

ORIGINAL RESEARCH

Internet health information seeking by primary care patients

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ABSTRACT:

Introduction: As patients seek health information more frequently on the internet, the impact on their health status and

their relationship with doctors could be a matter of concern. The objective of this study is to know how frequently rural primary care

patients seek health information on the internet and the factors associated with it.

Methods: This cross-sectional study surveyed 850 patients aged over 15 years who attended two rural health centers in Cuenca (Spain). Consecutive case sampling was done. The participants were invited to answer a survey with sociodemographic and clinical aspects, and questions about possible internet searches for health information. The statistical analysis included the description of the variables and a bivariate analysis, and was completed with a logistic regression analysis.

Results: Patients' median age was 54 years, interquartile range 39–67 years; 60.9% were female. Of those surveyed, 49.8% (95%

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confidence interval 46.3–53.2) stated that they used the internet to seek health information. Statistically significant differences were apparent for gender, age, level of education, disease and attendance ($p < 0.0001$). A logistic regression analysis showed an independent relationship with health information seeking on the internet for the variables gender, age, level of education ($p < 0.0001$) and having a chronic disease ($p = 0.004$).

Conclusion: Roughly half the primary care patients in the rural area sought health information on the internet. Females, young people, those with a higher level of education and a chronic disease background did so more frequently.

FULL ARTICLE:

Introduction

According to recent UN data, over half the world's population has access to the internet¹. This percentage has increased with time despite difficulties persisting in some sectors of society, for example the primary digital divide, associated with limitations to access to new technologies or economic barriers; and the secondary digital divide, which relates to difficulties with achieving skills because of low schooling levels or not recognizing the accumulated benefits that their use can offer^{2–5}. According to 2015 Eurobarometer data, 70% of people in Spain used mobile phones with internet access in 2014. However, the growth of new information and communication technologies (ICT) has stagnated with only a 10% increase compared to the previous decade⁶. The Spanish National Statistics Institute indicates that 90.7% of the population in Spain aged 16–74 years used the internet in 2019, which was 4.6% more than in 2018⁷.

Patients' use of online health information to enquire about health matters before or after medical consultations has also increased. This has led to demand overhang given the vast quantity of available information⁸. However, users do not possess suitable skills to distinguish between fake news and fact, which could lead to poor doctor–patient relationships⁹. Similar limitations may arise for professionals although they have generally moved toward the digital age with new care and treatment plans based on patient participation¹⁰.

Some social determinants associated with this activity are well known. For instance, patients with a high level of education are more likely to seek health information from the internet on quality websites. Young people have become more regular users of ICT, but internet use by the elderly has only slightly increased¹¹. Women tend to seek out information on health matters for themselves, particularly in relation to pregnancy¹², food and exercise, but also seek health information for their relatives^{13–15}. Patients with few financial resources tend to seek internet information on health matters less frequently¹³, which may be determined by the disease they have. Some literature reports that ill patients who are uncertain about a diagnosis and

treatment more frequently use the internet to find alternative therapies and/or views from other users, how they have to face their disease and the possibility of relapse¹⁶. In the vast majority of cases, the idea is that patients do not trust online health information very much^{17,18}.

Most studies on internet use have been conducted in urban populations, and the internet usage of rural primary care patients is unknown.

The hypothesis for the present study states that using the internet to seek information about health matters is widespread in the rural population. The authors expect it to be frequently used by young people and patients with chronic diseases.

For this reason, the present study aims to learn how frequently rural primary care patients seek health information on the internet and the factors associated with this practice.

Methods

A cross-sectional study was conducted after inviting patients aged over 15 years from the towns of Motilla del Palancar and Iniesta in Cuenca, Spain, who consulted primary care from February to June and from July to September 2019, respectively. According to the population density of both towns, the estimated sample size was 385 patients from each town for an expected 50% prevalence, a 95% confidence interval (CI) and 5% precision. Consecutive case sampling was done in accordance with the time available between consultations.

The inclusion criteria were specified in relation to patients' age (> 15 years) and consultation time (8 am to 3 pm, Monday to Friday, in the months when data were collected at the respective health centers). Illiterate patients and/or those who did not speak Spanish were excluded. The patients previously received an informed consent document. No patient refused to participate in this study.

A specially designed self-administered questionnaire with 15 questions was used. It included sociodemographic aspects such as

age, gender, civil status and level of education according to the National Education Classification (2014) (CNED-2014). Socioeconomic level was estimated according to the profession of the main financial provider (the patient or their relative) using the classification of occupational social class proposed by Domingo-Salvany et al¹⁹. Open questions were about having a chronic disease background and the reason for attending consultations. Patients were asked if they sought information on the internet, what devices and search engines they used, at what time point they sought information about consultations with health personnel, if they used the internet to seek information relevant to a relative's health, and the reason for employing different websites and their reliability.

The collected data were coded and included in a computer data file using the SPSS v25 statistical package (IBM; <http://www.spss.com>). The statistical analysis included the description of the variables. The following were applied: a bivariate analysis by the χ^2 to compare the qualitative variables, the student's *t*-test for the quantitative variables with normal distribution and a non-parametric test if they did not follow normal distribution (Kolmogorov–Smirnov test). To control for any confounding factors and possible interactions among the variables showing a statistically significant association in the bivariate analysis, a multivariate analysis was carried out by logistic regression. Statistically significant differences were taken as $p < 0.05$.

Ethics approval

Data processing was completely anonymous. Patients were informed about the objectives and the study procedure, and they signed informed consent. This study was approved by the Drug Research Ethics Committee of the Integrated Care Management of Albacete, Spain (2018/12/138).

Results

Seeking health information on the internet

A total of 850 valid questionnaires were obtained. No-one refused to participate in the study. The patients' median age was 54 years with an interquartile range (IR) of 39–67. Of all the patients, 60.9% were female. Moreover, 49.8% (95%CI 46.3–53.2%) indicated that they sought health information on the internet – 53% (95%CI 47.9–57.9%) in Motilla del Palancar and 46.9% (95%CI 42.9–51.6%) in Iniesta. No significant differences were found between both populations ($p=0.075$).

Statistically significant differences ($p < 0.0001$) were found for information-seeking on the internet for attendance, gender, age and level of education (Table 1). The median numbers of visits to nursing staff and the doctors by patients who sought information on the internet were two nursing consultations and eight doctor visits each year, respectively. For those who did not seek this information online, median numbers of annual visits were six nursing and nine doctor consultations each year. The median age of the patients who sought information was significantly lower than that of those who did not. Women more frequently searched the internet: 55.2% (95%CI 50.8–59.6%) compared to 41.3% (95%CI 35.8–46.7%) for males. A total of 75.4% of those who had completed secondary education and 86.4% of those with university education sought health information on the internet. Information-seeking also significantly increased ($p=0.001$) with more qualified occupations.

Of the patients who sought information on the internet, 78.0% across both towns (95%CI 74.0–82.1%) reported that they did so for their relatives and friends, with 80.2% in Motilla del Palancar and 75.8% in Iniesta. No statistically significant differences between towns was found.

Table 1: Sociodemographic characteristics of study participants and the relationship to seeking health information online[†]

Characteristic	Seeking health information on the internet			
	No	Yes	Total	p-value
Doctor visits per year, median (IR)	9 (5–15)	8 (4–12)	8 (5–13)	<0.0001
Nursing visits per year, median (IR)	6 (2–13)	2 (1–5)	3 (1–9)	<0.0001
Median age, years (IR)	67 (54–76)	43 (28–54)	54 (39–67)	<0.0001
Gender, n (%)				
Female	232 (44.8)	286 (55.2)	518 (60.9)	<0.0001
Male	195 (58.7)	137 (41.3)	332 (39.1)	<0.0001
Level of education, n (%)				
No completed studies	15 (83.3)	3 (16.7)	18 (2.1)	
Primary education	328 (73.7)	117 (26.3)	445 (52.4)	<0.0001
Secondary education	70 (24.6)	214 (75.4)	284 (33.4)	<0.0001
University education	14 (13.6)	89 (86.4)	103 (12.1)	<0.0001
Profession, n (%)				
Manager of large center	5 (19.2)	21 (80.8)	26 (3.1)	<0.0001
Manager of small center	16 (35.6)	29 (64.4)	45 (5.3)	
Intermediary profession	13 (36.1)	23 (63.9)	36 (4.2)	
Self-employed	4 (33.3)	8 (66.7)	12 (1.4)	
Supervisors/qualified worker	15 (40.5)	22 (59.5)	37 (4.4)	
Semi-qualified worker	155 (54.4)	130 (45.6)	285 (33.5)	0.001
Unqualified worker	219 (53.5)	190 (46.5)	409 (48.1)	0.001
Total	427 (50.2)	423 (49.8)	850 (100)	

[†] Qualitative variables are presented with relative frequency values and, in brackets, the percentages that correspond to those who answered 'yes' and 'no' to seeking information for each variable – they must be read horizontally. Percentages in the 'Total' column refer to the value of each variable – they must be read vertically. IR, interquartile range.

Reasons for attending primary care consultations, and chronic disease background

Table 2 shows the distribution of the patients who searched the internet for information on health issues according to their reason

for attending consultations on the day they participated in the study.

The most frequent reason (28.6%; 95%CI 25.5–31.7%) for consultation was general and non-specific problems. No statistically significant differences were found between the patients who sought health information and those who did not in relation to their reasons for attending consultations.

Frequency of seeking health information on the internet was significantly higher ($p < 0.05$) for those who did not have a chronic disease, and 67.5% did this (95%CI 61.7–72.9%). The disease background that was most frequently associated with seeking health information on the internet was related to cardiovascular risk (Table 3).

Table 2: Reasons for consultations and internet health information-seeking[†]

Reason for consultation	Seeking health information on the internet		
	No n (%)	Yes n (%)	Total n (%)
Non-specific problems	120 (49.4)	123 (50.6)	243 (28.6)
Immune and hematologic	4 (57.1)	3 (42.9)	7 (0.8)
Circulation	40 (66.7)	20 (33.3)	60 (7.1)
Skin and cutaneous annexes	18 (51.4)	17 (48.6)	35 (4.1)
Eyes, orbitals and auditory system	18 (51.4)	17 (48.6)	35 (4.1)
Musculoskeletal	73 (53.7)	63 (46.3)	136 (16.0)
Nervous system and psychological problems	18 (40.9)	26 (59.1)	44 (5.2)
Respiratory	45 (46.9)	51 (53.1)	96 (11.3)
Digestion, endocrine, metabolic and nutrition	35 (53.0)	31 (47.0)	66 (7.8)
Male/female genital and urinary; breasts, family planning, pregnancy, birth and puerperium	13 (44.8)	16 (55.2)	29 (3.4)
Someone other than the patient	43 (43.4)	56 (56.6)	99 (11.6)
Total	427 (50.2)	423 (49.8)	850

[†] Qualitative variables are presented with relative frequency values and, in brackets, the percentages that correspond to those who answered 'yes' and 'no' to seeking information for each variable – they must be read horizontally. Percentages in the 'Total' column refer to the value of each variable – they must be read vertically. There were no statistically significant differences.

Table 3: Health information-seeking on the internet according to chronic disease background

Reason for consultation [†]	Seeking health information on the internet [‡]		
	No n (%)	Yes n (%)	p-value
Any disease	330 (58.9)	230 (41.1)	<0.0001
Heart disease	24 (75.0)	8 (25.0)	<0.0001
Lung disease	35 (71.4)	14 (24.5)	<0.0001
Psychiatric disease	52 (45.2)	63 (54.8)	0.053
Chronic diseases associated with cardiovascular risk	243 (70.2)	103 (29.8)	0.007
Bone disease	134 (60.6)	87 (39.4)	0.115
Skin disease	4 (33.3)	8 (66.7)	0.413
Genital system disease	14 (93.3)	1 (6.7)	0.037
Anemia	2 (50.0)	2 (50.0)	0.892
Neurological disease	4 (36.4)	7 (63.6)	0.018
Disease of digestive system	15 (62.5)	9 (37.5)	0.010
Neoplastic disease	12 (46.2)	14 (53.8)	0.001
Eye disease	5 (55.6)	4 (44.4)	0.422
Autoimmune disease	4 (57.1)	3 (42.9)	0.336
Circulatory disease	4 (40.0)	6 (60.0)	0.289

[†] Multiple responses were possible.

[‡] Results are expressed as the total frequencies of healthy and ill patients. Percentages refer to patients who sought health information on the Internet.

Variables independently associated with information-seeking: multivariate analysis

Table 4 indicates the logistic regression analysis results and shows an independent relationship with health information-seeking on the internet for the variables of gender, age, level of education and having a chronic disease background.

An interaction was apparent between age and having a chronic disease background. It indicated that the likelihood of seeking information on the internet was lower for being older and having a

chronic disease background. When this was taken into account, the odds ratio considered separately for having a chronic disease background increased, and in such a way that it made information seeking more likely.

Figure 1 shows the different frequencies for information-seeking for different age groups and having a chronic disease background. It shows that the vast majority of older patients with a chronic disease background did not trust online health information very much.

Table 4: Logistic regression analysis of patient data

Characteristic	B	Standard error	Wald	p-value	OR (95%CI)
Gender	0.670	0.184	13.203	<0.0001	1.954 (1.362–2.805)
Level of education [†]			45.567	<0.0001	
Secondary	1.156	0.210	30.181	<0.0001	3.177 (2.103–4.798)
Tertiary	1.881	0.351	28.725	<0.0001	6.558 (3.297–13.044)
Age	-0.070	0.007	91.590	<0.0001	0.933 (0.919–0.946)
Chronic disease background	0.648	0.224	8.399	0.004	1.912 (1.233–2.963)
Diseases background–age interaction	-0.056	0.014	16.418	<0.0001	0.945 (0.920–0.971)

[†] Related to those patients who completed no studies or primary education. CI, confidence interval. OR, odds ratio.

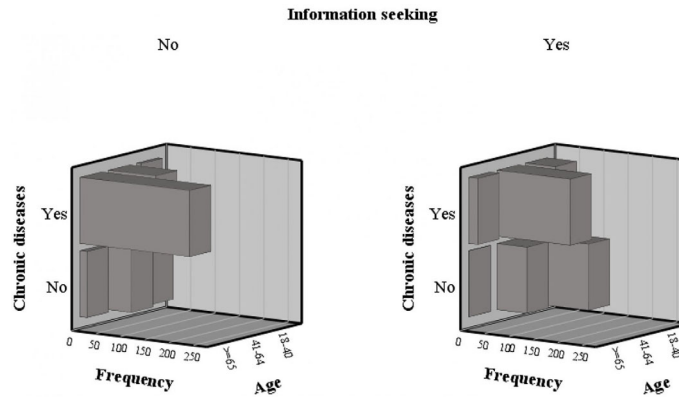


Figure 1: Information-seeking frequency according to age and having a chronic disease background.

Discussion

Just under half of patients sought health information for themselves and/or relatives on the internet. Women, young people and those who had completed secondary and higher education more frequently sought health information on the internet. An interaction was found between age and having a chronic disease background – being older with a diseases background determined a lesser likelihood of seeking health information online. When this was taken into account, having a diseases background independently predisposed to seek information online; that is, having a chronic diseases background predisposed to seeking health information, except for older patients.

Patients used the internet to be informed about their health and their relatives' health. This finding is similar to what other studies report²⁰, and women use the internet more frequently than men²¹. The digital divide is currently narrower, which allows patients to participate in their own health and disease process²². The present study found that 49.8% of patients use the internet to seek information on health matters, which confirms the extensive use of online information²³. This might influence how they communicate, how they cope with health problems, and how patients satisfy their curiosity, as similar studies have observed²⁴. More young patients used the internet for searches, but so did quite a large number of older patients²⁵. In any case, the present study results revealed that the older the patients were, the less interest they showed in the internet, which coincides with findings of other authors²⁶. In terms of occupation, the patients who occupied higher job posts more frequently did internet searches about their health; for example, 80.8% managers or directors searched online, as opposed to 46.5% of unqualified workers. Similar results were

found for level of education – a high percentage of people who went to university used the internet. Therefore, the present study's results agree with these two aspects and with other studies²⁷.

The most frequent reasons for patients attending consultations were unspecified tasks such as administrative activities (eg reports for sick leave or financial assistance). In line with this reason, one of the benefits of growing internet use is that such tasks could be performed online. Both doctors and patients used their time during consultations to inquire about health-promoting activities, such as exercise and a healthy diet²⁸. Other frequent reasons for attendance were locomotor and breathing problems – findings that agree with other studies²⁹. The patients with a chronic disease background who frequently used the internet were most likely to have cardiovascular diseases, followed by bone problems and psychiatric diseases, which also coincides with the findings of other studies³⁰. Studies have shown that the internet can not only have a beneficial use, but can also support correctly and remotely monitoring such diseases^{31,32}.

For health matters, the internet can be a beneficial tool for patients and healthcare personnel. It would be interesting to make the most of these tools being available to reach people who live in situations of exclusion due to the primary or secondary digital divide³³⁻³⁵.

Conclusion

The patients in this study from the primary care centers in both towns, especially females, used the internet as a source of information about health matters for themselves and their relatives. This type of online information is used more frequently by younger people, people with a higher level of education and

those with a diseases background.

Special attention should be paid to the 50% of the population who are not seeking health information online.

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