



Health Literacy and its Relation to Quality of Life in People with Heart Disease

Marzangi A¹, Ahangarzadeh Rezaei S^{2*}, Ghareagaji Asl R³

¹ MSc Student in Psychiatric Nursing, Nursing and Midwifery Faculty, Urmia University of Medical Sciences, Urmia, Iran

² Assistant Professor, PhD in Nursing, Nursing and Midwifery Faculty, Urmia University of Medical Sciences, Urmia, Iran

³ Assistant Professor, Department of Biostatistics and Epidemiology, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran

ABSTRACT

Introduction and objectives: Cardiovascular diseases affect life expectancy and damage the quality of life. One of the factors that affect the quality of life is the health literacy. The aim of the present study is to determine the level of health literacy and its relation to quality of life in patients with heart disease.

Method of study: The present study was conducted in the form of cross-sectional analysis on 374 patients with heart disease, referring to the Hospital of cities located in South-Western Azerbaijan province. The method was stratified sampling. In order to gather the required information McNew's quality of life questionnaire and the health literacy measurement questionnaire in the Iranian population were used. For data analysis we used SPSS software version 21.

Results: The overall health literacy score for 42 percent of heart patients was inadequate and only 18.4% of the patients had high health literacy score. The average overall score for the quality of life was calculated by 125.2 with a standard deviation 26.6. there was observed a significant correlation between heart patients' health literacy and their quality of life.

Conclusion: Generally, people with heart disease were of no desired quality of life and the health literacy. Heart patients' health literacy of Mahabad was better than that of Miandoab and Boukan. Status of the quality of life for all three cities was similar. So health literacy improvement planning for heart patients to enhance their quality of life can be from the priorities of the health system of country.

Key Words: Heart disease, quality of life, health literacy

eIJPPR 2018; 8(3):25-32

HOW TO CITE THIS ARTICLE: Marzangi A, Ahangarzadeh Rezaei S, Ghareagaji Asl R. (2018). "Health literacy and its relation to quality of life in people with heart disease", *International Journal of Pharmaceutical and Phytopharmacological Research*, 8(3), pp.25-32.

INTRODUCTION

Increasing urbanization in many developing countries by creating a change in lifestyle has confronted them with the challenge of doubling diseases, the fight against contagious infectious diseases as well as the emergence of epidemic and chronic non-communicable

diseases [1]. A large fraction of the death caused by non-communicable diseases is related to cardiovascular diseases (CVD) [3, 2]. About one-third of the total deaths around the world and 10% of all the lost years of life due to Disability Adjusted Life Years (DALY) are attributed to these diseases [5, 4]. Based on

Corresponding author: Ahangarzadeh Rezaei S

Address: Nursing and Midwifery Faculty, Urmia University of Medical Sciences, Urmia, Iran

e-mail ✉ sorezayee@yahoo.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Received: 17 November 2017; **Revised:** 21 April 2018; **Accepted:** 03 May 2018



the estimations the number of deaths due to CVD in the year 2030 will amount to 23.6 million [6-8]. Cardiovascular diseases are the main cause of death in Iran [10, 9]. 46.8% of cases of death in Iran are because of the different forms of cardiovascular diseases. Now, 15 million people in Iran suffer from the heart diseases [11]. The people with a history of cardiovascular disease are exposed to the high risk for suffering from the Major Adverse Cardiac Events (MACE) including death, non-fatal myocardial infarction, cerebral stroke, the marked pulmonary embolism, hospitalization and bleeding [12]. Generally, the chronic diseases including CVD will follow many clinical, social and psychological problems; these problems in turn cause some mental and physical activity limitation and the reduction of people's Quality of Life (QoL) [13]. Quality of life includes the mental, physical, emotional and social feeling of well-being, and reflects patients' mental evaluation of their status of health and their response to it [15 and 14]. One of the factors that will affect QoL is health literacy; the low health literacy is actually associated with high incidence of chronic diseases, including cardiovascular diseases and low quality of life [20-16]. Health literacy is the capacity of a person for the acquisition, interpretation and understanding of primary health services information that is necessary for the right decision-making and includes the application of skills of reading, hearing, analysis and decision making in health positions that are not necessarily based on the years of public reading ability or study [15]. People with low health literacy level suffer at most from the affliction and death caused by chronic diseases [21-23]; they receive far less preventive care [24, 21]. These people experience 1.5-3 times more than others the adverse consequences of wellbeing [26, 25]. Low health literacy is a common problem [27]. The results of various studies in Iran suggest a low level of health literacy; in the study conducted in 5 provinces to determine the level of health literacy 71.9% of participants had inadequate or border health literacy. Also in the survey taken in the city of Kerman, about 60 percent of the people were of low health literacy [28, 29].

Considering that the improvement of health literacy has an effective role in promoting health status and utilization of health services, and on the other hand due to the high incidence of heart diseases and a considerable economic burden that can impose these diseases to individuals and the society, the investigation of the quality of life as one of the treatment outcome measurements and factors affecting it in these people can help to identify the problems related to current programs of Treatment and care of these diseases and also discover the points required for intervention; and because few studies have examined the role of health literacy and its relation to quality of life in people with cardiovascular disease. This study was designed and implemented aimed to determine the level of health literacy and its relation to quality of life in patients with heart disease.

MATERIALS AND METHOD

The present study was conducted in a cross-sectional analytical way on 374 patients with heart disease referring to the internal department of the heart and CCU of the hospital of cities located in south of West Azarbaijan province (Mahabad, Boukan, Miandoab). Due to lack of Interventional study and proportional to the number of beds available and the patients the People were selected with the ratified sampling method. Since the reference of the heart patients to the aforementioned departments is homogeneous over the years, an interval (June to August of 2016) was selected and the patients of that interval were included into study. Collecting data from patients was done with the use of the questionnaire. Criteria for inclusion included: obtaining informed and written consent to participate in the study, the age range of 30-65 years, having the least reading and writing literacy, being hospitalized in one of the internal departments of the heart and the CCU, the passage of at least 6 months of the diagnosis of heart disease in people and lack of vision, hearing and speech disorders in patients in a way that they do not prevent communicating with them. The criterion for exclusion of the study was patients' death. First, the participants were given sufficient description about the importance of doing research and also about the confidentiality of their information and from between the people the qualified individuals were selected with personal satisfaction. In order to collect information on the quality of life the MacNew's standard questionnaire (specified questionnaire for monitoring cardiac patients' quality of life) [30]. Validity and reliability of the questionnaire were confirmed by means of a study conducted in Iran by Bagheri (2001); using the method of content validity its reliability coefficient was calculated by 92% [31]. Localization of this questionnaire was done by the study of Asadi Lari et al (2003) in patients with myocardial infarction; the inner solidarity of physical and emotional realm was reported through Cronbach's alpha by 92 percent and social realm by 94% and for the entire realms by 95% [32]. This questionnaire contains 27 questions and measures patients' three emotional, physical and social dimensions of quality of life. In this questionnaire 12 questions are related to the emotional performance (questions 1-12 of questionnaire), 10 questions related to physical performance (questions 13-22 of the questionnaire) and 5 questions related to social performance (questions 23-27 of the questionnaire). The answer to each question is graded by the Likert seven-options scale of always to never; in the negative questions the option always is allocated to the score 1 and the option never to the score 7. It must be noted that in the positive questions (questions 3, 5 and 7) the scores are allocated conversely. The lowest score, namely 27, is related to the lowest score for quality of life and the highest score of 189 represents the individual's high quality of life. In connection with the dimensions of the questionnaire, the minimum and

maximum score of emotional dimension is respectively 12 and 84, the physical dimension 10 and 70 and the social dimension 70 and 35 respectively. For acquiring information related to health literacy we applied the health literacy measurement questionnaire in Iranian population [33]. This questionnaire was evaluated by Montazeri et al (2014) in terms of validity and reliability. The final results obtained from exploratory factor analysis showed that the above mentioned questionnaire has a desirable structural validity with 33 items in 5 environments; they explain collectively 53.2% of the observed changes. The amount of Cronbach's Alpha of items in its structures was also acceptable and reported by 72% to 89%; so the reliability of the questionnaire was also confirmed [33]. The questions of this questionnaire have been designed in the form of 33 questions and with answers in Likert scale and in 5 dimensions of reading, availability, comprehension, evaluation, decision-making and behavior. The score of each question on the Likert scale was obtained between 1 to 5 and the score of each dimension based on the total questions related to the same dimension; the higher scores represent a higher level of health literacy. To analyze data, the SPSS 21 software was used. For the quantitative data the average and standard deviation and for the qualitative variables the frequency and percentage was reported. For the analysis of data, the statistical Chi-square tests, the one-sample Kolmogorov-Smirnov, Leven's test for equality of variances, the Pearson correlation coefficient, Spearman's rho correlation, independent sample t-test and one-way ANOVA were used.

FINDINGS

Based on the findings of the present study 44.9% of patients were related to the city of Mahabad. The individuals participating in the study of the cities Boukan and Miandoab were 31.3% and 23.8% respectively. 56.1% of the units under research were male. The average age of the patients was 50.3 years with SD 9.6 and all of them were in between the ages of 30-65 years.

Table 1. Demographic characteristics of research units

Variable	number	Sub-group	percentage
City	168	Mahabad	44/9
	117	Boukan	31/3
	89	Miandoab	23/8
Gender	164	Female	43/9
	210	Male	56/1
Marriage	73	Never married	19/5
	301	married	80/5
Education	242	Under diploma	64/7
	65	Diploma &	17/4
	67	having high	17/9

		school education Having BA & higher	
Patients' smoking	61 313	Yes	16/3
		No	83/7
Economic condition	143 172 59	Income less than expenditure	38/2
		Income equal to expenditure	46
		Income more than expenditure	15/8
BMI	141 162 69	Normal	38
		Overweight	43/3
		Fat	18/3

The above table states that the married individuals have the most share in the study (80.5%). Body mass index was calculated as non-normal for 62 percent of the patients. 38.3% of the units under research had low economic status. 16.3 percent of them consumed cigarettes. Most of the units under research had the under diploma literacy level (64.7 percent).

Table 2. Information relating to heart disease in research units

Variable	Number	Sub-group	Percentage
Heart disease in family	188 186	Yes	50/3
		No	49/7
Attendant's disease	116 22 115 41 25 11 44	No	
		Diabetes	31
		Blood pressure	5/9
		Diabetes & blood pressure	30/8
		Kidney &	11
		Urinary tracts	6/6
		Hypothyroidism or hyperthyroidism	2/9
Others	11/8		
Reference to emergency services	181 193	Yes	48/4
		No	51/6
Hospitalization in hospital	117 257	Yes	31/3
		No	68/7

Based on the findings of the above table, 50.3 percent of the units under research reported the history of heart disease in their family. 5.9% of them suffered in addition to heart disease from diabetes and 27 percent of them had hypertension. The average period of time passed from catching heart disease in the units under research was 3.3 years with SD 2.5. 48.4% of them reported the history of referring to hospital's emergency services due to complications of their heart

disease during a last year. 31.3% of them also were hospitalized during a past year at least once due to heart disease.

Table 3. Average scores of health literacy different dimensions in research units

Health literacy	Average scores	Standard deviation
Reading dimension	54/6	33/5
Availability dimension	55/6	28/1
Comprehension dimension	64/5	26/5
Evaluation dimension	50/8	29/3
Decision & behavior dimension	64/5	20/9
Overall health literacy	58/1	24/3

The above table shows that the overall average health literacy score is 58.1 with SD 24.3. The average score of the dimensions of comprehension and decision making (64.5) is more than other dimensions of health literacy. The lowest score of health literacy is related to evaluation dimension with 50.8. The overall health literacy score for 42 percent of heart patients was inadequate and for 18.4% of them was high.

Table 4. Average scores of the dimensions of quality of life of research units

Quality of life	Average scores	Standard deviation
Emotional dimension	51/9	10
Physical dimension	48/3	12/9
Social dimension	25	6/7
Overall quality of life	125/2	26/6

The above table states that the overall average score of the quality of life is 125.2 with SD 26.6. The highest average score for quality of life in the emotional dimension was calculated as 51.8 and its lowest score in social dimension as 25.

Table 5. Comparing the average scores of the quality of life of research units in terms of city

Group	Number	P-value	Df	F	Standard deviation	Average scores
Boukan	117	0/9	2	0/02	26/3	124/8
Mahabad	168				27	125/4
Miandoab	89				26/5	125/3

The above table suggests that the average score for quality of life in the cities under study has been almost similar. Based on the results of the one-way ANOVA, there is no significant statistical difference in the average score for quality of life in the cities of Mahabad, Boukan and Miandoab.

The findings resulted from the statistical analyses showed the existence of significant statistical correlation between quality of life on the one hand and marriage, age, gender, education level, the period of time traversed from diagnosis of heart disease, attendant's disease, history of visiting the emergency services and being hospitalized in a past year and health literacy on the other ($p > 0.05$). In other words, the men, married people, younger ones, patients having higher education, distance less than the time of diagnosis of the disease, lack of attendant's disease, patients with no history of visiting the emergency services and hospitalization during a past year, and those with higher health literacy were of the better quality of life.

DISCUSSION AND CONCLUSION

due to the chronic nature and severity of their side-effects and consequences the heart diseases are considered as the main health priority in all countries, particularly in third world countries. Based on the findings of the present research, the average score of the dimensions of comprehension and decision making was more than that of other dimensions of health literacy. The lowest score of health literacy was related to evaluation dimension. The overall health literacy score was inadequate for 42 percent of heart patients and high for 18.4% of them. The highest average score for quality of life was calculated in the emotional dimension and the lowest in the social dimension. The level of health literacy of units under research has had a significant impact on their quality of life. By increasing health literacy, the patients' quality of life and their satisfaction of their life has increased. The findings of the present study are consistent with the results reported in the studies of Macabasco et al and Koushyar et al [27, 15]. High health literacy takes shape the individuals' health behavior and keeps them away from risky behaviors, leads them to self-care behaviors and gives them training when and where they should refer, or from where and who they receive their information needed. Finally, it increases their obedience of the prescribed medicinal regimen and observing treating physician recommendations and optimal control of the disease.

Based on the results of the present research, the average score for quality of life of units under research (125.2) is not consistent with the results of the survey taken by Hoffer et al on the quality of life of patients with angina (143.1 as its average score of quality of life) and ischemic heart disease (137.7 as its average score for quality of life) in Norway, Sweden and Denmark and



is lower than it. The average score of the quality of life in Sweden, Norway and Denmark was reported respectively by 145.8, 137.7 and 145.8. In all dimensions of quality of life as well the quality of life score was lower [34]. In justifying the difference observed it can be pointed out that in this study all forms of heart diseases other than the blood vessels diseases were included in the study; while Hoffer et al dealt with the study of quality of life in two heart diseases separately. Quality of life score reported in the study of Yazdanbakhsh et al was almost less than half of the score obtained in this survey; it is not consistent with the results of the present study [35]. The findings of this study are not consistent with the results of the research done by Bagheri et al, because the units under research of the present study had more appropriate quality of life [36]. The status of the quality of life of patients examined in this study is consistent with the results of the study of Amirian et al [37].

The status of the quality of life in men was better than that of women. Men's average quality of life was calculated more than that of women's. There was observed a significant correlation between gender and the quality of life. The findings of this research are consistent with the results of the studies of Shojaei, Ridinger et al, Klein et al and Yazdanbakhsh et al [35, 38 and 40]. Perhaps the better situation of the quality of life in men is caused by more physical activity and mobility than women's, because the prevalence of low physical activity can be seen more in women; this leads to lower quality of life of patients. In the study of Abedi et al and Amirian et al the mentioned relationship has been not observed; it is not consistent with the results of the present study [37, 41]. The reason for this non-consistency with the study of Abedi et al can be caused by the difference in the data collection tool, because in this study the MacNew's quality of life measurement questionnaire has been used and in the study of Abedi et al the 36-question quality of life questionnaire has been used. The volume of the sample in this research has been 6 times more than the volume of the sample in the study of Amirian et al; so the non-significance of relationship between the gender and the quality of life in the study of Amirian et al can be attributed to the low sample size.

The results of this study showed that the age affects directly and indirectly the quality of life for heart patients and with increasing age quality of life is reduced; that is consistent with findings of Shojaei, Abedi et al, Jiarung et al, Nesbitt et al and Wang et al [40-44]. The results of the study of Yazdanbakhsh et al violate the discovered relationship in this study [35]. The younger age groups have better evaluation of their health status. Also, with increasing age, in addition to the physical problems caused by age, socio-economic and psychological pressures and increased prevalence of forgetting shows its adverse effects on health and subsequently the quality of life of the patients and their entourage will decrease.

Based on the findings of the present study, the average score for quality of life in married people was more than that of unmarried people. There was observed a significant difference between the average score for quality of life in different levels of units under study. The status of quality of life in married persons was more desirable; that can be caused by psychological support on behalf of the patient's wife. The existence of a spouse can be helpful in the correct management of the disease. Nesbitt et al reported the lack of relationship of marriage with the health literacy and quality of life; that is not consistent with the results of the present study. This non-consistency can be caused by the fact that in this study the frequency of married individuals has been more than the study of Nesbitt et al (80.5 vs. 56.4) [43, 28].

The results of this study showed that the economic situation of the units under research affects their quality of life so that those who were economically at the higher levels were of a higher quality of life. The findings of the research of Nesbitt et al are not consistent with the results of the present study [43]. Economic difficulties create a change in people's priorities and compel them to be in the environments that have not any proportion with their disease condition. On the other hand, the economic difficulties will prevent any access to a physician and needed medications and therefore in the process of heart disease control a disorder is created. Finally, lack of disease control leads to the reduction of the quality of life of individuals and their satisfaction.

There is no relationship between the smoking and quality of life of the units under research. The results of this study are consistent with the study of Nesbitt et al [43]. Abedi et al proposed the existence of the effect of cigarette smoking on the quality of life for heart patients; that is not consistent with the findings of the present investigation [41]. To explain the above mentioned we point out that most people continue to smoke with knowledge of the adverse effects of it. So we can say that the main problem by these people is not health literacy, because at now we all are aware of the harms of smoking, especially in heart patients.

The results of this study indicated that the level of education affects the status of the quality of life of units under research. The quality of life for patients who have a higher education, was more favorable. The results are consistent with the study of Yazdanbakhsh et al [45, 35, 29, 25]. Increase in the level of education leads to the rise of the individual's knowledge and awareness in the field of how to function the body and diseases related to it. Also paying attention to the health and the behaviors that endanger the person's health is high by people with higher literacy. The prevalence of risky behaviors by those who have a lower education level, is clearly more visible. An increase in knowledge and awareness and consequently increase in the level of health literacy increases the patients' obedience of the recommendations and the drug regimen as prescribed

by the treating physician. Finally, the main goal of treatment that is surely disease control will be obtained.

Average score of the quality of life for those whose disease diagnosis have been prolonged, is lower. There was a reverse and significant linear relationship between the score of the dimensions of quality of life and the elapsed time since the diagnosis of heart disease in the research units. In describing these results, we can conclude that the existence of a chronic heart disease and the need to get the drug and therapeutic interventions affect patients in the long run psychologically and confuse the mental health of individuals and create a sense of hopelessness. Finally, the individuals' quality of life can be encountered with the disorder. The relationship observed in the investigation of Bagheri et al and Shojaei et al also has been confirmed; that is consistent with the findings of the present study [40, 36].

The results of this study showed that the existence of heart disease in family of the units under research has not affected the patients' quality of life. In his study Amirian found the existence of a connection between the history of heart disease in family and the patients' quality of life; that is not consistent with the findings of this study [37].

The existence of the attendant's disease has caused a downtrend in the quality of life for heart patients; these findings have been confirmed by Wang et al and Shojaei; they are consistent with the findings of this study [45, 40, 44]. Those who in addition to heart disease suffered from one or more other diseases had lower health literacy and quality of life. The reason for this is that the existence of several diseases increases the need for the care and the amount of incoming medicament; it will make difficult the management of the conjoined patients.

The results of this study showed that those who during a past year due to side-effects related to their heart disease have referred to the hospital emergency or have been hospitalized, have a lower quality of life. Shojaei has reported this connection also in his research; that is consistent with the findings of the present research [40, 29]. Low health literacy reduces people's demand to get the health facility and these people do not refer to health centers until becoming their disease serious. On the other hand, the results achieved can be interpreted such that perhaps the severity of disease in those who refer to the hospital emergency or have been hospitalized, has been great and their disease situation is more serious; as a result, these people have experienced more than others the Emergency Department and hospitalization and finally have had a lower quality of life.

Generally, the results of this research showed that patients with heart diseases do not have a desired quality of life and health literacy. Heart patients' health literacy status of Mahabad has been better compared to that of Miandoab and Boukan. In terms of the quality of life all three cities had a similar situation. So the

planning in the field of improving the health literacy of individuals to promote the quality of life for heart patients can be a health system priority. Also in order to investigate more closely the issue of health literacy and the quality of life in patients with heart disease, it is necessary to design and conduct other similar studies on the broader dimensions with the methodologies of cohort and clinical trial.

Appreciation

This study has been extracted from student master thesis in ir.umsu. rec.1395.108. The researchers know it necessary to appreciate the honorable patients cherished for participating in research, departments respected administrators and training supervisor of the hospitals of Dr. Gholipour of Boukan, Imam Khomeini of Mahabad and Abbasi of Miandoab for the sake of contributing to the process of collecting data and all of the people who make them in doing this research help.

REFERENCES

- [1] Gidey A, Weldeyes E. TRENDS IN CARDIOVASCULAR DISEASE OVER TIME: A 30-YEAR RETROSPECTIVE ANALYSIS OF MEDICAL-ICU ADMISSIONS IN ADDIS ABABA, ETHIOPIA. *Ethiopian Medical Journal*. 2015; 53(3).
- [2] Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C ,et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet (London, England)*. 2012 Dec 15; 380(9859):2197-223. PubMed PMID: 23245608. Epub 2012/12/19.
- [3] Xie G, Zou H, Myint PK, Shi P, Ren F, Gao W, et al. Baseline overall health-related quality of life predicts the 10-year incidence of cardiovascular events in a Chinese population. *Quality of life RESEARCH: an international journal of quality of life aspects of treatment, care and rehabilitation*. 2015 Jul 14. PubMed PMID: 26169230. Epub 2015/07/15.
- [4] Sun LY, Lee EW, Zahra A, Park JH. Risk Factors of Cardiovascular Disease and Their Related Socio-Economical, Environmental and Health Behavioral Factors: Focused on Low-Middle Income Countries- A Narrative Review Article. *Iranian journal of public health*. 2015 Apr; 44(4):435-44. PubMed PMID: 26056662. Pubmed Central PMCID: PMC4441956. Epub 2015/06/10.
- [5] Alwan A. Global status report on noncommunicable diseases 2010: World Health Organization; 2011.
- [6] Europe W. Gaining Health The European Strategy for the Prevention and Control of Noncommunicable Diseases. Copenhagen,

- Denmark: WHO Regional Office for Europe. 2006.
- [7] Allender S, Scarborough P, Peto V, Rayner M, Leal J, Luengo-Fernandez R, et al. European cardiovascular disease statistics. 2008.
- [8] Beganlic A, Pavljasevic S, Kreitmayer S, Zildzic M, Softic A, Selmanovic S, et al. Qualitative Evaluation of Cardiovascular Diseases Management in Family Medicine Team in One Year Level. Medical archives (Sarajevo, Bosnia and Herzegovina). 2015 Jun; 69(3):140-4. PubMed PMID: 26261378. Pubmed Central PMCID: PMC4500297. Epub 2015/08/12.
- [9] Asgari F, Mirzazadeh A, Heidarian H. 3rd National Surveillance of Risk Factors of Non-Communicable Diseases (SuRFNCD-2007) in Iran. Ministry of Health and Medical Education, Iran. 2009:20-40.
- [10] Karami M, Soori H, Monfared AB. Estimating the contribution of selected risk factors in attributable burden to stroke in iran. Iranian journal of public health. 2012; 41(5):91-6. PubMed PMID: 23113182. Pubmed Central PMCID: PMC3468982. Epub 2012/11/01.
- [11] Saeidi M, Soroush A, Komasi S, Moemeni K, Heydarpour B. Attitudes toward cardiovascular disease risk factors among patients referred to a cardiac rehabilitation center: importance of psychological attitudes. Shiraz E-Medical Journal. 2015; 16(7).
- [12] Khoury H, Lavoie L, Welner S, Folkerts K. The burden of major adverse cardiac events and antiplatelet prevention in patients with coronary or peripheral arterial disease. Cardiovascular therapeutics. 2015: N/a-n/a.
- [13] Canbaz S, Sunter AT, Dabak S, PEKSEN Y. The prevalence of chronic diseases and quality of life in elderly people in Samsun. Turkish Journal of Medical Sciences. 2003; 33(5):335-40.
- [14] Lee GK, Chronister J, Bishop M. The effects of psychosocial factors on quality of life among individuals with chronic pain. Rehabilitation Counseling Bulletin. 2008.
- [15] Kooshyar H, Shoorvazi M, Dalir Z, Hosseini M. Health Literacy and its Relationship with Medical Adherence and Health-Related Quality of Life in Diabetic Community-Residing Elderly. Journal of Mazandaran University of Medical Sciences (JMUMS). 2014; 23.
- [16] Wang C, Kane RL, Xu D, Meng Q. Health literacy as a moderator of health-related quality of life responses to chronic disease among Chinese rural women. BMC women's health. 2015; 15:34. PubMed PMID: 25887361. Pubmed Central PMCID: Pmc4399716. Epub 2015/04/19.
- [17] Howard DH, Sentell T, Gazmararian JA. Impact of health literacy on socioeconomic and racial differences in health in an elderly population. Journal of General Internal Medicine. 2006 Aug; 21(8):857-61. PubMed PMID: 16881947. Pubmed Central PMCID: Pmc1831584. Epub 2006/08/03.
- [18] Wolf MS, Gazmararian JA, Baker DW. Health literacy and functional health status among older adults. Arch Intern Med. 2005 Sep 26; 165(17):1946-52. PubMed PMID: 16186463. Epub 2005/09/28.
- [19] Kim SH. Health literacy and functional health status in Korean older adults. Journal of clinical nursing. 2009 Aug; 18(16):2337-43. PubMed PMID: 19583664. Epub 2009/07/09.
- [20] Curtis LM, Wolf MS, Weiss KB, Grammer LC. The impact of health literacy and socioeconomic status on asthma disparities. The Journal of ASTHMA: official journal of the Association for the Care of Asthma. 2012 Mar; 49(2):178-83. PubMed PMID: 22277072. Pubmed Central PMCID: Pmc3509174. Epub 2012/01/27.
- [21] Faruqi N, Stocks N, Spooner C, El Haddad N, Harris MF. Research protocol: Management of obesity in patients with low health literacy in primary health care. BMC obesity. 2015; 2:5. PubMed PMID: 26217520. Pubmed Central PMCID: Pmc4511590. Epub 2015/07/29.
- [22] Sudore RL, Yaffe K, Satterfield S, Harris TB, Mehta KM, Simonsick EM, et al. Limited literacy and mortality in the elderly: the health, aging, and body composition study. Journal of General Internal Medicine. 2006 Aug; 21(8):806-12. PubMed PMID: 16881938. Pubmed Central PMCID: PMC1831586. Epub 2006/08/03.
- [23] Bostock S, Steptoe A. Association between low functional health literacy and mortality in older adults: longitudinal cohort study. BMJ (Clinical research ed). 2012; 344:E1602. PubMed PMID: 22422872. Pubmed Central PMCID: Pmc3307807. Epub 2012/03/17.
- [24] Scott TL, Gazmararian JA, Williams MV, Baker DW. Health literacy and preventive health care use among Medicare enrollees in a managed care organization. Medical care. 2002; 40(5):395-404.
- [25] Dennison CR, McEntee ML, Samuel L, Johnson BJ, Rotman S, Kiely A, et al. Adequate health literacy is associated with higher heart failure knowledge and self-care confidence in hospitalized patients. The Journal of cardiovascular nursing. 2011 Sep-Oct; 26(5):359-67. PubMed PMID: 21099698. Pubmed Central PMCID: Pmc3116982 .Epub 2010/11/26.
- [26] Dewalt DA, Berkman ND, Sheridan S, Lohr KN, Pignone MP. Literacy and health outcomes: a systematic review of the literature. Journal of General Internal Medicine. 2004 Dec; 19(12):1228-39. PubMed PMID: 15610334.

- Pubmed Central PMCID: Pmc1492599. Epub 2004/12/22.
- [27] Macabasco-O'Connell A, DeWalt DA, Broucksou KA, Hawk V, Baker DW, Schillinger D, et al. Relationship Between Literacy, Knowledge, Self-Care Behaviors, and Heart Failure-Related Quality of Life Among Patients With Heart Failure. *Journal of General Internal Medicine*. 2011 Sep; 26(9):979-86. PubMed PMID: 21369770.
- [28] Banihashemi S-AT, Amirkhani MA, Haghdoost AA, Alavian S-M, Asgharifard H, Baradaran H, et al. Health literacy and the Influencing Factors: A study in five provinces of Iran. *Journal of Strides Development Medical Education*. 2012; 4(1):1-9.
- [29] Nekoei-Moghadam M, Parva S, Amiresmaili M, Baneshi M. Health Literacy and Utilization of health Services in Kerman urban Area 2011. *Tolue Behdasht Journal*. 2012; 11(14):123-34.
- [30] Merkouris A, Apostolakis E, Pistolas D, Papagiannaki V, Diakomopoulou E, Patiraki E. Quality of life after coronary artery bypass graft surgery in the elderly. *European Journal of Cardiovascular Nursing*. 2009; 8(1):74-81.
- [31] Bagheri H. Effects of group counseling on quality of life of patients suffering from myocardial infarction referred to clinics of Shariati Hospital and Tehran Imam [MA Thesis] Tehran: Department of Internal- Surgery, Tarbiat Modarres University. 2002:1-10.
- [32] Asadi-Lari M, Javadi HR, Melville M, Oldridge NB, Gray D. Adaptation of the MacNew quality of life questionnaire after myocardial infarction in an Iranian population. *Health and quality of life outcomes*. 2003; 1:23. PubMed PMID: 12869205. Pubmed Central PMCID: PMC166140. Epub 2003/07/19.
- [33] Montazeri A, et al. Health literacy for Iranian Adults (HELIA): development and psychometric properties. *Payesh* 2014;13:589-600.
- [34] Höfer S, Saleem A, Stone J, Thomas R, Tulloch H, Oldridge N. The MacNew Heart Disease Health-Related Quality of Life Questionnaire in patients with angina and patients with ischemic heart failure. *Value in Health*. 2012; 15(1):143-50.
- [35] Yazdani-Bakhsh R, Javanbakht M, Sadeghi M, Mashayekhi A, Ghaderi H, Rabiei K. Comparison of health-related quality of life after percutaneous coronary intervention and coronary artery bypass surgery. *ARYA atherosclerosis*. 2016; 12(3):124.
- [36] Bagheri H, Memarian R, ELHANI F. Survey the effect of group counseling on quality of life in myocardial infarction patients who have been referred to the clinics of Imam Khomeini and Shariati Hospitals in Tehran. 2004.
- [37] Amirian Z, Maslakkpak MH, Jalali R, Khalkhali H, Salehi S. The Effects of Regular Physical Activity at Home on Patients' Quality of Life after Coronary Artery Bypass Surgery. *Journal of Knowledge & Health*. 2013; 8(2): PAGE: 51-6.
- [38] Alzheimer's Association. (2016). 2016 Alzheimer's Disease Facts and Figures. *Alzheimer's & Dementia*, 12(4).
- [39] Mozaffarian, D., Benjamin, E. J., Go, A. S., Arnett D.K., Blaha, M.J., Cushman M., et al. (2016). Heart disease and stroke statistics—2016 update: a report from the American Heart Association. *Circulation*, 133(4), e38–e360.
- [40] Shojaei F. Quality of life in patients with heart failure. *Hayat*. 2009; 14(2):5-13.
- [41] Abedi H, YASAMAN AM, ABDEYAZDAN GH. Quality of life in heart failure patients referred to the Kerman outpatient centers, 2010. 2011.
- [42] Wu J-R, Lennie TA, Frazier SK, MOSER DK. Health-Related Quality of Life, Functional Status, and Cardiac Event-Free Survival in Patients With Heart Failure. *The Journal of cardiovascular nursing*. 2015.
- [43] Nesbitt T, Doctorvaladan S, Southard JA, Singh S, Fekete A, Marie K, ET al. Correlates of Quality of Life in Rural Patients With Heart Failure. *CLINICAL PERSPECTIVE*. *Circulation: Heart Failure*. 2014; 7(6):882-7.
- [44] Wang W, Lau Y, Chow A, Thompson DR, He H-G. Health-related quality of life and social support among Chinese patients with coronary heart disease in mainland China. *European Journal of Cardiovascular Nursing*. 2014; 13(1):48-54.
- [45] Peterson PN, Shetterly SM, Clarke CL, Bekelman DB, Chan PS, Allen LA, et al. Health literacy and outcomes among patients with heart failure. *Jama*. 2011 Apr 27; 305(16):1695-701. PubMed PMID: 21521851. Pubmed Central PMCID: Pmc4540335. Epub 2011/04/28.