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Research Article

Veteran Preferences for Sources of Medical Information

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Abstract

Objective: This study explores where and why Veterans use external resources for medical information. This can help healthcare providers meet the information need of their patients while providing them with quality external resources.

Methods: Surveys were distributed to Veteran patients in a Veterans Affairs (VA) hospital. They determined if patients used external resources for medical information, which media types were used and desired, and if there was an association between resource helpfulness and predetermined usefulness factors.

Results: 32/102 (31.4%) respondents used external resources. Patients most frequency used the Internet and expressed a desire for additional time with their healthcare provider and more educational pamphlets. Resource helpfulness was associated with increased medical information availability, improved health decisions and well-being, and having an active role in medical decision-making.

Conclusion: Patients desire more time with their healthcare provider and more educational pamphlets. Resource use was associated with several usefulness factors, although external resources were less trustworthy than healthcare providers.

Practice Implications: Healthcare providers can take a dual approach in delivering patients medical information. First, provide in-person information using educational pamphlets. Second, provide trustworthy external resources such as medically credible website recommendations.

Key Words: veteran patients; medical education; medical information; medical information; credibility; medical information trustworthiness; media; external media sources; media type; internet; internet use; e-health; educational pamphlets; media use; patient education; patient centered; media availability; resource helpfulness; health decisions and well-being; active role in medical decision-making; media usefulness factors; doctor-patient interaction; doctor-patient relationship

1. Introduction

Thirty-five percent of United States adults have diagnosed themselves using the Internet. Of the people who used the Internet for medical information, only 13% began at websites specialized for this purpose [3]. These statistics demonstrate the impact that the Internet has on people's medical information and decision-making. Although the Internet is commonly used, literature widely suggests that it is not necessarily accurate [13,16,17,21]. One study found that of the top search results to common pediatric emergency complaints, 40% contained inaccuracies and only 5% were deemed accurate, readable, trustworthy, and of high quality [17]. Inaccuracies of online medical information were highlighted during the COVID-19 pandemic. Surveys during the beginning months of the pandemic found that 26% of people saw conflicting facts about COVID-19 from news sources and 48% of people saw incorrect news about the virus [14,15].

Despite these inaccuracies, most people in the United States seek health information online [3]. This behavior may derive from the benefits patients experience from finding medical information through external resources. These key benefits are referred to in this paper as usefulness factors. They have been chosen based on background literature and at the discretion of the researchers. They include increased medical information availability, improved relationships with healthcare providers, improved health decisions and well-being, and having an active role in medical decision-making [1,2,9,12,13,16]. These benefits have been referred to

independently but have not been studied in aggregate in a Veteran population. Additionally, it is unknown where Veterans receive or want to receive medical information. This is intriguing, as only 3.2% of Veteran patients use My HealtheVet, which is a free online health portal where Veterans can search for general health information online [4,19]. Knowing why patients use external resources and where patients want to receive medical information can help healthcare providers meet the information desires of their patients while guiding them towards reputable and appropriate resources. This is the main purpose of this study.

Healthcare providers might be able to guide patients towards credible resources as 53% of people who look up medical information online already bring the information up to their providers. This suggests a willingness of patients to collaborate with their providers and suggests that providers should be prepared to facilitate these conversations. As noted previously, patients' use of external resources is associated with improved relationships with healthcare providers. However, this is dependent upon a provider's response to this behavior. Patients are more satisfied when providers take their questions seriously and, in contrast, feel as though their relationship deteriorates if the provider fails to do so [13]. This demonstrates that patients want their providers to interpret or verify medical information from external resources. Additionally, research suggests that satisfaction rates are high when clinicians provide "Internet prescriptions," or website recommendations to patients [13,18,21]. This directly demonstrates that patients are generally open to being guided, and providers should take advantage of this opportunity given the possible inaccuracies from external resources [13,16,17,21].

Outcomes of this explorative study can be used as guidance for VA healthcare professionals to provide patients with the most reliable medical information in the form of media that best suits their patients' needs. For example, if patients primarily use the Internet for external medical information, healthcare providers may wish to offer them links to reliable and trustworthy websites [13]. If patients wish to receive more information from educational pamphlets, providers could have some ready-to-go for appointments. As a result, these actions might relieve patients' desires for medical information and give healthcare providers some level of control over the reliability and trustworthiness of the resources their patients access. The role of a healthcare provider as a guide towards other medical resources is especially important if results demonstrate that media helpfulness is associated with the external resource usefulness factors.

2. Methods

Surveys were distributed to outpatients at the Brooklyn VA Medical Center. A researcher explained the purpose of the survey to each patient and confirmed patient comprehension. Each survey took approximately 10 minutes or less to complete. Patients were initially asked if they received medical information from resources outside of their healthcare provider in the past 6 months. This served as an exclusionary criterion. Respondents who used external resources completed the entire survey while those who did not only gave demographic information.

The main focuses of this study were to determine [1] where Veterans receive and want to receive medical information from and [2] why Veterans use external resources to gather medical information. To answer the first question, a list of less than ten media types were chosen at the discretion of the researchers. These include educational pamphlets, email, family / friends, Internet, television commercials, television shows, social media, and newspapers [9,13]. Patients were asked how much of their medical information they currently receive and want to receive from each of these media types based on a Likert Scale from 1 (Least) to 5 (Most). To answer the second question, overall resource helpfulness was correlated to the media usefulness factors which include increased medical information availability, improved relationships with healthcare providers, improved health decisions and well-being, and having an active role in medical decision-making [1,2,9,12,13,16].

Other variables were created to better understand the role of external resources in acquiring medical information. Patients who scored resource helpfulness as 3 of higher were asked why they found medical information to be helpful. Answer choices included: [1] they wished to gain more information regarding their healthcare needs, [2] they often forgot or needed to refresh what was explained at their doctor visits, [3] they looked for an online community to relate to, and [4] they want a second opinion [1,2,9,12,13].

Descriptive statistics were analyzed in SPSS. Paired-sample t-tests were used to determine if patients optimally wanted to receive more or less of their medical information from the listed external resources. Correlations were calculated between overall resource helpfulness and the media usefulness factors. Positive correlations indicate that patients use external resources in part due to the associated factors. Comparisons were also made between healthcare providers and external resource trustworthiness and availability using paired-sample t-tests. Multiple linear regressions were calculated to determine effects of demographics on resource use and helpfulness.

3. Results

One hundred two outpatients [96% male] completed the survey. 32 patients [31.4%] used resources outside of their healthcare provider while the remainder [70; 68.6%] only used their healthcare provider for medical information. Although not directly calculated, the researcher approximates the response rate to be around 3-7%. The most common age group was 60-80 years. Demographic data is shown in Table 1.

	N	%
Gender		
Female	3	3.0%
Male	98	97.0%
Age		
18-38	9	8.8%
39-59	21	20.6%
60-80	66	64.7%
81+	6	5.9%
Race		
Asian/Pacific Islander	3	3.5%
Black or African American	38	44.7%
Hispanic	9	10.6%
White/Caucasian	35	41.6%
Household Income		
$0-$49,999	46	50.0%
$50,000-$99,999	31	33.7%
$100,000-$149,999	6	6.5%
$150,000-199,999	5	5.4%
$200,000 and up	4	4.3%
Education		
Less than high school diploma	5	4.9%
High school diploma	60	58.8%
Associate's Degree	10	9.8%
Bachelor's Degree	18	17.6%
Master's Degree	8	7.8%
Doctoral Degree	1	1.0%

	Healthcare Provider Only		Healthcare Provider and Media	
	N	%	N	%
Gender				
Female	0	0.0%	3	9.4%
Male	69	100.0%	29	90.6%

Table 1: *Frequency of Demographic Variables*

Patients' current and preferred use of each media type was scored on a Likert scale from 1 (Least) to 5 (Most) as shown in Table 2a. Commonly used and preferred media types were defined as those with a score significantly greater than 3.0 as calculated through independent sample t-tests. The only commonly used source was face-to-face time with healthcare providers (4.34; $p<0.001$). Commonly preferred sources included both educational pamphlets (3.41; $p<0.05$) and face-to-face time with healthcare providers (4.88; $p<0.001$). Differences between current and preferred sources of medical information were calculated using paired sample t-tests. Patients wanted higher exposure to educational pamphlets with a current mean score of 2.41 and a preferred mean score of 3.41 ($p<0.001$). Patients also wanted more face-to-face time with their healthcare providers with a current mean score of 4.34 and a preferred mean score of 4.88 ($p=0.01$). Significant correlations were found between resource helpfulness and the usefulness factors: increased medical information availability ($r=44\%$; $p<0.05$), improved health decisions and well-being ($r=53\%$; $p<0.01$), and having an active role in medical decision-making ($r=55\%$; $p<0.01$). Significant correlations were also found between health decisions and well-being and the media usefulness factors: media trustworthiness ($r=47\%$; $p<0.01$), media availability (60%; $p<0.01$), provider relationship (49%; $p<0.01$), and an active role in medical decision-making (61%; $p<0.01$). Other notable correlations occurred between an active role in medical decisionmaking and the variables: media trustworthiness ($r=39\%$; $p<0.05$) and provider relationship (55%; $p<0.01$). These correlations are listed in Table 3.

Method	Current	Ideal
Educational Pamphlet	2.41	3.41
Email	2.31	2.52
Face to Face with Healthcare Provider	4.34	4.88
Family/Friends	2.56	2.81
Internet (excluding email and social media)	2.91	2.72
Television Commercials	2.03	2.26
Television Shows	2.03	2.19
Social Media (e.g. Twitter and Facebook)	2.06	2.06
Newspapers	2.25	2.44

Table 2a: *Current and Preferred Method of Getting Medical Information*

Method	18-38 (n = 4)		39-59 (n = 9)		60-80 (n = 18)	
	Current	Ideal	Current	Ideal	Current	Ideal
Educational Pamphlet	1.25	2.25	3.00	4.00	2.44	3.50
Email	1.50	2.75	2.00	2.11	2.72	2.67
Face to Face with Healthcare Provider	3.75	4.75	4.44	4.89	4.44	4.89
Family/Friends	2.75	3.25	2.56	3.11	2.56	2.56
Internet (excluding email and social media)	3.25	3.00	3.33	3.11	2.72	2.56
Television Commercials	1.50	1.75	2.00	2.38	2.17	2.39
Television Shows	1.50	2.00	2.33	2.33	2.06	2.22
Social Media (e.g. Twitter and Facebook)	2.00	2.25	2.11	2.22	2.11	2.00
Newspapers	1.75	2.00	2.89	2.89	1.94	2.22

Table 2b: *Current and Preferred Method of Getting Medical Information by Age*

There was no significant correlation between resource helpfulness and improved relationships with healthcare providers (r=33%; p=0.068). However, during additional analysis, usefulness factors were evaluated using one-sample t-tests. Factors with scores significantly greater than 3.0 as calculated through independent sample t-tests were noted. All the usefulness factors, including improved relationships with healthcare providers were significant: increased medical information availability (mean=3.69; $p<0.01$), improved relationships with healthcare providers (mean=3.38; $p<0.05$), improved health decisions and well-being (mean=3.31; $p<0.05$), and having an active role in medical decision-making (mean=3.53; $p<0.05$). This suggests that all the factors are, at the very least, applicable to the respondents.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Source	1.31	0.47									
2. Media Helpful	3.69	1.28	NA								
3. Decisions and Well-being	3.31	0.82	NA	.53**							
4. Media Trustworthy	2.75	1.14	NA	.12	.47**						
5. Provider Trustworthy	4.56	0.62	NA	-.10	.02	.07					
6. Media Availability	3.69	1.26	NA	.44*	.60**	.37*	.15				
7. Provider Availability	4.53	0.62	NA	-.19	.11	.10	.37*	-.11			
8. Provider Relationship	3.38	0.91	NA	.33	.49**	.31	.07	.42*	.04		
9. Active Role	3.53	1.39	NA	.55**	.61**	.39*	21	.26	.55**		

Note. M and *SD* are used to represent mean and standard deviation, respectively. * indicates $p < .05$. ** indicates $p < .01$.
For Source: 1 = Healthcare Provider Only; 2 = Healthcare Provider and Media

Table 3: *Correlation Matrix for Resource Helpfulness and Characteristics*

Further analysis was done to better understand resource use in the Veteran population. Patients who answered that found external resources to be helpful with a score of 3 or higher were subsequently asked to select specific reasons why. Pre-selected answer choices included that they wished to gain more information regarding their healthcare needs, they often forgot or needed to refresh what was explained at a doctor's appointment, they looked for an online community to relate to, and they wanted a second opinion from what their doctor told them. These were selected at the discretion of the researchers based on literature (1,2,9,12,13). Of the 24 respondents, 11 (46%) stated that they often forgot or needed to refresh what was stated at doctor appointments, 5 (21%) patients looked for an online community to relate to, and 8 (33%) wanted a second opinion from what their doctor told them.

Correlations were also calculated between media helpfulness and current use of each resource type. Significant positive correlations indicated that patients found media types to be helpful for gathering medical information. The only significant correlations with media helpfulness were email ($r=39.3\%$; $p<0.05$) and Internet use ($r=73.9\%$; $p<0.001$). To further analyze this relationship, multiple linear regressions (MLRs) were used to predict media helpfulness using media usefulness factors moderated by email use or Internet use. No significant interaction effects were found when moderating by email use. However, significant interaction effects were found when moderating for Internet use. Interaction effects were found with improved health and well-being ($p<0.05$) and with improved relationships with their healthcare providers ($p<0.05$). These models indicate that patients who used the Internet more often found external resources to be helpful regardless of their perception of their health decisions and well-being or their relationships with their healthcare providers.

Paired sample t-tests were used to compare media and healthcare providers in terms of availability and trustworthiness. Patients found their healthcare providers (4.53) to be more available than media sources (3.69; $p=0.001$). Patients also found their healthcare providers (4.56) to be more trustworthy than media (2.75; $p<0.001$). A one-way ANOVA was calculated to determine differences in media use based on race. There were no significant differences in media use ($F(3,81)=0.081$, $p=0.970$). A logistic regression was performed to determine the effect of income on the use of media use and no significant differences were found ($\chi2(1) = 0.35$, $p = .553$.). Multiple linear regressions (MLRs) were also performed to predict perceptions of media helpfulness based on individual media usefulness factors and moderating demographic data including income, age, race, and education level. No significant interaction effects were found.

Current and preferred sources for medical information were also broken down by the age groups 18-38 (n=4), 39-59 (n=9), and 60-80 (n=18) as shown in Table 2b. All source averages greater than 3.0 are referred to as common. It should be noted that these results are purely illustrative and, due to small sample size and large variability within groups, are not necessarily representative. The 18-38 age group commonly utilized face-to-face time with their healthcare providers (3.75) and the Internet (3.75). This age group commonly desired face-to-face time with their healthcare provider (4.75) and information from family and friends (3.25). The 39-59 age group commonly used educational pamphlets, face-to-face time with their healthcare provider, and the Internet. This age group desired the use of educational pamphlets, face-to-face time with healthcare providers, family and friends, and the Internet. The 60-80 age group only commonly used face-to-face time with their healthcare providers. This age group also only commonly desired face-to-face time with their healthcare providers. The 81 and over age group only had 1 response and was, therefore, not analyzed.

4. Discussion and Conclusion

4.1 Discussion

This study's original purpose was to determine [1] where patients receive and want to receive medical information from and [2] why patients use external resources. This was initially questioned as only 3.2% of Veteran patients use My HealtheVet, which is a free online health portal where Veterans can search for general health information online (4,19). In finding where and why patients use external resources, healthcare providers can better understand the information needs of their patients and help guide them towards credible resources.

Patients desired increased exposure to educational pamphlets. This is interesting as there are notable benefits to the use of educational pamphlets. Medical information is remembered better when appointments are

supplemented with written information or visual aids (9). Without any written or visual supplementation, approximately 40% to 80% of medical information delivered by healthcare professionals is immediately forgotten (9). This problem is especially relevant to the VA population as older adults forget more information immediately (9,20). However, educational pamphlets can still benefit younger populations who have similarly low retention rates after just one week (9). Given this literature and patients' desire for more educational pamphlets, they should be more available to Veteran patients.

Patients also desired more face-to-face time with their healthcare providers. This may have various reasons; however, the ones discussed here will focus on the direct interaction between patients and healthcare providers during appointments. During appointments, patients often do not request medical information even though they desire it. One study found that even though patients overwhelmingly desire medical information, 28% of patients exhibited no information-seeking behaviors during interactions with their doctors [2]. This dichotomy between medical information desire and medical information seeking behavior suggests that Veteran patients likely desire information from their healthcare providers that they do not request during appointments. Interestingly, increased interaction time with doctors encourages medical information seeking behavior in patients [2]. Therefore, fulfilling the respondents' request for more face-to-face time with their providers can give them the time required to request the information they desire.

Healthcare providers should also focus on Internet use. Although the participant population did not want to increase their Internet use for medical information, it was the most used media source outside of health providers and was the third most desired source behind healthcare providers and educational pamphlets. Additionally, higher Internet use was related to higher perceived media helpfulness, indicating that patients perceive it as a good way to receive medical information. Further analysis via MLRs suggests that patients who used the Internet more often for medical information thought that media was helpful regardless of their perception of their relationship with their healthcare provider, even if this perception was negative. Therefore, healthcare providers may want to further analyze how they should interact with patients who use the Internet for medical information, especially since Internet use has risen in the Veteran population [19].

Since patients who use the Internet for medical information find it beneficial, wish to continue its use, use it regardless of their relationship with their healthcare provider, and since Internet use in Veterans has increased over time, healthcare providers may want to further analyze how they should interact with patients who use the Internet for medical information [19]. This is especially true when considering that literature widely suggests that the credibility of medical websites found on the Internet or used by patients is questionable [13,16,17,21].

Correlation results between resource helpfulness and usefulness factors suggest that patients associate increased resource use with increased medical information availability ($r=44\%$; $p<0.05$), improved health decisions and well-being ($r=53\%$; $p<0.01$), and having an active role in medical decision-making ($r=55\%$; $p<0.01$). There was no significant correlation between resource helpfulness and improved relationships with healthcare providers ($r=33\%$; $p=0.068$). However, further analysis demonstrated that respondents on average gave every usefulness factor a favorable score significantly above the neutral level of three. Therefore, every usefulness factor is at the very least applicable to the population. This suggests that using external resources might improve relationships with healthcare providers in a more indirect way. For example, improved relationships with healthcare providers were significantly correlated to improved health decisions and well-being (49%; $p<0.01$) and having an active role in medical decision-making (55%; $p<0.01$). These factors were, in turn, helpful to the patient population.

There are many reasons why each usefulness factor would benefit patients. Medical information availability can be increased with external resources such as the Internet which is easily accessible and convenient. Health decisions and well-being is improved as the Internet has been shown to increase confidence in medical decision-making, knowledge of medical information, feelings of empowerment, compliance to treatment plans, and efficiency of clinical time (11,21). Lastly, encouraging patient information-seeking behaviors can improve relationships with healthcare providers. This is highly dependent on physicians and will be elaborated upon later (13,18,21).

To better understand why patients used external resources, common and specific reasons were compilated by researchers based on literature and at their discretion (2,9,13). These reasons were only asked to patients scored resource helpfulness as 3 or higher (n=3). Patients most commonly found media helpful to gain more information regarding their healthcare needs (92%). A large portion of patients (46%) also used media because they often forgot or needed to refresh what was explained at doctor appointments (9,12). Additionally, 33% of patients wanted a second opinion from what their doctor told them and 21% looked for an online community with which they could relate.

These results demonstrate that most patients who used external resources did so to gather information. This is in alignment with background research which stated that patients have a strong desire for medical information [2]. However, these results also demonstrate that patients' use of media was multifaceted as they cited use for reasons not purely informationally driven. 21% of participants used the Internet to connect to an online community. Benefits of having an online community have been previously studied in a group of Veterans. This study found that Veteran patients who joined an online patient-driven community for epilepsy patients had increased epilepsy self-management and self-efficacy scores [5]. These results demonstrate the benefits of external resources and further demonstrate patients' desire for having a more active role in their health decisions.

Healthcare providers can have an important role in helping patients gather and access medical information from external resources. Literature describes three ways that providers can respond to patients talking about medical information from external resources [13,18,21]. Providers can [1] ignore the information based on the assumption that they are more credible, [2] doctors can act as collaborators, [3]doctors can give "Internet prescriptions" by giving website information to patients. This allows the patient to search through credible information on their own time (13). The second and third interaction types are the most optimal and lead to high patient satisfaction (13,18,21). In fact, patients felt that their relationship with their healthcare provider improved if providers with good communication skills discussed the mentioned information. Conversely, patients believed that their relationship suffered if the provider did not take their questions seriously (18). Additionally, although answering patients' questions may take more time, patients who obtained information from the Internet may have more efficient use of their clinical time as they seemed to have a higher level of base-knowledge of their treatment options (21).

Summarized, this background literature suggests that patients want healthcare providers to interpret or verify medical information from external resources. This study supports this because, even with all the benefits of external resources, overall, patients rated providers to be much more trustworthy. Therefore, it seems commonsensical that patients, who want to be active in their health decisions and want medical information, would search for information on their own time and bring it up to their providers. This also helps explain why patients might want educational pamphlets as they would be receiving them from their trusted providers.

This study had several notable limitations. Survey distribution was not randomized as the researcher approached patients waiting for their appointments. Additionally, surveys were only distributed to those who comprehended English and were physically able to take the survey. The sample size was small as only 32/102 participants used external resources. Due to the small sample size, determining results with sub-groups was difficult. For example, only 4 non-male participants were surveyed, and

only one person over the age of 81 was surveyed. Survey distribution occurred in only one VA hospital; therefore, results might not be generalizable to the VA population as a whole. Arguably, an additional limitation is that the usefulness factors often correlated to one another. Therefore, they are not independent of each other and their effects were most likely overlapping. This makes it difficult to quantitatively determine which effect was most prominent or what underlying variable or mechanism caused their interaction. Additionally, this study acts as a guideline for healthcare providers. Future studies can act upon these guidelines and determine if they improve patient satisfaction, comprehension, etc.

4.2 Conclusion

This study is a guideline to help healthcare providers meet the medical information needs of their patients. Veterans expressed that their healthcare providers are very available and trustworthy. This is true whether in comparison to media or as an absolute measure. However, a significant portion of participants (31.4%) still use media to supplement the services of their healthcare provider. Providers should make educational pamphlets more available as patients desired increased exposure to them, and education pamphlets can be useful in increasing patient comprehension and retention of information [6,7,8,9,10]. The Internet was the most used external resource, and patients wanted to continue using it for medical information. Healthcare providers should take patients' online research seriously to maintain their relationships with their patients. There is even precedence to encourage patients to search for medical information, especially since patients associated resource helpfulness with availability, improved health decisions and well-being, and having an active role in medical decision-making [11,13,18,21].

4.3 Practical Implications

Practically, healthcare providers can help meet patients' desires for medical information by making both educational pamphlets and recommended websites readily available to patients during consultations. Educational pamphlets should have both written information and visuals while recommended websites can be written on take-home cards [6,7,8,9,10]. Additionally, educational pamphlets could have a section for recommended websites dedicated to the specific topic it discusses or visualizes. Importantly, since literature suggests that a large portion of patients do not actively ask for information, even if they desire it, healthcare providers should be the active party and ask patients if they want any additional medical information or if they want educational pamphlets or medical website recommendations [2].

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