Study of Relationship between Self- Rated Heath and Objective Health in Different Social- Economic Groups of Tehran City in 2014

Abstract

The evaluation of health by an individual or self- rated health is a popular international index which is widely attended for evaluating the individuals' health in the public health researches and epidemiology. Many studied have revealed that the self- rated health is a reliable predictor of mortality, suffering from illness and deficiency of physical performance. In addition, it has close correlation with the objective health indexes. The findings of this study have revealed the strong relationship of the self- rated health and the objective health. As the self- rated health can be used as a reliable tools 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. The further studies are suggested to be done in other regions for studying the quality of questionnaire and also the factors affecting the self- rated health.

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Key words: self- rated health, objective health, World Health Organization, psychometric analysis, social- economic condition, validity and reliability.

Introduction

The evaluation of health by an individual or self- rated health (SRH) is a popular international index which is widely attended 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 the 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 the 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 the disability and mortality, deficiency of physical performance and suffer from diseases such as dementia, cardiovascular disease and so on even after the control of confounding variables. Furthermore, the self- rated health is one of the best indexes studied in all the 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).

The self- rated health also is considerably used as a variable for comparing the health of people groups and evaluating the social inequality (4, 13). The international epidemiological studies have revealed the relationship between the Self- rated health and the social- economic condition. It mean that different social- economic conditions have effect on the self- rated health (5, 14). The studies done in Switzerland revealed that the low social- economic condition is meaningfully linked to the disease prevalence or bad self- rated health status (15, 16). The SRH in the groups with lower level of social- economic condition has been weaker than the groups with optimal social- economic condition (3-5, 9, 14, and 17). The study done in Iran in 2008 showed that the SRH has been so weak in the lower social- economic condition (13). In addition, the study of SRH validity has been restricted to the counties with high income, but the study of SRH validity can be justified in the 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 health around the world. Therefore, the validation of health outcome indexes such as SRH is start point for the researchers to study the existing evidences and support the social policies for eliminating the health injustices (4).

Materials and methods

The present research is a sectional descriptive- analytic research. The population includes the inhabitant individuals of Tehran city with minimum 18 years old. The appropriate age condition (18- 80 years), physical and mental ability and conscious satisfaction were regarded as the inclusion criteria. The interview by the questionnaire was applied for collecting 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, the individuals who suffer at least one of the disease of diabetes, high blood

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pressure, cancer, asthma and respiratory diseases, cardiovascular diseases (heart attack and Cerebrovascular), neuropathy (depression and anxiety), musculoskeletal diseases (lumbago and chronic pains) and the other diseases in addition to the mentioned diseases for which the drug is consumed were regarded as the patient individuals and otherwise, they were considered as the healthy persons.

In the calculation of add ratio of objective health, for every level of group self- rated health, the group who evaluated their health very good was regarded as the reference or comparison group. The odds ratio was calculated in two forms: in the first state, the odds ratio was determined for the self- rated health of five states (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 as the self-rated health with these two states.

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 scores mean of questions of World Health Organization questionnaire with the status of self- rated health and objective health. 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 (social- economic condition) includes 5 social- economic subcategories. One of purposes of latent class regression is to find these social- economic subcategories and to evaluate the volume of every social- economic subcategories (latent classes) (25).

Findings

The present research aims at validating the health status questionnaire of World Health Organization and evaluating its psychometric criteria with the purpose of domesticating that with the Iranian culture. The content validity is a salient validity the existence of which during the design process should be confirmed. Sos, this validity is of special importance for the other validities and due to its close relationship with the reliability. Therefore, the evaluation of content validity is so necessary in designing the questionnaires (27). Nowadays, the process of quantitative content validation by using

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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 (28- 30). 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 that 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 (28- 30). 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 (28) 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 30 past 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 (31). In a psychometric study done in China, the ICC index was obtained 0.8 – 0.89 (32). In another psychometric study done by Garin et al. (2010) in Europe, this index in the domain of movement, perception and recognition, self- acre, and interpersonal relationships was obtained respectively 0.19, 0.61, 0.52 and 0.64, respectively. The reason of being lower of index in domain of movement is the six-week distance between test and retest. Meanwhile, the patient’s movement has been improved or worsened. Whereas the optimal ICC index is higher than 0.7 (33), the study done in

China has supported the World Health Organization questionnaire as an acceptable tool for evaluating the inability in the chronic diseases (34). So, it can be concluded that being lower of 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 (35). 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 (31). Therefore, it can be concluded that the Persian version of health status questionnaire of World Health Organization has satisfactory reliability and validity for evaluating the health status in Iran. The 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 (36).

There are different indexes for evaluating the health such as suffering, clinical and laboratorial examinations, and life style. The use of 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, high LDL level but the level of triglyceride has been decreased due to changing the life style by the exercise, one the other side they have the gluttony and polydipsia habits; since the health status of these individuals has simultaneously improving or disease status from the perspective of clinical parameters and life styles. Therefore, a specific index is required to evaluate different health indexes (36). In first study of self- rated health done in USA from 1950 to 1970, the self- rated health has been reported as an index which has statistical relationship with the 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 all the old men (39). More than 40 studies have reported that the self- rated health has been used as the independent mortality index even after controlling the age, sex and demographical variables. In addition, the weak self- rated health has meaningful relationship with the increase of mortality in the cardiovascular and cancer patients (40). The study of relationship between the self- rated health and the mortality has revealed that the death reasons which have close relationship with the self- rate health include the diabetes, infections and respiratory diseases and the multicausal diseases such as the cardinal disease, brain stroke, and cancer have an average relationship and the death resulted from the accident, suicide and murder has weak relationship with the self- rated health (36).

Discussion

The present research was done in 2014 on 2000 individuals in Tehran with the aim of investigating the relationship between the self- rated health and the objective health. The results revealed that the self- rated health can be an appropriate substitution for the objective health and predict that; 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 the serf-rated social- economic condition, job, education, age, sex and marital status. In this research, the testees were asked to evaluate the objective health and illness prevalence by five options of 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 evaluated as the 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, 36).

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In other words, the worse the self- rated health, the more the prevalence of diseases would be. It means that the 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 that 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 (36). This matter indicates that the individuals use the criterion of suffering or not suffering the 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 between the recognized groups with different properties that is 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

corresponds to the results if this research (3, 41). The individuals who have evaluated their social- economic condition good have reported their health better, too. This can be due to further access to better food regime and further physical activity. The study done in Japan revealed that the individuals with lower income had very bad health status (42). The study done in China and Singapore has reported the similar results (3, 41).

In this study, the men and women have evaluated their health similar, but the men have evaluated their health a little better than the women. In the study done on Sweden, a few men have evaluated their health good (16). In the study done in China, the women have reported their health in all the dimensions (physical and mental performance, social relationships and adaptability, movement, perception and recognition) weaker than the 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, the women are still deprived from the education, job, and participation in social affairs and have more the responsibility of housekeeping and parenting (43). The other studies had similar reports. In addition to reporting this matter that the women report their health weaker than the men, they have revealed that the women suffer further illness and inability in comparison to the men in similar self- rated health status (44).

The results of a research titled ‘’effective factors in self- rated health in Australian women" revealed that the age is a factor related to the self- rated health, in such a way that the relationship between the self- rated health and objective health in 20- 29 years old women is weaker than the 30- 39 and 40 – 59 years old women. The 20- 29 years old women without any illness have reported their health at two excellent and good levels respectively 44 and 48 percent. In this group, the individuals with average level of illness have reported their health respectively at good and weak levels similarly 52 percent. Furthermore, the individuals with chronic illness have reported their health 44 and 48 percent respectively good and weak; while in the women of higher 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 son 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 respectively 10, 71 and 19 percent of their health respectively excellent, good and weak (45). The other findings also reveal that the individuals evaluate their health weaker by the increase of their age. The study done in China showed that when the individuals evaluate their health weaker, their average age is increased. 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, 45- 48) revealed that the age is a risky factor for the weak self- rated health status. The findings of study done in China with the aim of investigating the relationship between the social properties and demographical features with the self- rated health indicate that the self- rated health is evaluated 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 (43). There is a strong relationship between the self0 rated health and the education level. The individuals with higher education have evaluated their health better in comparison to the individuals with lower level of education (43). There has been obtained similar results in the accessible studies (41, 49, and 50). Ross and Wuc have stated their opinions about the positive relationship between the self- rated health and the education level in such way that the access to higher education level directly and indirectly by obtaining the job, economic condition, social- mental resources and life style improves the health. The individuals with high education obtain higher health literacy and reveal more sensitivity in the control of behavior and reformation of life style (51). The findings of present research also reveal that the individuals evaluate their health status weaker by the reduction of education level. Although the single- item index of self- rated health reveals sufficiently the individuals' objective health status, some researchers believe that, based on the obtained results, it is unlikely the policy makers and managers be intended to make important decisions based on the results obtained from this single- item index (43).

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 the 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 that their social- economic condition is different from the other regions of Iran. So, the results should be cautiously generated to the other Iranian peoples.

Research strong points

The random selection of 2000 individuals of two sexes in different age groups with above 26 years old is the most important strong point of this study that can be indicative of

studied population. Despite the present study, most of the other studies have studied the self- rated health mostly on the elder population (18, 20- 22, 52- 55) (56- 59) or the individuals with special disease. Furthermore, the health outcomes can be economically predicted by using the self- rated health index.

Conclusion

The findings of present research revealed the strong relationship between the self- rated health and the objective health; in such a way that the self- rated health can be used as a reliable tool for measuring the objective health. So, this questionnaire can be used as the 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.

References

1. Vahdani Nams Ebadi, M; Azarins, A; Omidvari, S; Jahangiri, K; et al. how the people evaluate their health: study of health from the people of Iran.
2. Benyamini Y. Why does self-rated health predict mortality? An update on current knowledge and a researchagenda for psychologists. Psychology & Health. 2011;26(11):1407-13.
3. Wu S, Wang R, Zhao Y, Ma X, Wu M, Yan X, et al. The relationship between self-rated health and objective health status: a population-based study. BMC public health. 2013;13(1):320.
4. Abdulrahim S, El Asmar K. Is self-rated health a valid measure to use in social inequities and health research? Evidence from the PAPFAM women's data in six Arab countries. International journal for equity in health. 2012;11(1):53.
5. Foraker RE, Rose KM, Chang PP, McNeill AM, Suchindran CM, Selvin E, et al. Socioeconomic status and the trajectory of self-rated health. Age and ageing. 2011;40(6):706-11.
6. Chandola T, Jenkinson C. Validating self-rated health in different ethnic groups. Ethnicity and Health. 2000;5(2):151-9.
7. Guimarães JN, Chor D, Werneck G, Carvalho M, Coeli C, Lopes C, et al. Association between self-rated health and mortality: 10 years follow-up to the Pró-Saúde cohort study. BMC public health. 2012;12(1):676.
8. Han M, Kim K, ParkJ, Kang M, Ryu S. Association between levels of physical activity and poor self-rated health in Korean adults: The Third Korea National Health and Nutrition Examination Survey (KNHANES), 2005. Public health. 2009;123(10):665-9.

9. Alexopoulos EC, GeitonaM. Self-rated health: inequalities and potential determinants. International journal of environmental research and public health. 2009;6(9):2456-69.
10. Manderbacka K, Kåreholt I, Martikainen P, Lundberg O. The effect of point of reference on the association between self-rated health and mortality. Social science & medicine. 2003;56(7):1447-52.
11. McCullough ME, Laurenceau J-P. Gender and the natural history of self-rated health: a 59-year longitudinal study. Health Psychology. 2004;23(6):651.
12. salvation, magic. Self-health is a good indicator for measuring the health of people in society: the study of coherence. Iranian Journal of Epidemiology. 2015; 10 (4): 89-96.
13. Nedjat S, Hosseinpoor AR, Forouzanfar MH, Golestan B, Majdzadeh R. Decomposing socioeconomic inequality in self-rated health in Tehran. Journal of epidemiology and community health. 2012;66(6):495-500.
14. Suresh S, Sabanayagam C, Shankar A. Socioeconomic status, self-rated health, and mortality in a multiethnic sample of US adults. Journal of epidemiology. 2011(0):1107050244.
15. Bauer GF, Huber CA, Jenny GJ, Müller F, Hämmig O. Socioeconomic status, working conditions and self-rated health in Switzerland: explaining the gradient in men and women. International journal of public health. 2009;54(1):23-30.
16. MolariusA, Berglund K, Eriksson C, Lambe M, Nordström E, Eriksson HG, et al. Socioeconomic conditions, lifestyle factors, and self-rated health among men and women in Sweden. The European Journal of Public Health. 2007;17(2):125-33.
17. Ree E, Odeen M, Eriksen HR, Indahl A, Ihlebæk C, Hetland J, et al. Subjective Health Complaints and Self-Rated Health: Are Expectancies More Important Than Socioeconomic Status and Workload? International journal of behavioral medicine. 2013:1-10.
18. Kaplan G, Barell V, Lusky A. Subjective state of health and survival in elderly adults. Journal of gerontology. 1988;43(4):S114-S20.
19. Gupta S, McDade T, Adam E. Objective versus subjective measures of health: Systematic differences and determinants. Preliminary version. 2010.
20. Mitrushina M, Satz P. Correlates of self-rated health in the elderly. Aging Clinical and Experimental Research. 1991;3(1):73-7.
21. Fillenbaum GG. Social context and self-assessments of health among the elderly. Journal of Health and Social Behavior. 1979:45-51.
22. Ferraro KF. Self-ratings of health among the old and the old-old. Journal of Health and Social Behavior. 1980:377-83.

23. Subramanian S, Huijts T, Avendano M. Self-reported health assessments in the 2002 World Health Survey: how do they correlate with education? Bulletin of the World Health Organization. 2010;88(2):131-8.
24. Dowd JB, Zajacova A. Does self-rated health mean the same thing across socioeconomic groups? Evidence from biomarker data. Annals of epidemiology. 2010;20(10):743-9.
25. Jamali., J. Application of latent class regression model in modeling factors related to provincial Ibin migration in Iran). Advances in Mathematical Modeling: Mashhad university of medical sciences.
26. Bayat N. Select and implement a suitable classification a job inhealth studies in Iran 1391.
27. A E, NE S. Run the content validity of the questionnaire. Journal of Epidemiology. 1389;4(6):66_74.
28. A S, MA C, S M. Development of a patient safety culture measurement tool for ambulatory health care settings. HealthCare Manag Sci. 2007;10(2):139_49.
29. JS G, L D. Selection and use of content experts for instrument development. Res Nurs Health. 1997;20(3):269_74.
30. SS B, ES L, S R. Objectifying content validity: conducting a content validity study in social workresearch. Social Work Research. 2003;27(2):94_104.
31. Salomon JA, Mathers CD, Chatterji S, Sadana R, Ustun TB, Murray CJ. Quantifying individual levels of health: definitions, concepts and measurement issues. Health systems performance assessment: debates, methods and empiricism Geneva: World Health Organization. 2003:301.
32. Chiu T-Y, Yen C-F, Chou C-H, Lin J-D, Hwang A-W, Liao H-F, et al. Development of traditional Chinese version of World Health Organization Disability Assessment Schedule 2.0 36–item (WHODAS 2.0) in Taiwan: Validity and reliability analyses. Research in developmental disabilities. 2014;35(11):2812-20.
33. Walter S, Eliasziw M, Donner A. Sample size and optimal designs for reliability studies. Statistics in medicine. 1998;17(1):101-10.
34. Garin Boronat O, Ayuso-Mateos JL, Almansa J, Nieto M, Chatterji S, Vilagut G, et al. Validation of the" World Health Organization Disability Assessment Schedule, WHODAS-2" in patients with chronic diseases. Health and quality of life outcomes 2010; 8: 51. 2010.
35. Baron M, Schieir O, Hudson M, Steele R, Kolahi S, Berkson L, et al. The clinimetric properties of the World Health Organization Disability Assessment

Schedule II in early inflammatory arthritis. Arthritis Care & Research. 2008;59(3):382-90.
36. Yamada C, Moriyama K, Takahashi E. Self-rated health as a comprehensive indicator of lifestyle-related health status. Environmental health and preventive medicine. 2012;17(6):457-62.
37. Friedsam H, Martin HW. A comparison of self and physicians' health ratings in an older population. Journal of Health and Human Behavior. 1963:179-83.
38. Maddox GL, Douglass EB. Self-assessment of health: a longitudinal study of elderly subjects. Journal of health and social behavior. 1973:87-93.
39. Lundberg O, Manderbacka K. Assessing reliability of a measure of self-rated health. Scandinavian Journal of Public Health. 1996;24(3):218-24.
40. Benjamins MR, Hummer RA, Eberstein IW, Nam CB. Self-reported health and adult mortality risk: an analysis of cause-specificmortality. Social science & medicine. 2004;59(6):1297-306.
41. Lim W-Y, Ma S, Heng D, Bhalla V, Chew SK. Gender, ethnicity, health behaviour & self-rated health in Singapore. BMC Public Health. 2007;7(1):184.
42. Shibuya K, Hashimoto H, Yano E. Individual income, income distribution, and self rated health in Japan: cross sectional analysis of nationally representative sample. Bmj. 2002;324(7328):16.
43. Xu J, Zhang J, Feng L, Qiu J. Self-rated health of population in southern China: association with socio-demographic characteristics measured with multiple-item self-rated health measurement scale. BMC public health. 2010;10(1):393.
44. Benyamini Y, Blumstein T, Lusky A, Modan B. Gender differences in the self-rated health–mortality association: Is it poorself-rated health that predicts mortality or excellent self-rated health that predicts survival? The gerontologist. 2003;43(3):396-405.
45. Shadbolt B. Some correlates of self-rated health for Australian women. American Journal of Public Health. 1997;87(6):951-6.
46. Jylhä M, Guralnik JM, Balfour J, Fried LP. Walking Difficulty, Walking Speed, and Age as Predictors of Self-Rated Health The Women's Health and Aging Study. The Journals of gerontology Series A: Biological Sciences and Medical Sciences. 2001;56(10):M609-M17.
47. Murata C, Kondo T, Tamakoshi K, Yatsuya H, Toyoshima H. Determinants of self-rated health: Could health status explain the association between self-rated health and mortality? Archives of gerontology and geriatrics. 2006;43(3):369-80.

48. Molarius A, Janson S. Self-rated health, chronic diseases, and symptoms among middle-aged and elderly men and women. Journal of clinical epidemiology. 2002;55(4):364-70.
49. Tajvar M, Arab M, Montazeri A. Determinants of health-related quality of life in elderly in Tehran, Iran. BMC public health. 2008;8(1):323.
50. Kennedy BP, Kawachi I, Glass R, Prothrow-Stith D. Income distribution, socioeconomic status, and self rated health in the United States: multilevel analysis. Bmj. 1998;317(7163):917-21.
51. Ross CE, Wu C-l. The links between education and health. American sociological review. 1995:719-45.
52. Damian J, Ruigomez A, Pastor V, Martin-Moreno JM. Determinants of self assessed health among Spanish older people living at home. Journal of Epidemiology and Community Health. 1999;53(7):412-6.
53. Maddox GL. Some correlates of differences in self-assessment of health status among the elderly. Journal of Gerontology. 1962.
54. Nybo H, Gaist D, Jeune B, McGue M, Vaupel JW, Christensen K. Functional Status and Self- Rated Health in 2,262 Nonagenarians: The Danish 1905 Cohort Survey. Journal of the American Geriatrics Society. 2001;49(5):601-9.
55. Kivinen P, Sulkava R, Halonen P, Nissinen A. Self-reported and performance-based functional status and associated factors among elderly men: the Finnish cohorts of the Seven Countries Study. Journal of clinical epidemiology. 1998;51(12):1243-52.
56. Ruo B, Bertenthal D, Sen S, Bittner V, Ireland CC, Hlatky MA. Self-rated health among women with coronary disease: depression is as important as recent cardiovascular events. American heart journal. 2006;152(5):921. e1-. e7.
57. Mäntyselkä PT, Turunen JH, Ahonen RS, Kumpusalo EA. Chronic pain and poor self-rated health. Jama. 2003;290(18):2435-42.
58. Cott CA, Gignac M, Badley EM. Determinants of self rated health for Canadians with chronic disease and disability. Journal of epidemiology and community health. 1999;53(11):731-6.
59. Bosworth HB, Siegler IC, Brummett BH, Barefoot JC, Williams RB, Vitaliano PP, et al. The relationship between self-rated health and health status among coronary artery patients. Journal of Aging and Health. 1999;11(4):565-84