

Original Article



Does Increasing Health Literacy Reduce Self-medication? A Case Study of Hamadan University of Medical Sciences

Mohamad Reza Amiri¹, Hossein Vakilmofrad¹, Farideh Rostami¹, Samad Moslehi^{2*}

¹Department of Medical Library and Information Sciences School of Paramedicine, Hamadan University of Medical Sciences, Hamadan, Iran

²Department of Biostatistics, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran

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*Corresponding author:

Samad Moslehi,

Email: samadmoslehi999@gmail.com



Abstract

Background: Self-medication is one of the challenging issues in health care systems. Health literacy seems to be an important factor in self-medication behaviors. The aim of this study was to investigate the relationship between health literacy and self-medication among undergraduate students of Hamadan University of Medical Sciences.

Methods: Using a cross-sectional survey method, this descriptive-analytical study was conducted in 2020. Among 2600 undergraduate students of Hamadan University of Medical Sciences, including non-clinical students, 335 people were selected by the convenience sampling technique. Data were collected using two questionnaires, including a standard health literacy questionnaire and a researcher-made self-medication questionnaire. The linear regression model was employed to analyze data by SPSS, version 23.

Results: The results revealed that 174 people (52%) of the statistical population were women, and there is a significant difference between males and females in terms of self-medication ($P=0.022$). The effect of gender on self-medication was statistically significant ($P=0.013$), and self-medication decreased slightly more with increasing health literacy in males than in females. In general, without considering gender, the relationship between health literacy and self-medication was statistically significant ($P=0.007$), while health literacy had a negative relationship with self-medication.

Conclusion: Health literacy among students was at an adequate level, and their level of self-medication is high. Health literacy as a factor affecting the capacity for decision-making and action in the field of health has a significant relationship with self-medication behavior. Therefore, due to its negative consequences, it is necessary to take measures to reduce this social phenomenon.

Keywords: Self-medication, Health Literacy, Students

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Introduction

Self-medication is a harmful social phenomenon that some people use as treatment-seeking behavior when they feel sick (1). It is a behavior in which a person attempts to resolve self-identified health issues by using medicines, herbs, or some therapeutic drugs based on one's own interests or the advice of another person without consulting a physician (2,3). Self-medication as a global challenge is quite common in many countries and is unfortunately due to the misconception that drugs are purely curative and harmless, while according to medical texts, drugs have side effects and adverse social and economic consequences (1,4,5). Self-medication is common in many countries, and its rate is high (68.1% and 75%) in some countries such as India (6) and Chile (7), respectively. The rate of self-medication in Iran varies from 12% to 90% (8-12), and based on the random effect model in the research of

Azami-Aghdash et al, the overall rate of self-medication was appraised to be 53% (13), which is a matter of concern. Studies on self-medication have also been conducted among different groups. For example, Jalilian et al showed that 35.4 of pharmacy visitors in Hamadan province had self-medication (8). The findings of Khadem et al also demonstrated a 76.4% prevalence of self-medication among paramedical students and an increase during university education (4). Self-medication is influenced by numerous factors, including social and economic conditions, lifestyle, immediate access to medicines, cost of medicines, exposure to advertising, internet access and skills to use it, family, and education level. The other affecting factors are age and gender, as well as previously prescribed medication and pharmaceutical advertising recommendations in popular newspapers or magazines (14,15).



In this regard, Javadzade et al, examining the psychological factors of self-medication, found that the perceived sensitivity and violent beliefs, along with promoting critical health literacy can be effective in changing self-medication behavior (16). Health literacy was first proposed in the 1970s, and as an effective factor in the health care system, it can be considered an educational solution to promote community health (17). Health literacy is a set of skills required to acquire, process, and understand basic health information and is considered a set of knowledge and skills or a hierarchy of functions (functional-interactive-critical) (18). The ability to use information is important when making decisions about a person's quality of life and health (19). Health literacy not only encompasses a range of cognitive skills that allow people to access and use health information to improve their ability to participate in the promotion and maintenance of health (20), but also the skills needed for the integration of health information, direction, processing, problem-solving, and decision-making (21). In the health literacy promotion approach, health literacy is considered an asset that can increase the capacity for decision-making and action in the field of health (22).

Given the concept of self-medication and its harms, as well as the concept and positive consequences of health literacy, it is expected that there is a relationship between the level of health literacy and self-medication because insufficient health literacy is associated with declining health in society (23). However, the results of studies on the relationship between health literacy and self-medication show conflicting results. For example, Mousaeipour et al indicated no significant relationship between health literacy and confirmation and performance of self-medication among women referred to comprehensive health care centers in Sirjan (23). Conversely, Kamran et al reported that there was a significant relationship between total health literacy and general health situation with self-medication, and the prevalence of self-medication among participants with poor and highly poor self-rated physical and mental health was significantly higher than in other participants (24). Moreover, Muflih et al concluded that promoting the health literacy level of the public can diminish improper self-medication, especially self-medication with antibiotics (25). The results of Javadzade et al revealed that individuals with higher perceived severity and higher critical health literacy were less likely to practice self-medication (16).

Non-clinical students' health literacy is expected to increase during their education. Due to the high rate of self-medication among students (4,5), the conflicting results in various studies, and the relationship between health literacy and self-medication, this study aimed to determine the relationship between health literacy and self-medication among undergraduate students.

Materials and Methods

This descriptive-analytical applied research was performed

in September-November 2020 using a cross-sectional survey method. All the 2600 undergraduate students of Hamadan University of Medical Sciences in 2021 were the statistical population. A convenience sampling method (non-probability sampling) was adopted due to its incredibly prompt, uncomplicated, and economical nature; it is defined as a method adopted by researchers where they collect data from a conveniently available pool of respondents. Therefore, 335 people were determined as the sample size using Krejcie and Morgan's table.

The inclusion criteria included having bachelor's, master's, and Ph.D. degrees, being 18 years and older, having no permission for prescribing drugs, and completing comprehensive health literacy and self-treatment questionnaire. On the other hand, the exclusion criteria were clinical students (treatment field), lack of willingness to complete the questionnaire, inability to answer questions, and incomplete answering of the questionnaire.

Qualified respondents were approached in educational and non-educational environments such as classrooms, amphitheatres, college campuses, and the like, and the questionnaire was completed through face-to-face interviews with 335 undergraduate students.

In this study, a questionnaire was prepared in three parts, including personal characteristics, health literacy, and self-medication. The first part includes data about age, gender, marital status, and the like, and the second part contains evaluation and decision-making, understanding, and skills, as one of the important aspects of health literacy from the standard Health Literacy for Iranian Adults (HELIA) questionnaire, which was published by Montazeri et al. This questionnaire includes 33 items, which measure 5 health literacy dimensions, including reading, access, understanding, appraisal, and decision. In the present study, all dimensions of the questionnaire were considered to be one major dimension. The scores of items were in the range of 1-5 (never, rarely, sometimes, most often, and always, respectively) based on a 5-point Likert-type scale. The score of each individual was obtained from the sum of the scores (from 33 to 165), and the scores were converted to the 0-100 range according to dividing the difference between the raw score of each individual with the minimum possible score and the difference between the maximum and minimum possible scores. In ranking health literacy levels, the scores of 0-50, 50.1-66, 66.1-84, and 84.1-100 indicate inadequate, not very adequate, adequate, and excellent levels, respectively. The HELIA questionnaire has an acceptable validity level and has acquired reliability of 0.89 (26).

The third part of the researcher-made questionnaire included questions on factors affecting self-medication. This questionnaire is designed based on two self-medication questionnaires by James et al (27) and Elander et al (28), which was considered a comprehensive questionnaire according to the opinion of health professionals. Using the backward and forward translation method, due to the

inconsistency of this questionnaire with the culture and educational technique of Iran, first, all the items were translated into Persian, and then the Persian translation was again translated into English and matched with the original version. Then, it was given to 13 professors and specialists in the health field. Writing changes were applied by health professionals, and required items were added while removing additional items.

Therefore, the researcher-made self-medication questionnaire contained 17 items, the scores of items which ranged from 1 to 5 (never to always) based on a 5-point Likert-type scale. The way of scoring from 0 to 100 on this questionnaire was the same as the health literacy questionnaire, and the scores of 0-20, 20.1-40, 40.1-60, and 60.1-100 were considered to indicate low, medium, high, and very high levels, respectively.

After applying changes, the revised questionnaire was given to health professionals again to check the clarity and appropriateness of the questions, along with evaluating their classification (unfavorable to completely favorable), and they were asked to check each of the questions and score them. Each health professional indicated the degree of desirability by writing numbers 1-4 in front of each question. Content validity indices were calculated after collecting the information. Acceptable content validity ratios (CVR) were reported based on the Lawshe table. The content validity index (CVI) was also assessed using a 4-point grading scale. The CVR for all of them, except for one question, was higher than 0.54; according to the Lawshe table, the acceptable CVR based on the opinions of 13 health professionals for all questions should be higher than 0.54. Considering that this value for this question was less than 0.54, it was removed from the questionnaire. Additionally, the CVI for all questions was higher than 0.79, and the total CVI was equal to 0.93, confirming the validity of this index.

The correlation rate of the items was used to evaluate the reliability using Cronbach's alpha coefficient calculation method. The reliability of this questionnaire was measured and confirmed by Cronbach's alpha for another 30 samples ($\alpha=0.76$), and the reliability of the total questions was 0.86. Then, the total score of this questionnaire was determined to be from 16 to 80.

The raw data were descriptively and inferentially analyzed after data collection. For categorical variables, frequencies and percentages were calculated, and the independent samples *t* test was used for comparing the means of health literacy and self-medication in the two groups (i.e., gender and marital status). Finally, the linear regression model was performed to assess health literacy and demographic variables associated with self-medication using SPSS (version 23), and $P<0.05$ was considered statistically significant.

Results

In the present study, among 335 samples, 174 (52%) cases were women. The mean \pm standard deviation age

of the students was 21.81 ± 2.15 years. In addition, 305 (91%) of them were single, and the rest were married. The Kolmogorov-Smirnov test was applied for investigating the normality of self-medication and health literacy between gender and marital status groups. The normality of variables was approved and two independent samples *t* tests were employed accordingly. The descriptive statistics of demographic characteristics are reported in Table 1.

Table 2 presents the result of comparing the mean of self-medication and health literacy between gender and marital status.

As shown, in total, students' health literacy (with a total average of 72.71) is at an adequate level (66.1-84), and their self-medication rate (with a total average of 47.72) is at a high level (40.1-60). The mean of self-medication in females was higher than in males, and this difference was statistically significant ($P=0.022$).

To evaluate the relationship between health literacy and self-medication, the linear regression model was used, the results of which are provided in Table 3. The Kolmogorov-Smirnov test was calculated for the normality of self-medication as an outcome variable, and the results represented that the data distribution for a variable of self-medication was normal ($P=0.136$).

Based on the results in Table 3, the effect of age ($P=0.932$) and marital status ($P=0.49$) on self-medication is not statistically significant. The effect of gender ($P=0.005$) and health literacy ($P=0.03$) on self-medication is statistically significant. In males, the mean of self-medication score decreases by 2.71, conditional on being constant other variables. As the score of health literacy increases one unit, the mean of self-medication score decreases by 0.06, conditional on being constant other variables.

As the effect of marital status and age was not statistically significant, the backward strategy was employed, the results of which are reported in Table 4. The relationship between gender ($P=0.013$) and health literacy ($P=0.007$) with self-medication was statistically significant. In males, the mean of self-medication score decreased by 2.35, conditional on being constant health literacy. As the score of health literacy increased by one unit, the mean of self-medication score decreased by 0.07, conditional on being constant gender. For one unit increase in health literacy in males, the mean of self-medication score was 51.73. In contrast, for females, if their health literacy score increased

Table 1. Descriptive Statistics of Demographic Information Variables

Categorical Variable	
Gender, No. (%)	
Male	161 (48)
Female	174 (52)
Marital status, No. (%)	
Single	305 (91)
Married	30 (9)
Age, Mean \pm SD	21.81 \pm 2.15

Note. SD: Standard deviation.

Table 2. Mean Comparison of Self-medication and Health Literacy Between Gender and Marital Status

Variables	Category	Self-medication	P Value*	Health Literacy	P Value*
		Mean±SD		Mean±SD	
Gender	Male	46.58±8.24	0.022	71.58±18.36	0.276
	Female	48.77±8.45		73.77±16.68	
Marital status	Single	47.69±8.16	0.857	72.99±17.34	0.398
	Married	48.07±10.78		70.00±19.25	
	Total	47.72±8.41		72.71±17.51	

Note. SD: Standard deviation, *Independent samples *t* test.

Table 3. The Relationship Between Health Literacy, Gender, Age, and Marital Status With Self-medication

Variable	Coefficient	SE	95% CI	P Value
Constant	53.74	5.41	(43.14 - 64.35)	<0.001
Gender				
Male	-2.71	0.97	(-4.62 - -0.80)	0.005
Female	Ref.	-	-	-
Marital status				
Married	-1.28	1.85	(-4.91 - 2.35)	0.490
Single	Ref.	-	-	-
Age	-0.02	0.23	(-0.48 - 0.43)	0.932
Health literacy	-0.06	0.03	(-0.11 - -0.01)	0.030

Note. SE: Standard error; CI: Confidence interval.

Table 4. The Relationship Between Health Literacy and Gender on Self-medication (Backward Strategy)

Variable	Coefficient	SE	95% CI	P Value
Constant	54.15	2.08	(50.06 - 58.25)	<0.001
Gender				
Male	-2.35	0.94	(-4.19 - -0.50)	0.013
Female	Ref.	-	-	-
Health literacy	-0.07	0.03	(-0.12 - -0.02)	0.007

Note. SE: Standard error; CI: Confidence interval.

by one unit, the mean of self-medication would be 54.08.

Discussion

The goal of any health system in any country is to improve the health of society in various ways. One of the problems facing the health system is the phenomenon of self-medication, which must receive attention. To manage this phenomenon, it is important to study the factors affecting it. Therefore, this study was conducted to investigate the relationship between health literacy and self-medication among undergraduate non-clinically students of Hamadan University of Medical Sciences in 2020.

The results of this study showed that the range of health literacy of students participating in the study is at an adequate level. Considering that the research population included students, this result was expected, which is consistent with the results of Muflih et al (25) and Sajadi et al (29), while contradicting those of Vozikis et al (30). Additionally, the results indicated the high rate of self-medication among the students participating in the study.

The findings of this study, like other studies on the rate of self-medication (3,4,24,25,31), demonstrated a high rate of self-medication in different groups in different societies. The results revealed that if health literacy is assumed to be constant, the effect of gender on self-medication is significant. In other words, self-medication was lower among males than females. These results are in line with those of Najafipour et al (32) and Saharan and Pandey (33), while being inconsistent with the findings of Heshmatifar et al (15) and Zare et al (34).

According to the results, health literacy as one of the important factors in promoting community health has a significant relationship with self-medication behavior, but in the study population, this relationship was negligible contrary to expectations. The findings of this study confirmed those of some studies on the relationship between health literacy and self-medication, including Javadzade et al (16), Muflih et al (25), and Kamran et al (24); however, the results of the current study do not match the findings of Mousaeipour et al (23). In explaining this result, it can be stated that health literacy as a valuable asset by increasing cognitive skills (20), as well as skills needed for the integration of health information, direction, processing, problem-solving, and decision-making (21), enables people to carefully evaluate health-associated issues before any action, and all of their aspects and effects, thus individuals make decisions about self-medication with greater sensitivity. However, in explaining that health literacy had a slight relationship with reducing self-medication, it can be mentioned that other factors in addition to health literacy, including cultural factors, poverty, and laws related to the management of distribution and drug use, may affect self-medication behaviors. Accordingly, it is necessary to conduct this research in different groups in society and compare the results.

Limitations

This research was conducted on a small sample in a medical science university. It is suggested that this study be performed on the students of non-medical universities to investigate the relationship between health literacy and self-medication.

Conclusion

According to findings, health literacy among students

was at an adequate level, but their level of self-medication was high. Health literacy as a factor affecting the capacity for decision-making and action in the field of health had a significant relationship with self-medication behavior. Therefore, due to the negative consequences of this social phenomenon, it is necessary to take measures to reduce it. One of the effective factors in reducing self-medication is increasing the level of public health literacy, which can significantly reduce its harms, along with managing other factors.

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Author Contributions

Conceptualization: Mohammad Reza Amiri, Hossein Vakilmofrad, Farideh Rostami.

Data curation: Mohammad Reza Amiri, Samad Moslehi.

Formal Analysis: Mohammad Reza Amiri, Samad Moslehi.

Investigation: Hossein Vakilmofrad, Farideh Rostami.

Methodology: Mohammad Reza Amiri, Samad Moslehi.

Project administration: Mohammad Reza Amiri.

Resources: Farideh Rostami.

Supervision: Mohammad Reza Amiri.

Validation: Samad Moslehi.

Visualization: Hossein Vakilmofrad, Farideh Rostami, Samad Moslehi.

Writing – original draft: Mohammad Reza Amiri.

Writing – review & editing: Mohammad Reza Amiri, Hossein Vakilmofrad, Samad Moslehi.

Conflict of Interests

The authors have no conflict of interests associated with the material presented in this paper.

Ethical Permissions

This study was approved by the Ethics Committee of Hamadan University of Medical Sciences (No. IR. UMSHA. REC.1398.809). In addition, written consent was obtained from the participants before answering the questionnaire.

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