Self-Rated Health among General Population in the West of Iran: A Cross-Sectional Analysis of Socioeconomic Determinants

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ABSTRACT

Background: Self-rated health (SRH), as a powerful independent predictor of mortality, has been used worldwide. However, there is currently lack of information about the SRH in Iran as a developing country. This study was conducted to investigate the relationship between SRH and socioeconomic factors in the general population in western Iran.
Methods: A cross-sectional study was conducted in 2017 enrolling 1,444 subjects aged 18 years and over in five areas of Kermanshah City, Iran. A single question of SRH with five scales of excellent (coded as 1), very good, good, fair, or poor (coded as 5) was used. Univariate and multiple logistic regression models were performed to determine factors associated with poor self-rated health.
Results: The proportion of poor SRH was 14.7%. Multiple logistic regression showed that the most important determinants of poor SRH were older age (adjusted odds ratio $(AOR)_{31\text{-}50year}$=1.96, $AOR_{\geq 51year}$=4.93, married status (AOR=2.53), divorced or widowed status (AOR=2.62), self-reported income level as middle (AOR=2.51) and low (AOR=4.59), rural residency (AOR=1.5), low physical activity (AOR=11.97), and having chronic diseases (AOR=6.85). In addition, the educational level had a negative relationship with poor SRH $(AOR_{academic}$=0.47).
Conclusion: Our results revealed that both individual and social factors are directly associated with poor SRH. Therefore, these determinant factors should be considered in health policies and planning for promoting health and SRH in the west of Iran.

Key words: Self-rated health, Heath status, Cross-sectional study

INTRODUCTION

Self-rated health (SRH) as an important indicator with a single item is used to assess the general health status among communities [1]. This scale has been used as a powerful independent predictor of mortality worldwide. In this regard, a systematic review [2] summarized the results of twenty-seven longitudinal studies

and confirmed this association. Although the mechanisms for the association are unclear, socio-demographic factors may be endogenous variables or intermediate step in the causal relationship [3].

There are some issues indicating the necessity to obtain further evidence on the factors associated with SRH. For example, many studies have found inconsistent results in the association between SRH and gender [4], age [5], educational level [6], household income [7], marital status [8], and place of residence [9], which may be due to some different aspects such as culture, lifestyle, and socio-economic status within and between countries.

In addition, there are few studies conducted on the SRH in Iran as a developing country [10-13] and most of the related results were extracted from the CASPIAN IV study [14-19]. Based on the evidence from these Iranian studies, about 5.7% of a general population reported their health status as poor [12] while another similar study conducted on women has reported the poor SRH of 37.7% [20]. There was no similar study on the mentioned issue in the small communities such as western Iran. Accordingly, the present study was conducted to investigate the prevalence of SRH and its related socio-demographic factors in western Iran to reveal the affected factors on the health status in the society.

METHODS

Study setting and sampling

This cross-sectional study was conducted in Kermanshah city, western Iran, from March to July 2017. The city is located in the border region of Iraq-Iran. According to the prevalence of poor self-rated health of 37.7% in Iran [20], a sample size of 1,445 subjects at 0.05 significance level (α) and a precision of 0.025 (d) was calculated. The target population was a convenience sample of inmates at the Kermanshah city. To this end, the city was divided into five regions including north, south, west, east, and central areas. Then, from each area, 289 samples were included in the study by convenience sampling. Totally, the response rate was 95.7% in this study.

Dependent variable

The status of self-rated health as the dependent variable was asked from individuals through a single question: how would you generally describe your health? The responses include excellent (coded as 1), very good, good, fair, or poor (coded as 5). To analyze the data by the logistic regression model, the categories "excellent", "very good", and "good" were combined (coded as 0) as were the categories "fair" and "poor" (coded as 1).

In other words, the dependent variable was defined as a dichotomous variable (excellent and poor SRH).

Independent variables

The socio-demographic variable including age, sex, educational level (illiterate, primary and secondary, academic), self-reported income level (low, middle, high), marital status (single, married, divorced or widowed), and residency (urban, rural) and health behavior variables such as smoking status (never, former, current), age at smoking onset, health insurance (yes or no), overweigh and obesity, physical activity, and chronic disease (yes or no) were collected using a self-administered questionnaire.

BMI was calculated as weight (in kilogram) divided by squared height (in meter). It was categorized into four groups including underweight (BMI<18.5 kg/m^2), normal (18.5-24.9 kg/m^2), overweight (25-29.9 kg/m^2), and obese (BMI≥30 kg/m^2).

Statistical analysis

Univariate and multiple logistic regression models were performed to determine factors associated with poor self-rated health. The crude and adjusted odds ratios (ORs) with corresponding 95% confidence interval (95% CI) were reported. The fit of the model was checked by the Hosmer and Lemeshow test (P=0.118). All statistical analyses were performed at a significance level of 0.05 by Stata software version 12 (StataCorp, College Station, TX, USA).

Ethical issues

This study was approved by the ethics committee of the Deputy of Research of the Kermanshah University of Medical Sciences (no. 96422). The participants were assured that their information would remain confidential.

RESULTS

The proportion of poor self-rated health was 14.7% (95% CI: 12.9%, 16.7%). The mean age of the participants was 36.02 (SD 13.5), with a male to female ratio of 1.3. More than half of the subjects were married (54.6%) and most of them were non-smokers (74.5%). Primary or secondary school education had a higher proportion among the subjects (54.8%). About 14% of participants had low physical activity, 8.6% were obese, and 12.7% had chronic diseases. More details of socio-demographic characteristics of studied population are presented in Table 1.

TABLE 1. Distribution of SRH by the socio-demographic characteristics of the population in Kermanshah, western Iran, 2017

VARIABLE	SUBGROUPS	SELF-RATED HEALTH		P-VALUE
		Excellent	Poor	
Gender	Female	500 (83.5)	99 (16.5)	0.029
	Male	686 (87.6)	97 (12.4)	
Age (yr)	20-30	552 (94.4)	33 (5.6)	0.001
	31-50	482 (83.8)	93 (16.2)	
	≥51	152 (68.5)	70 (31.5)	
Education level	Illiterate	41 (53.2)	36 (46.8)	0.001
	Primary and secondary	647 (85.5)	110 (14.5)	
	Academic	497 (90.9)	50 (9.1)	
Marital status	Single	537 (94.5)	31 (5.5)	0.001
	Married	604 (80.0)	151 (20.0)	
	Divorced or widowed	45 (76.3)	14 (23.7)	
Smoking status	Never	903 (86.5)	141 (13.5)	0.361
	Former	51 (86.4)	8 (13.6)	
	Current	232 (83.1)	47 (16.8)	
Smoking onset (yr)	Lower than 18	146 (89.6)	17 (10.4)	
	19 and over	86 (74.1)	30 (25.9)	0.001
Self-reported income level	High	226 (95.0)	12 (5.0)	0.001
	Middle	448 (88.0)	61 (12.0)	
	Low	512 (80.6)	123 (19.4)	
Health insurance	Yes	1007 (85.3)	173 (14.7)	0.218
	No	179 (88.6)	23 (11.4)	
Physical activity	High	750 (94.6)	43 (5.4)	0.001
	Middle	320 (81.6)	72 (18.4)	
	Low	114 (58.8)	80 (41.2)	
	Underweight	29 (72.5)	11 (27.5)	
Body mass index (BMI)	Normal	645 (89.8)	73 (10.2)	0.001
	Overweight	418 (82.8)	87 (17.2)	
	Obese	86 (72.3)	33 (27.7)	
Chronic diseases	No	1099 (91.1)	108 (8.9)	0.001
	Yes	87 (49.7)	88 (14.3)	
Residency	Urban	1001 (88.6)	129 (11.4)	0.001
	Rural	182 (73.1)	67 (26.9)	

Response rate in the study: 95.7%. SRH: self-rated health. Excellent was defined as combination of "excellent", "very good", and "good" and Poor was defined as combination of "fair" and "poor".

After adjusting all variables shown in Table 2, sex was not significantly associated with poor SRH. Poor SRH significantly increased with age (P-trend<0.001) and both of the age groups were statistically significant compared to the reference group (aged 20-30 years). Married (adjusted odds ratio (AOR)=2.54, 95%CI: 1.63, 3.96) and divorced and widowed (AOR=2.43, 95%CI: 1.09, 5.44) subjects had an increased likelihood of poor SRH compared to single ones. Those with primary or secondary school educational level have an OR of 0.56 of reporting poor health than illiterate people. Rural residents had significantly higher odds of poor SRH (AOR=1.54, 95%CI: 1.03, 2.29) than those of urban residents. The association with poor SRH was significantly increased among individuals who reported self-perceived income as middle and low compared to high level.

In terms of health behavior variables, multiple logistic regression model revealed that individuals who had low

TABLE 2. Unadjusted and adjusted odds ratios for poor self-rated health by socio-demographic variables in Kermanshah, western Iran, 2017

VARIABLE	SUBGROUPS	UNADJUSTED OR	P-VALUE	ADJUSTED OR	P-VALUE
Gender	Male	1.00	-	1.00	-
	Female	1.4 (1.03-1.90)	0.029	1.06 (0.76-1.49)	0.734
Age (yr)	20-30	1.00	-	1.00	-
	31-50	3.23 (2.13-4.89)	<0.001	1.96 (1.24-3.11)	0.004
	≥51	7.70 (4.91-12.09)	<0.001	4.93 (2.95-8.24)	<0.001
Education level	Illiterate	1.00	-	1.00	-
	Primary and secondary	0.19 (0.12-0.32)	<0.001	0.48 (0.28-0.84)	0.010
	Academic	0.11 (0.07-0.20)	<0.001	0.47 (0.25-0.89)	0.020
Marital status	Single	1.00	-	1.00	-
	Married	4.33 (2.89-6.48)	<0.001	2.53 (1.59-4.02)	<0.001
	Divorced or widowed	5.39 (2.67-10.86)	<0.001	2.62 (1.18-5.83)	0.018
Self-reported income level	High	1.00	-	1.00	-
	Middle	2.56 (1.35-4.86)	0.004	2.51 (1.30-4.85)	0.006
	Low	4.52 (2.45-8.35)	<0.001	4.59 (2.40-8.78)	<0.001
Health insurance	Yes	1.00	-	1.00	-
	No	0.75 (0.47-1.19)	0.219	-	-
Residency	Urban	1.00	-	1.00	-
	Rural	2.86 (2.04-3.99)	<0.001	1.5 (1.0-2.23)	0.048

OR: odds ratio, Adjusted odds ratio for all variables with p-value lower than 0.2 in the univariate model.

level of physical activity (AOR=11.97, 95%CI: 3.80-36.90), compared to high level of physical activity), and those with chronic diseases (AOR=6.85, 95%CI: 2.80, 16.80) were most likely to have poor SRH. In the univariate model, a U-shaped association was found between BMI and poor SRH, which was not statistically significant in the multiple model (Table 3).

DISCUSSION

This study examined the possible effects of demographic, socio-economics, and health behavior variables associated with SRH in western Iran. The SRH is one of the main predictive factors of morbidity and mortality in different populations worldwide. Therefore, SRH could be considered as a good indicator of health status in society [1, 2].

According to our results, poor SRH is positively correlated with age and BMI and negatively with income, educational level, and physical activity. Furthermore, urban residents and single participants were more likely to have excellent SRH. Nevertheless, current smokers and those who started smoking in lower ages and participants with chronic disease and inactive individuals had more chance to have poor SRH.

The present study found a U-shaped association

between BMI and poor SRH, which in agreement with findings from the previous studies [21]. In contrast, another study did not find any association between BMI and SRH [14]. In line with our findings, other studies conducted in Iran showed that educational level, income, and being married positively and age and being female are negatively associated with SRH [10, 12, 22]. Chronic conditions were also reported to have a negative effect on SRH [12, 22]. Another study showed that physical activity is associated with SRH and individuals with higher physical activity are more probable to have a good health status [18].

Similar to other studies, a higher education level and a higher income were strongly correlated with better SRH [23, 24]. Health policymakers should consider this important point that while lower-income increases the chance of poor health, the inequality in the distribution of income could increase the importance of income on SRH in society [25]. Nonetheless, some interventions such as providing good primary health care not only could decrease the effects of income inequality on SRH but also could improve self-rated overall and mental health in the population [26]. Another evidence suggests a weaker association between income inequality and poor SRH in some cases [27]. Other studies showed that socioeconomic status (SES) of people is a predictive factor for poor SRH. Consequently, people with low socioeconomic status show a higher chance to rate their health status as poor [28, 29]. The results of a related study in Iran indicated that families' SES had a stronger

TABLE 3. Unadjusted and adjusted odds ratios for poor self-rated health by health behavior variables in Kermanshah, western Iran, 2017

VARIABLE	SUBGROUPS	UNADJUSTED OR	P-VALUE	ADJUSTED OR	P-VALUE
Smoking status	Never	1.00	-	1.00	-
	Former	1 (0.47-2.16)	0.991	-	-
	Current	1.3 (0.9-1.86)	0.157	-	-
Smoking onset (yr)	Lower than 18	1.00	-	1.00	-
	19 and over	3 (1.56-5.75)	0.001	2.03 (0.89-4.60)	0.092
Physical activity	High	1.00	-	1.00	-
	Middle	3.92 (2.63-5.85)	<0.001	2.30 (0.84-6.26)	0.105
	Low	12.24 (8.04-18.62)	<0.001	11.97 (3.80-36.90)	<0.001
Body mass index (BMI)	Underweight	3.35 (1.61-6.99)	0.001	ND	-
	Normal	1.00	-	1.00	-
	Overweight	1.84 (1.31-2.57)	<0.001	0.95 (0.41-2.21)	0.903
	Obese	3.40 (2.12-5.42)	<0.001	0.81 (0.14-4.66)	0.816
Chronic diseases	No	1.00	-	1.00	-
	Yes	10.29 (7.21-14.70)	<0.001	6.85 (2.80-16.80)	<0.001

OR: odds ratio, Adjusted odds ratio for all variables with p-value lower than 0.2 in the univariate model.

association with SRH than regional SES [19]. However, in some countries, the educational level could have a greater effect on SRH than income [29]. The residents of rural areas and outside the capital areas usually have a lower SRH. Limitations for access to health care services, especially specialists' services, could be one of the main reasons of this issue [30].

A similar study [13] showed that age, educational level, marital status, and economic status of households are associated with SRH in Iran. In addition, economic status, educational level, and age were the main contributors to the inequality in SRH. This study also disclosed that 11.5% of participants rated their health status as poor or very poor that is lower than the prevalence of poor SRH in our study (14.7%) [13]. In a study in the Spanish population, 25.9% of respondents reported their health status as poor [31]. In comparison, the prevalence of overall SRH in Sweden is lower than Iran. Correspondingly, this evidence shows that prevalence of poor SRH is higher in women. Also, physical activity and obesity have been reported as a key predictor of poor SRH [24].

Several pieces of evidence in line with our findings indicated that chronic disease and long-term disability is an effective factor on poor SRH [32-34]. In addition, chronic conditions could change the self-rating health of individuals during times [35]. Meanwhile, psychological resources such as self-esteem can result in a better SRH in people with chronic diseases [33]. Other previous studies in Iran have shown the negative effects of chronic disease on health-related quality of life [36-38]. Therefore, the chronic conditions could be considered as the strong factors with a negative effect on health-related quality of

life and SRH. So, intervention for management of these conditions and decreasing their negative effects should be considered in programs of the health system in Iran.

Similar to our finding, another study showed that smoking is negatively correlated with SRH. Certain sociodemographic factors such as males, higher educated people, married people, and those who never consumed alcohol had a better SRH [39]. Social structures, socioeconomic deprivation, and lack of perceived control are other important factors affecting the SRH. Social support, especially informal social networks, is known as one of the main determinants of the SRH [39]. In Iran, social capital is also mentioned as a positive factor on the SRH [10]. An existing piece of evidence shows that Iranian women with higher level of social cohesion, as an outcome of social capital, have a better SHR. Other determinants of SRH among Iranian women include age, educational level, crowding index, and income [40].

Most of the studies in developed and non-developed countries exhibited that women have a lower level of SRH and lower chance to report their overall health as good [24, 34, 40]. Nevertheless, some studies reported no difference between men and women for SRH [41]. Other studies have shown that the strength of the relationship between poor SRH and mortality is similar among men and women [42]. Moreover, in some cases, women report a lower health status but show a lower mortality. Therefore, it is suggested that the way that SES affects the mortality could be explained by its association with SRH. Nonetheless, the effects of gender on mortality act independently [43]. The findings of three cohort studies in the United Kingdom implied that SRH is more strongly

associated with mortality in men. However, SRH is known as a good predictive of mortality in men and women and presence of chronic condition could increase this predictive power [31]. Another study has disclosed that the association between SRH and mortality is affected by age in both men and women [44].

Although our findings provide a good evidence about SRH and affecting factors in Iran, the study had some limitations. First of all, it was a cross-sectional study so that the associations found between the variables are not causal. Second, convenience sampling was used for data collection. Therefore, the samples may not be fully representative of population and findings should be interpreted with caution. Third, BMI was calculated with self-expressed weight and height of participants and this could increase the error of measuring this variable.

In conclusion, poor SRH is directly associated with age, BMI, smoking, and chronic conditions and inversely with income, educational level, and physical activity. Furthermore, urban residents, males, and singles are more likely to have good SRH. Hence, it recommended considering these determinant factors in health policies and planning for promoting health and SRH in the western Iran and in a similar society.

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Conflict of interest

The authors have no conflicts of interest to declare for this study.

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