Health Education and Health Promotion (HEHP) (2016) Vol. 4 (2)

The Survey of Health Literacy and Factors Influencing It among High School Students in Tehran, 2016

Farideh Saeedi[1], Rahman Panahi[2]*, Fereshteh Osmani[3]

Abstract

Aim: Currently, the issue of adolescents' health literacy is particularly important because it is an essential component in improving their quality of life. Due to the lack of enormous studies on this issue, this study aimed to determine the level of health literacy and factors influencing it among high school students in Tehran, Iran.

Methods: This research is a cross-sectional and descriptive-analytic study, which was conducted on 400 male and female students studying in the second period of high school, who were selected using multi-stage random sampling. Data were collected through a questionnaire, which included personal characteristics, and the questionnaire of HELMA (Health Literacy Measure for Adolescents). The obtained data were analyzed using SPSS 20 and descriptive statistics as well as t-test and ANOVA tests.

Findings: The mean age of students was 17.01±0.87 years. 50% (n=200) of the participants were female, 50.5% (n=202) were from the North part of Tehran, and 34.5% (n=138) were in the third grade. 37.5% (n=150) had inadequate health literacy, 37% (n=148) relatively adequate health literacy, 22.5% (n=90) adequate health literacy, and 3% (n=12) excellent health literacy. Health literacy was correlated significantly with the level of education, parents' education, source of information, the assessment of health status and interest in the issues of health ($p<0.05$).

Conclusion: The results indicated that most of the students had limited health literacy. Due to the role of health literacy in promoting the adolescence quality of life, it is necessary to pay more attention to promote health literacy and gain sufficient skills in order to make health information be practical and working.

Keywords: Health literacy, Students, HELMA, Tehran

1. M.Sc. Student, Department of Health Education and Promotion, Science and Research Branch, Islamic Azad University, Tehran, Iran Email: saeedy.f2014@yahoo.com
2. Ph.D. Candidate, Instructor, Department of Health Education and Promotion, Science and Research Branch, Islamic Azad University, Tehran, Iran Email: Peimanpanahi63@yahoo.com
3. Ph.D. Candidate, Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran Email: fereshteh.osmani@gmail.com

Introduction

"Health literacy" is a new concept that has involved a group of professionals in both fields of education and health. Health literacy is based on this idea that both health and literacy are vital resources for everyday life [1]. Health literacy depends on literacy, and includes knowledge, motivation and the capacity of individuals to access, understand, evaluate and use health information in order to judge and make decisions in everyday life to maintain or improve their quality of life during years [2]. Health literacy is defined as a set of skills that creates the ability of basic reading and calculation duties required to operate in an environment that provides health care [3]. WHO has introduced health literacy as cognitive and social skills that determine motivation and capability of individuals to acquire, to understand and to apply information in a way that leads to maintain and improve their health [4]. Research in recent decades has shown that health literacy is a better predictor than education, social status, economic status, occupation, race or sex for health status [5]. Health literacy is very important to the extent that if an individual does not have sufficient health literacy, he/she can barely understand information and suggestions provided to him/her by health professionals, and he/she can use them less desirably. In this case, the health level is weaker, the hospitalization rate and using emergency services are higher, and measures taken to prevent diseases by the person are much less. Consequently, we will see increasing imposition of costs and energy on health system and service providers [1]. In addition to less health literacy, less participation in decision-making about treatment, less expression of health concerns, and worse relationship with physicians, it is claimed that people with poor skills of health literacy know less about health issues and receive less preventive services, controlling their chronic diseases is worse, have poorer performance of physical and mental health and the use rate of emergency services, and health care is more seen among them [6]. If people have higher health literacy, they are able to have acceptable performance in new situation and with components related to health using acquired socio-cognitive skills [7]. Accordingly, increasing health behaviors and improving access to health care are some of those expected consequences in relation to having health literacy [8]. In a national survey by Montazeri et al. in 2016, to measure health literacy among Iranian adults aged 18-65 years. 44% of the participants had limited health literacy [9]. Ghanbari et al. (2015) examined the adolescents' health literacy using HELMA questionnaire. The results showed that 57.5 % of the adolescents had limited

health literacy [1]. According to what mentioned before, health literacy is very important for all age groups, especially adolescents. Since the health issues of adolescents are very important, WHO, in health goals of people, insists on the reduction of mortality of adolescents, violence, depression, unintentional injuries, substance abuse, suicide, sexually transmitted diseases, tobacco use and obesity [10]; on the other hand, the adolescence is a developmental period during which the child becomes a perfect citizen and the agent to change the life of his/her own and other people. This would result in forming the physical and mental maturity, personal values and beliefs, sense of identity, and understanding of their place in the world. Adolescence is a period during which relations with other people and the neighborhood where he/she lives change dramatically [11].

According to the 2011 census, adolescents aged 10-19 years comprised 16.3% of the total of over 12.3 million population of the country [1]. Today, the issue of health literacy among adolescents is of particular importance, and studies have shown that being low educated adolescent is a major problem as many young people are not able to read during the studying years at schools [8]. The individuals with high levels of health literacy benefit from health consequences more than people with limited health literacy; so empowering adolescents with the skills to communicate effectively about their health and to understand the health care trends is a vital factor in removing inequality in the health care issues for these people [12]. Hence, given the importance of health literacy and its health consequences, this study aimed to determine the level of health literacy and factors influencing it among high school students in Tehran.

Materials and Methods

This research is a cross-sectional and descriptive-analytic study. The studied population consisted of adolescents aged 15-18 years studying in the second period of high school, who were selected from girls' and boys' high schools in districts No. 2 and 9 in Tehran. The sample size was considered using the following formula and by taking into account p=0.50 (the estimation rate of people who have enough health literacy), and confidence level of %95, d=0.05 (error rate):

$$n = \frac{Z(1-\frac{\alpha}{2})^2.pq}{d^2}$$

$$n = \frac{(1.96)^2 \times (0.5 \times 0.5)}{(0.05)^2} = 384 \cong 400$$

The sample size was 420, including 10% exclusion. In this study, multi-stage random sampling method was used. First, a list of 19 educational districts and high schools in Tehran was prepared, which was then divided

into two parts: Northern and Southern. Then one district was selected randomly (districts 2 and 9) from each part for sampling purposes. At the Northern part, one girls' high school and one boys' high school were selected randomly from each district, and at the last stage, three classes from the second to fourth grades were selected randomly from each school; finally among the selected classes, all students were selected as sample.

Inclusion criteria for the study contained studying at high schools in Tehran, having a mean age of 15-18 years, and tendency to participate in the study. The lack of each criterion mentioned above was considered as an exclusion criterion. Data were collected through a questionnaire, which contained two parts as follows:

1) **Demographics**: Age, sex, residential area, grade at school, parents' education, parents' occupation, physical activity, household income, interest in health issues, individual assessment in terms of health status, and the first source of health information. Due to demographic conditions, changes of content reliability should be evaluated. Thus, to determine the reliability of demographic questions, the internal correlation test was used. A pilot study was conducted among 30 students. The data were analyzed using the Cronbach's alpha coefficient of 85%.

2) **Health literacy**: Health literacy data were collected through HELMA. This questionnaire was designed and conducted by Ghanbari et al. in 2014, which was evaluated in terms of psychometrics and then was used. HELMA's validity and reliability have been proven before for students, and Cronbach's alpha coefficient was calculated as 0.95 in this study. The health literacy inventory included 44 statements in 8 access areas (5 statements), reading (5 statements), comprehension (10 statements), evaluation (5 statements), usage (4 statements) communication (8 statements), self-efficacy (4 statements) and calculation (3 statements) that is self-assessment of abilities of an individual for a specific action dealing with health information. It was rated based on the five-point Likert scale: *never* (score: 1), *rarely* (score: 2), *sometimes* (score: 3), *most of the time* (score: 4), and *always* (score: 5). Based on the cut-off points of 50, 66 and 84, the health literacy of adolescent students were ranked on four levels of *inadequate* (0-50), *relatively adequate* (50.1-66), *adequate* (66.1-84) and *excellent* (84.1-100) [1].

For this study, necessary permissions were received from the Vice Chancellor of Science and Research Faculty of Islamic Azad University of Tehran, Department of Education in Tehran and the departments of education of districts 2 and 9 and used for the selected high schools (one girls' school and one boys' high school). At the time of referral

to schools, the researcher explained the details to the principals while introducing himself, and after coordination with the principals, one class was selected randomly from each grade. All students of these selected classes participated in the study as sample. At first, the objectives of the study and confidentiality of information received were explained, and after obtaining informed consent, the students completed the questionnaires as self-assessment ones. Data were analyzed using SPSS 20 and statistical methods including descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (t-test, and ANOVA). The significance level of 0.05 was considered in this study.

Results

A total of 400 students with a mean age and SD of 17.01±0.87 years were studied; however, 20 students were excluded because of failing to complete the questionnaires or unwillingness to participate in the study (response rate of 95.2%). 50% (n=200) of them were female, 34.5% (n=138) were in the third grade, 33.8% were in the second grade, and 31.8% were in pre-university grade. Education level of 42.6% (n=170) of fathers and 50.5% (n=202) of mothers of the students was high school diploma. 81.2% (n=325) of fathers were employed and 80.8% (n=323) of the mothers were housewives. 46.3% (n=185) reported that they walked from home to school, 33% (n=132) reported that the monthly income of a household was up to USD 286-572, 35.3% (n=141) of the students were somehow interested in health-related issues, 44% (n=176) evaluated their health status good, and the greatest source of information in the field of health was estimated by 47% of the parents (n=188).

Table 1 shows that the variables of students' grade, parents' educational status, interest in health issues, individual assessment of health status, and health information resource with the mean score of health literacy had a significant relationship. Scheffe test showed that third grade education with two other grades were significantly different ($p<0.001$) so the mean score of health literacy was low in this grade. There was a significant difference in health literacy between the students whose parents had collegiate level and those whose parents had diploma ($p=0.018$) and ($p=0.009$). So that the average health literacy score of students whose parents had university education was higher There was a significant difference in health literacy between the adolescents who were interested in health issues “somewhat” and “high” and “very high” and those with “almost no” and “little” ($p<0.001$) so that the mean score of health literacy of students who were somewhat or high or very high interested in health issues

was greater than those who chose "almost no" and "low" option. There was a significant difference between the health literacy of students whose health status was assessed at "very good" and "good" levels in comparison with the students whose health rated was as "bad and very bad" ($p<0.001$). The average health literacy score in the adolescents whose health status was assessed as "very good" and "good" levels was higher than those whose health status was rated as "bad" and "very bad". Also there was a significant difference between those students who evaluated their health status "very good" and those who evaluated their health status "average" and "bad" ($p<0.001$) so that the mean score of health literacy of very good group was more than the two other groups. Nevertheless, there was no difference in the levels of health information source between the different groups.

Table 1: The demographics characteristics of participants in terms of health literacy

Health literacy / Demographic characteristics		Average	Standard deviation	Test results
Sex	Boy	55.01	16.58	*t=0.297, df=398 p-value=0.767
	Girl	54.52	16.02	
Age	15	54.65	18.74	**F=1.855 p-value=0.169
	16	55.63	15.66	
	17	52.56	16.12	
	18	56.73	16.40	
Living region	North of Tehran	53.27	16.57	*t=1.855, df=398 p-value=0.064
	South of Tehran	56.28	15.89	
Grade	Second	57.07	16.51	**F=10.229 p-value<0.001
	Third	49.82	16.30	
	Fourth	57.69	14.83	
Educational status of father	Under diploma	54.21	15.86	**F=4.138 p-value=0.017
	Diploma	52.62	15.62	
	Collegiate	58.16	17.19	
Educational status of mother	Under diploma	55.72	14.81	**F=5.071 p-value=0.007
	Diploma	52.44	17.25	
	Collegiate	58.70	14.60	
Father's occupation	Employed	55.12	14.81	**F=0.520 p-value=0.595
	Unemployed	51.81	18.67	
	Retired	53.36	18.73	
Mother's occupation	Employed	54.71	15.84	**F=0.121 p-value=0.886
	Housewife	54.72	16.37	
	Retired	58.02	19.45	
Income	286 $	52.75	17.91	**F=1.459 p-value=0.225
	286-572 $	54.75	14.73	
	572-858 $	54.88	17.40	
	More than 858 $	57.81	14.83	
Having a snack	I do not	52.70	14.35	**F=2.209 p-value=0.041
	Drink tea without sugar	55.58	15.93	
	Drink tea with sugar	52.77	15.54	
	Fruits and fresh juices	58.21	16.97	
	Sweet treats	51.26	14.56	
	Dried fruits	54.54	21.94	
	Other	49.77	17.37	

Health literacy / Demographic characteristics		Average	Standard deviation	Test results
Interested in health issues	Almost no	41.02	19.11	**F=18.302 p-value<0.001
	Little	46.68	14.31	
	Somehow	54.64	14.47	
	Much	59.86	12.62	
	Very much	62.67	18.48	
Individual assessment of health status	Very good	59.81	16.24	**F=6.521 p-value<0.001
	Good	54.87	16.51	
	Average	49.68	13.67	
	Bad	45.14	17.52	
	So bad	53.38	14.85	
Source of health information	Teacher	59.62	13.63	**F=2.549 p-value=0.020
	Parent	52.68	17.35	
	Doctor	58.90	14.75	
	Health worker	51.74	13.17	
	Others	49.24	17.26	
	Internet	56.40	14.45	
	Book	43.27	19.30	
Going school from home	Walking	55.41	15.19	**F=0.533 p-value=0.578
	Motorcycle or car	53.49	17.59	
	Sometimes on foot, and sometimes by car	55.13	16.79	

The mean and SD of scores of health literacy among the studied population was obtained 54.76±16/23 out of 100. Table 2 shows the frequency distribution of the health literacy level of the studied students. As shown, 37.5% (n=150) of them had inadequate, 37% (n=148) had relatively adequate, 22.5% (n=90) had adequate, and 3% (n=12) had excellent health literacy.

Table 2: Frequency distribution of health literacy of students

Variable	Frequency (percent)
Inadequate health literacy	150 (37.5)
Relatively adequate health literacy	148 (37)
Adequate health literacy	90 (22.5)
Excellent health Literacy	12 (3)
Total	400(100)

Discussion

This study aimed to determine the level of health literacy and factors influencing it among high school students in Tehran. The results showed that health literacy of 74.5% of the adolescents was limited (inadequate and relatively adequate). In the study conducted by Ghaddar et al. on adolescents in South Texas using NVS inventory, 47.9% had inadequate health literacy [13]. Chisolm et al., in the research on students in Pennsylvania using the REALM inventory evaluated that 24.2% of the participants had limited health literacy [14]. In the study by Ghanbari et al., students with

limited health literacy were estimated to be 55.7 % of total sample using the questionnaire of HELMA [1]. The observed variety, meanwhile, was related to the difference of targeted population in various regions and various tools used in evaluation of health literacy. These results are also in contrast with the results of Montazeri et al. Possible reasons for this discrepancy are the differences between the two in terms of items such as sample size, age and noted measuring devices.

According to the findings, there was a significant discrepancy between the mean score of health literacy in the third grade with the two other grades; the third grade students had lower health literacy. The highest mean score of health literacy was related to the fourth grade that was not consistent with the findings of Ghanbari et al. [1, 14]. It is possible to prepare for dealing with the challenges for entrance exams and some students in this grade, being prepared to enter the job market, can be the poorer self-assessment causes of health literacy skills in this grade. The findings of this study indicated a significant relationship between parents' education and health literacy of students. This result is consistent with the results of Lam in China and Sharif in the US [15, 16]. However, Sharif, Ghanbari and Blanck found no significant relationship between health literacy and parents' education [1, 17]. Among the possible reasons for this discrepancy, we can refer to the difference between the tools used in the evaluation of health literacy level (studies by Sharif and Blanck) and the difference between the target populations in various regions (study by Ghanbari) compared to the present study.

Any interest in health issues in this study was significantly related to the health literacy of adolescents so the lowest mean score of health literacy was for the students who had low or no interest in health issues, which is consistent with the study of Ghanbari et al. [1]. About 72.2 % of the adolescents evaluated their health status "very good" or "good". This amount was 63% in the study of Massey et al. and 76.6 % in the study of Ghanbari et al. [1, 18]. No significant difference was found between the self-assessment of girls and boys; the boys reported their health status "very good" much more than the girls.

In this study, adolescent boys had higher health literacy and better assessment of their health status than their girl counterparts. Ghanbari and Paek had different reports where girls had self-reported higher health literacy. The difference in the geographic areas, cultural differences, different age groups (12-13 years old), black and white race, use of different questionnaire (in the study of Paek et al.), and covering more districts of education (by Ghanbari et al.) can be the causes of

discrepancy in the results [1, 19]. Since there was a significant relationship between the adolescents' health literacy level, the parents' education, and boys had parents with collegiate education (65%) more in compared to girls (47.7%), so the above result was not unexpected.

Despite the willingness of young people to be independent from family, joining their peers and increasing communication, as well as great information gap between youth generation and their parents, nearly half of the adolescents (48%) named their parents as the first health information source, and physicians as the second main source of health information, and by the small margin, the Internet as the third source. Among the various sources of health information, teachers and books were named at the next levels. It seems that a lot of assignments among students and teachers do not leave sufficient time for the parties to get health information as well as the disqualification of some teachers in this regard lead to cut the students, choices of teachers as a source of health information. In the study of Brown and colleagues, 21% of the participants named school as the main source [20]. Limitations of the study include: The examined adolescents were studying in the selected high schools. For this reason, there was no access to the students who had quitted school. Self-reporting method in completing the adolescents' health literacy questionnaire made it difficult to compare the observed differences between different individuals or sub-groups. It is suggested that a national study be conducted to assess adolescents' health literacy, and the results are scheduled to enhancing community health literacy. Also we recommend conducting qualitative studies on the factors affecting the need for health literacy in various fields of health literacy.

Conclusion

According to the obtained results, 74.5% of the students had limited health literacy, and health literacy has contributed considerably in improving the quality of life of young people. So it is necessary to pay more attention to the issue of health literacy through educational interventions in order to improve it and to gain appropriate skills in relation to make health information practical and working among adolescents. The factors we can mention are the use of new technologies in the creation of improved health literacy skills, providing programs that focus on the topics required by adolescents, educating and strengthening the role of teachers regarding the promotion of health literacy, and running health education programs in schools.

Acknowledgement

The authors express their thanks to all officials

and students participating in the study. Code of ethics of the study mandated by Institutional Committee of Ethics in Biomedical Research Branch of Islamic Azad University research was IR, IAU, SRB, REC, 2015, 22.

References

1. Ghanbari SH, Ramezankhani A, Mehrabi Y, Montazeri A. The Health Literacy Measure for Adolescents (HELMA): Development and psychometric evaluation. Payesh 2016; 15(4): 388-402. [In Persian]
2. Vozikis A, Drivas K, Milioris K. Health literacy among university students in Greece: determinants and association with self-perceived health, health behaviors and health risks. Arch Public Health [Internet] 2014; 72(1): 15.
3. Jovic-Vranes A, Bjegovic-Mikanovic V, Marinkovic J. Functional health literacy among primary health-care patients: data from the Belgrade pilot study. J Public Health (Oxf) 2009; 31(4): 490-5.
4. Smith BJ, Tang KC, Nutbeam D. WHO health promotion glossary: New terms. Health Promot Int 2006; 21(4): 340-5.
5. Higgins JW, Begoray D, MacDonald M. A social ecological conceptual framework for understanding adolescent health literacy in the health education classroom. Am J Community Psychol 2009; 44(3): 350-62.
6. Peerson A, Sunders M. Health literacy revisited: What do we mean and why does it matter? Health Promot Int 2009; 24(3): 285-96.
7. Speros C. Health literacy: concept analysis. 2005; Available from: https://www.memphis.edu/nursing/pdfs/speros-healthliteracyarticlejan_3448.pdf
8. Manganello JA. Health literacy and adolescents: a framework and agenda for future research. Health Educ Res 2008; 23(5): 840-7.
9. Tavousi M, Haeri Mehrizi AA, Rafiefar S, Solimanian A, Sarbandi F, Ardestani M, Hashemi A, Montazeri A. Health Literacy in Iran: finding from a national study. Payesh 2016; 15(1): 95-102. [In Persian]
10. Parvizi S, Ahmadi F, Mirbazegh SF. Concept and factors concerning to health in an adolescent's point of review (A review article). JSKUMS 2012; 14(3): 12. [In Persian]
11. UNICEF. Progress for children: A report card on adolescents. UNICEF 2012. Available from: https://www.unicef.org/publications/index_62280.html
12. Santoro K, Speedling C. The case for investing in youth health literacy: One step on the path to achieving health equity for adolescents. NIHCM Issue Br 2011. Available from: https://www.nihcm.org/component/content/

article/5-issue-brief/1310-the-case-for-investing-in-youth-health-literacy-one-step-on-the-path-to-achieving-health-equity-for-adolescents-issue-brief

13. Ghaddar SF, Valerio MA, Garcia CM, Hansen L. Adolescent health literacy: The importance of credible sources for online health information. J Sch Health 2012; 82(1): 28-36.
14. Chisolm DJ, Manganello JA, Kelleher KJ, Marshal MP. Health literacy, alcohol expectancies, and alcohol use behaviors in teens. Patient Educ Couns 2014; 97(2): 291-6.
15. Lam L, Yang L. Is low health literacy associated with overweight and obesity in adolescent: an epidemiology study in a 12-16 years population, Nanning, China 2012. Arch Public Heal 2014; 72(1): 11.
16. Sharif I, Blank AE. Relationship between child health literacy and body mass index in overweight children. Patient Educ Couns 2010; 79(1): 43-8.
17. Sharif I, Warsh J, Ketterer T, Hossain J, Chari R. Association between health literacy and child and adolescent obesity. Patient Educ Couns 2014; 94(1): 61-6.
18. Massey PM, Prelip M, Calimlim BM, Quiter ES, Glik DC. Contextualizing an expanded definition of health literacy among adolescents in the health care setting. Health Educ Res 2012; 27(6): 961-74.
19. Paek H-J, Reber BH, Lariscy RW. Roles of interpersonal and media socialization agents in adolescent self-reported health literacy: a health socialization perspective. Health Educ Res 2011; 26(1): 131-49.
20. Brown SL, Teufel JA, Birch DA. Early adolescents perceptions of health and health literacy. J Sch Health 2007; 77(1): 7-15.