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# Effects of Online Health Information-Seeking Behavior on Rational Medication Use and Patient Activism

## Online Sağlık Bilgisi Arama Davranışının Akılcı İlaç Kullanımı ve Hasta Aktivizmi Üzerindeki Etkileri

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## Abstract

**Aim**: This study aimed to examine the effects of Online Health Information-Seeking Behavior on Rational Medication Use and Patient Activism, and to evaluate whether rational medication use mediates the relationship between online information seeking and patient activism.

**Material and Method**: A descriptive cross-sectional study was conducted among 462 adults residing in Sakarya, Türkiye. Data were collected through face-to-face and online surveys using validated scales measuring online health information-seeking behavior, rational medication use, and patient activism. Descriptive analyses, correlation tests, regression analyses, and mediation analysis were performed using SPSS 22.0. Ethical approval and informed consent were obtained prior to data collection.

**Results**: Participants demonstrated moderate levels of online health information-seeking behavior, while their rational medication use and patient activism levels were relatively lower. Online information-seeking behavior was positively associated with both rational medication use and patient activism. Additionally, rational medication use partially mediated the relationship between online health information seeking and patient activism, indicating that individuals who seek health information online are more likely to engage in rational medication practices and take a more active role in managing their health.

**Conclusion**: Online Health Information-Seeking Behavior contributes meaningfully to both Rational Medication Use and Patient Activism. Strengthening digital health literacy and improving access to reliable online health resources may enhance patient engagement, support safer medication practices, and promote better health outcomes. Interventions aimed at increasing patients' capacity to evaluate digital health information could further strengthen these behaviors.

**Keywords**: Online health information-seeking behavior, rational medication use, patient activism, digital health literacy, health behavior

## Öz

**Amaç**: Bu çalışma, Online Sağlık Bilgisi Arama Davranışının Akılcı İlaç Kullanımı ve Hasta Aktivizmi üzerindeki etkisini incelemek ve akılcı ilaç kullanımının bu ilişki üzerinde aracılık rolü oynayıp oynamadığını değerlendirmek amacıyla gerçekleştirilmiştir.

**Gereç ve Yöntem**: Araştırma, Sakarya ilinde yaşayan 18 yaş ve üzeri 462 birey ile yürütülen tanımlayıcı ve kesitsel bir çalışmadır. Veriler, yüz yüze ve çevrimiçi anketler aracılığıyla toplanmış; online sağlık bilgisi arama davranışı, akılcı ilaç kullanımı ve hasta aktivizmi geçerliliği kanıtlanmış ölçeklerle değerlendirilmiştir. Analiz sürecinde betimsel istatistikler, korelasyon testleri, regresyon ve aracılık analizleri uygulanmıştır. Çalışma için etik kurul onayı ve katılımcı onamı alınmıştır.

**Bulgular**: Katılımcılar, online sağlık bilgisi arama davranışında orta düzeyde bir eğilim sergilemiş; akılcı ilaç kullanımı ve hasta aktivizmi düzeyleri ise daha düşük bulunmuştur. Online sağlık bilgisi arama davranışı, akılcı ilaç kullanımı ve hasta aktivizmi ile pozitif yönde ilişkili bulunmuştur. Ayrıca akılcı ilaç kullanımının, online sağlık bilgisi arama davranışı ile hasta aktivizmi arasındaki ilişki üzerinde kısmi aracılık etkisi gösterdiği anlaşılmıştır.

**Sonuç**: Online Sağlık Bilgisi Arama Davranışının hem Akılcı İlaç Kullanımını hem de Hasta Aktivizmini desteklediği görülmektedir. Dijital sağlık okuryazarlığının güçlendirilmesi ve güvenilir çevrimiçi sağlık bilgisine erişimin artırılması, hasta katılımını ve güvenli ilaç kullanımını geliştirebilir. Bu kapsamda, bireylerin dijital sağlık bilgilerini değerlendirme kapasitesini artırmaya yönelik girişimlerin desteklenmesi önerilmektedir.

**Anahtar Kelimeler**: Online sağlık bilgisi arama davranışı, akılcı ilaç kullanımı, hasta aktivizmi, dijital sağlık okuryazarlığı, sağlık davranışı

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## INTRODUCTION

The rapid advancement of technology has significantly improved access to health-related information, shaping individuals' health-seeking behaviours and influencing their approaches to disease management. In modern healthcare, the internet has become a central resource for patients seeking reliable information about treatment options and preventive health strategies. This shift has become increasingly important in the context of rising global life expectancy, which is associated with longer disease duration and a growing need for rational medication use. Ensuring appropriate medication adherence is essential for maintaining health and preventing complications. Digital health applications now play a crucial role in supporting patient engagement, and active participation in personal health-related decisions is widely recognised as a core component of effective care.[1-3]

The ongoing digitisation of healthcare services has not only reshaped lifestyle behaviours but also transformed the ways in which patients participate in treatment processes. Individuals who actively seek credible health information online are more likely to adopt rational medication behaviours, guided by a clearer understanding of medication safety, adherence requirements and potential interactions. However, concerns remain regarding the accuracy and reliability of online health information. Evidence shows that information obtained from trustworthy sources can enhance patient adherence and overall well-being, whereas inaccurate or unverified content may lead to misinformation and negatively affect health outcomes.[4-7]

The World Health Organization (WHO) highlights the importance of rational medication use as a key determinant of patient safety and effective communication between healthcare professionals and patients.[3] Appropriate medication use contributes to positive treatment outcomes and reduces the risk of adverse effects. Accordingly, online health information–seeking has emerged as an important factor influencing optimal medication adherence.[8-11] Individuals with high health literacy are better equipped to critically evaluate medical information, reducing the likelihood of irrational medication practices, inappropriate self-medication and non-adherence to prescribed regimens.[12] In contrast, low health literacy is associated with poor adherence, increased medication errors and preventable complications.[13-15]

Beyond medication adherence, physical activity plays a central role in effective disease management, particularly among individuals with chronic conditions. Patients who actively participate in health-related decision-making are more likely to benefit from personalised healthcare services. Engagement in decisions that directly affect quality of life is widely valued and contributes to enhanced treatment satisfaction. Research indicates that physically active individuals who take an active role in their healthcare decisions exhibit lower emergency department utilisation, implement more effective disease management strategies and achieve better overall health outcomes.[16-18] Furthermore, empowering patients through self-efficacy, confidence and informed decision-making is increasingly recognised as a fundamental component of digital health literacy and contributes to improving the overall efficiency of healthcare systems.

The present study aims to examine the relationships among online health information–seeking behaviour, rational medication use and patient activism, and to assess how digital participation influences medication adherence and patient empowerment. By exploring these associations, the study seeks to support the development of more effective health communication strategies and promote evidence-based, patient-centred approaches in healthcare. Given the growing reliance on digital health resources, fostering responsible information-seeking behaviours and encouraging active patient participation are essential for improving both individual and societal well-being.

Enhancing patient activism levels requires coordinated efforts among healthcare stakeholders. Coaching programmes, personalised health education and initiatives designed to strengthen general health literacy can support this process and may also contribute to reducing healthcare costs.

## MATERIAL AND METHOD

Ethical approval was obtained from Sakarya University Social Sciences and Humanities Ethics Committee (Date: 18.09.2024, Approval No: 06). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. All participants were informed about the purpose of the study and voluntarily agreed to participate.

The study was conducted in the province of Sakarya between 19 September 2024 and 30 November 2024. Research data were collected using both face-to-face and online survey administration methods.

### Population and Sample

The population of the study consisted of individuals aged 18 years and older residing in the province of Sakarya, Turkey. Based on a 95% confidence interval, the minimum required sample size was calculated as 384.[19] To enhance the reliability and generalisability of the findings, the study was completed with 462 participants, selected through convenience sampling. Data were obtained from individuals who voluntarily agreed to participate, and subsequent analyses were conducted to compare the findings with those reported in the existing literature.

### Data Collection Tools

The primary data collection tool was a structured questionnaire comprising four sections. The first section included six items assessing the participants' demographic characteristics. The second section used the Online Health Information Search Behaviour Scale, developed by Ünal and Deniz,[20] to measure online health information–seeking

behaviour. This scale consists of five items rated on a 5-point Likert scale (1=Never; 5=Always). The Cronbach's alpha coefficient for this scale was 0.72, indicating acceptable internal consistency.

Rational medication use was measured using the Rational Medication Use Scale, adapted by Demirtaş et al. from the original validity and reliability study.[21] Items on this scale are answered with "true," "false," or "don't know." The Cronbach's alpha coefficient for this scale was 0.74, demonstrating satisfactory reliability.

Patient activism level was assessed using the Patient Activism Level Scale, adapted into Turkish by Koşar et al.[22] Response categories include "strongly disagree," "disagree," "agree," "strongly agree," and "don't know/cannot evaluate." The Cronbach's alpha coefficient for this scale was 0.75, representing the highest reliability of the three scales.

Overall, all reliability coefficients fell within the moderate-to-high range, indicating that the scales provided consistent and valid measurements throughout the data collection process. Based on these results, all three scales were deemed reliable for use in the present study.

### Data Analysis

Data analysis was conducted using the SPSS 22.0 statistical software package. Descriptive statistics were computed to examine participants' online health information–seeking behaviours, rational medication use, and patient activism levels. All statistical results were interpreted using a 95% confidence interval and a significance level of 0.05.

## RESULTS

### Demographic Characteristics

A total of 462 participants met the inclusion criteria and were included in the analysis. **Table 1** presents a detailed summary of the participants' demographic characteristics. The sample distribution across age, sex, educational background, and other relevant sociodemographic indicators provides a representative overview of the study population.

Analysis of gender distribution showed that 56.06% of the participants were male (n=259), whereas 43.94% were female (n=203). Regarding age, 37.45% (n=173) were 25 years old or younger, while the smallest age group consisted of individuals aged 55 years and above (14.28%, n=66).

With respect to educational attainment, the most represented group comprised participants holding an associate degree (40.04%, n=185). Employment status analysis indicated that 39.18% (n=181) of the sample were employed, whereas 60.82% (n=281) were unemployed. In terms of marital status, 56.28% (n=260) were married and 43.72% (n=202) were single.

Finally, 32.47% of participants (n=150) reported having a long-term illness, while 67.53% (n=312) indicated no such condition.

**Table 1. Demographic Characteristics**

| Variables | n | % |
|---|---|---|
| Gender | | |
| Male | 259 | 56.06 |
| Female | 203 | 43.94 |
| Age Groups | | |
| ≤ 25 years old | 173 | 37.45 |
| 26-40 years old | 82 | 17.75 |
| 41-55 years old | 141 | 30.52 |
| ≥ 55 years old | 66 | 14.28 |
| Education Level | | |
| High School and Below | 131 | 28.35 |
| Associate Degree | 185 | 40.04 |
| Bachelor's Degree | 83 | 17.97 |
| Master's Degree | 63 | 13.64 |
| Employment Status | | |
| Employed | 181 | 39.18 |
| Unemployed | 281 | 60.82 |
| Marital Status | | |
| Married | 260 | 56.28 |
| Single | 202 | 43.72 |
| Chronic Disease | | |
| Yes | 150 | 32.47 |
| No | 312 | 67.53 |

Note: Data are presented as n (%).

### Descriptive Statistics of Variables

Descriptive statistics for Online Health Information-Seeking Behavior, Rational Medication Use, and Patient Activism are summarized in **Table 2**.

**Table 2. Descriptive Statistics of Variables**

| Variables | Mean±SD |
|---|---|
| Online Health Information-Seeking Behavior | 3.51±0.49 |
| Rational Medication Use | 2.11±0.40 |
| Patient Activism | 1.77±0.40 |

Participants demonstrated a moderate level of Online Health Information-Seeking Behavior (3.51±0.49). However, their scores for Rational Medication Use (2.11±0.40) and Patient Activism (1.77±0.40) were comparatively lower. These findings suggest that, although individuals actively seek health information online, their engagement in rational medication practices and patient activism remains limited.

### Correlation Analyses

The relationships among the primary study variables were examined using Pearson correlation analysis, and the results are presented in **Table 3**.

**Table 3. Correlation Analysis**

| Variables | 1 | 2 | 3 |
|---|---|---|---|
| Online Health Information-Seeking Behavior | 1 | 0.68** | 0.65** |
| Rational Medication Use | 0.68** | 1 | 0.47** |
| Patient Activism | 0.65** | 0.47** | 1 |

Note: Pearson correlation coefficients are reported. p<0.01.

A strong positive correlation was identified between online health information-seeking behavior and rational medication use (r=0.68, p<0.01), indicating that individuals who engage more frequently in online health information-seeking tend to use medications more rationally.

Similarly, a strong positive association was observed between online health information-seeking behavior and patient activism (r=0.65, p<0.01), suggesting that increased engagement in online information-seeking is linked to higher levels of patient activism. Additionally, a moderate positive correlation was found between rational medication use and patient activism (r=0.47, p<0.01), indicating that individuals who practice rational medication use also demonstrate greater patient activism.

### Impact Analyses

Regression analysis was conducted to examine the direct effects of online health information-seeking behavior on rational medication use and patient activism, and the results are presented in **Table 4**.

**Table 4. Impact Analyses**

| Effect | β | p-value | Confidence Interval (LLCI-ULCI) |
|---|---|---|---|
| Online Health Information-Seeking Behavior → Rational Medication Use | 0.52 | <0.01 | 0.48-0.56 |
| Online Health Information-Seeking Behavior → Patient Activism | 0.34 | <0.01 | 0.25-0.42 |
| Rational Medication Use → Patient Activism | 0.32 | <0.01 | 0.19-0.46 |

Note: The regression analysis reports the direct effects of online health information-seeking behavior on rational medication use and patient activism, as well as the direct effect of rational medication use on patient activism. All reported paths were statistically significant at the p<0.01 level. Confidence intervals (LLCI–ULCI) represent the estimated range of the effects.

Online health information-seeking behavior significantly predicted rational medication use (β=0.52, p<0.01), indicating that individuals who engage more frequently in online health information-seeking tend to use medications more rationally. Similarly, online health information-seeking behavior exerted a significant positive effect on patient activism (β=0.34, p<0.01), suggesting that increased online information engagement is associated with greater levels of patient activism. Additionally, rational medication use had a significant positive effect on patient activism (β=0.32, p<0.01), demonstrating that individuals who use medications rationally are more likely to adopt active roles in managing their health.

### Mediation Analysis

A mediation analysis was conducted to examine whether rational medication use mediates the relationship between online health information-seeking behavior and patient activism, and the results are presented in **Table 5**.

**Table 5. Mediation Analysis**

| Effect Type | β | p value | Confidence Interval (LLCI-ULCI) |
|---|---|---|---|
| Direct Effect (Online Health Information-Seeking Behavior → Patient Activism) | 0.34 | <0.01 | 0.25-0.42 |
| Indirect Effect (Online Health Information-Seeking Behavior → Rational Medication Use → Patient Activism) | 0.17 | <0.01 | 0.10-0.24 |
| Total Effect (Online Health Information-Seeking Behavior → Patient Activism | 0.51 | <0.01 | 0.45-0.56 |

Note: The mediation analysis reports the direct, indirect, and total effects of online health information-seeking behavior on patient activism through rational medication use. Effects were statistically significant at the p<0.01 level.

The direct effect of online health information-seeking behavior on patient activism was positive and statistically significant (β=0.34, p<0.01), indicating that individuals who engage in online health information-seeking demonstrate higher levels of patient activism. The indirect effect, representing the mediating pathway through rational medication use (β=0.17, p<0.01), revealed a partial mediation. This suggests that online health information-seeking behavior enhances patient activism in part by promoting more rational medication use.

The total effect, which combines both direct and indirect influences, was strong and statistically significant (β=0.51, p<0.01). These findings collectively demonstrate that rational medication use partially mediates the relationship between online health information-seeking behavior and patient activism, indicating that individuals who seek health information online contribute to greater patient activism both directly and indirectly through rational medication practices.

## DISCUSSION

This study examined the effects of online health information-seeking behavior on rational medication use and patient activism. The findings demonstrate that access to digital health information enhances individuals' engagement in treatment processes and contributes to improved awareness regarding the appropriate use of medications. Existing research similarly indicates that seeking health information online enables individuals to become more knowledgeable about their health status, thereby supporting medication adherence and treatment compliance.[1] In this context, promoting responsible online information-seeking behaviors is essential for strengthening patient engagement and improving the overall efficiency of healthcare systems.

From an anatomical perspective, rational medication use and patient activism are closely associated with individuals' awareness of their own bodies. Previous literature emphasizes that enhancing anatomical knowledge supports individuals in managing their health more effectively.[23] This is particularly evident in chronic conditions, including musculoskeletal disorders, where understanding anatomical structures helps patients interpret symptoms, adhere to treatment plans, and participate actively in decisions concerning their care.

The strong association observed between online health information-seeking behavior and patient activism in this study aligns with the established view that digitally acquired information contributes to higher levels of health-related awareness and self-management.

The relationship between rational medication use and anatomical understanding also warrants emphasis. Awareness of how pharmacological agents interact with the body such as the influence of gastrointestinal anatomy on drug absorption or the impact of analgesics on the musculoskeletal system promotes safer and more effective medication practices. The results of this study show that online health information-seeking behavior positively influences rational medication use, highlighting the importance of fostering individuals' motivation to acquire knowledge related to medication and bodily function.

Patient activism, defined as an individual's ability to make autonomous decisions regarding their health, depends not only on access to credible information but also on a foundational understanding of biological structures and functions. For instance, in the case of musculoskeletal injuries, knowledge of relevant anatomical structures may enhance an individual's adherence to prescribed treatment. Previous research indicates that patient education programs can facilitate improved self-management, with anatomical knowledge serving as a central element of these initiatives.[24]

The observed association between patient activism and rational medication use in the present study further supports the value of structured education in promoting active patient engagement.

Although the literature includes studies that address each of these variables individually, research examining all three variables simultaneously is limited. For example, Zülfikar and colleagues (2014) reported that the majority of individuals who accessed health-related information through digital sources experienced positive effects both personally and for those around them.[25] Similarly, Çömlekçi and colleagues (2021) found that individuals tend to rely on scientific publications and expert opinions to verify online health information, reflecting an increasing preference for credible digital sources.[26] Kilit and colleagues (2019) also demonstrated that health professionals, the internet, and social media were the most frequently used sources for health information, whereas radio, telephone helplines, and mobile health applications were among the least utilized. The study further indicated notable differences in information-seeking behaviors and trust levels across demographic groups.[27]

Regarding rational medication use, previous research underscores the need to strengthen public awareness. For instance, Sağır and colleagues (2014) emphasized that although progress has been made globally and in Turkey, further educational efforts are required to promote rational medication practices.[28] Similarly, Ekenler and colleagues (2016) reported widespread inappropriate medication behaviors, including the use of drugs without a physician's recommendation, changing doses independently, and prematurely discontinuing prescribed treatments.[29] Aydın and colleagues (2012) likewise stressed the importance of education and family-based interventions to improve rational medication use.[30]

Finally, the study's findings underscore the need to strengthen digital health literacy. Despite the increased use of digital platforms, concerns persist regarding the accuracy and reliability of online health information. Misinformation in digital environments may lead to inappropriate health decisions, particularly in sensitive areas such as medication use. Therefore, promoting access to accurate and evidence-based digital health resources is critical. In addition, expanding anatomy and pharmacology education may further support individuals' capacity to evaluate and interpret health information obtained online.

## CONCLUSION

Health information sought online by individuals must be organized according to scientific principles. Ensuring the security of information on this platform within the framework of laws by relevant health authorities will facilitate access to accurate health information and positively contribute to the public's health and well-being. Strengthening the structure of reliable digital health platforms will similarly contribute to protecting public health and improving understanding of relevant topics such as anatomy and the musculoskeletal system for patients with health problems. In this context, it is also necessary for countries to develop health literacy programs appropriate to their own cultural structures. Individuals can only make informed decisions by collaborating with health authorities and relevant health institutions. In this context, with the intervention of the relevant authorities, up-to-date and accessible accurate health platforms can be achieved.

Strengthening communication between patients and physicians, and creating an atmosphere where patients can consult after accessing online health information, can also positively impact the quality of clinical care. It is also important for physicians to provide clear and corrective explanations regarding common health misinformation found on online sites. This helps patients manage their health behaviors and health communication more consciously. In conclusion, it is also necessary to have advisory practices that support digital health literacy and to support this with clinical consultations. Practical solutions proposed in light of these recommendations will positively impact public health in achieving success in the delivery of healthcare services.

In conclusion, strengthening online health information-seeking behavior appears to be an effective strategy for enhancing individuals' engagement in their own health management and promoting rational medication use. By improving patients' access to reliable health information,

healthcare providers can support more informed decision-making and contribute to greater adherence to recommended treatment plans. Collaborative efforts among healthcare stakeholders to encourage responsible information seeking practices have the potential to improve patient empowerment and foster a more active approach to personal health management. In the long term, such initiatives may lead to healthier populations and a more efficient, responsive healthcare system.

## ETHICAL DECLARATIONS

**Ethics Committee Approval**: Ethical approval was obtained from Sakarya University Social Sciences and Humanities Ethics Committee (Date: 18.09.2024, Approval No: 06).
**Informed Consent**: Written informed consent was obtained from patients.
**Referee Evaluation Process**: Externally peer-reviewed.
**Conflict of Interest Statement**: The authors have no conflicts of interest to declare.
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