Development of a scale for measuring social health of Iranians living in three big cities

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Abstract

 Background: Social health is considered as a significant dimension of health and, hence, its assessment is vital in health planning. Within this context, this study aimed to develop a valid and reliable scale for measuring individual's social health in Iran. To do so, an exploratory sequential mixed method was used.
 Methods: To establish the item pool and primary scale, 30 interviews with experts and other stakeholders, and a primary review of relevant literature and similar questionnaires were conducted. Then, a survey with 800 respondents from three cities in Iran was undertaken to assess the validity and reliability of the scale.
 Results: In the qualitative stage of this study, after careful consideration, forty questions were remained for the next step. Considering the correlation of the score of each question with the total score of the questionnaire, seven questions were omitted. For this questionnaire with 33 remaining questions, Cronbach's alpha for internal consistency was estimated to be 0.86. The reliability coefficient for 100 samples (taken after 7 to 10 days from the first round of sampling) was 0.91. Considering the factor analysis, three factors were recognized. These factors were named as "family", "community" and "friends and relatives". Cronbach's Alpha for internal consistency of community, friends and relatives, and family factors were estimated to be 0.91, 0.77 and 0.78 respectively. The corresponding value of the reliability indicator, intraclass correlation coefficient (ICC), for community, friends and relatives, and family were calculated 0.69, 0.80 and 0.67 respectively.
 Conclusion: We developed a measurable scale for social health at an individual level in the Iranian community with an acceptable level of validity and reliability. The new developed scale is able to provide an opportunity to measure Iranians' social health at an individual level. Such an indicator of individual health can be used in evaluating the performance of social health policies and providing a platform for evidence-based policy-making in the social health context.

 Keywords: Social health, Iran, Scale development, Measure.

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Introduction

Social heath is a controversial concept (1). Other concepts such as social welfare, social well-being, social determinants of health and human development have been discussed as potential misconceptions of social health, as well as, in social sciences literature, social well-being and social welfare is actually more abundant than social

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health, and social research repertoire has practically used social well-being in lieu of social health (2). According to the definition presented by World Health Organization (WHO), "health" is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (3). Based on this definition, social health is considered as a dimension of individual health. However, the social health theme may be less familiar and is less frequently discussed and studied than physical or mental health (4). It should be mentioned that there is another view regarding social health in which social health is considered as healthy community. In this concept, a society is healthy when there is equal opportunity for all and access by all to the goods and services, essential to full functioning as a citizen (5). In addition to these two concepts, there is a third concept in which social health is viewed as social determinants of health (SDH), and focuses on deprivation, unemployment, education, etc (2).

Considering the mentioned concepts, the focus of this study is on the first concept, individual-focused social health which points to "that dimension of an individual's well-being concerning how he/she gets on with other people, how other people react to him/her, and how he/she interacts with social institutions and societal mores" (6,7). Actually, the social domain of health is perceived as well-being regarding social activities and relationships, including the ability to relate to individuals, groups, communities, and society as a whole (8). The adopted approach in this research is similar to the view of Keyes where he defines social health as an assessment of self-functions in community, the quality of communications with others, and close contacts and membership in social groups (9). In a similar way, the highlights of the definition presented by Sharipo focuses on the ability of individuals to interact with others and community to do their social roles (10).

Apart from the way we look at social health, measuring individual's social health has been a challenging task in recent decades. Despite much attention have been paid on measuring individual-based social health, most of methods developed for measuring social health have focused on the limited number of social health dimensions (11), particularly, social support or social functioning. For instance, the MOS (Medical Outcomes Study) Social Support Survey (12), the Social Support Questionnaire (13), the RAND (Research and Development) corporation Social Health Battery (14), and the Duke-University of North Carolina (UNC) Functional Social Support Questionnaire (15) have only taken social support into consideration. The Katz Adjustment Scales (16), the Social Functioning Schedule (17), the Interview Schedule for Social Interaction (18), the Social Adjustment Scale (19) and the Social Maladjustment Schedule (20) can be named as methods that have only focused on social functioning.

The Keyes questionnaire as one of the most commonly used questionnaires, measures social health in five domains: social integration, social acceptance, social contribution, social actualization and social coherence (9). The purpose of Keyes study was to substantiate and test a social model of well-being that reflects positive social health (9). The RAND social health battery as one of the most important methods in the social health measuring records resources for social support and the frequency of social interactions with eleven questions. This method is suitable in general population surveys, however, it does not rate the subjective experience of support (14). In addition, a number of social-wellbeing scales focus on social problems instead of perceived individual social health. For instance, in Northern Ireland health and social wellbeing survey, following the area of "social environment", there are a number of questions about being satisfied with place of life, neighborhood and other social problems like, drunken people, substance abuse and vandalism (21).

Few nationally accepted social health

studies, has developed scales for measuring social health in an individual level within our county. Moreover, there is no universal scale for measuring it. Searching within Thomson Reuters' Web of knowledge database (formerly ISI) using the keyword of "Social Health", we only found 476 indexed articles. With the addition of the keyword "Iran", the number of articles decreased to six. None of them was related to individual's social health. To the best of the authors' knowledge, there is not a nationally-accepted method for measuring individual social health in Iran.

For evidence-based policy making in the field of social health, there is a great need to develop a proper scale for measuring self-perceived social health. In response to such a need, this study tends to develop a reliable scale for measuring social health in the Iranian community and assess its psychometric properties in this community. To proceed the research objectives, a combination of qualitative and quantitative approaches was adopted. In the qualitative step, the content of a primary questionnaire was extracted. Finally, the validity and reliability of this questionnaire was assessed in the quantitative step in order to derive the final questionnaire.

Methods

This study was conducted using an exploratory mixed method in three big cities of Iran (i.e. Tehran, Isfahan, Urmia) in 2011. In this study, a qualitative approach was taken as the first stage to generate the item pool, and the second stage was based on a quantitative approach to assess the validity and reliability of the scale.

All documents such as books, original articles, similar questionnaires related to individual social health were collected and reviewed. Using the data, individual social health was primarily defined and to share this definition with relevant experts and managers, guideline for interviews was prepared. To gather all views and opinions on individual social health, interviews were undertaken with social health experts, managers and representatives of NGOs (Non Governmental Organizations). Actually, purposive sampling was used for the qualitative staging of the study.

Five open ended questions were designed for the qualitative semi-structured interview. The interviews were performed by three professional interviewers and recorded upon obtaining the permission of participants.

During the interviews, lasting from 30 min to 60 min, a pre-prepared interview guide was used, participants were asked about the concept of social health in the Iranian community, and their perceptions about gender role in social health and social health in different age categories were sought. Despite the adequacy of data gathered after 20 in-depth interviews, a further five interviews were carried out to validate the data collected over the first 20 interviews. All interviews were recorded and transcribed verbatim using a manifest content analysis method. Each transcribed interview was initially read thoroughly and character notes were taken to generate the character of the text, in accordance with the qualitative thematic content analysis.

To develop a draft of the questionnaire, the notes were categorized and reviewed to determine themes and sub-themes. The preliminary questionnaire was sent to 30 experts and other stakeholders in order to obtain their opinion about relevance, clarity and content validity. Then, the expert committee assessed and revised the face and content validity of the questions again to make sure all aspects of individual social health have been considered. More details about qualitative data analysis is available (22).

In the phase of assessing face validity, the questionnaire was piloted with 10 samples, considering that the size of pilot study equal to 1% of total sample would be enough.

Sample size for quantitative phase of study, was determined using the sample size formula for correlational studies by considering the lowest expected correlation

rate as 0.15; error type one as 5%; error type 2 as 20%; response rate as 80%; and study design effect as 1.5. Initially, we decided to do sampling, from 5 cities in Iran; from north, west, east, south and center. But, due to study limitations, sampling was limited to 3 cities. It should be mentioned that Tehran, capital of Iran, has a population with different cultures from all around of Iran due to high emigration rate. Due to logistical and financial limitations, we employed multi-stage sampling. A list of units defining target population was defined as sampling frame. The sample size for target cities; Tehran, Isfahan, Urmia was 400, 200 and 200 respectively. Kish method was used to select a sample within a household. The Kish Method is a technique that allows for the random selection of one individual from a household and can be used for selection within households regardless of the sampling method used to select the respondent in the household. To fill out questionnaire, primarily the method was explained to respondents by interviewer and then respondents filled out forms by themselves. For illiterates, the questionnaire was read completely. Respondents informed their consent verbally. In Urmia which mother tongue of people is different, the survey was conducted by educated staff acquainted with the mother tongue of the region. Whenever there was an ambiguity of the language of the instrument for respondent, necessary clarification was made by interviewer.

Each question (i.e. item) was measured using the five graded Likert scale. The quantitative step of this study was performed in two stages by Iranian Students Polling Agency (ISPA), an expert organization in conducting field surveys, to meet the high level standard of random-sampling. A survey of 800 samples in three big cities (i.e. populations more than 2 million) of Iran including Tehran, Isfahan and Urumia was conducted. In the second stage, to assess the stability of the scale, 100 of 800 individuals (i.e. samples) filled in the questionnaire, completed the questionnaire once more after 7 to 10 days. It should be mentioned that the 100 samples were selected randomly from all areas of the mentioned cities, encompassing different sex and age.

This study was approved by the Shahid Beheshti University of medical sciences ethical board. The authors have no known conflicts of interest and certify their responsibility for this manuscript.

Statistical Analysis

In qualitative stage of study, data analysis was done using Statistical Package for the Social Sciences (SPSS), Version 16.0 (SPSS Inc. 2008). Exploratory factor analysis (EFA) was used for determining the dimensions of social health. We conducted a factor analysis (principal components analysis followed by a varimax rotation) to explore the scale for constructs (possible subscales) recoding items. The sample adequacy for extraction of the factors was confirmed through Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity. In this analysis, the factors with values equal or higher than 1 were considered significant and chosen for interpretation. We assessed internal reliability of the scale by calculating internal consistency (Cronbach's alpha) and test-retest reliability by ICC (Intraclass correlation). To assess construct validity, we calculated correlations between scales (Pearson's).

Results

In the qualitative stage of this study, about 80 questions were initially considered using the literature review and interviews undertaken as a questionnaire draft. After careful consideration by the expert panel and other stakeholders, 40 of these questions were omitted through the integration or deletion of similar questions, and 40 questions finally remained for the next step. Figure 1 shows the main extracted themes and subthemes.
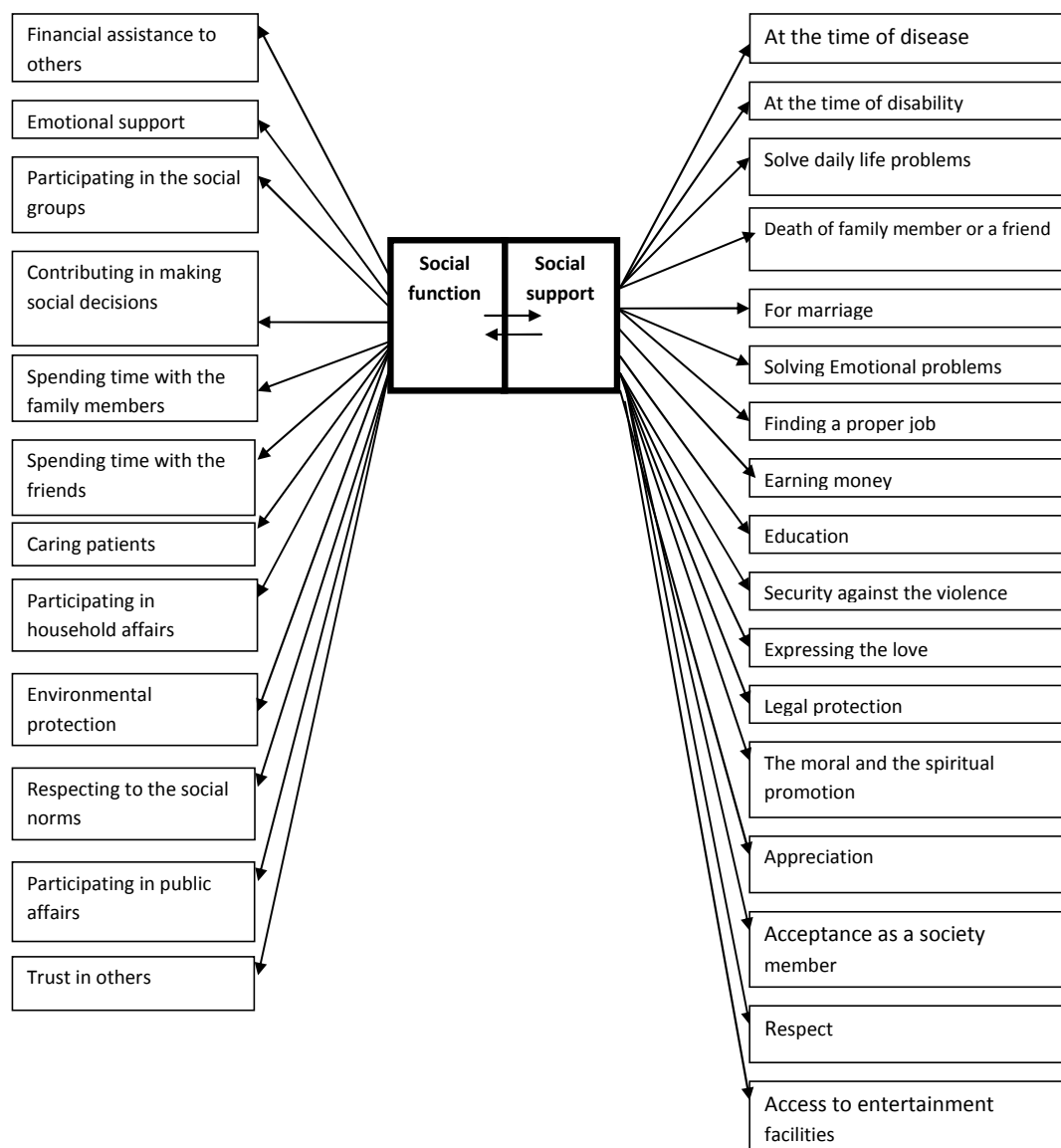
Fig. 1. The main extracted themes and sub-themes of individual social health

In the quantitative stage, there was a sampling population with 778 samples (i.e. individuals), of which 51% were male. The age of respondents was 18 and higher. The mean and standard deviation of respondents' age were 38.7 and 7.3 respectively.

Regarding the education level of the samples, the percentage of samples with no education, a degree lower than diploma, diploma degree and university degree were 7.2%, 26.2%, 33.0% and 33.6%, respectively. 35% of the samples were employed, 9% were unemployed and the remaining was housewife, student or retired. The response rate was %97 (778 out of 800). Indeed, there was little missing data in this study which did not have any effect on the results.

The total score of social health was calculated using the 40-item questionnaire. Hence, the range of scores was between 40 and 200. The score of each question with the total score of the questionnaire was compared. Where the correlation between the score of each question with the total score of the questionnaire was less than 0.4, the question was omitted. This led to only omit seven questions; implying 33 out of 40 questions were remained in the questionnaire. The expert committee of the pro-

Table 1. The demographic characteristics and social health score of respondents

		Number (percent)	mean of social health score*	Standard deviation
sex	female	381 (49)	104.5	17.6
	male	397 (51)	104.6	17.4
age	17-30	328 (42)	103.5	16.0
	31-45	238 (31)	104.5	117.9
	46-65	178 (23)	105.2	18.6
	66 and higher	33 (4)	108.3	20.0
Educational status	no formal education	56 (7)	107.9	16.3
	a degree lower than diploma	204 (26)	108.4	18.9
	diploma degree	257 (33)	102.1	17.1
	university degree	262 (34)	102.9	16.3
city	Tehran	386 (50)	99.8	17.5
	Urmia	196 (25)	117.9	11.2
	Isfahan	196 (25)	100.0	15.4
Occupational status	employed	278 (36)	104.6	16.2
	housewife	248 (32)	104.4	18.1
	student	104 (13)	104.6	17.0
	retired	74 (10)	106.1	20.3
	Unemployed	72 (9)	102.0	17.9

* Due to 33 five graded questions of instrument, the expected minimum and maximum are 33 and 165, respectively.

ject assessed the remained questions and confirmed that content validity would be met with little changes.

For the questionnaire with 33 questions, Cronbach's alpha for internal consistency was estimated to be 0.86. The reliability coefficient for 100 samples (taken after 7 to 10 days from the first round of sampling) was estimated to be 0.91.

The KMO (Kaiser-Meyer-Olkin) test was undertaken to assess the probability of factor analysis. Considering high probability of correlation between extracted factors, Oblimin with Kaiser normalization was employed for rotational method. Due to the significance of the KMO test (at the 5% level) and considering that the correlation of each question with at least one of the other questions was more than 0.3, the factor analysis was performed.

Considering the Scree plot, three factors were recognized appropriate. 41.40% of variance was explained by the first three factors. These factors included "family", "community" and "friends and relatives" as the first, second and third factors, respectively. To fit the questions with related factors, we transferred 3 of 9 questions from the friends and relatives factor to the community factor through the expert panel. The

number of questions for the factors of community, friends and relatives and family was finally set to 19, 8, and 6, respectively. The correlation of each question with the factors is displayed in Table 1. This table shows that items 1, 23, and 25 (bolded) could be placed in Factor 3 (friends and relatives) but due to appropriate context, they were placed in Factor 1 (community).

The correlation between the factors and the correlation between the total score and the factors are shown in Table 2. As seen, the maximum inter-item correlation within the two scales is 0.51 (i.e. r= 0.51), suggesting that there are no two factors that are alike and measure the same aspect of social health.

To indicate the internal consistency of the factors of community, friends and relatives, and family, Cronbach's Alpha was estimated to be 0.84 (95% CI: 0.83-0.86), 0.77 (95% CI: 0.75-0.80) and 0.72 (95% CI: 0.69-0.75), respectively. The Corresponding value of the reliability indicator (ICC) for the factors of community, friends and relatives, and family was calculated 0.69 (95% CI: 0.52-0.79), 0.80(95% CI: 0.42-0.95) and 0.67(95% CI: 0.50-0.78), respectively.

Table 2. Correlation of each item with extracted factors (Extraction Method: Principal Component Analysis; Rotation Method: Oblimin with Kaiser Normalization)

	brief description for each question	Correlation with		
		Factor 1	Factor 2	Factor 3
1	Access to medical facilities	0.05	0.17	0.44
2	Effect of community on health	0.61	-0.15	0.15
3	Emotional support of family	0.03	0.67	0.11
4	Emotional support of friends and relatives	0.06	0.04	0.49
5	family Expression the love	-0.01	0.67	0.17
6	friends and relatives Expression the love	0.01	0.07	0.53
7	Being appreciated due to useful activities	0.09	0.25	0.40
8	Economic support of friends and relatives	0.02	0.05	0.50
9	Economic support of community	0.46	-0.28	0.28
10	spiritual supportive environment of community	0.76	0.06	-0.14
11	Entertainments in community	0.79	-0.08	-0.01
12	Acceptance as a society member	0.61	0.06	0.06
13	Supportive environment to improve in community	0.79	0.06	-0.03
14	To show talents	0.81	0.03	-0.06
15	Respect by community	0.41	0.09	0.25
16	Supportive laws	0.70	-0.04	0.09
17	To satisfy by social norms	0.65	0.13	-0.07
18	Caring others	-0.06	0.05	0.56
19	to satisfy of relationship with family members	0.03	0.66	0.16
20	to satisfy of relationship with friends and relatives	-0.01	0.21	0.47
21	To get together with friends	-0.09	0.09	0.59
22	Emotional support to others	-0.16	0.12	0.58
23	To participate in social groups	0.35	-0.19	0.40
24	To be effective on community decisions	0.52	-0.23	0.35
25	To express opinions in community	0.23	-0.29	0.51
26	Trust to others	0.37	0.06	0.07
27	Support at the time of disability	0.02	0.61	0.13
28	Social benefits	0.49	0.01	0.10
29	To be happy with family members	0.08	0.50	0.26
30	security in community	0.76	0.13	-0.18
31	Effect of media	0.71	0.10	-0.17
32	spiritual supportive environment of family	0.27	0.55	-0.04
33	security in place of living	0.25	0.10	0.20

Discussion

In this study, a new social health questionnaire was developed that was consisted of three main factors, including family, friends and relatives, and community, each has 6, 8 and 19 questions, respectively. The results showed good internal consistency and reliability for the whole questionnaire and each domain. In this scale, 30 of 33 questions were designated to extract the three factors selected by factor analysis, and only three questions were replaced between the factors according to the theme of each factor.

The developed questionnaire would cover main domains of social health, noted in different evidences, such as social support, social functioning, etc (11-21). It should be mentioned that almost all other approaches existed in social health studies focus merely on one domain of individual social health (11-21). In addition, most of these approaches have been designed for clinical or limited setting, not field surveys. These ap-

Table 3. Correlation inter- factors and between total score and each factor (Pearson correlation coefficient)

	Family	Community	Friends and relatives
Family		0.26**	0.48**
Community	0.27**		0.51**
Friends and relatives	0.48**	0.51**	
Total score	0.63**	0.82**	0.83**

** Correlation is significant at the 0.01 level (2-tailed)

proaches are almost self-administered; however, a limited number of the approaches are fulfilled using an interview and interviewer's judgment.

It should be also mentioned that goals of social health studies may be different depending upon the request of the Ministry of Health. In this study, the main aim was to develop a simple scale with a maximum of 40 questions in a way to be feasible for field surveys and its results would be applicable for policy-makers.

Three factors considered in the developed questionnaire, including family, close friends and relatives, and community, are different from factors taken in other approaches. In general, most of reviewed questionnaires have much more factors compared to the one developed in this study. For instance, the Social Functioning Schedule Questionnaire has been based on 12 factors (17).

To the best of the author's knowledge, the prepared approach in this study is the first questionnaire developed in Iran to measure individual social health. There are a number of advantages in this study that further enhance reliability of the developed approach. These include: (i) a considerable number of samples participated in the questionnaire development process from three big cities (i.e. 800 samples), (ii) a high response rate from participants (more than 90%) to assess several aspects of validity and reliability, (iii) using a comprehensive qualitative method to extract questions and (iv) using a wide range of expert opinion in the questionnaire development process.

There were some limitations in this study too. The concept of individual social health is a culture-based matter; hence, it is desirable to assess validity and reliability of this questionnaire in other provinces of Iran with different cultures and ethnicities, as well as, rural residents, tribes and migratory populations, suburban residents, and communities whose mother tongue is not Farsi. Although the new questionnaire might consist of more factors with more questions to encompass all possible aspects of social

health, we need to develop a questionnaire as far possible as short, clear and simple due to the request of the Ministry of Health for having a standard approach appropriate and applicable for national surveys.

This project was a preliminary study and the grading of individual social health scores were undertaken using the difference between the minimum and maximum scores. Besides, due to lack of related studies, similar weights were used for all questions considered. As this may be unrealistic, some qualitative researches are suggested to be conducted for determining the weight of each factor. In addition, quantitative researches in big sampling population are needed in order to standardize grading cut-points.

Conclusion

In conclusion, the developed questionnaire shows acceptable measures of validity and reliability. However more studies are needed to assess validity and appropriateness of the questionnaire in other geographical locations of Iran with different cultures and ethical background. Given the results obtained from this study, this work may be considered as the first step in evidence-based policy-making in the field of social health. It must be mentioned that the Iranian Ministry of Health has principally agreed that this questionnaire to be used for the first Iranian social health survey at the national level.

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