

## Health Literacy and Health Outcomes in Iranian Adolescents: A Systematic Review

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### ABSTRACT

**Background and Objective:** Health Literacy is the capacity of individuals to obtain, interpret, and understand health-related information for making an appropriate decision. The aim of this study was a systematically review the literature on the outcomes of health literacy in Iranian adolescents.

**Materials and Methods:** The search was done on scientific databases, using the keywords “health literacy”, “health knowledge”, “teen”, “adolescent”, “high school”, “middle school” and “Iran” in Persian and English, from 2010 until 2021 Jan. Study process was conducted from 10th of December to the end of December. Studies were considered with data about outcomes of health literacy in Iranian adolescents.

**Results:** Ten studies met inclusionary criteria. Two studies reported students with higher health literacy had better health-promoting behaviours; moreover, two other studies reported students with higher health literacy had better body mass index. One study reported better oral health literacy conducted to lower oral health problems; furthermore, one study showed that higher health literacy leads to osteoporosis preventive behaviours.

Results of one study indicated that higher health literacy leads to more perceived self-efficacy and better self-care performance. One study showed better hair and skincare performance in students with higher health literacy. Another study indicated that students with higher health literacy had better attitude and behaviour toward breakfast consumption and the results of one study demonstrated that students with better health literacy had better nutrition behaviours. In all studies, there were statistically significant linear correlations between health literacy and its outcomes ( $p < 0.05$ ).

**Conclusion:** The results indicated that adolescent’s health literacy seems associated with important health outcomes then considering the importance of health literacy in adolescents, designing and implementing educational intervention for promoting health literacy is significantly important. As adolescents spend most of their daily time in schools, educational interventions should be school-based.

**Paper Type:** Research Article

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## Introduction

Nowadays, health literacy has been proposed as a global issue. It is widely considered as one of the most significant determinants of health that should be given priority in the public health policy decisions(1). Health literacy has been defined as the ability of obtaining, processing and understanding the health-related information and services required for making the best decisions in health related situations(2). It includes skills for reading, listening, analysis, and decision-making in the context of health. Studies have shown that inadequate health literacy is correlated with undesirable health outcomes such as lack of health knowledge, poor physical and mental health performance, little control over chronic diseases, low medication adherence, high rates of hospitalization and massive healthcare costs(3, 4).

Although all age groups suffer from inadequate health literacy, addressing this matter for adolescents is of particular importance. Due to the rapid biological, mental and emotional changes, adolescence is a significant stage of life; furthermore, adolescence is a critical time for putting the foundations of good health status in adulthood. The knowledge and skills that adolescents gain in this period influence their decision-making and behavior in the future. Moreover, adolescents are considered as an important group in long term usage of the healthcare system. For following a lifelong healthy lifestyle, adolescents should gain adequate health literacy and increase their health skills(5).

Adolescents face inevitable challenges to their health containing increased levels of stress as well as sleep and eating problems (6, 7). Studies showed that inadequate health literacy in adolescents is correlated with unhealthy behaviors including: low level of physical activity, obesity(8), and high prevalence of other unhealthy

behaviors(9). More than half of the premature deaths and about one third of the disease burden among adults can be related with behaviors which have been occurred in or began from adolescence period.

Although adolescents appear to be healthy, mostly do behaviors and actions which contribute to disabilities or premature death in adulthood. This should be noted as an important public health issue that needs more attention(10).

Some studies indicated that Iranian adolescents encounter with serious health related problems such as cigarette and drug use(10), mental problems including depression, anxiety and stress(11), problems related to puberty and poor menstrual health and nutritional problems(12). On the other hand, high schools are the last stage for adolescents to take health literacy education in the Iranian educational system. According to an Iranian health literacy survey, more than 60% of adults had inadequate health literacy(13). Considering the significant role of adolescents in the future development of each country, having a high level of health literacy is vital. Although researchers have begun assessing health literacy levels in adolescents (14), assessing the outcomes of health literacy in adolescents is relatively new.

Then, the goal of the current review is to synthesize the existing research on the outcomes of health literacy in Iranian adolescents to inform future research on the role of health literacy in adolescent health decision-making.

To meet our goals, we will address the following research questions

- How health literacy was assessed?
- What type of health literacy was assessed?
- What are the outcomes of health literacy in adolescents?

It is obvious that by summarizing the obtained information, a better basis is provided for the knowledge of experts and decision makers in the field of adolescent's health literacy so that they can enjoy a better quality of life. This study aimed to retrieve and summarize the previous studies and was conducted in order to more accurately assess the outcomes of health literacy in Iranian adolescents in the form of a systematic review.

### Method

Researchers planned and conducted the systematic review according to the preferred reporting items for systematic reviews(15). Eligible studies were recognized using electronic data-bases such as Pub Med/MEDLINE, Scopus, Web of Science, Google Scholar, Magiran, SID. Primary search items included "health literacy", "health knowledge", "teen", "adolescent", "high school", "middle school" and "Iran" in Persian and English.

Search was performed from 2010 until 2021 Jan. Just descriptive studies were included in the current review which reported any outcomes of health literacy in adolescents (10 to 18 years) who were not chronically ill or disabled exclusively. Mental health literacy did not be considered

The PRISMA flowchart (Fig. 1) summarized the results of the search process and study selection. Initially, 189 papers were imported into Endnote. Studies were excluded from further analysis in the following order: duplicate and not related ( $n = 45$ ), based on title and abstracts ( $n = 128$ ), low quality ( $n = 6$ ). Evaluation and confirmation of the quality of the studies were performed using the STROBE checklist(16).

The quality of the selected studies was judged using the Strobe checklist and on title, abstract, introduction (background and necessity of the study, objectives), method (study design, participants, variables, sample

size, statistical methods) findings (Participant characteristics, descriptive findings, outcome, and main outcomes), discussion (key outcomes, limitations, interpretation, and generalization) and funding were scored in the article. The Strobe checklist has 22 items, each item being awarded a point. Studies with a score above 16 are in the category of studies with good quality assessment, studies with a score of 11 to 16 are in the category of intermediate studies and studies with a score below 11 are in the category of poor studies. The results of the qualitative evaluation of the studies are given in Table 1.

For all selected studies, the following details were extracted: name of the first author, year of study, sample size, city of publication, type of health literacy, tool of assessment, age of participants, health literacy status, outcomes of health literacy and quality assessment score.

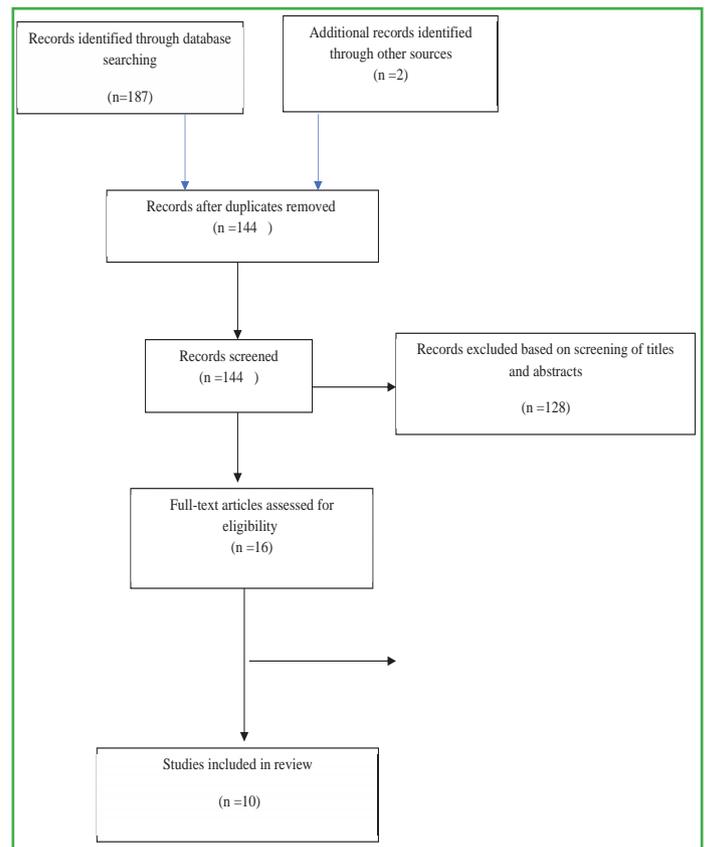


Fig.1. PRISMA flowchart for study selection

## Results

Of the ten studies reviewed, two were conducted in Tehran(4, 17), and the other eight in Ahvaz, Bandar abbas, Eghlid, Qazvin, Chenaran, Yasuj, Mashhad and Mianeh(18-25). Sample sizes across studies ranged from 186 to 440.

The most prevalent questionnaire for assessing health literacy was HELMA which was used in four studies (4, 17, 19, 23). The other questionnaires were OHLI and NVS (18, 20, 21). The health literacy questionnaire in two studies were researcher made(22, 25) and in one study was HELIA(24).

Just one study assessed oral health literacy (OHL)(18). Three studies were conducted on girls between 15 -18 years(17, 20, 22), three on senior high school girls(19, 23, 24), one on boys and girls between 12-15 years(18) one on girls between 13-15 years(21) one on girls between 14-16 years(25) and one on boys and girls between 15-18 years(4).

Of the total ten studies, two studies examined the associations between demographic variables and health literacy.

In Basir study, health literacy was higher among girls and higher grades. Also, those with academic educated fathers had higher OHL score. Though, there was no significant correlation between the Decayed, Missing, and Filled Teeth (DMFT) and OHL(18). In Ramezankhani study, there was a positive significant relationship between health literacy and father's governmental job status as well as with the parental education status. Moreover, there was a negative significant correlation between health literacy and sleep duration (23).

In one study, although, there was no significant correlation between the component of health literacy calculation and the self-care component of nutrition, responsibility to health, spiritual growth and physical activity, there was a positive and significant relationship between the health

literacy and perceived self-efficacy and self-care performance, Also, between components of health literacy and components of self care(19). Most of studies indicated that health literacy in adolescents was inadequate.

The relationships between parent education, income, age and adolescent health literacy were consistent across studies and reflect of the adult literature such that adults' education and income were positively related to their children health literacy (26).

Parents with higher education and income are more likely to have higher health literacy. Then, they are better equipped to teach adolescents health literacy skills and more likely to have the resources for creating opportunities for adolescents to further learn and practice these skills. Studies showed that parents with high education and income are more likely to engage in preventive health behaviors for their children (27, 28). These early preventive health experiences serve as a teaching tools in the development of health literacy that translates into health behavior in adulthood (29).

Therefore, adolescents in households with low parent education and income are at higher risk for adopting lower preventive health behaviors in adulthood and promoting their health literacy through interventions is critical to improving their preventive health and reducing disparities.

## Discussion

The aim of this paper was to summarize the existing studies on the relationship between health literacy and health outcomes in Iranian adolescents. Although only 10 studies were recognized, the results suggested that there is a meaningful correlation between health literacy and health outcomes in Iranian adolescents.

The results of the current study showed that

Table1: Studies on the Relationship Between Health Literacy and Adolescents Health Outcomes

Author	Sample	Place	Health Literacy	Measure	Sample(age)	Health Literacy status	Health Outcomes	Qualitative Assessment
Karimi (2019)	370	Tehran	Functional	HELMA	Girls(15-18)	Moderate	The results of regression analysis revealed that there was statistically significant direct associations between health-promoting behaviors and one's health literacy ( $\beta= 0.39$ , $p<0.001$ ).	14
Aghamolaei (2016)	400	Bandar abbas	Functional	HELIA	Boys&Girls	Inadequate	Regression analysis showed that 49 percent of health-promoting behavior changes were explained by health literacy level	16
Olyani (2017)	235	Mashhad	Functional	NVS	Girls(13-15)	Inadequate	There was a negative correlation between health literacy and body mass index ( $p < 0.001$ ).	13
Basir (2020)	254	Ahvaz	Functional	OHLI	Boys&Girls (12-15)	Inadequate (only 17.3% adequate)	The OHL level of the students was in positive correlation with the OHL-S ( $P < 0.05$ ).	12
Saeedy Golluche (2017)	400	Tehran	Functional	HELMA	Boys&Girls (15-18)	Inadequate	There was a direct correlation between aspects of health literacy and nutritional practice so with increasing health literacy, nutritional practice is improved. ( $P$ -value $< 0/001$ ).	15
Panahi (2020)	375	Qazvin	Functional	Self construct	Girls(15-18)	Adequate	Logistic regression showed that there was a significant association between the adoption of osteoporosis preventive behaviors and health literacy ( $P < 0.001$ ).	12
Khodabandeh (2016)	320	Miyaneh	Functional	HELMA	Girls Senior high school	Inadequate	The results of this study indicated that a student with high levels of health literacy and the perceived self-efficacy has better self-care performance. Therefore, in order to improve the self-care performance of students, it is recommended that their health literacy be improved at schools.	14
Zarrinkolah (2016)	186	Eghlid	Functional	Self construct	Girls(14-16)	Adequate	Level of health literacy and reading understanding of participants was adequate and health literacy in the calculation of the skin and the hair was border line. Between reading comprehension and performance measures correlated significantly with skin and hair ( $P<0.05$ ).	16
Motamedi (2020)	439	Chenaran	Functional	NVS	Girls(15-18)	Inadequate (only 0.7 % adequate)	The results revealed that there was a significant difference between the mean scores of students' health literacy in the four levels of body mass index ( $P<0.0001$ ).	11
Ramezankhani (2020)	440	Yasuj	Functional	HELMA	Girls Senior high school	Moderate	According to the findings, the score of attitude and behavior of breakfast consumption in participants with high health literacy was higher than those with low health literacy. Also, there was a significant relationship between attitude and behavior of breakfast consumption with health literacy ( $p < 0.05$ ).	13

functional health literacy was the most prevalent measure of health literacy and related to higher health promoting behaviors, better attitude and behavior of breakfast consumption, lower BMI, better self care performance, more adoption of osteoporosis-preventive behaviors, better nutritional and oral hygiene practice and better hair and skin care performance in puberty.

Academically, three types of health literacy has been defined: functional, communicative and critical(30). Based on the results of this study, all of the measures only assessed functional health literacy, thus the significant role of health literacy in translating knowledge into behavior through communication and interactions with health professionals and health content, and sociopolitical action and critical health literacy with emphasis on critical analysis and action in health related issues ignored (31).

Functional health literacy was related to health promoting behaviors and other kinds of health behaviors. The studies reviewed did not measure all aspects of health literacy and did not account for environmental and developmental characteristics critical to adolescents' health behavior decision-making so these results just showed a small part of the adolescent health literacy and health behavior picture.

Although the results provided enough evidence to suggest that there is significant correlation between health literacy and health outcomes in adolescents and should be investigated further, it should be noted that baseline research on all kind of health literacy and objective skills rather than just perceptions. As no gold standard exists for measuring health literacy, studies differ not only in the tools used but also in specifications of thresholds for distinguishing between health literacy levels.

Measurements development to assess all types of health literacy in adolescents is critically

needed to completely understand the health literacy as an important health behavior decision-making skill.

Findings from our review can be considered in light of 3 other reviews that examined the relationship between health literacy and health outcomes.

The results of a systematic research indicated that low parental health literacy is related to worse health outcomes in children, particularly for young children and adolescents; moreover, lower-than-average health literacy among adolescents seemed to be related to more unhealthy behaviors(32).

Findings of another study concluded that lower health literacy was associated with poorer health-related outcomes include a poorer ability to demonstrate taking medications properly and interpret medication labels and health messages and, among elderly persons, poorer overall health status and higher mortality. Evidence is emerging that lower health literacy can mediate (explain or partially explain) racial disparities in health outcomes(33).

Results of one other study concluded the positive correlation between health literacy and health outcomes in children and their parents(34).

Their findings were generally similar to ours, including low health literacy being related to less health related knowledge and poorer health status, overall use of health care services, and overall health behavior, and disease severity.

Considering the increase in online health information-seeking and the use of media as a tool to promote health behaviors among adolescents, interventions to improve adolescents' media health literacy and critical health literacy may serve to maximize the impact of media campaigns to promote public health. Moreover, critical media health literacy skills as the ability to access, understand, critically evaluate, and

apply health information to health decisions which are a life skill with important consequences should be integrated into school curriculums and clinical settings.

As individual-level interventions are not adequate, social policies and population level interventions educating adolescents about how they are targeted via media are necessary. In fact interventions that provide adolescents with opportunities to learn how to critically analyze health messages and media sources will serve to strengthen the impact of health literacy in decision-making regarding behaviors.

Although this field has made advances, work remains to be done. Limited data were available from nationally representative or other large samples. Some smaller studies may have lacked sufficient statistical power to detect correlation between health literacy and health outcomes because of limitations in their sample distribution. Therefore, for having more confidence, larger studies are needed.

Regardless of these limitations, our review should enhance the public's awareness that low health literacy can play a substantial role in health outcomes. Finding ways to reduce the effects of low health literacy on health outcomes warrants the attention of policymakers, clinicians, and other stakeholders.

**Conclusion:** we believe that developing validated objective measures of health literacy that assess all kinds of health literacy (functional, communicative/interactive, critical, and media health literacy), is critical in determining the level of health literacy and the exact correlation between adolescents' health literacy and health outcomes and recognizing areas for intervention. Improving health literacy may likely promote health outcomes in adolescents as it empowers adolescents in health decision-making in their current lives and across their lifespan.

Policies should be generated to support adolescents' development of health literacy skills as the skills required to make informed health decisions are essential and a matter of public health.

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