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Is There a Relationship between Low Health Literacy and Smoking?

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Abstract

Aim: Identification of contributory factors in smoking and gaining insight into the roles played by each of these factors including health literacy (HL) may account for quitting or decreasing the prevalence of smoking. The aim of the current study was to identify the effects caused by different HL levels on smoking.

Methods: 347 students inhabiting the dormitories of Shahid Beheshti University of Medical Sciences were included in a cross-sectional correlational study. Random cluster sampling was used for the selection of participants. HELIA questionnaire (used for HL measurement in Iranian urban population between 18-65 years of age) and a researcher-made questionnaire (for determining the status of smoking in individuals) were used to collect information from the participants. All data were statistically analyzed by SPSS software.

Findings: The mean and standard deviation of HL score was 70.52±14.12 out of 100. The results indicated that among the university students, 59.7% (201 people) were non-smokers, 23.1% (78 people) were smokers, and 17.2% (58 people) had experienced smoking. These findings reveal that HL is significantly correlated with smoking in university students. Also different levels (insufficient, relatively sufficient, and sufficient) of HL show its significant correlation with smoking, meaning that less HL levels are accompanied by a higher chance of smoking.

Conclusion: The relatively high prevalence of smoking in university students and the impact of HL on smoking highlight the need to increase the level of HL in university students and develop an efficient tool for measuring smoking literacy in all age groups.

Keywords: Health literacy, Smoking, University students

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Introduction

Health literacy (HL) is defined as the capacity for obtaining, interpreting, and understanding the primary information associated with health services. HL is necessary to make appropriate decisions, and involves the exploitation of reading, listening, analysis, and decision-making skills in health-related situations. These skills do not necessarily depend on the number of years one spends for study or his/her ability to read [1]. A variety of studies have indicated that low levels of HL are accompanied by deficient knowledge on health services and situations, lack of ability to perform self-care activities, problems in understanding the manual instruction of drugs and performing therapeutic procedures, drug misuse, lack of following the physician's recommendations and guidelines, increased chance of hospitalization and enhanced costs of health care, poor health condition and higher rate of mortality, limited use of screening methods for early diagnosis of different diseases such as cancer, lack of ability to communicate properly with physicians and other health care providers, and limited capacity for obtaining appropriate and timely health services [2-11]. At the individual level, ineffective communications resulting from low HL lead to mistakes, low quality, and risks for patient's safety in receiving health care services. At the population level, individuals with favorable levels of HL are able to take part in public and private debates regarding health, medicine, scientific knowledge, and cultural beliefs. Therefore, the benefits of high HL levels affect all life activities (at home, office, society, and culture). A higher HL increases the person's independence and capabilities. The process of obtaining HL can be considered as a step towards improvement of life quality. In the society, HL can also lead to justice and the stability of changes in public health. In general, the problem of low HL can be overcome by educating people and turning them into more productive resources (such as increasing their HL) [12, 13]. Studies have found the presence of insufficient HL levels (25% and 26%) in Iranian university students [14, 15].

Smoking is believed to be the first preventable factor of morbidity and mortality worldwide [16, 17]. The prevalence of smoking has increased in youth, especially in the age group of 18-24 years. A major fraction of people in this age group is university students. If the current situation continues, smoking is anticipated to cause the annual death of around 10 million people in 2020. Smoking has also been known to play a causal role in the majority of cases of different malignancies including lung, cervical, and renal cancers, as well as health risks such as heart attacks, myocardial infarction, and other cardiovascular disorders [18]. A variety of surveys indicate that the prevalence of smoking among students

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studying in some Iranian universities of medical sciences has reached the significant amount of over 20% [19, 20].

To date, a limited number of investigations have evaluated the potential effects of low HL on beginning or quitting smoking [21]. These studies have yielded contradictory results. Sudore et al. have shown a significant correlation between limited HL and smoking in older people [22], whereas Baker et al. have not found any relationship between low HL and smoking in various adult age groups [23]. More recent studies conclude that low HL may act as an independent risk factor for return to smoking, poor outcomes in quitting smoking, and interest in smoking [21, 24, 25]. Keeping this in mind, the current study was designed and carried out with the goal of determining the correlation between different HL levels and smoking in students who were living at the dormitories of Shahid Beheshti University of Medical Sciences in 2016.

Materials and Methods

The current work is a cross-sectional correlational study that was performed on 360 undergraduate students inhabiting the dormitories of Shahid Beheshti University of Medical Sciences. Random cluster sampling was used to include students in the study. To achieve this purpose, a list of all dormitories whose inhabitants were individuals studying in different disciplines of medical sciences was prepared. A number of dormitories were then randomly selected one by one until the number of students included in the study reached the desired sample size.

One of our objectives in the present work was to determine the HL level of students. Based on previous reports, the HL standard deviation and the minimum differential point were determined as 25 and 3, respectively (18). According to the Cochrane's sample size formula, at least 270 people were needed to be included in the study. Despite these statistical considerations, the possible loss of sample up to 30% was considered. Therefore, 347 individuals were picked out.

Inclusion criteria were inclination to participate in the survey, being a university student, spending undergraduate years, being at the 2nd and 3rd years of study, having Iranian nationality, and inhabiting the dormitories managed by Shahid Beheshti University of Medical Sciences. Also the lack of interest in continuing the survey and the lack of interest in completing the questionnaires were considered as exclusion criteria.

Information was collected by using the following tools: 1) Background and demographic information questionnaire including questions about age, sex, marital status, educational year, occupational status, the sources used to obtain information on health

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and disease. 2) Health Literacy for Iranian Adults (HELIA) questionnaire that is used for HL measurement in the Iranian urban population between 18-65 years of age was applied to determine the HL level. This questionnaire includes 33 items measuring 6 major dimensions including reading, access, understanding, appraisal, decision-making and behavior. Scoring is implemented by calculating the raw scores associated with the dimensions of HL and then converting the raw scores into a standard score of 0 to 100. The scores between 0-50, 50.1-66, 66.1-84, and 84.1-100 were considered as insufficient HL, relatively sufficient HL, sufficient HL, and excellent HL, respectively. Montazeri et al. have designed and psychometrically measured the capacity of this instrument and concluded that this questionnaire has favorable validity and satisfactory reliability. This questionnaire offers advantages such as separately considering different dimensions of HL, using items in a linguistically simple manner, and generality [26]. 3) A researcher-made questionnaire that was used to determine smoking/non-smoking status of the participants. This questionnaire contains five items. A group of experts evaluated the validity of this questionnaire, and some of the items were revised accordingly. Furthermore, 20 students filled out the questionnaire, and Cronbach's alpha level was calculated as 0.85.

The questionnaires were completed by the students in a self-report mode. All students were asked to answer the questions honestly. Besides, they were assured that all information disclosed in the questionnaires will be used in a confidential manner. They completed the questionnaires at their own dormitories. Data were analyzed by the SPSS software (version 21) using Chi-square test and Spearman's and Kendall's rank correlation coefficients. The significance level was considered 0.05.

Findings

A total of 347 students were enrolled. 10 people failing to complete the full questionnaire and unwillingness to participate in the study were excluded. The average age of the participants was 22.93 ± 4.05 years with 61% (205 students) female and 39% (132 students) male. Our findings showed that 87% (293 students) were single, 59% (199 students) were spending the 3rd year of undergraduate studies, and 73% (248 students) were jobless. Internet and communication with friends and relatives were the most important sources commonly used by the participants to obtain health information. Our results revealed that 59.7% (201 students) were non-smoker, 23.1% (78 students) were smokers, and 17.2% (58 students) had experienced smoking.

The mean and standard deviation of HL was 70.52±14.12 out of 100. The percentage of

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students with insufficient, relatively sufficient, sufficient and excellent HL levels was 9.2% (31), 28% (94), 43% (145), and 19.8% (67), respectively.

Table 1 indicates the correlation between different levels of HL and the students' smoking/non-smoking status. According to the results, the chance of smoking in the students with relatively sufficient, sufficient, and excellent HL levels was, respectively, 0.33-fold, 0.45-fold, and 1.12-fold higher than the students with insufficient HL. In addition, all HL levels except excellent HL significantly correlated with smoking.

Table 1: Correlation between different levels of HL and smoking among the students

Smoking status	Yes		No		Total		OR	P
HL level	Number	Percent	Number	Percent	Number	Percent		
Insufficient HL*	19	5.64	12	3.56	31	9.2	Ref	-
Relatively sufficient HL	49	14.5	45	13.35	94	28	0.333	0.016
Sufficient HL	45	13.35	100	29.7	145	43	0.456	0.020
Excellent HL	23	6.8	44	13	67	19.8	1.125	0.711

* Insufficient level was considered as reference, and the chance of smoking (OR) in other groups versus the 1st group was calculated by logistic regression.

Discussion and conclusion

The current study was undertaken to identify the correlation between various levels of HL and smoking status in the students inhabiting the dormitories of Shahid Beheshti University of Medical Sciences in 2016. Our findings revealed that the level of HL is, generally, moderate in students, and is insufficient and relatively sufficient in more than one-third of the participants (36.8). Our results are in contrast to the study conducted by Azimi et al. [14], who reported that the HL level was borderline and insufficient in more than two-thirds of the students (79%). This difference might be attributed to the higher number of female than male students, the use of students who were studying in different disciplines of medical sciences, and further convenience in answering the questions of HELIA versus NVS questionnaire in the present study compared to the study by Azimi and colleagues.

Our findings are also contrast with the results reported by Zhang et al. [27], who found the low level of HL in students and Mahmoudi et al [16], who observed a borderline and insufficient level of HL in students. These conflicting results are due to the fact that we evaluated students in different disciplines of medical sciences, whereas the studies mentioned above were based on investigating the students of different disciplines of non-

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medical sciences. Furthermore, the results of this study are not consistent with those of Vozikis and colleagues [28] who showed a moderate to high level of health literacy. Possible reasons for this discrepancy can be the different measuring tool, the larger number of students participating, and being students at the higher education level than the study cited in the study.

About 23% of the students taking part in our study did smoke during the survey. Our results are in agreement with the studies undertaken by by Ghodsi et al. [19], Shojaezadah et al. [29], Bahrami et al. [30], and Khami et al. [31]. These studies reported the smoking prevalence of 23%, 22.3%, 23%, and 23, respectively. However, our findings are not concordant with the surveys conducted by Shojaa et al. [32], Divsalar et al. [33], and Abedini et al. [34] in which the smoking prevalence rates were reported 6.2%, 11%, and 9%, respectively.

Although our work exhibits a smoking prevalence less than that in some European countries and the US, it reveals that the prevalence of smoking is higher in Tehran than other Iranian cities. In general, the current study suggests a higher rate of smoking compared with previous reports. The increased number of smoking individuals in our survey might result from the lack of considering smoking as a bad behavior, easier self-reporting, the change of students' lifestyle into the western lifestyle, and a higher inclination towards smoking in large cities. Various investigations in different countries have found different smoking prevalence rates in university students. Metintas et al. have reported a smoking prevalence of 21.9% and 11% in medical students of European and Asian countries, respectively [31, 35].

The results of our study highlight the fact that there is a significant correlation between HL and smoking status ($p = 0.003$). This finding is in striking contrast to the study of Arnold et al. [36], who found no significant relationship between HL and smoking. There are several reasons behind this discrepancy that include, among others, the use of different measurement tools and different sample sizes. Furthermore, statistical population used by Arnold et al. was only composed of pregnant women, whereas we used university students of both sexes and with different income levels.

Furthermore, our investigation indicated that insufficient, relatively sufficient, and sufficient HL levels are significantly correlated with smoking. This means that less HL levels are accompanied by a higher chance of smoking. This finding is consistent with the data reported by Stewart et al. [25], Sudore et al. [22], Wanger et al. [37], and Fernandez et al. [38], who observed a significant relationship between low HL levels and higher smoking

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prevalence rates, but contradicts the results obtained by Baker et al. [23]. One of the major reasons for this discrepancy is that Baker et al. used older adults in their investigation, and measured HL by TOFHLA; however, we included university students with a much lower average age and measured HL by a different tool (HELIA). According to the results, it can be concluded that low HL is a certain conceptual interpretation of insufficient knowledge about the health risks and effects of smoking; it is associated to the inappropriate attitude toward smoking as well.

Taken together, our analyses indicated the smoking prevalence rate of 23.1%, a moderate HL level in the university students, and a significant correlation between lower HL levels and higher chance of smoking. Our findings emphasize the need to increase HL level in university students, and suggest the development of a specific and distinctive tool to measure the smoking literacy. To our knowledge, the current study is the first report on measuring the relationship between HL levels and smoking prevalence in university students. One of the weak points of our survey is that the questionnaires were completed by the students at the dormitories. Furthermore, students living in their own cities and those living in locations other than dormitories did not participate in the survey. Therefore, the current study cannot represent all university students. Additionally, the incomplete recording of some information (owing to the lack of interest to cooperate or fear of completing questionnaires) is another weakness of this work. However, the greatest limitation of our survey might be the limited number of related reports in the literature.

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