-pressure and LDL-cholesterol levels (9-12).

5.2 Recommendations for lifestyle focus in people with diabetes

Lifestyle management is a fundamental aspect of diabetes care (13). Physical activity, diet management and smoking cessation is recommended by the Norwegian Diabetes Association, The Norwegian Directorate of Health and the American Diabetes Association (13-15).

Exercise have shown several beneficial effects in people with diabetes included improved glycemic control (only type 2 diabetes), beneficial effects on lipid-levels, increased insulin-response and a reduction in cardiovascular and total mortality (16-22).

Diet management is an important part of diabetes management. The evidence is strong that medical nutrition therapy provided by registered dietitians is an effective and essential therapy (23). Medical nutrition therapy is the process by which the nutrition prescription is tailored for each patient with diabetes based on medical, lifestyle, and personal factors and is an

integral component of diabetes management and diabetes self-management education (24). Medical nutrition therapy improves glycemic control, and may also improve lipids, blood pressure, weight management, as well as decreasing the need for medications and reducing the risk of onset and progression of comorbidities (23).

Smoking cessation in people with diabetes who smoke is an essential part of diabetes care, as quitting smoking decreases the risk of both micro- and macrovascular complications of diabetes (25, 26). Thus, there are strong indications that lifestyle changes in a positive direction may reduce morbidity and mortality in patients with diabetes.

5.3 Increasing use of eHealth

The World Health Organization (WHO) defines eHealth as "the use of information and communication technologies for health" (27). Health-related internet use have increased substantially in the resent years (28-31). 70-80% of internet users in Europe and the United States have reported using the internet for health-related purposes (28, 30, 32-37). Those more likely to seek health information online are women, younger people, people with higher education, higher household income, long-term-illness/heavy use of health-care services, and a subjective assessment of one's own health as good (28, 30-38). It was recently reported that 87% of Norwegians with type 1 diabetes use eHealth-services (39).

In Norway, 98% of households have internet access (40) and 90% of the population between 16 and 79 years use the internet every day. Social media is used by 80% (41). Among the Norwegian population over 15 years of age, 78% have reported using the internet for health-related purposes (30). In year 2000 only 19% of the Norwegian population had searched for health-information online (30).

5.4 Lifestyle changes after online information

Several studies have shown that internet-based interventions can promote health behavior change (42-44), regarding physical activity (45), diet, weight loss (46-48), and smoking cessation (49). A quite consistent finding is that internet-based interventions that are interactive and tailored to individuals are generally more successful than those who are not, and that eHealth used with additional support, such as direct interaction with the health-care provider or in-person counseling, increase the effectiveness compared to stand-alone eHealth

interventions (43, 44, 46-49). There is no solid evidence whether this applies to Norwegian people with type 1 or type 2 diabetes.

Among Norwegian internet-users the most used eHealth related activity was to read about exercise or diet, reported by 60% (30, 36). A Norwegian study from 2007 found that 40% of those who had used internet for health-related purposes reported feeling inspired to change health behavior as a consequence (31). Using internet- or mobile-based self-help programs to support health-behavior change was reported by 17% of Norwegian internet users (36). In the United States 43% of internet users reported using the internet to help with diet, weight and physical activity (50). Using the internet for this purpose was associated with more fruit intake, more vegetable intake and more moderate exercise (50). Because lifestyle focus is strongly recommended for people with diabetes, and the use of internet is widespread in Norway, we want to examine how use of the internet can affect lifestyle changes for the large group of people diagnosed with diabetes in Norway.

6 Aim

The aim of this study was to investigate to what extent people with diabetes report lifestyle changes based on online information, and to examine associations between lifestyle changes and sociodemographic factors, health, and discussing the information with a doctor. More specifically, we aim to answer the following research questions: “To what extent do people with diabetes report lifestyle changes after online information?” and “How are lifestyle changes after online information associated with, age, gender, education, self-rated health and whether the information has been discussed with a doctor?”

7 Material and methods

7.1 Data source

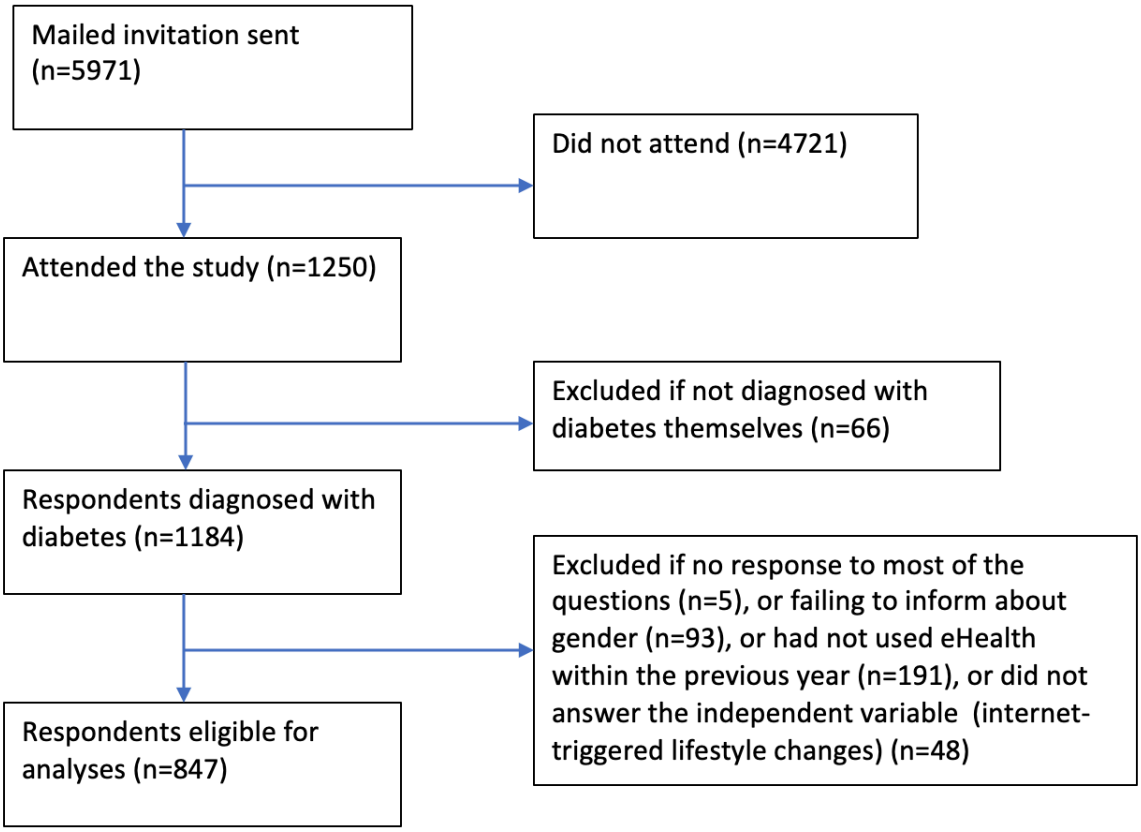
This master project is a cross-sectional study based on the same data as the DIAcare project (39). The DIAcare project conducted a survey on use of eHealth among members of the Norwegian Diabetes Association (NDA) in January and February 2018. The Norwegian Centre for Research Data (NSD) assisted in the collection of data.

7.2 Participants

Invitations to participate in the study was sent by email to 5971 randomly selected members of the NDA (about 18% of all members). Information about the study was posted together with the email-invitation. It was not possible for the same member to fill in the questionnaire more than once. A total of 1250 persons, aged 18-89 years answered the questionnaire, giving a minimum response rate of 21% (1250/5971). The real response rate is assumed to be higher as the DIAcare project experienced more than 400 bounce backs from servers unable to deliver the invitation (39).

Starting from 1250, 66 participants were excluded for not having diabetes themselves. This group consisted mainly of family members, but also a few health personnel and others. Those who left out most of the questions (n=5) and those who did not give information about gender (n=93) were also excluded. At last, we excluded those who had not used eHealth within the previous year (n=191) and those who did not give an answer to the independent variable (internet-triggered lifestyle changes, n=48). This left a sample of 847 respondents who were diagnosed with diabetes and had used eHealth during the previous year (figure 1).

Figure 1: Flowchart of study population



7.3 Questionnaire and measures

The questionnaire (appendix 1) included questions about use of and experiences with eHealth and health care services, health status, and demographic and socioeconomic characteristics. Sociodemographic information included gender, age, and educational attainment. For the analyses, age was grouped in 10-year intervals. The 4 education categories were labeled low (primary/part of secondary school), middle (high school), high (college/university less than 4 years), and highest (college/university 4 years or more). Self-rated health was measured with the item: "How do you rate your own health in general?" Response options were excellent, good, fair, bad, and very bad. Due to low numbers in the very bad category (4 respondents), we merged the bad and very bad categories. Regarding use of eHealth we included the two following questions in the analyses; "Based on information you have found on the internet, have you changed your lifestyle?" and "Based on information you have found on the internet, have you discussed the information with a doctor?". The variables originally had four response options but was dichotomized by merging the response options into "never" and "once, sometimes or often". We chose to dichotomize the variable as our interest were if the respondents had ever made an internet-triggered lifestyle-change or discussed online information with a doctor, rather than how often.

7.4 Analyses

Data were analyzed by descriptive statistics and logistic regressions. Lifestyle changes based on online information was used as the dependent variable. The independent variables were age, gender, education, self-rated health status and whether the participants had discussed eHealth information with a doctor. A multivariable regression model was constructed to determine the associations between internet-triggered lifestyle changes and the independent variables. The independent variables were introduced collectively into the regression model. As reference categories we used female gender, age 18-29 years, low education, excellent self-rated health and never having discussed information from the internet with a doctor. We used 95% confidence intervals and set $P<.05$ as the significance level throughout the study. All analyses were performed by Stata version 15.1 (StataCorp LLC).

7.5 Ethics

This study was approved by the data protection officer at the University Hospital of North-Norway (ref 2019/3761). The Regional Committee for Medical and Health Research Ethics

(REK) found that an application for this project was not required according to the Norwegian Health Research Act (2015/1779/REK nord). The data bureau NSD received no information about the participants other than the email addresses.

8 Results

8.1 Sample characteristics

Of the 847 participants included in this study, 438 were men (51.7%). Mean age of the participants was 53.9 years, 51.0 years for women and 56.6 years for men. Median age was 56 years. Over 40% were aged were aged 60 years or older (357/847, 42.2%). Half of the participants had type 1 diabetes (428/847, 50.5%), 47.7% had type 2 diabetes (404/847), and 2.8% had other types of diabetes (24/847). Four of the participants reported having both type 1 and type 2 diabetes, and two reported having both gestational diabetes and type 2 diabetes. Therefore, six of the participants entered into more than one group regarding type of diabetes.

Among the participants, 62,1% had education from college or university (high or highest education group, 262/826, 31.7% and 251/826, 30.4%, respectively). Half of the participants rated their own health as good (424/841, 50.4%). Just over half of the participants had never discussed information from the internet with a doctor (443/845, 52.4%). Lifestyle-changes accomplished after online information was reported by 46.9% (397/847).

Table 1: Sample characteristics

Characteristic	**Value, n (%)**
Gender (n=847)	
Female	409 (48.3)
Male	438 (51.7)
Age in years (n=847)	
18-29	73 (8.6)
30-39	87 (10.3)
40-49	127 (15.0)
50-59	203 (24.0)
60-69	229 (27.0)
≥ 70	128 (15.1)

Type diabetes (n=847)	
Type 1	428 (50.5)
Type 2	404 (47.7)
Other (including gestational diabetes)	24 (2.8)
Education (n=826)	
Low	73 (8.8)
Middle	240 (29.1)
High	262 (31.7)
Highest	251 (30.4)
Self-rated health (n=841)	
Excellent	118 (14.0)
Good	424 (50.4)
Fair	212 (25.2)
Poor/very poor	87 (10.3)
Have you discussed information from the internet with a doctor? (n=845)	
Never	443 (52.4)
Once/sometimes/often	402 (47.6)
Have you changed your lifestyle based on information from the internet? (n=847)	
Never	450 (53.1)
Once/sometimes/often	397 (46.9)

8.2 Probability of changing lifestyle after online information

The probability of making an internet-triggered lifestyle change decreased with higher age and increased with discussing information from the internet with a doctor.

People aged 60-69 years and 70 years and over were significantly less likely to change lifestyle after online information, compared with people aged 18-29 years (odds ratio (OR) 0.54, CI 0.31-0.95 and OR 0.42, CI 0.23-0.80, respectively). In addition, we found that persons aged 30-39 years were significantly less likely to make an internet-triggered lifestyle change compared to persons aged 18-29 years (OR 0.49, CI 0.25-0.97). The age groups 40-49 years and 50-59 years did not have significantly less odds for lifestyle changes compared to the reference group.

The probability of changing lifestyle after online information was more than doubled for people who had discussed information from the internet with a doctor, compared to those who had not (OR 2.54, CI 1.90-3.40).

Gender, education, and self-rated health were not associated with making an internet-triggered lifestyle change (table 2).

Table 2: Probability of changing lifestyle after online information

Characteristic	OR[a]	P value	95 % CI[b]
Gender			
Female	1.00	- [c]	-
Male	0.99	0.95	0.74-1.33
Age in years			
18-29	1.00	-	-
30-39	***0.49***	***0.04***	***0.25-0.97***
40-49	0.79	0.46	0.43-1.46
50-59	0.74	0.30	0.42-1.30
60-69	***0.54***	***0.03***	***0.31-0.95***
≥ 70	***0.42***	***0.01***	***0.23-0.80***
Education			
Low	1.0	-	-
Middle	1.04	0.89	0.60-1.81
High	0.95	0.84	0.54-1.64
Highest	1.01	0.97	0.58-1.77
Self-rated health			
Excellent	1.0	-	-
Good	1.12	0.60	0.73-1.74
Fair	1.07	0.77	0.67-1.73
Poor/very poor	1.35	0.32	0.75-2.43
Have you discussed information from the			

internet with a doctor?			
Never	1.0	-	-
Once/sometimes/often	***2.54***	***<0.00***	***1.90-3.40***

[a]OR: odds ratio.
[b]CI: confidence interval
[c]Not applicable (reference group).

Statistically significant findings are written in bold and cursive.

9 Discussion

9.1 Principal findings

Almost half of the participants (397/847, 46,9%) reported that they had made lifestyle-changes based on online information, once or several times. The probability of making an internet-triggered lifestyle change decreased with higher age (≥ 60 years) and increased with discussing information from the internet with a doctor. We also found that the group aged 30-39 years were significantly less likely to make a lifestyle change after online information compared to persons aged 18-29 years. Internet-triggered lifestyle changes were not associated with gender, education, or self-rated health.

9.2 Internet-triggered lifestyle changes

47% of participants in this study reported that they once or several times had made lifestyle changes based on online information. A Norwegian study from 2007 found that 40% of those who had used internet for health-related purposes reported feeling inspired to change health behavior as a consequence (31). A US study found that in 2011, 43% of internet users used the internet to help with diet, weight and physical activity and that using the internet for this purpose was associated with more fruit- and vegetable-intake and more physical activity (50). These numbers are just slightly lower than what we found. However, none of those studies reported on how many who had actually changed their lifestyle based on online information.

A factor that also has to be taken in to account is that our study is conducted among people with diabetes, and previous research has indicated that persons with chronic diseases tend to use the internet for health purposes to a higher extent than the general population (30, 32, 37).

The proportion of people reporting lifestyle changes after online information in this study may therefore be higher than in the general population.

A Danish observational study conducted among 103 obese diabetes patients between 2016 and 2018, found that 85.4% of the participants lost weight during an eHealth intervention for weight loss (51). Although none of the studies mentioned above are directly comparable to ours, they support the finding that internet can play a significant role in lifestyle changes.

9.3 Positive associations between lifestyle changes and discussing online information with a doctor

The probability of making lifestyle changes after online information more than doubled for people who discussed information from the internet with a doctor, compared to those who did not. Previous metanalyses have indicated that face-to-face interactions can increase the effectiveness of internet interventions (44, 48). A recent qualitative interview study among obese patients with diabetes who had participated in an eHealth-intervention for weight loss, found that the most important driver in long-term weight loss was a strong relationship with a healthcare professional (52). Our findings are in line with this research, emphasizing that health-care professionals can play an important role in lifestyle changes additional to health-advice found on the internet. In general, there are evidence that eHealth services are additional rather than alternative to support provided by traditional health care services (39). Our findings imply that it is important for health personnel to discuss lifestyle advice with patients, even though there are plenty of easily accessible lifestyle-advice on the internet.

9.4 No gender differences in internet-triggered lifestyle changes

In this study there were no gender differences in making lifestyle changes after online information. It is a general finding that women tend to use the internet for health purposes more than men (29, 30, 32-37). However, using the internet for health purposes does not necessarily lead to lifestyle changes.

When Alvarez-Galvez et al. investigated the use of eHealth among 26,566 inhabitants in the 28 EU Member States in 2020 (data from 2014), they found men showed a larger interest in lifestyle choices than women, while women were more interested in healthcare professionals,

vaccinations, and pregnancy and childbirth than men were (37). Differences in the purpose of eHealth use could be a possible explanation to why we didn't find differences in internet-triggered lifestyle changes according to gender.

The previously mentioned Danish study among obese diabetes patients, found no significant gender differences on average weight loss after an eHealth intervention (51). This finding is in line with ours and may indicate that men and woman are equally able to do internet-triggered lifestyle changes. As both studies are conducted among a Scandinavian population with diabetes the findings are not necessarily representative for other population groups.

9.5 Less lifestyle changes among people over 60 years and those aged 30-39 years

The odds for making a lifestyle-change based on online information decreased in people over 60 years. This is in line with previous research quite consistently indicating that younger people use the internet for health purposes more than older people (28-32, 34, 35, 50). There are also indications that younger people to a higher extent trust information from the internet, as around 80% of young French adults (mean age 22.6 years) trusted health information from the internet (53), whereas around 40% of older people in the Netherlands (mean age 72.0 years) trusted this information source (54). More use of eHealth and greater trust in information found on the internet among younger people might make younger people more able to do an internet-triggered lifestyle change.

A quite surprising finding in our study was that people aged 30-39 years reported significantly less lifestyle changes from online information compared to people aged 18-29 years, as well as compared to people aged 40-49, 50-59 and 60-69 years. For the use of eHealth in general we have not found indications that people aged 30-39 years are less active. Rather, Andreassen et al. reported in 2007 that the 30-44 age group included the most active eHealth in seven European countries (32). In 2013, Sørensen et al. found that almost 70% of Norwegians aged 30-44 years had read about exercise or diet on the internet (30). This proportion is slightly smaller than for the age group 15-29 years, but higher than for the age groups 45-59 years and 60 years and over. A possible explanation could be that they are strongly occupied with focusing on career and family in this phase of life, rather than focusing on lifestyle changes.

9.6 No associations between lifestyle changes and education or self-rated health

We found no associations between internet-triggered lifestyle changes and education or self-rated health. Prior research quite consistently indicates that people with higher education use the internet for health purposes to a greater extent (28, 31-34, 37), including using the internet to support exercise or diet (36, 50).

One factor that could be influencing our result is that is that in our study, 62.1% of the participants had education from college or university, compared to 34.6% in the general Norwegian population (55). The percentage of persons with type 1 diabetes is higher than in the general population with diabetes in Norway (2), and there are indications that that people with T1D are higher educated than people with T2D (56). These factors make our finding difficult to generalize regarding the association between education and internet-triggered lifestyle changes in both the population with diabetes and in the general Norwegian population.

A possible explanation to why we did not find differences according to education could be related to adaption time for the use of internet as source for eHealth. Often those with higher education are early adopters to novel technology (56). Now that it is more common and widespread to consult the internet for health information (28-31), the differences may even out. It may therefore be easier to find differences according to education in earlier studies, compared to more recent ones.

Also, we found no associations between internet-triggered lifestyle changes and self-rated health. Using the internet for health purposes is a precondition for making internet-triggered lifestyle changes. When Andreassen et al. investigated the use of eHealth in 7 European countries in 2007, they found that people in good self-rated health were more likely to use the internet for health purposes. The group that used internet most for health purposes were those who suffered from illness but who nevertheless felt that they were in good health (32). However, when Alvarez-Galvez et al. seven years later surveyed the inhabitants of the 28 EU Member States, they found no significant relationship between self-rated health and the use of the internet for health purposes (37). We were not able to find studies that investigated the

associations between self-rated health and internet-triggered lifestyle changes among people with diabetes.

9.7 Limitations

A low participation rate is the main limitation of this study. This was problematized by Hansen et al. in the first publication in the DIAcare project (39). Due to the low response rate, Hansen et al. compared respondents who did not respond initially but eventually consented with early respondents, assuming that late respondents were more similar to non-respondents. By doing this they found out that older people (aged over 60 years) dominated among the late respondents. Younger people may therefore be overrepresented in the study. In general, participation in studies are generally lower in younger people (57), and this may contribute to level out a possible overrepresentation of younger people. Nevertheless, generalization should be made with caution.

In questionnaire data there is always potential for recall bias, which can lead to both under- and overreporting of the measured outcomes. In this study, providing objective measures instead of using self-reported data would be difficult as one would have to supervise the participants' internet use along with all lifestyle related behavior in the participants every-day life. This would require large amounts of resources and be challenging is terms of privacy. However, studies have shown that self-reported data regarding Web-based eHealth solutions are valid (58).

In questionnaire data there is also a risk of questions being misunderstood or interpreted differently from respondent to respondent. Therefore the questionnaire used in the DIAcare project and this master thesis was reviewed and tested several times by 2 persons diagnosed with diabetes and by experts from the DIAcare research group before the questionnaire was distributed (39).

Because of the cross-sectional study design, no causal relationships can be established. Also, we cannot exclude the possibility of unmeasured confounders of the reported associations, such as which type of internet resources the participants have used, how often they use the internet for health purposes, and objective measures on health status.

9.8 Strengths

One of the strengths of this study is that is focuses on an area that is scarcely investigated. The cross-sectional study design based on self-reported data gave us the opportunity to investigate lifestyle changes after online information on a general basis, rather than focusing on one type of lifestyle change after the use of one specific webpage/app/internet-intervention. Another strength is that this study includes people with both type 1 and type 2 diabetes, recruited from all over Norway, aged from 18 to 89 years. The observational design of this study allows for data to reflect a real-life setting.

9.9 Implications and further research

Our findings suggest that internet can play a significant role in lifestyle changes among people with diabetes. Discussing the information with health personnel increases the odds for changing lifestyle. It is therefore of importance that high-quality updated online information is easily available for patients, and that doctors make room for discussing the information with the patients in the clinical encounter.

In this study we recorded whether the participants had made lifestyle changes after online information or not. Future research should investigate what kind of changes participants have made regarding lifestyle. A qualitative study among people with diabetes would be suitable for this item.

Future research could also examine possible explanations to why people aged 30-39 years report less lifestyle changes and investigate facilitators and barriers to discussing lifestyle information from the internet in the clinical encounter.

10 Conclusion

Our findings suggest that internet can play a significant role in lifestyle changes among people with diabetes. Therefore, it is of importance that high-quality updated online information is easily available for patients. This study also indicates that health-care professionals can play an important role in lifestyle changes additional to health-advice found on the internet. It is therefore of importance that health personnel make room for discussing lifestyle advice in the clinical encounter. Future research should investigate what kind of changes participants have made regarding lifestyle, examine possible facilitators and barriers

to discussing lifestyle information from the internet in the clinical encounter, and seek to find possible explanations to why people aged 30-39 years report less lifestyle changes.

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12 GRADE-evaluation of key/main articles in the reference list

Reference: Alvarez-Galvez J, Salinas-Perez JA, Montagni I, Salvador-Carulla L. The persistence of digital divides in the use of health information: a comparative study in 28 European countries. Int J Public Health. 2020;65(3):325-33.

Study design: Cross-sectional

Grade - quality Low

Objective	Material and methods	Results	Discussion/comments/checklist
to identify which are the socio-demographic factors that can describe health information users' profiles in Europe and assess which are the factors distinguishing users and non-users and their association with the use of health-related online information **Conclusion** Findings show a need to increase people's eHealth literacy, especially for males over 45 years old not suffering from a long-term illness. In order to limit the misuse of poor or untrustworthy health information that might contribute to higher health disparities, special interest should be focused on population socio-demographic characteristics. **Land** The 28 EU member states **Year for data collection** 2014	**Population** 26,566 individuals living in private households in the EU member states, regardless of nationality or citizenship, language or legal status, who answered the questionnaire via mobile phone or fixed phone lines **Inclusion-/exclusion criteria.** Included if they had answered the questionnaire by phone. Exclusion criteria undisclosed. **Main exposure:** Use of internet for health purposes **Important confounding factors** gender, age, education, long-term illness, health-related knowledge, frequency of internet use, phone/mobile phone access, country of residence **Statistical methods** multilevel logistic regression model and a propensity score matching	**Main finding** There were significant differences in the use of the Internet for health information according to gender, age, education, long-term illness and health-related knowledge. **How large is the effect? (Adjusted odds ratio) + CI** Gender: Male (ref.) female OR 2.03, CI (1.878–2.186) Age group: 15 – 24 (ref.) 45-54 OR 0.78, CI (0.648–0.943) 55-64 OR 0.56, CI (0.459–0.670) 65+ OR 0.38, CI (0.312–0.459) Education (per year): OR 1.04, CI (1.033–1.048) Long-standing illness: No long-standing illness (Ref.) One long-standing illness OR 1.60, CI (1.457–1.746) Multiple long-standing illness OR 2.16, CI (1.896–2.466) Knowledge of health topics: Very bad (Ref.) Fairly bad OR 2.27, CI (1.660–3.104) Fairly good OR 2.70, CI (2.001–3.656) Very good OR 2.18, CI (1.592–2.993) **Other findings** Results showed that a poor health status was associated with a higher use of the Internet for health purposes only for people having chronic conditions. 72% of Europeans had used the Internet to search for health-related information. Statistically significant differences by self-rated health (SRH) were not found. Men used more search engines, while women preferred health organization websites. Social networks were more consulted by women. Regarding topics searched for differences per gender were small. However, men were more interested in lifestyle choices than women, while women were more interested in healthcare professionals, vaccinations, and pregnancy and childbirth than men Internet search for health information significantly varied among European countries. The probability of using the Internet for health purposes increased linearly with the frequency of Internet use, but exclusively among those who presented a frequent use of the Internet. A similar pattern was also found for mobile phone availability, i.e. those who had mobile phones used them also for health information seeking.	**Checklist:** • **Is the objective clear?** Yes • **Is a cross sectional design suitable for the objective?** Yes • **Is the inclusion criteria clearly defined?** No • **Are responders compared to non-responders?** No • **Was the response rate high enough?** Undisclosed • **Is the main exposure validated? (Classific. Bias?)** No, all data is self-reported via phone interviews. • **Has the authors considered important confounding factors in the design/analyses?** Yes • **Do you believe in the results?** Yes • **Can the results be transferred to practice?** Yes • **Does the literature support the results?** Yes **What does the authors discuss about :** - **Strengths:** - one of the first studies measuring the differences in the search for online health information according to social and demographic factors in a large set of European countries - use of the Internet to search for health information was compared across different variables that have been considered as relevant in previous literature - **Weaknesses:** - the analysis did not include socio-economic factors such as income or occupational status - only the first dimension of eHealth literacy was explored, i.e. access to online health-related information, without using validated health literacy scales - The study did not explore contextual effects of specific macro-level indicators that might be relevant to understand between-countries variations

Reference: Andreassen HK, Bujnowska-Fedak MM, Chronaki CE, Dumitru RC, Pudule I, Santana S, et al. European citizens' use of E-health services: A study of seven countries. BMC Public Health. 2007;7(1):53-.

Study design: Cross-sectional

Grade - quality Low

Objective	Material and methods	Results	Discussion/comments/checklist
To investigate patterns of health-related Internet use, its consequences, and citizens' expectations about their doctors' provision of e-health services **Conclusion** The users of Internet health services differ from the general population when it comes to health and demographic variables. The most common way to use the Internet in health matters is to read information, second comes using the net to decide whether to see a doctor and to prepare for and follow up on doctors' appointments. Hence, health-related use of the Internet does affect patients' use of other health services, but it would appear to supplement rather than to replace other health services. **Land** Norway, Denmark, Germany, Greece, Poland, Portugal and Latvia **Year for data collection** 2005	**Population** People living in Norway, Denmark, Germany, Greece, Poland, Portugal and Latvia between 15-80 years of age **Inclusion-/exclusion criteria.** People aged 15-80 years living in Norway, Denmark, Germany, Greece, Poland, Portugal and Latvia who answered the telephone interview. Recruited via random digit dialing. Sampling continued until approximately 1000 interviews from all countries were completed **Main exposure:** Use of internet for health purposes **Important confounding factors** Gender, age, education, work status, number of general practitioner (GP) visits, self-rated health status, long-term illness. Country of residence, internet access/frequency of use, phone/mobile phone access **Statistical methods** descriptive statistics and logistic regression analysis A chi-square test was used to determine whether the differences in eHealth use between countries were significant	**Main finding** 44 % of the total sample, 71 % of the Internet users, had used the Internet for health purposes. Factors that positively affected the use of Internet for health purposes were youth, higher education, white-collar or no paid job, visits to the GP during the past year, long-term illness or disabilities, and a subjective assessment of one's own health as good. Women were the most active health users among those who were online. **How large is the effect? Adjusted odds ratio (CI)** Age group: 15-29 (ref.) 30-44: 0,59 (0,52–0,68) 45-59: 0,34 (0,29–0,39) 60 +: 0,08 (0,07–0,10) Completed education: below A-level (ref.) A-level: 2,18 (1,92–2,48) Above A-level: 3,98 (3,36–4,70) GP visits the last year: 0 (ref.) 1-5: 1,33 (1,16–1,54) More than 5: 1,58 (1,33–1,87) Self-reported health status: good (ref.) Fair: 0,70 (0,61–0,79) Poor: 0,53 (0,40–0,69) Gender: male (ref.) female 1,17 (1,03–1,34) **Other findings** One in four of the respondents used the Internet to prepare for or follow up doctors' appointments. Feeling reassured after using the Internet for health purposes was twice as common as experiencing anxieties. When choosing a new doctor, more than a third of the sample rated the provision of e-health services as important. Health-related use of the Internet was most frequent in the Northern countries, and least frequent in the Southern countries.	**Checklist:** • **Is the objective clear?** Yes • **Is a cross sectional design suitable for the objective?** Yes • **Is the inclusion criteria clearly defined?** Yes • **Are responders compared to non-responders?** No • **Was the response rate high enough?** Undisclosed • **Is the main exposure validated? (Classific. Bias?)** No, all data is self-reported. • **Has the authors considered important confounding factors in the design/analyses?** Yes • **Do you believe in the results?** Yes • **Can the results be transferred to practice?** Yes • **Does the literature support the results?** Yes **What does the authors discuss about :** - **Strengths** - the findings are supported by previous research - **Weaknesses** - It was not possible to calculate an exact response rate due to lacking data from the polling agencies - Low telephone penetration in Poland - Income was not included as a variable

Reference: Wangberg SC, Sørensen T, Andreassen HK, Wangberg SC. Using the Internet to Support Exercise and Diet: A Stratified Norwegian Survey. 2015.

Study design: Cross-sectional

Grade - quality Low

Objective	Material and methods	Results	Discussion/comments/checklist
To investigate to what extent the Norwegian population use the Internet to support exercise and diet, what kind of services they use, and whether there are social disparities in use **Conclusion** Gender and education are related to how the Internet is used to support health behaviors. We should be aware of the potential role of the Internet in accelerating social disparities in health and continue to monitor population use. **Land** Norway **Year for data collection** 2013	**Population** Norwegian internet users **Inclusion-/exclusion criteria.** A stratified sample of 2196 persons was drawn from TNS Gallup's ISO 26362 certified Web panel of about 50,000 Norwegians over 15 years of age **Main exposure:** Use of internet to support exercise and diet **Important confounding factors** socioeconomic status, age, gender,education, appearance evaluation, interest in lifestyle, internet information processing skills, type of services used (regarding eHealth) **Statistical methods** Chi-square and ANOVA were used to test for differences between groups and logistic regression to analyze relationships between variables	**Main finding** 69% of women and 53% of men had read about exercise or diet on the Internet. More people with higher education reported this. **How large is the effect? (Adjusted odds ratio + CI)** Gender: (χ2= 25.6, P<.001) Education: (χ2=19.1, P<.001) Having kept an online exercise or diet diary as dependent outcome: OR (95%CI) p-value Good or very good subjective health 1.92 (1.23-3.00) .004 Higher education 1.69 (1.18-2.44) .005 Female 1.40 (0.98-1.99) .067 More satisfied with appearance 0.96 (0.90-1.03) .262 **Other findings** gender difference was found for using Internet-based interventions with 20% of women compared to14% of men reporting having used these interventions (χ2=7.9, P= .005), for having posted a status about exercise or diet on Facebook or other SNS (23% vs 12%, χ2=18.8, P<.001), and for having kept an online exercise or diet journal (21% vs 15%, χ2=7.0, P=.008). Evaluations of own physical appearance accounted for some of the gender differences in using online exercise or diet journals. Seven percent of the total sample reported having used electronic communication to ask professionals about exercise or diet, while a few more had discussed online with peers (10%). Asking professionals online was more common amongst those with only primary education (13%, χ2<10.5, P=.005).	**Checklist:** • **Is the objective clear?** Yes • **Is a cross sectional design suitable for the objective?** Yes • **Is the inclusion criteria clearly defined?** Yes • **Are responders compared to non-responders?** No • **Was the response rate high enough?** Yes, 87 % of those who opened the email invitation completed the survey. • **Is the main exposure validated? (Classific. Bias?)** The exposure is only self-reported and not validated against objective measures. • **Has the authors considered important confounding factors in the design/analyses?** Yes • **Do you believe in the results?** Yes • **Can the results be transferred to practice?** Yes • **Does the literature support the results?** Yes **What does the authors discuss about :** - **Strengths** - The study used and reported several potentially overlapping items to make sure that it did not underestimate frequency of use (of internet to support exercise or diet) based on the participant not being familiar with what the authors chose to name the activity - **Weaknesses** - The questionnaire did not ask about watching videos online - Some of the items the questionnaire did ask about are probably overlapping, and not very precisely defined in terms of probably catching some eHealth use that is not directly related to health behaviors - The study lack detailed information about the participant's health behavior and whether there were any changes after Internet use

Reference: Using the Internet to Help With Diet, Weight, and Physical Activity: Results From the Health Information National Trends Survey (HINTS), McCully, 2013			**Study design: Cross-sectional** **Grade - quality** Low
Objective	**Material and methods**	**Results**	**Discussion/comments/checklist**
To (1) assess the demographic characteristics of people who use the Internet to help with diet, weight, and physical activity (DWPA), (2) assess whether usage trends changed over time, and (3) investigate the associations between using the Internet for DWPA and health behaviors. **Conclusion** Contrary to prior research, our population-level study did not show a pronounced gender difference in the use of the Internet for DWPA. Our results support the increasing viability of the Internet as a platform for behavior change intervention, as a growing percentage of Internet users are turning to the Internet for help with DWPA. Additionally, using the Internet for DWPA is associated with better DWPA-related health behaviors. **Land** USA **Year for data collection** 2007 and 2011	**Population** US adults who participated in the Health Information National Trends Survey in 2007 and 2011 **Inclusion-/exclusion criteria.** Those who had missing data on using the Internet for DWPA (32.8%) or key demographic variables (2.5%) were excluded **Main exposure:** Having used a website to help with diet, weight, or physical activity **Important confounding factors** Age, gender, level of education, BMI, race/ethnicity, marital status, internet access, level of internet use, internet information processing skills, interest in the topic **Statistical methods** Multiple logistic regression was used to determine the demographic correlates of using the Internet for help with DWPA. Multiple linear regression was used to test the associations between Internet use for DWPA and three health behaviors: fruit intake, vegetable intake, and physical activity.	**Main finding** A larger percentage of Internet users used the Internet for DWPA in 2011 (42.83%) than in 2007 (40.43%). In general, Internet users who were younger, more educated, married, of a minority race, and who had a higher Body Mass Index (BMI) were more likely to use the Internet for DWPA **How large is the effect? (Adjusted odds ratio), CI** Age: OR 0.98, CI 0.97-0.98 Education: OR 1.40, CI 1.38-1.42 Marital status: OR 1.06, CI 1.02-1.11 Race: non-Hispanic blacks: OR 1.14, CI 1.02-1.11; Hispanics: OR 1.42, CI 1.20-1.68 BMI: OR 1.04, CI 1.03-1.04 **Other findings** Across survey years, gender was not associated with using the Internet for DWPA (OR 1.03, P=.12), but there was a significant interaction between survey year and gender (OR 1.95, P=.002); in 2007, men were more likely to use the Internet for DWPA, but women were more likely to do so in 2011. Using the Internet for DWPA was associated with more vegetable intake (B=.22, P=.002), more fruit intake (B=.19, P=.001), and more moderate exercise (B=.25, P=.001), although the strength of the associations between using the Internet for DWPA and fruit intake and exercise was weaker in 2011 than in 2007.	**Checklist:** • **Is the objective clear?** Yes • **Is a cross sectional design suitable for the objective?** Yes • **Is the inclusion criteria clearly defined?** Yes • **Are responders compared to non-responders?** No • **Was the response rate high enough?** No, only 35-40 % response rate. • **Is the main exposure validated? (Classific. Bias?)** No, all data are self-reported, so data on DWPA-related behaviors cannot be validated against objective measures • **Has the authors considered important confounding factors in the design/analyses?** Some, but not all • **Do you believe in the results?** Yes • **Can the results be transferred to practice?** Yes • **Does the literature support the results?** Most of the results. But, contrary to prior research, the study did not show a pronounced gender difference in the use of the Internet for DWPA. **What does the authors discuss about :** - **Strengths** - First study to examine use of Internet-based DWPA programs in a nationally representative sample of the United States - **Weaknesses** - No casual relationships can be established due to the correlational nature of the data - dichotomous measure for using the Internet for DWPA; there was no way to ascertain an individual's level of use (eg. yearly, weekly, daily), nor to tell the type or quality of the website or program they used - because the 2007 and 2011 HINTS datasets used different samples, any longitudinal inferences from the data could not be made - all data are self-reported, so data on DWPA-related behaviors cannot be validated against objective measures

Reference: Komkova A, Brandt CJ, Hansen Pedersen D, Emneus M, Sortsø C. Electronic Health Lifestyle Coaching Among Diabetes Patients in a Real-Life Municipality Setting: Observational Study. JMIR Diabetes. 2019;4(1):e12140.			**Study design: Patient series** **Grade - quality** Low
Aim	**Material and methods**	**Results**	**Discussion/comments/checklist**
To assess the effects associated with the eHealth intervention among diabetes patients in a real-life municipal setting **Conclusion** This study brings forward evidence of a positive effect of a real-life eHealth lifestyle intervention on diabetes patients' lifestyle in a municipal setting. Future research is needed to show if the effect is sustainable from a long-term perspective. **Land** Denmark **Year for data collection** 2016-2018	**Population:** 103 obese diabetic patients in 8 danish municipalities **Outcome – main outcome** self-reported weight change after participating in an eHealth intervention **Important confounding factors** Age, gender and initial BMI **Statistical methods** Descriptive statistics including means and standard deviations was used to summarize characteristics of study population. Ordinary least square regression was used to examine the intervention impact on weight change with age, gender, and initial BMI as confounders.	**Main finding** The eHealth intervention significantly reduced weight among diabetes patients. **Effect size** Participants lost on average 4.3% of the initial body mass, which corresponds to 4.8 kg over a mean period of 7.3 months. **CI** Undisclosed **Other findings** Patients who were in intervention for more than 9 months achieved a weight reduction of 6.3% or 6.8 kg.	**Checklist:** • **Is the objective clear?** Yes • **Was the study based on a random selection from a suitable patient group?** (selection bias)* No, only those who participated in the intervention > 90 days are included. • **Was the inclusion criteria clearly defined?** Only partly, it is not clear how the participants are recruited to the study. • **Was all patients in the same stage of the disease?** Yes, all had BMI > 30, with mean BMI 36 and SD 5,2. • **Was the response rate high enough?** The response rate was 100 % because those who participated in the intervention < 90 days were excluded. • **Are responders compared to non-responders?** No, there are not done analyses of those who participated in the intervention < 90 days. • **Was it used objective criteria to validate the endpoints?** (Classifc. Bias) No, only self-reported weight was recorded. • **Is prognostic/confounding factors described/considered in the design/analyses?** Yes • **Was the data registered prospectively?** Yes • **Was the follow-up long enough?** The follow-up was long enough for the participants who stayed in the intervention until the end of the study (1 year), but the participants who stopped using the eHealth intervention before 1 year should have been followed longer. • **Was the follow-up long enough to reach the endpoints?** (attrition/follow-up bias) Yes • **Do you trust the results?** Yes • **Can the results be transferred to practice?** Yes • **Does the literature support the results?** Yes **What does the authors discuss about:** - **Strengths** - the study is set in a «real-life setting» - **Weaknesses** - Self-reported data are always subject for reporting bias - The real-life municipal setting is a strength as well as a limitation in relation to disentangling the effect of the program

13 Appendix 1 - Questionnaire DIAcare

BACKGROUND INFORMATION

1. Do you yourself have diabetes diagnosed by a doctor? (yes/no)

2. If no, what is the reason that you are a member of the Norwegian Diabetes Association? (check one or more boxes)
    a. Health professional
    b. Family member
    c. Other…….

Those who have chosen the response alternative "No" to the question "Do you have diabetes diagnosed by a doctor?" can end the survey here.
Those with the response alternative "Yes" to the question "Do you have diabetes diagnosed by a doctor?" have access to the rest of the survey.

3. What is your gender (woman/man)?

4. What is your age? (number of years)

YOUR OWN HEALTH

5. What type of diabetes do you have? (check one box) (type 1/type 2/gestational diabetes/other type)

6. How many years have you had diabetes? (number of years)

7. How is your diabetes being treated? (check one or more boxes) (insulin/tablets/diet and lifestyle)

8. How would you say that your diabetes is controlled? (check one box) (very well/well/neither well nor poorly/poorly/very poorly)

9. How do you rate your own health in general? (check one box) (very good/good/neither good nor poor/ poor/very poor)

10. Have you ever smoked or do you smoke every day? (check one box) (never/yes, now/yes, previously)

11. Do you have or have you had high blood pressure? (no/yes, previously but not now/yes, now)

12. Have you had a heart attack (myocardial infarction)? (no/yes)

13. Do you have or have you had heart failure? (no/yes, previously but not now/yes, now)

14. Do you have or have you had angina pectoris/chest pain due to heart disease? (no/yes, previously but not now/yes, now)

15. Have you had a stroke/brain haemorrhage? (no/yes, previously but not now/yes, now)

16. Do you have or have you had kidney disease? (no/yes, previously but not now/yes, now)

17. Do you have or have you had cancer? (no/yes, previously but not now/yes, now)

18. Do you have or have you had mental illness? (no/yes, previously but not now/yes, now)

19. How would you describe your health today (check one box for each of the five areas)

    a. Walking
        i. I have no problems in walking around
        ii. I have slight problems in walking around
        iii. I have moderate problems in walking around
        iv. I have severe problems in walking around
        v. I am unable to walk around

    b. Personal care
        i. I have no problems washing or dressing myself

ii. I have slight problems washing or dressing myself
iii. I have moderate problems washing or dressing myself
iv. I have severe problems washing or dressing myself
v. I am unable to wash or dress myself

c. Common tasks
i. I have no problems doing my usual activities
ii. I have slight problems doing my usual activities
iii. I have moderate problems doing my usual activities
iv. I have severe problems doing my usual activities
v. I am unable to do my usual activities

d. Pain/discomfort
i. I have neither pain nor discomfort
ii. I have slight pain or discomfort
iii. I have moderate pain or discomfort
iv. I have severe pain or discomfort
v. I have extreme pain or discomfort

e. Anxiety/depression
i. I am neither anxious nor depressed
ii. I am slightly anxious or depressed
iii. I am moderately anxious or depressed
iv. I am severely anxious or depressed
v. I am extremely anxious or depressed

USE OF THE INTERNET/E-HEALTH

20. During the past 12 months, have you used the Internet for information about health and illness? (check one box for each of the four categories)
    a. Apps for smartphone or tablet computer (never/once/sometimes/often)
    b. Search engines (like Google) (never/once/sometimes/often)
    c. Social media (like Facebook) (never/once/sometimes/often)
    d. Video services (like YouTube) (never/once/sometimes/often)

21. During the past 12 months, have you used apps for a smartphone or tablet computer for follow-up of your own diabetes (check one box) (never/less than once a month/once a month/once a week/every day)

22. During the past 12 months, have you used one or more of the following portals for information about health and illness? (check one box for each of the eight categories)
    a. diabetes.no (never/once/sometimes/often)
    b. levmeddiabetes.no (never/once/sometimes/often)
    c. helsebiblioteket.no (never/once/sometimes/often)
    d. helsenorge.no (never/once/sometimes/often)
    e. lommelegen.no (never/once/sometimes/often)
    f. nhi.no (never/once/sometimes/often)
    g. apotek1.no (never/once/sometimes/often)
    h. other portals (never/once/sometimes/often)

23. How do you rate the quality of the information in these health portals? (check one box for each of the eight categories)
    a. diabetes.no (very good/good/neither good nor bad/ bad/very bad/not considered)
    b. levmeddiabetes.no (very good/good/neither good nor bad/ bad/very bad/not considered)
    c. helsebiblioteket.no (very good/good/neither good nor bad/ bad/very bad/not considered)
    d. helsenorge.no (very good/good/neither good nor bad/ bad/very bad/not considered)
    e. lommelegen.no (very good/good/neither good nor bad/ bad/very bad/not considered)
    f. nhi.no (very good/good/neither good nor bad/ bad/very bad/not considered)
    g. apotek1.no (very good/good/neither good nor bad/ bad/very bad/not considered)
    h. other portals (very good/good/neither good nor bad/ bad/very bad/not considered)

24. Based on the information you have found on the Internet, have you (check one box for each of the four categories)
    a. Decided to visit a doctor, when you would otherwise NOT have visited one? (never/once/sometimes/often)
    b. Decided NOT to visit a doctor, when you would otherwise have visited one? (never/once/sometimes/often)
    c. Discussed the information with a doctor? (never/once/sometimes/often)
    d. Changed your medicine without talking to a doctor? (never/once/sometimes/often)
    e. Become unsure about whether you have received the right diagnosis? (never/once/sometimes/often)
    f. Become unsure about whether you have received the right treatment? (never/once/sometimes/often)
    g. Changed your lifestyle? (never/once/sometimes/often)
    h. Felt anxious? (never/once/sometimes/often)
    i. Felt reassured? (never/once/sometimes/often)
    j. Felt better informed? (never/once/sometimes/often)
    k. Felt more confused? (never/once/sometimes/often)

25. During the past 12 months, have you searched for health information on the Internet in order to (check one or more boxes)
    a. Decide whether you should go to a doctor?
    b. Prepare for a visit to the doctor?
    c. Obtain information after a visit to the doctor?

26. During the past 12 months, have you taken part in any online group for people with diabetes? (yes/no)

27. Have you communicated over the Internet with your primary care doctor/primary care doctor's office during the past 12 months? (yes/no, number of times)

28. If yes, have you used Internet communication to (check one or more boxes)
    a. Book an appointment (yes/no)
    b. Communicate about your health/illness (yes/no)

c. Renew a prescription (yes/no)
d. Other purpose (yes/no)

USE OF HEALTH SERVICES

29. During the past 12 months, because of your own health, have you consulted a primary care doctor/general practitioner (GP) (your own or a substitute) (Yes/no/number of times)

30. If yes, how many of these consultations were with your own primary care doctor (not with a substitute doctor)?

31. During the past 12 months, because of your own health, have you consulted a doctor on duty outside working hours? (Yes/no/number of times)

32. During the past 12 months, because of your own health, have you consulted a psychiatrist/psychologist outside hospitals? (Yes/no/number of times)

33. During the past 12 months, because of your own health, have you consulted a medical specialist outside hospitals (apart from your primary care doctor/a general practitioner (GP)/a psychiatrist)? (Yes/no/number of times)

34. During the past 12 months, because of your own health, have you consulted a psychiatric hospital outpatient clinic? (Yes/no/number of times)

35. During the past 12 months, because of your own health, have you consulted another hospital outpatient clinic (apart from a psychiatric outpatient clinic)? (Yes/no/number of times)

36. During the past 12 months, have you been admitted to hospital? (No, have not been admitted to hospital/Yes, admitted to a psychiatric hospital/ Yes, admitted to other (somatic) hospital)

37. If “yes, admitted to psychiatric hospital”, how many times have you been admitted? (number of times)

38. If “yes, admitted to other (somatic) hospital”, how many times have you been admitted? (number of times)

39. Do you have health insurance that gives you access to private health services? (yes/no/do not know)

40. How long have you had your current primary care doctor (regular GP)? (check one box) (less than 1 year/1-2 years/3-4 years/ more than 4 years)

MORE BACKGROUND INFORMATION

41. In which region are you currently living? (check one box) (Nordland, Troms, Finnmark, Svalbard/ Trøndelag, Møre og Romsdal/ Rogaland, Hordaland, Sogn og Fjordane/ Agder, Telemark, Vestfold, Buskerud, Østfold, Akershus, Oslo, Hedmark, Oppland)

42. What/where is your country of birth? (check one box) (Norway/ Europe outside Norway/ Pakistan/Asia outside Pakistan/ Africa/ North America/ South America/ Australia or New Zealand)

43. What is your highest completed education? (check one box)
    a. primary and lower secondary school/secondary modern school (framhaldsskole)/college (folkehøyskole) up to 10 years
    b. Vocational training/high school (realskole) /upper secondary school/sixth form of comprehensive school (gymnas) minimum 3 years
    c. University college/university, less than 4 years
    d. University college/university, 4 years or more

44. Do you live alone or with other people? (alone/with others, if yes how many)

45. Do you live with your spouse or cohabitant?

46. Do you live with parents/guardians? (if yes, number)

47. What was your household's total gross income last year? |(check one box) Include all income from work, social security, social assistance and similar (under NOK 150000 /150000-350000/351000-550000/55100-750000/751000-1000000/over 1000000)

48. What is your main daily activity? (check one box)
    e. Employed full-time
    f. Employed part-time
    g. Homemaker
    h. Retirement pensioner
    i. Disability pensioner/receive a work assessment allowance (arbeidsavklaringspenger)
    j. Receive social assistance benefits (sosialstønad).
    k. Unemployed
    l. School pupil/student
    m. Military
    n. Other