Study of Relationship between Self-rated Health and Objective Health in Different Socio-economic Groups of Tehran in 2014

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Authors' contributions

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ABSTRACT

The evaluation of health by an individual or self-rated health is a popular international index which is widely practiced for evaluating the individuals' health in the public health researches and epidemiology. Many studies have revealed that self-rated health is a reliable predictor of mortality, illness, and loss of physical capacity. In addition, it has close correlation with the objective health indexes. The findings of this study have revealed the strong relationship between self-rated health and objective health. As self- rated health can be used as a reliable tool in the evaluation of objective health, this questionnaire can be used as a probable tool of screening the individuals' health in the society and determining the individuals who need care. Further studies are suggested to be done in other regions for studying the quality of the questionnaire and also the factors affecting the self-rated health.

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1. INTRODUCTION

The evaluation of health by an individual or self-rated health (SRH) is a popular international index which is widely practiced for evaluating the individuals' health in the public health researches and epidemiology. Indeed, the answer to a specific question by the World Health Organization (WHO) and Euro-REVE Organization (by doing a project by European Union for coordinating the concept of health) has been regarded as one of the best indexes of health measurement at individual and social levels [1]. The most prevalent criterion of health measurement by the individual him/herself on which there is a global consensus is used as following: "In general, would you say that your health is excellent, very good, good, fair or poor?" [2-8]. These two organizations have studied the relationship between "evaluation of general health by the individual" and health consequences at a wide level and have proposed this measurement for evaluating the policy of public health-related data such as "hope to life and death" [1,3,4,9]. The results of studies indicate that the "evaluation of general health by the individual especially in a periodical form has strong relationship with the other subjective and objective evaluations of welfare, and health and death consequences." In other words, the evaluation of health by the individuals themselves is predictive of health consequences and risks during their life [10,11]. Furthermore, it has been revealed that this health index is an appropriate index for evaluating the health services and predictive of consequences such as disability, mortality, loss of physical capacity, suffering from diseases such as dementia, cardiovascular diseases, and so on even after the control of confounding variables. Furthermore, self-rated health is one of the best indexes studied in all types of cancers, in such a way that it acts better in the case of survival prediction in comparison to the performance status of the patient [12]. Self-rated health also is considerably used as a variable for comparing the health of social groups and evaluating social inequality [4,13]. The international epidemiological studies have revealed the relationship between self-rated health and socio-economic condition. It means that different socio-economic conditions affect self-rated health [5,14]. The studies done in Switzerland revealed that low socio-economic condition is meaningfully linked to disease prevalence or bad self-rated health status [15,16]. The SRH in the groups with lower level of socio-economic condition has been lower than the groups with optimal socio-economic condition [3-5,9,14,17]. The study done in Iran in 2008 showed that the SRH has been very low in the lower socio-economic condition [13]. In addition, the study of SRH validity has been restricted to countries with high income, but the study of SRH validity can be justified in countries with lower and average income where the mortality and infection statistics have lower quality or are inaccessible with regard to the increasing interest in study and supervision of social inequality in the domain of global health. Therefore, the validation of health outcome indexes such as SRH is a start point for the researchers to study the existing evidences and support the social policies for eliminating health injustices [4].

2. MATERIALS AND METHODS

The present research is a sectional descriptive-analytic research. The population includes the inhabitants of Tehran with a minimum age of 18. The appropriate age condition (18- 80 years), physical and mental ability, and conscious satisfaction were regarded as the inclusion criteria. An interview was conducted using the questionnaire to collect data. The mean index and standard deviation were used for describing the data. The odds ratio and confidence level of 95% were obtained by the logistic regression. In this method, the objective health and self-rated health were respectively regarded as the dependent variable and main predictive variable. In the case of variable of objective health, individuals who suffered from at least one of the diseases of diabetes, high blood pressure, cancer, asthma and respiratory diseases, cardiovascular diseases (heart attack and Cerebrovascular), neuropathy (depression and anxiety), musculoskeletal diseases (lumbago and chronic pains) and other diseases in addition to the mentioned diseases for which a medication is consumed were regarded as unhealthy individuals and otherwise, they were considered as healthy individuals. In the calculation of odd ratio of objective health, for varying degrees of self-rated group health, the group who evaluated their health as very good was regarded as the reference or comparison group. The odds ratio was calculated in two forms: in the first method,

the odds ratio was determined for the five degrees of self-rated health (the group who evaluated their health good, fair, bad and very bad in comparison to the group who evaluated the health very good). In second method, two states were regarded for the self- rated health (the individuals who had evaluated their health bad in comparison to the ones who had evaluated their health good). By integrating three groups who had evaluated their health very good, good and fair, the good group was obtained; and by integrating two groups who had evaluated their health bad and very bad, the bad group was obtained.

Two tailed test was used for testing the hypotheses and the p value was regarded less than 0.05. The compare means t- test in two independent populations was used for comparing the mean scores of questions of World Health Organization questionnaire with self-rated health and objective health status. For evaluating the economic condition, the Latent Class was applied on the financial status variables and ultimately, five groups or five main elements were created for calculating the economic index. The latent class regression has better function in the case of nominal two-state variables in comparison to the quantitative variables. The main idea of latent class regression is that the studied individuals are correlated to each other and the studied population (socio-economic condition) includes 5 socio-economic subcategories. One of the purposes of latent class regression is to find these socio-economic subcategories and to evaluate the volume of every socio-economic subcategories (latent classes) [18].

3. FINDINGS

The present research aims to validate the health status questionnaire of World Health Organization and evaluating its psychometric criteria with the purpose of domesticating it with the Iranian culture. The content validity is a salient validity, the existence of which during the design process should be confirmed. So, this validity is of special importance for the other validities due to its close relationship with reliability. Therefore, the evaluation of content validity is very necessary in designing the questionnaires [19]. Nowadays, the process of quantitative content validation by using the potential experts and participants (conscious people) causes this process as an appropriate tool for designing a proper, transparent and comprehensive questionnaire. The inter-rater agreement index (IRA) is a controlling factor for the content validity process. The acceptable value for this index has been regarded 70 to 80 percent in different studies [20-22]. In this study, the calculated IRA for the appropriateness and transparency was respectively obtained 70 and 90 percent. The value of IRA index is indicative of higher percentage of experts' agreement and the confirmation of tool's appropriateness and transparency. The S-CVI index used for evaluating the general appropriateness of the tool in the average approach was calculated 94% which is indicative of acceptable appropriateness of this tool. The general appropriateness of the tool was calculated 94 percent and the appropriateness of seven questions was obtained 100%. One question (sleep status) was obtained 90%. The other question (movement) was calculated 80% and the other one (interpersonal relationships) was obtained 70%, the reason of which might be the individuals' different perception of personal relationships and social participation that needs to be reviewed. So, the general appropriateness index, except in the case of the question related to interpersonal relationships, indicates that the questionnaire questions have acceptable validity. The least acceptable validity for validating the content has been mentioned 80 percent in different articles [20-22]. The general transparency of tools was obtained 98% that is completely optimal in comparison to the acceptable value (80%) mentioned in the articles. The general comprehensiveness of the tools has been mentioned at least 80 percent [20] in different articles that was obtained 90% in this study. Therefore, the findings of this research revealed that these tools have optimal appropriateness, transparency, and comprehensiveness and it can be concluded that these tools have required validity to be used in the Iranian culture. The intra-cluster correlation coefficient for all the questions except the fourth one was obtained between 0.72 and 1.

The tools reliability for the question 4 (in general, how much have you felt physical pain in past 30 days?) was calculated 68%. It can be due to the non-consistency of physical pain and its changeability during the evaluation time. Kristofer et al. have reported that the findings of test-retest reveal that some questions have lower reliability in comparison to the other ones [23]. In a psychometric study done in China, the ICC index was obtained 0.8 – 0.89 [24]. In another psychometric study done by Garin et al. [25] in

Europe, this index in the domain of movement, perception and recognition, self- acre, and interpersonal relationships was obtained 0.19, 0.61, 0.52 and 0.64, respectively. The reason of being of lower index in domain of movement is the six-week gap between test and retest. Meanwhile, the patient's movement has been improved or worsened. Whereas the optimal ICC index is higher than 0.7 [26], the study done in China has supported the World Health Organization questionnaire as an acceptable tool for evaluating the inability in the chronic diseases [25]. So, it can be concluded that being of lower index in the domain of pain can be due to the non-consistency of physical pain and its changeability during the evaluation time. It is worth mentioning that this index has obtained 0.82- 0.96 only in the case of study done by Bavon et al [27]. Furthermore, Kristofer et al. have reported the use of this questionnaire in 69 countries for the quantification of level of health and its validity and reliability [23]. Therefore, it can be concluded that the Iranian version of health status questionnaire of World Health Organization has satisfactory reliability and validity for evaluating the health status in Iran. Self-rated health is based on the mental evaluation of health status and it is preferred to be used as the replacing index in the social sciences studies, when the objective health indexes by the medical examination are not accessible [28].

There are different indexes for evaluating the health such as suffering, clinical and laboratorial examinations, and life style. The use of a combination of mentioned indexes sometimes makes the evaluation of health difficult. For instance, the determination of health status is difficult in the case of individuals who had high blood pressure, hypoglycemia, and high LDL level, but the level of triglyceride has been decreased due to change of life style through exercise. On the other side they are gluttonous and have polydipsia; since the health status of these individuals has simultaneously improved or disease status from the perspective of clinical parameters and life styles. Therefore, a specific index is required to evaluate different health indexes [28]. In first study of self-rated health done in USA from 1950 to 1970, self-rated health has been reported as an index which has statistical relationship with objective health indexes [2-4]. In the study done with the aim of evaluating the reliability of general question of self-rated health in the evaluation of people's public health, the results revealed that this question has a good reliability even in comparison to many other questions and the reliability has been evaluated good in all the age groups and it has been excellent in older men [29]. More than 40 studies have reported that self-rated health has been used as the independent mortality index even after controlling the age, sex, and demographical variables. In addition, weak self-rated health has meaningful relationship with increased mortality in patients with cardiovascular diseases and cancer [30]. The study of relationship between self-rated health and mortality has revealed that causes of death which have close relationship with the self-rated health include: diabetes, infections, and respiratory diseases. Multi-causal diseases such as cardinal disease, brain stroke, and cancer have an average relationship. Death resulted from accident, suicide, and murder has weak relationship with self-rated health [28].

4. DISCUSSION

The present research was done in 2014 on 2000 individuals in Tehran with the aim of investigating the relationship between self-rated health and objective health. The results revealed that self-rated health can be an appropriate substitution for objective health and predict it; in such a way that the individuals who had evaluated their health very good have reported the least percentage of disease (or maximum objective health) and the individuals who had evaluated their health bad and very bad have reported the most illness prevalence (or minimum objective health). This linear procedure is meaningfully observed at all the levels of different variables such as self-rated socio-economic condition, job, education, age, sex, and marital status. In this research, the participants were asked to evaluate the objective health and illness prevalence from very good to very bad. The finding revealed that the individuals who evaluate their health bad and very bad reveal the meaningful increase of seven mentioned diseases. The prevalence of all the diseases which were evaluated as objective health criteria in this study has strong relationship with the evaluation of self-rated health. The accessible studies also revealed that the prevalence of diseases such as the cancer, heart attack, brain stoke, cardiovascular diseases, high blood pressure, diabetes, and dyslipidemia is considerably more in the individuals who evaluate their health weak and this prevalence has direct relationship with the very bad status of self-rated health [3,16,28]. In other words, the worse the self-rated health, the

more the prevalence of diseases would be. It means that self-rated health can differentiate the patients form the healthy individuals. In general, from among 1983 individuals studied in this research, 10% (72 men (8%) and 104 women (10%) evaluated their self- rated health bad or very bad. Similar results were obtained in the study done in Sweden in 2006. In this study, 7% of men and 9% of women reported their self-rated health bad or very bad, which is 1% less than the results observed in present research [16]. In the study done in Japan, 11.5% and 1.9% of the individuals respectively have evaluated their health bad and very bad [28]. This matter indicates that the individuals consider suffering or not suffering from a disease for evaluating their health.

The results of present research revealed that the questionnaire with valid structure (evaluation of what it claims) has construct validity too; and it can diagnose the health status between the recognized groups with different properties that are expected to have different health status. There is strong relationship between the marital status and the self- rated health. The divorced individuals or the ones the spouse of whom has passed away, have evaluated their health status very bad. The study done in China and Singapore confirms and corresponds to the results of this research [3,31]. The individuals who have evaluated their socio-economic condition good have reported their health better. This can be due to further access to better diet and more physical activity. The study done in Japan revealed that the individuals with lower income had very bad health status [32]. The study done in China and Singapore has reported similar results [3,31]. In this study, men and women have evaluated their health similar, but men have evaluated their health a little better than the women. In the study done on Sweden, fewer men have evaluated their health good [16]. In the study done in China, women have reported their health in all the dimensions (physical and mental performance, social relationships and adaptability, movement, perception and recognition) worse than men and have expressed the existence of injustice in society as one of its reasons. Although the effective measures have been taken for eliminating the sexual injustice in China, women are still deprived of equal opportunities of education, job, and participation in social affairs and are usually responsible of housekeeping and parenting [33]. The other studies had similar reports. In addition to reporting this matter that the women report

their health worse than men, they have revealed that the women suffer from more illnesses and inability in comparison to men of similar self-rated health status [34].

The results of a research titled "Effective factors in self-rated health in Australian women" revealed that age is a factor related to self-rated health, in such a way that the relationship between self-rated health and objective health in 20- 29 years old women is weaker than the 30-39 and 40–59 years old women. 20-29 years old women without any illnesses have reported their health excellent and good 44 and 48 percent respectively. In this group, individuals with average level of illness have reported their health respectively at good and weak levels similarly 52 percent. Furthermore, individuals with chronic illness have reported their health good and weak 44 and 48 percent respectively; while women of older age group at three levels of objective status of being healthy, average and weak illness, the relationship between the self- rated health and objective health is so strong and there is considerable difference between three excellent, good and weak levels in the case of amount of answering the self- rated health status. For instance, in the age group of 40- 59 years old, the individuals with average level of illness have reported their health excellent, good, and weak 10, 71 and 19 percent respectively [35]. Other findings also reveal that the individuals evaluate their health weaker as age increases. The study done in China showed that individuals who evaluate their health as weaker, have a higher average age. It means that the self-rated health of studied individuals is meaningfully decreased by the increase of age.

The studies done in Sweden, Finland, Australia and Japan [3,16,35-38] revealed that the age is a risky factor for those of weak self-rated health status. The findings of study done in China with the aim of investigating the relationship between social properties and demographical features with self-rated health indicates that self-rated health is evaluated as weaker by the increase of age. But the individuals with non-optimal mental symptoms have reported their health similar in every age group and the changes of self-rated health status in different age groups often has been related to the physical health [33]. There is a strong relationship between self-rated health and the education level. Individuals with higher education have evaluated their health as better in comparison to the individuals with lower levels of education [33]. There has been obtained similar

results in the accessible studies [31,39,40]. According to Ross and Wuc, the positive relationship between self-rated health and the education level in their opinion is due to the fact that access to higher education level directly and indirectly improves health by providing a job, better economic condition, social-mental resources, and better life style. The individuals with higher education obtain higher health literacy and display more sensitivity in the control of behavior and reformation of life style [41]. The findings of present research also reveal that the individuals with lower educational levels evaluate their health status as weaker. Although the single-item index of self-rated health reveals the individuals' objective health status sufficiently, some researchers believe that, based on the obtained results, it is unlikely the policy makers and managers would intend to make important decisions based on the results obtained from this single-item index [33].

4.1 Research Weak Points

The interpretation of results of this study involves some limitations. These limitations include the nature of a sectional research that does not allow the study of temporal relationship between self-rated health and objective health. The second limitation is the trust in the questionnaire for measuring the objective health and illness prevalence. The self-rated health questionnaire has been used for standardizing the questionnaire. Like any questionnaire study, the studied individuals' answer can be potentially affected by their social origin biases. The third limitation is related to the selection of research population from the capital of Iran, as their socio-economic condition is different from the other regions of Iran. So, the results should be cautiously generated for the rest of the Iranian population.

4.2 Research Strong Points

The random selection of 2000 individuals of two sexes in different age groups above 26 years old is the most important strong point of this study that can be indicative of the studied population. Contrary to the present study, most of the other studies have studied the self-rated health of the elder population [42,43-45,46-49,50-59] or the individuals with special diseases. Furthermore, the health outcomes can

be economically predicted by using self-rated health index.

5. CONCLUSION

The findings of present research revealed a strong relationship between self-rated health and objective health; in such a way that self-rated health can be used as a reliable tool for measuring the objective health. So, this questionnaire can be used as a probable tool for screening the health of individuals in the society and determining the individuals who need care. It is suggested to study further the questionnaire quality in other regions and the factors which can be effective on the self-rated health.

CONSENT

It's not applicable.

ETHICAL APPROVAL

It's not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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