

Health Literacy and Body Image Concern Among Healthcare Employees in Binaloud, Iran

ABSTRACT

Background and Objective: Health literacy has been implicated as one of the main factors in improving public health maintenance, the present study examined the relationship between health literacy toward body image concern and respondents' demographic factors in healthcare employees in Binaloud, Iran.

Materials and Methods: This cross-sectional survey was conducted on 170 healthcare employees in Binaloud, Iran. The full version of the self-administered Multidimensional Body-Self Relations Questionnaire (MBSRQ) and Health Literacy for Iranian Adults (HELIA) questionnaires were used as validated self-report measures to examine body image concerns and health literacy of participants. We used SPSS Statistics 16 (Chicago, Illinois) to conduct the descriptive statistics and preliminary analyses such as χ^2 , ANOVA, and Pearson correlation.

Results: Results showed that 56.6% of participants had adequate health literacy, 24.4% had marginal, and 19% had inadequate health literacy. The mean score of the overall body image levels in the female and male participants were 256.45 ± 25.3 and 256.4 ± 21.6 , respectively. There was a significant relationship ($r=0.149$; $p<0.05$) between health literacy and overall body image.

Conclusion: This finding reflected a significant and positive relationship between overall body image score and the health literacy skills such as decision-making, understanding, and reading. We suggested a home/workplace intervention program to improve employees' body image concerns.

Paper Type: Research Article

Keywords: Body satisfactions, healthcare employees, body image concern, health literacy.

► **Citation:** Mahdifar M, Tavakoly Sany B, Ghavami V, Vahedian- Shahroodi M. Health Literacy and Body Image Concern Among Healthcare Employees in Binaloud, Iran. *Journal of Health Literacy*. Spring 2021; 1(6): 31-40.

Mozhgan Mahdifar

Department of Health Education and Health Promotion, School of Health Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran.

Seyedeh Belin Tavakoly Sany

Department of Health Education and Health Promotion, Social Determinants of Health Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

Vahid Ghavami

Department of Biostatistics, Social Determinants of Health Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

Mohammad Vahedian- Shahroodi

* Department of Health Education and Health Promotion, Social Determinants of Health Research Center, Mashhad University of Medical Sciences, Mashhad, Iran. (Corresponding author). VahedianM@mums.ac.ir

Received: 21 February 2021

Accepted: 23 May 2021

Doi: 10.22038/jhl.2021.55849.1153

Introduction

In recent public health systems, negative body image is considered as the main concern because it is related to more negative outcomes, such as depression, low self-esteem, eating disorders, steroid abuse, emotional distress, appearance rumination, exercise disorders, and unnecessary cosmetic surgery (1, 2). Several studies reported that 40% of men and 56% of women were dissatisfied with their overall appearance. Therefore, body image concern may have recognized as a 'normative' experience for many men and women. Although, several factors may have led to body image concern, including illness-related factors and structural barriers, a focus of global studies has been on the expository models or theories that rely on to describe reasons for ill-health and public health maintenance (2, 3).

Health literacy has been implicated as one of the main factors in improving public health maintenance, especially among the adult population (4). The world health organization coined the term health literacy to refer to the "degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services in order to make appropriate health decisions" (5, 6). Therefore, health literacy is the social and mental skills, estimating the individuals' ability and motivation for understanding, using, and reaching information to make appropriate decisions in ways that maintain and promote good health (7-10). Several studies indicated that higher health literacy skills and ability among the general public is associated with positive health indicators and health behaviors including regularly engaging in healthy dieting habits and physical activity (7, 11, 12). Additionally, education programs based on health literacy may improve mental and physical aspects of unhealthy behavior or

health disorders, coping abilities, quality of life, motivation, and physical status, and furthermore, reduce emotional distress, mood disorders, and anxiety (12, 13). In contrast, inadequate health literacy among adult population is associated with several negative health behaviors including alcohol use, smoking, and lower family affluence (8, 14, 15). A few surveys have been conducted related to the association between obesity and body image concern in adult population and their health literacy level (16-18). While some research reported that inadequate health literacy in adults was significantly associated with increased obesity and body mass index (BMI), another research indicated an insignificant association between health literacy and adult BMI or body image concern (5, 9, 19). Therefore, the linkage between symptoms of body image concern and health literacy among the adult population remains unexplored.

It was evidenced that, body image in terms of perceived weight is the main stimulate for healthy dieting habits and physical activity (8, 19). Likewise, several studies reported that fewer social comparisons, less internalization of societal ideals, and higher self-esteem all predict higher positive body image and body satisfaction (6, 8, 20). Given the increasing options and complexity of negative body image and body satisfaction, especially in the employee population which require more involvement of men and women population in health decision-making, health literacy could help us to achieve appreciate weight management and control (21, 22). Despite the importance of health literacy, there is no previous study has assessed the association between health literacy and body image concern, and we found no study in this area from Iran. This is the main oversight, given that body image concern and body dissatisfaction are now affect a majority

of adults in world and given the fact that body image concern is recognized as a 'normative' experience. Therefore, the primary aim of this study was to examine the relationship between health literacy toward body image concern and respondents' demographic factors in healthcare employees in Binulad, Iran.

Material and Methods

Study design and participants

This cross-sectional survey was conducted in Binaloud, Iran from July 2020 to August 2020. The study sample consisted of all employees working in healthcare centers. Binalood is a new city that is located 50 km southwest of Mashhad in Khorasan Razavi province.

In the present study, according to the information available in the study of Pasdaran et al. regarding physical activity in female employees of Kermanshah University of Medical Sciences, and taking into account the accuracy of 0.68 (d) and the standard deviation of 4.31, the first type error of 0.05 and considering 10 % of sample loss, 170 people determined based on the following formula.

The target population includes all employees working in healthcare centers of Binaloud who met inclusion criteria. Participants were eligible if they worked in healthcare centers of Binaloud, had a history of physical health, and could speak and read their Persian language. Participants were excluded if they: (a) unwilling to participate; (b) had suffered mental disturbance, chronic disease (including diabetes and cardiovascular diseases), visual impairment, and upper limb disability because participants with different types of disease and disability need different education programs based on their physical and mental condition. Therefore, these populations were excluded from this study and we only included women with health who met inclusion criteria.

We asked all eligible participants to complete a written informed consent form and all questionnaires consisting of self-report items designed to study variables. In each interview, all women and men were asked about their socio-demographic characteristics (age, gender, marital status, income, number of children, and education level) to fill out the questionnaire. In addition, their weight, height, and body mass index (BMI) were measured.

Overall, 170 employees were eligible to attend this study. This sample size was sufficient to the achieve target of this study at a confidence level of 95 % with an accuracy rate of 3.0% for women and 2% for men. The Ethics Committee of Mashhad University of Medical Science approved the study. Prior to completing the questionnaires, we informed all eligible participants about the details and target of the study. All participants signed a consent form and completed all questionnaires. Likewise, social and demographic variables included age, gender, marital status, income, number of children, and education level were asked by the authors during the first meeting. Further, we estimated participant's body mass index (BMI) based on their weight and height. BMI were categorized into four groups: underweight (BMI < 18.5 kg/m²), normal persons (18.5 to 24.9 kg/m²), overweight persons (25.0 and 29.9 kg/m²), and obese (BMI ≥ 30.0 kg/m²)(2).

Instruments

Body Image: The full version of the self-administered Multidimensional Body-Self Relations Questionnaire (MBSRQ) was used as the validated self-report measure to examine body image concerns. This includes 69-item and ten subscales (appearance evaluation and orientation, fitness evaluation and orientation, health evaluation and orientation, illness orientation, the body areas satisfaction

scale, the self-classified weight scale, and the overweight preoccupation scale). We used International Guidelines for Cross-Cultural Adaptation (CCA) to translate items into Persian. We tested content validity ratio (CVR), content validity index (CVI) and internal consistency. The CVR, CVI, and overall Cronbach's alpha of the questionnaire was 0.87, 0.89, and 0.87, which were acceptable in this study. Each item was scored on a 5-point Likert scale ranging from "definitely disagree" to "definitely agree". The final score is 69, with a range of 69 to 345, in which a score of 69 shows a lack of dissatisfaction or concern and higher scores show more concern or dissatisfaction with their body image.

2.2.2. Health Literacy for Iranian Adults (HELIA):

in this study, Health Literacy for Iranian Adults (HELIA) questionnaire (23) was used to examine the Health literacy of participants. Iranian socio-cultural characteristics prepared and approved this questionnaire to estimate health literacy among the Iranian population aged 18 to 65 years (19). The core conceptual framework in HELIA include the ability to understand health information (understanding), the ability to examine and evaluate the health information (appraisal), use the information to make a decision (apply or use health-related information), the concept comprised the ability to obtain health information (access), and reading skills. The CVR, CVI, and overall Cronbach's alpha of the questionnaire were 0.87, 0.89, and 0.8. All items in HELIA were scored on a 5-point Likert scales, ranging from 1 (Never) to 5 (Always). It indicates the lowest to the highest level of the participants' abilities.

2.2.3. Statistical tests: We used SPSS Statistics 16 (Chicago, Illinois) to conduct the descriptive statistics and preliminary analyses (χ^2 and ANOVA) to evaluate the status of socio-

demographic characteristics, MBSRQ aspects and BMI. The regression analysis models and Spearman's correlation coefficient were tested to examine association between MBSRQ, BMI, and socio-demographic characteristics. In this study, 95% confidence interval (CI) and $p < 0.05$ were considered as the significance threshold. Statistical tests were analyzed using SPSS Statistics 16 (Chicago, Illinois) for all variables.

Results

The mean age of female and male participants in this study were 35.9 ± 8.3 and 36.84 ± 7.21 years old, respectively, and ranged from 20 to 60 years old. Most of the participants were married (77.6%), master (58.3%) or bachelor's degree, (29.4%) with 2 children, and the majority of the participants had a normal weight (50.6%) or overweight (41.2%) (Table 1). The mean score of health literacy levels among the female and male participants was 141.9 ± 18.18 and 136.74 ± 25.21 , respectively. The result showed that 56.6% of participants had adequate health literacy, 24.4% had marginal, and 19% had inadequate health literacy. Mean scores of the overall body image levels in the female and male participants were 256.45 ± 25.3 and 256.4 ± 21.6 , respectively (Table 1).

Table 2 shows that there was no significant relationship ($p > 0.05$) between the demographic factors and level of health literacy. There was a significant relationship between health literacy and overall body image levels ($r = 0.149$; $p < 0.05$), BSRQ ($r = 0.153$; $p < 0.05$), and BASS ($r = 0.148$; $p < 0.05$).

Also, the decision-making, understanding, and reading were significantly ($p < 0.05$) correlated with MBSRQ and BSRQ (Table 3).

Table 1: participant's characteristics

Variables		Women (n=115)	Men (n=55)	p-value
Age, (years), M ± SD		35.9 ± 8.3	36.84 ± 7.21	0.1
Education, %	Diploma	19.5	38.2	0.09
	Higher Diploma	7.8	7.3	
	Bachelor or Master	40	32.7	
	PhD	20.9	10.9	
	Physicians	12.2	10.9	
Marriage statuses, %	Single	25.2	16.4	0.19
	Married	74.8	83.6	
Number of children, %	0	17.2	17.4	0.47
	1	28.7	28.3	
	2	40.2	32.6	
	3	12.6	15.2	
	More than 3	11	6.5	
BMI, %	Underweight	2	0	0.14
	Normal	55.9	43.6	
	Overweight	39.6	43.6	
	Obese	4.5	12.7	
Health literacy %	General score	141.91±18.18	136.74±21.25	0.1
	Decision-making	50.41±7.14	48.18±7.43	
	Appraisal	16.73±2.97	15.96±3.25	
	Understanding	31.8±3.6	31.61±4.27	
	Reading	17.21±3.11	16.01±4.93	
	Access to information	25.74±4.27	24.96±4.93	
MBSRQ, M± SD	General score	256.45 ± 25.3	256.4 ± 21.6	0.88
BSRQ, M ± SD	Appearance evaluation (AE)	28.25 ± 4.1	27.6 ± 3.63	0.81
	Appearance orientation (AO)	52.29 ± 4.66	51.74 ± 4.3	
	Fitness evaluation (FE)	11.6 ± 2.25	11.95 ± 2.03	
	Fitness orientation (FO)	47.37 ± 7.3	49.23 ± 6.75	
	Health evaluation (HE)	21.72 ± 3.27	21.2 ± 2.88	
	Health orientation (HO)	32.77 ± 5.58	31.49 ± 3.98	
	Illness orientation (IO)	21.06 ± 3.69	20.05 ± 3.12	
BASS, M ± SD	Body area satisfaction (BASS)	35.93 ± 5.81	37.05 ± 5.27	0.22
Attitude M ± SD	Self-classified weight (SW)	6.83 ± 1.38	6.6 ± 1.6	0.71
	Overweight preoccupation (WP)	10.6 ± 1.9	10.6 ± 2	

Table 2: Testing relationship between the five dimensions of health literacy and demographic variables in the subjects

Demographic variables		Access to information	Reading	Understanding	Appraisal	Decision-making	Total Health literacy
Age	20-29	25.18 ± 4.29	16.90±3.55	31.53±3.74	16.37±3.01	48.86±7.56	138.86±19.2
	30-39	25.82± 4.5	17.05±3.52	32.40± 3.34	16.83±2.95	49.83±8.01	141.95±19.56
	40-49	25.30±4.91	16.5±40.4	31.30 ±4.45	16.3±3.45	50.46±6.69	139.86±20.482
	50-60	25.60±3.56	16.60±2.67	31.40±3.5	15.50±2.12	48.5±7.53	136.6±13.4
p-value		0.88	0.87	0.25	0.59	0.72	0.77
Gender	Male	24.96±4.93	16.01±4.93	31.61±4.27	15.96±3.25	48.18±7.43	136.74±21.25
	Female	25.74±4.27	17.21±3.11	31.8±3.6	16.73±2.97	50.41±7.41	141.91±18.18
	P-value		0.289	0.51	0.773	0.129	0.068
Marriage	Single	24.92±4.89	16.57± 3.81	31.28±4.09	16.15± 4.89	47.78±8.38	136.73±20.83
	Married	25.65±4.38	16.90±3.74	31.87±3.74	25.65±4.38	50.24±7.12	141.25±18.82
	P-value		0.37	0.64	0.41	0.46	0.07
BMI	Underweight	27±2.82	20.00± 0.00	32.00± 0.00	16±1.41	44.5±3.53	139.5±7.77
	Overweight	25.29±4.58	16.23±4.18	31.73± 3.86	16.41±3.08	49.55±7.8	139.23± 20.07
	Normal	25.62±4.62	17.21±3.45	31.67±3.95	16.48±3.22	49.52±7.44	140.52±19.49
	Obese	25.91±3.55	18.33±2.05	32.16±3.15	17±2.55	52.50±4.81	145.91±13.67
P-value		0.905	0.098	0.981	0.936	0.439	0.735
Education	Diploma	24.88± 5.06	16.65± 4.16	31.41±3.94	15.93±3.21	48.39±7.95	137.27±21.12
	Higher Diploma	25.33±4.55	17.58±2.74	32.5±3.68	16.83±2.94	50.25±7.44	142.5±18.54
	Bachelor	25.64±4.46	16.56±3.97	31.68±3.99	16.67±3.14	49.93±7.84	140.5±19.88
	Master	25.45±3.95	17.81±2.18	31.63±3.88	16.81±3.15	51.27±4.67	143±15.29
	PhD	26.43±3.059	17.50±2.73	32.43±2.65	16.43±2.47	50.37± 5.63	143.18±17.45
P-value		0.81	0.68	0.85	0.74	0.72	0.77
Number of child	0	25.91±3.51	17.73±2.97	32.78±3.14	17.39±2.22	51.65±5.85	145.47±13.24
	1	26.02±3.87	17.47±3.21	32.18±3.02	16.52±2.94	50.34±6.17	142.55±15.08
	2	25.28±5.33	16±4.91	31.22± 4.44	16.36±3.45	49.78±8.31	138.64±23.56
	3	25.27±4.61	17.23±3.17	31.5±4.06	16±2.97	50.83±5.94	140.83±17.25
	4	24.5±3	16.25±3.3	31.75±3.3	15.75±2.06	45.75±11.37	134±20.37
P -value		0.905	0.265	0.524	0.589	0.592	0.582

Table 3: Testing correlation between the health literacy skills and body image scores

Variables	Health literacy	Decision-making	Appraisal	Understanding	Reading	Access to information	MBSRQ	BSRQ	BASS
Health literacy	1.000								
Decision-making	.844**	1.000							
Appraisal	.859**	.641**	1.000						
Understanding	.827**	.555**	.700**	1.000					
Reading	.833**	.540**	.676**	.782**	1.000				
Access information	.857**	.577**	.781**	.700**	.754**	1.000			
MBSRQ	.149*	.227*	.022	.160*	.138*	-.004	1.000		
BSRQ	.153*	.152*	.017	.158*	.151*	.000	.970**	1.000	
BASS	.148*	-.001	.057	.035	.106	.019	.573**	.424**	1.000

** p-VALUE <0.001

*P-value <0.05

Linear regression analysis revealed that overall body image levels, BSRQ, and BASS were significantly associated with menopausal symptoms (Table 4).

Table 4: Regression Analyses Examining the Relationship between health literacy and body image scores

Parameters	Unstandardized Coefficients		Standardized Coefficients	t	*p-value.
	B	Std. Error	Beta		
(Constant)	130.597	38.340		7.121	.000
MBSRQ	1.080	0.244	0.113	4.420	.000
BSRQ	2.345	0.111	0.219	-32.965	.000
BASS	0.052	0.014	0.084	-3.711	.001

a. Dependent Variable: Health literacy: * Significant association at $\alpha = 0.05$, R-square: 0.36

Discussion

This is the first study reporting the present study examined the relationship between health literacy toward body image concern and respondents' demographic factors in healthcare employees in Binaloud, Iran.

The mean score of health literacy levels among the female and male participants was 141.9 ± 18.18 and 136.74 ± 25.21 , respectively, and 56.6% of participants had adequate health literacy. The result showed that the mean scores of health literacy were rather high in comparison with previous studies conducted on general populations in Iran. This may be due to our participants who work in healthcare centers; therefore, they have a higher level of awareness, health skills, and ability than other populations. The good health literacy for the studied employees in healthcare centers may be attributed to the health-related information that they have been usually provided during the procedures, hospital stay, tests, consultations, and following-up the type of disease (13, 21). Likewise, Sahar Khoshravesh et al reported that the average health literacy of healthcare employees in Hamedan was borderline. In addition, in recent research performed in Isfahan to estimate health literacy among healthcare providers, the average score of health literacy was moderate (6). A recent study carried out

in the United States reported that only 12% of American adults had high or adequate health literacy levels and the prevalence of inadequate health literacy be 53% in American adults (24).

Our finding reflected a significant and positive relationship between health literacy and overall body image score. To our knowledge, the association between body image and health literacy among the adult population has not been examined yet. However, a recent study has reported that adolescents with high health literacy are without risk for obesity and eating disorders, and they showed a positive body image and body satisfaction (8, 25, 26). It is seeming that poor health literacy has a mediation role in the association between body image in terms of being perceived as overweight or obese and symptoms of eating disorders. Therefore, this result extends the scope of association between health literacy and body image concern among the adult population. (24, 27). Furthermore, scores of decision-making, understanding, and reading have been shown to be associated with the results of body image, BASS, and BASR in healthcare employees. This positive association between overall body image and health literacy is important for health promotion and education programs support the implementation of universal health literacy as best practices to improved

body image concern and satisfaction. A higher level of health literacy skills and ability could enable participants to better understand and manage their weight control and appearance, which in turn positively affect their overall body image (10, 21, 27). In a study conducted by Rasa Jankauskiene et al., the body image and physical activity of 732 young adults had been assessed; most of the participants experienced disturbed body image (28). Another study was conducted by Alyse Bailey et al., with the purpose to explore how body image is represented for older or middle-age women. They reported that intervention programs that fosters a social support network to improve positive body image and the health literacy in older women populations are needed (29, 30). As we mentioned above, health literacy concept could be considered as one of the effective approaches for an intervention programs to decrease negative body image and eating concerns. Thus, further research is needed to use this theory in the relatively narrow national and cultural scope.

Some limitations need to be considered in this work. This study was a cross-sectional design, therefore, we cannot able to assess the temporal criteria and a conclusive statement of the cause-and-effect association. Therefore, these results need to be examined in longitudinal surveys. the use of a self-reported questionnaire may lead to overestimate or underestimate health literacy or body image score that may increase the bias of health literacy and body image disturbance. Further, our finding could not be generalizable to the people live another place, the elderly, and adolescence. Thus, we suggested further studies on the evaluation of health literacy and body image constructs among more diverse populations.

The findings of this research could help health educators and professionals to design a suitable health education program and intervention

to improve body image concern and health literacy. Clarifying the health literacy status and understanding the relationship between body image concern and health literacy in the adult population can contribute to design a proper support system to improve health outcomes and body image concern in each community.

Conclusion

Given the main results from this study, the level of health literacy was adequate and high among the most healthcare employees, and the body image score may be differed by the health literacy skills. This research addresses the new concept explaining the role of the theoretical framework of health literacy as key components to improve body image concern and body satisfaction in the adult population. Adults who have a lower probability of having symptoms for body image concern were found have a lower health literacy. We suggested a home/work place intervention program to improve employees' body image concerns.

Acknowledgements: We would like to thank all the vice president of research in Mashhad University of Medical Sciences.

Funding: This study was supported by grants from the Mashhad University of Medical Science, Iran.

Conflict of interest: All authors declared that they have no conflicts of interest in this work.

Ethics approval and consent to participate: This study was conducted after the approval and permission of Mashhad University of Medical Sciences Research Committee IR.MUMS.REC.1398.265 and was conducted with consideration of Helsinki Declaration in all phases of the study. Confidential data treatment was guaranteed. Written informed consent was obtained from the participants. Availability of data and materials Data from this study will not be openly available until planned publication outputs have been completed.

Reference

- Alipour B, Farhangi MA, Dehghan P, Alipour M. Body image perception and its association with body mass index and nutrient intakes among female college students aged 18-35 years from Tabriz, Iran. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*. 2015;20(4):465-71. <https://doi.org/10.1007/s40519-015-0184-1>
- Nutbeam D. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health promotion international*. 2000;15(3):259-67. <https://doi.org/10.1093/heapro/15.3.259>
- Bray I, Slater A, Lewis-Smith H, Bird E, Sabey A. Promoting positive body image and tackling overweight/obesity in children and adolescents: A combined health psychology and public health approach. *Preventive medicine*. 2018;116:219-21. <https://doi.org/10.1016/j.ypmed.2018.08.011>
- Khaleghi M, Amin Shokravi F, Peyman N. The Relationship Between Health Literacy and Health-Related Quality of Life in Students. *Iranian Journal of Health Education and Health Promotion*. 2019;7(1):66-73. <https://doi.org/10.30699/ijhehp.7.1.66>
- Sany SBT, Behzad F, Ferns G, Peyman N. Communication skills training for physicians improves health literacy and medical outcomes among patients with hypertension: a randomized controlled trial. *BMC health services research*. 2020;20(1):60. <https://doi.org/10.1186/s12913-020-4901-8>
- Khorasani EC, Sany SBT, Orooji A, Ferns G, Peyman N. Health literacy in Iranian women: a systematic review and meta-analysis. *Iranian Journal of Public Health*. 2020;49(5):860.
- ÖZPINAR S, ÇELİK ODABAŞI N, AKYOL M. Associations between health literacy and preventive Skin Cancer Prevention Strategies among University Students. *Journal of Health Literacy*. 2020;5(3):12-25. <https://doi.org/10.22038/jhl.2020.53482.1136>
- Boberová Z, Husárová D. What Role Does Body Image in Relationship between Level of Health Literacy and Symptoms of Eating Disorders in Adolescents? *International Journal of Environmental Research and Public Health*. 2021;18(7):3482. <https://doi.org/10.3390/ijerph18073482>
- Tavakoly Sany SB, Doosti H, Mahdizadeh M, Orooji A, Peyman N. The Health Literacy Status and Its Role in Interventions in Iran: A Systematic and Meta-Analysis. *International Journal of Environmental Research and Public Health*. 2021;18(8):4260. <https://doi.org/10.3390/ijerph18084260>
- O'Dea J, Maloney D. Preventing eating and body image problems in children and adolescents using the health promoting schools framework. *Journal of School Health*. 2000;70(1):18-21. <https://doi.org/10.1111/j.1746-1561.2000.tb06441.x>
- Charoghchian Khorasani E, Tavakoly Sany SB, Tehrani H, Doosti H, Peyman N. Review of Organizational Health Literacy Practice at Health Care Centers: Outcomes, Barriers and Facilitators. *International journal of environmental research and public health*. 2020;17(20):7544. <https://doi.org/10.3390/ijerph17207544>
- Peyman N, Tavakoly Sany SB, Nasehnezhad M, Doosti H, Chesneau C, Ferns G. Associating of mother's health literacy with sunlight protective behaviors of teenage children: application of social cognitive theory. *International Journal of Health Promotion and Education*. 2019;57(5):274-85. <https://doi.org/10.1080/14635240.2019.1623706>
- Jafari M, Lamiyan M, Hajizadeh E. Relationship between Health Literacy and Special Quality of Life and Body Image in Women Undergone Mastectomy in Reproductive Age. *Health Education and Health Promotion*. 2018;6(3):109-15. <https://doi.org/10.29252/HEHP.6.3.109>
- Croll J. Body image and adolescents. *Chest (in)*. 2005;40(35):50.
- Botta RA. For your health? The relationship between magazine reading and adolescents' body image and eating disturbances. *Sex roles*. 2003;48(9):389-99. <https://doi.org/10.1023/A:1023570326812>
- Khodabandeloo Y, Fat'h-Abadi J, Motamed-Yeganeh N, Yadollahi S. Factor structure and psychometric properties of the multidimensional body-self relations questionnaire (MBSRQ) in female Iranian University students. *Practice in Clinical Psychology*. 2019;7(3):187-96. <https://doi.org/10.32598/jpcp.7.3.187>
- Fathi F, Rezaei Sofi M. The relationship between health literacy and physical activity level of elderly women in the city of Urmia. *Journal of Health Literacy*. 2017;2(1):12-21. <https://doi.org/10.22038/jhl.2017.10947>
- Tajfard M, Tavakoly Sany SB, Avan A, Latiff LA, Rahimi HR, Moohebaty M, et al. Relationship between serum high sensitivity C-reactive protein with angiographic severity of coronary artery disease and traditional cardiovascular risk factors. *Journal of cellular physiology*. 2019;234(7):10289-99. <https://doi.org/10.1002/jcp.27945>
- Abedian Kasgari K, Peyman N, Momeni Badeleh S, Gholian Avval M, Momeni Badeleh K, Vahedian Shahroodi M, et al. Health Literacy Measurement in Childhood: A Systematic Review. *Journal of Pediatrics Review*. 2020;8(3):163-74. <https://doi.org/10.32598/jpr.8.3.850.1>
- Khazaei M, Tehrani H, Vahedian-Shahroodi M, Esmaily H, Taghipour A. women's health literacy and some related factors in Mashhad. *Journal of Health Literacy*. 2021;5(4):9-16. <https://doi.org/10.22038/jhl.2020.52942.1134>
- Zuair AA, Sopory P. Effects of Media Health Literacy School-Based Interventions on Adolescents' Body Image Concerns, Eating Concerns, and Thin-Internalization Attitudes: A Systematic Review and Meta-Analysis. *Health Communication*. 2020;1-9. <https://doi.org/10.1080/10410236.2020.1813954>
- Tavakoly Sany SB, Peyman N, Zadehahmad Z, Ferns G, Doosti H. Effect of educational interventions on health literacy in patients with heart failure. *International Journal of Health Promotion and Education*. 2019;57(1):23-36. <https://doi.org/10.1080/14635240.2018.1545597>
- Montazeri A, Tavousi M, Rakhshani F, Azin SA, Jahangiri K,

- Ebadi M, et al. Health Literacy for Iranian Adults (HELIA): development and psychometric properties. *Payesh (Health Monitor)*. 2014;13(5):589-99.
24. Khoshravesh S, Moeini B, Rezapur-Shahkolai F, Taheri-Kharameh Z, Bandehelahi K. Health literacy of employees of Hamadan University of medical sciences and related demographic factors. *J Educ Community Health*. 2018;5(1):19-26. <https://doi.org/10.21859/jech.5.1.19>
25. Alami A, Sany SBT, Lael-Monfared E, Ferns GA, Tatari M, Hosseini Z, et al. Factors that influence dietary behavior toward iron and vitamin D consumption based on the theory of planned behavior in Iranian adolescent girls. *Nutrition journal*. 2019;18(1):1-9. <https://doi.org/10.1186/s12937-019-0433-7>
26. Quaglio G, Sørensen K, Rübigen P, Bertinato L, Brand H, Karapiperis T, et al. Accelerating the health literacy agenda in Europe. *Health Promotion International*. 2017;32(6):1074-80. <https://doi.org/10.1093/heapro/daw028>
27. Swami V, Knowles V. Mental health literacy of negative body image: Symptom recognition and beliefs about body image in a British community sample. *International Journal of Culture and Mental Health*. 2014;7(2):199-215. <https://doi.org/10.1080/17542863.2013.769611>
28. Kickbusch I, Ratzan SC. Health literacy: making a difference in the USA. *Journal of Health Communication*. 2001;6(2):87-8. <https://doi.org/10.1080/108107301750254439>
29. Karimi S, Keyvanara M, Hosseini M, Jazi MJ, Khorasani E. The relationship between health literacy with health status and healthcare utilization in 18-64 years old people in Isfahan. *Journal of education and health promotion*. 2014;3.
30. Swami V, Knowles V. Mental health literacy of negative body image: Symptom recognition and beliefs about body image in a British community sample. *International Journal of Culture and Mental Health*. 2014;7(2):199-215. <https://doi.org/10.1080/17542863.2013.769611>