



## **Social Health Status in Iran: An Empirical Study**

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### **Abstract**

**Background:** As social health is a condition-driven, dynamic and fluid concept, it seems necessary to construct and obtain a national and relevant concept of it for every society. Providing an empirical back up for Iran's concept of social health was the aim of the present study.

**Methods:** This study is an ecologic study in which available data for 30 provinces of Iran in 2007 were analyzed. In order to prove construct validity and obtain a social health index, an exploratory factor analysis was conducted on six indicators of population growth, willful murder, poverty, unemployment, insurance coverage and literacy.

**Results:** Following the factor analysis, two factors of Diathesis (made up of high population growth, poverty, low insurance coverage and illiteracy) and Problem (made up of unemployment and willful murder) were extracted. The diathesis and problem explained 48.6 and 19.6% of social health variance respectively. From provinces, Sistan & Baluchistan had the highest rate of poverty and violence and the lowest rate of literacy and insurance coverage. In terms of social health index, Tehran, Semnan, Isfahan, Bushehr and Mazandaran had the highest ranks while Sistan and Baluchistan, Lorestan, Kohgiluyeh and Kermanshah occupied the lowest ones.

**Conclusion:** There are some differences and similarities between Iranian concept of social health and that of other societies. However, a matter that makes our concept special and different is its attention to population. The increase in literacy rate and insurance coverage along with reduction of poverty, violence and unemployment rates can be the main intervention strategies to improve social health status in Iran.

**Keywords:** Exploratory factor analysis, Construct validity, Social health status

### **Introduction**

Deterministic role of social and environmental factors on health have long been known. Effective Health initiatives in the nineteenth century and also most of the infrastructural measures in public health are signs of the recognition of such association between health and social status. In fact, most of the substantial reductions in mortality rates of infectious diseases, e.g. tuberculosis, happened before introduction of modern and effective medical treatments. To be exact, such declines emanated from improvements in people's living conditions and food baskets (1). It is shown that from different determinants of health, social deter-

minants account for approximately 50% of health differences (2).

Constitution of World Health Organization (WHO) whose draft was written in 1946 also shows that along with taking challenges of medical care and effective treatments into account, WHO founders were also to tackle social roots of health problems. They believed that health is a complete physical, mental and social wellbeing and not only the absence of disease and infirmity (3). However, it is hardly clear what they meant by social wellbeing. Although social health has been one of three staples of every definition of health, its concept bears no resemblance to physical and mental dimen-

sions of health. Its unique feature is that it can be thought of a society and an individual characteristic simultaneously. As Russell put it, on one hand a society is healthy when everyone has equal opportunities and access to basic goods and services, something which leads to high performance of citizens (4). In fact, law abiding, equality in wealth, public participation in decision making and social capital can be indicators of a healthy society (4). On the other hand, individualistic social health points to wellbeing of an individual which is, in turn, related to the quality of living and interacting with other people and also quality of reactions to social institutions and conventions (4).

For the first time, Belloc and Breslow (1971) took a scientific and practical approach to study social health. They defined it as “degree of members function in a society” and then made up a social health index accordingly. They asked some questions about social, mental and physical dimensions of health to figure out members function (5). Couple of years later, Cathy Donald and colleagues (1978) proposed a new concept again. Their reasoning was that, health is something beyond just reporting disease symptoms, rates and individual functional abilities. They believed that wellbeing is a matter apart from physical and mental health. According to their perception, social health is both a health basis and also a subject of that (6).

Considering different definitions and approaches, It seems that social health can be defined in three ways: [1] social health as a social dimension of an individual’s health, along with physical and mental health, which is concerned with being in a relationship with society. [2] A healthy society as pro-health social conditions and finally [3] as “a better social status generally” that according to each society’s situations, can have different objective meanings and examples.

There are some indices to measure social health. Indices help us determine the degree of changes (7). From different indices which are used to measure social health, the following can be mentioned; [1] Fordham social health index, which measures some different variables in different age groups and also some variables regardless of age.

They are child poverty, child abuse and infant mortality in childhood; suicide, drug abuse, high school drop-out and teenage pregnancy in adolescence; unemployment, income and health care coverage in adulthood; poverty and life expectancy at 65 in old age and finally violent crime, alcohol-induced mortality, affordable house and income inequality in all ages (8). [2] “Ontario Healthy Communities Coalition” index that attributes these traits to a healthy population: clean and safe environment, peace, equity and social justice, adequate access to food, water, shelter, income, security, work and recreation, adequate access to health care, opportunity for learning and developing skills, strong and supportive relations and networks, supportive work environments for family and individual wellbeing, extensive participation of dwellers in decision making, cultural and spiritual heritage, varied and dynamic economy, protection of natural environment and responsible consumption of resources that assures their sustainability (9). [3] North Carolina “population health workgroup” concept that believes a healthy population should enjoy security, affordable house; accessible transportation system, job security, healthy and safe environment, sustainable ecosystem and accessible and prevention-focused health care (10). And finally, [4] Healthy village concept of WHO Eastern Mediterranean office that includes clean and safe material environment, social coordination, openness to experiences, interactions and various relationships, protection and promotion of cultural and historical heritage, appropriate and accessible health care, economic variation and originality and sustainable utilization of available resources (11).

In Iran, Rafiey and colleagues for the first time conducted a Delphi survey to construct a national concept for social health and then an acceptable index for it (12). Since Rafiey and colleagues concept has no empiric backing, we aimed to put that in an empiric trial.

## Materials and Methods

Present study is an ecologic and correlational study in which Iran’s provinces (30 provinces in 2007) were the study units. In Rafiey and colleagues study

(Delphi method), there were five rounds of comment and feedback between researchers and Iranian social health experts. At first, 63 experts were chosen as Delphi members. Out of these initial participants, 31 persons did fully participate in rounds to the end. There were two criteria to choose participants: 1) scientific scholarship and reliability in health and social issues and 2) experience in health and social issues. The participants' expertise ranged from economics, development, management and epidemiology to social medicine, psychiatry, social and clinical psychology and social work. Finally, three categories of features were ascribed to social health in Iran. The first category contained those traits on which most Delphi participants agreed. According to these traits, a healthy society is a society in which 1) there is no one under poverty line, 2) there is no violence and 3) population growth is under control. The second category is made up of traits on which there was less agreement. However, whenever any difference could not be found in the first category, the second category can be added to concept of a healthy society; thus, a healthy society is a society in which, in addition to existing aforementioned traits in first category, 4) there is no gender discrimination, 5) all of citizens are the same in the eyes of law (in enforcing and being supported by law), 6) human rights treaty and other related treaties are established, 7) education is free and compulsory until secondary school, and is free thereafter, 8) there is universal access to health care, 9) security is assured, 10) liberty of conscience is granted, and 11) people are satisfied with their lives. The third category expresses further traits of an ideal healthy society; a healthy society is a society in which, as well as the existence of previous traits, 12) there is universal insurance coverage, 13) there is equitable distribution of income (everybody is given his/her rights and there is equal opportunity in income earning), 14) there is no unemployment, 15) there is no racial, ethnic and regional discrimination, 16) government is legitimate, 17) democracy is the only way of electing governors, and finally 18) governors are supervised democratically.

In the present study, in order to provide an empirical confirmation for social health concept, 6 indica-

tors were chosen from above 18 indicators. There were three criteria to choose these indicators; inclusion of first category traits, availability and accessibility of required and reliable data in the country (for all provinces), and convertibility to quantitative data. From this, in our study a healthy society is a society in which; 1) nobody is under poverty line, 2) there is no violence, 3) population growth is under control, 4) education is free and compulsory until secondary school, and is free thereafter, 5) there is universal insurance coverage, and finally 6) there is no unemployment.

In this study, required data for population growth was extracted from 2006 national census and also 2007 population estimates. Literacy, unemployment and insurance coverage data were derived from 2007 statistical year book. Violence data (willful murder, assault & battery) was drawn from Iranian police force statistics. Data for poverty (proportion of food expenditure to non-food expenditure) was taken from a national study on household budget in 2006, published by Iranian central bank.

To better expression, more elaboration on the concept and definition of each indicator is provided. 1) Poverty; economists make distinction between absolute and relative poverty. Absolute poverty means not having access to standards of life i.e. adequate food, house and clothing. Relative poverty means that a person is not able to reach a particular level of living standards which is being known as necessary and desired in the society. In the present study, proportion of food expenditure to non-food expenditure was used as a measure of poverty where the higher the share of food expenditure to non-food expenditure, the higher the degree of poverty (13).

2) Violence; although it seems easy to define violence but like other social issues there is no any consensus on it. As corporal punishment is the simplest type of violence, early definitions were on corporal punishment; violence is the expression of physical or verbal force against self or others, forceful action against one's will bearing hurt (14). WHO has defined it as the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community which either leads to injury or has a

high likelihood of injury, death, psychological harm, maldevelopment, or deprivation (15). In the present study, by violence we mean willful murder, assault and battery which is defined as;

Willful murder; killing by will and authority so that a person deliberately, consciously and premeditatedly takes the lives of others whether the deed is typically deadly or not (16). Assault & Battery; causing maim and mayhem whether it is intentional or unintentional. Any trauma in a limb combined with bleeding and tissue hurt is called battery. If trauma does not result in bleeding even with inner fracture it would be assault (16).

3) Population growth; Population means a group of individuals who dwell in a specified area (village, city, county, province or a country) continually and normally in households which share a unique political stand and national and ethnic features (17). Natural Growth Rate (NGR) demonstrates increase or decrease in population number, exclusive of immigration, which can be computed only by raw mortality and morbidity rates (formula 1) and represents that how many people will be added to population annually per 1000 person.

Formula

$$NGR = \frac{\text{mortality} - \text{birth}}{\text{mean population}} \times 1000 \quad [1]$$

4) Literacy: a literate person is somebody who can read and write a simple text in Persian or in other languages, whether he/she has an official credential or not. In this study, literacy rate has been used to measure literacy status in provinces (formula 2).

Formula [2]:

$$\text{Literacy Rate} = \frac{\text{Number of literate persons}}{\text{Number of 6 and over six years old persons}} \times 1000 \quad 5)$$

Insurance coverage: In the present study insurance coverage is the number of people who were under the coverage of social security organization (including public, private, arbitrary, occupational drivers and special insurance) at the end of 2006.

6) Unemployment: in our study an unemployed is somebody who does not have any paid job or salaried job and is not self-employed, is ready to work and is a job seeker (has tried to find a paid job or salaried job or put up a self-employed job). Unem-

ployment rate is the proportion of the unemployed population to the active population (18).

This should be noted that due to some reasons we could not include Gini index and assault & battery rates in our study. Assault & battery rate for the reason that there was a reverse relationship between it and willful murder unexpectedly ( $r = -0.248$ ,  $p = 0.09$ ). This is maybe because reports of assault & battery cases were not precise in some provinces. Consequently, it seemed that murder rate was a better indicator of violence. The reason for exclusion of Gini index was that again contrary to expectations this index had no correlation with other indices (for example with poverty;  $r = 0.007$ ,  $p = 0.48$  and with unemployment  $r = 0.005$  and  $p = 0.48$ ). Range restriction was our interpretation of this issue i.e. whenever a variable has a narrow variance this variable has to be called a constant rather a variable.

In order to prove the construct validity and obtain a social health index, an exploratory factor analysis was conducted on six indicators of population growth, willful murder, poverty, unemployment, insurance coverage and literacy. Factor analysis investigates that whether a number of observed correlated variables are related to a smaller number of unobserved variables called factors. Factors are latent constructs that influence observed variables and factor analysis discovers the nature of these constructs. Each factor explains a certain amount of variance in data.

As indicators had different units of measurement and in order to equalize the units, Z scores was measured for each indicator:

$$\text{Formula [3]} \quad Z = \frac{x - \mu}{\sigma}$$

Where  $x$  is the mean of sample,  $\mu$  is the mean of population and  $\sigma$  is the standard deviation of population.

And finally, to calculate the value of social health index in each province the following formula was used;

$$\text{Formula [4]} \quad \text{ISHIe} = \text{ZLIT} + \text{ZINS.COVS} - (\text{ZNGR} + \text{ZPOVS} + \text{ZMURD} + \text{ZUNEMP})$$

Where SHIe stands for Empirical Iranian Social Health Index and Z, LIT, INS.COVS, NGR, POVS, MURD and UNEMP denote the standardized rate,

literacy, insurance coverage, natural growth rate, poverty and unemployment respectively.

In our study, all of analyses were done in SPSS software (version 17).

## Results

As Table 1 shows Tehran had the best status in the index of proportion of food expenditure to

non-food expenditure (poverty). It indicates that 80 percent of Tehran's households income is spent on non-food expenditure and they already crossed basic needs level. Also, as it was expected Sistan& Baluchistan had the highest rates of violence and poverty and lowest rates of literacy and insurance coverage. Plus, Hormozgan had the lowest rate of population natural growth.

**Table 1:** Mean and standard deviation of social health indicators

		Insured per 1000	Number of literate $\geq 6$ years Old per 1000	Unemployment rate	Assault & battery per 1000	Murder per 1000	Natural growth rate	Prop. Of food expenditure to non-food
Mean		111	829	10.9	12.94	0.26	12.754	0.347
Standard Deviation		45.5	42.6	2.6	15	0.12	3.6	0.06
Lower bound	Province	Sistan	Sistan	Azerbaijan	Kermanshah	Khorasan (south)	Hormozgan	Tehran
	Value	47	680	7.1	0.19	0.03	5.1	0.20
Upper bound	Province	Boushehr	Tehran	Kohkiluyeh	Qom	Ilam	Sistan	Ilam & Sistan
	Value	258	912	17.6	62.8	0.52	25.9	.045

Iran's provinces are ranked based on their social health index value in Table 2. As this table illustrates, Tehran, Semnan, Esfahan, Boushehr and Mazandaran had the highest social health index values whereas Sistan& Baluchistan, Lorestan, Ilam, Kohkiluyeh and Kermanshah had the lowest social health index values.

Table 3 shows some Information on capability of variables (indicators) in construction of factors. Kaiser- Meyer- Olkin (KMO) measure of sampling adequacy tests the amount of variance in data which can be explained by factors. It should be higher than 0.5 for a satisfactory factor analysis.

Bartlett's test of sphericity is used to test the hypothesis that the variables (indicators) in correlation matrix are correlated. In this test a P-value lower than 0.05 indicates that there are significant relationships between variables and it is possible to find out latent structures in data. Considering values of KMO (0.66) and Bartlett's test (p-value<0.0001) in Table (4), our data had this capability to make up factors and reveal a latent construct that we call it "social health".

Following the factor analysis, factors were extracted.



**Table 2:** value and rank of provinces for social health index

Province	Value	Rank
Tehran	7.37	1
Semnan	6.42	2
Esfahan	5.1	3
Boushehr	4.55	4
Mazandaran	3.57	5
Qom	3.44	6
Yazd	3.37	7
Khorasan(razavi)	2.63	8
Hormozgan	2.52	9
Gillan	1.97	10
Markazi	1.92	11
Ghazvin	1.90	12
Eastern Azerbaijan	1.88	13
Zanjan	1.85	14
Southern Khorasan	0.9	15
Fars	-0.58	16
Golestan	-0.74	17
Khuzestan	-0.78	18
Hamadan	-1.22	19
Kurdistan	-1.47	20
Ardabil	-1.52	21
Western Azerbaijan	-2.33	22
Chaharmahal and Bakhtiari	-2.46	23
Northern Khorasan	-2.89	24
Kerman	-3.17	25
Kermanshah	-4.11	26
Kohkiluyeh and bouyerahmad	-4.42	27
Ilam	-4.96	28
Lorestan	-7.63	29
Sistan & Baluchistan	-10.98	30

**Table 3:** Kaiser-Meyer-Olkin (KMO) test and Bartlett's test

KMO measure of adequacy		0.66
	Approx.	Chi-square
Bartlett's Sphericity test	60.491	
	df	15
	Sig.	0.000

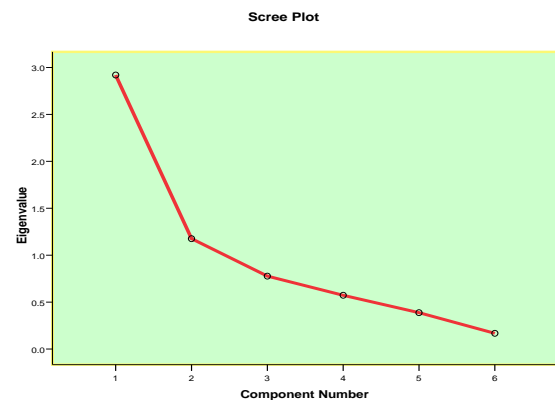
As Figure 1 illustrates, eigenvalue of two factors were more than 1, something which means that these two factors could explain the highest amount of variance in data. Table 4 shows the correlation matrix between variables and factors. In this table, variables can be categorized based on their highest factor loading. Factor loading is the

value of correlation between the observed variable and factor.

**Table 4:** Matrix of correlation between factors and social health indicators

Indicator	Factor 1 Diathesis	Factor 2 Problem
Natural growth rate	0.699	0.076
Food to non-food expenditure	0.640	0.369
Insurance coverage	-0.855	0.104
Literacy rate	-0.966	0.094
Murder rate	-0.104	0.893
Unemployment rate	0.104	0.708
Explained variance (%)	48.65	19.60

As it can be seen, variables of natural growth rate, proportion of food to non-food expenditure, insurance coverage and literacy rate were loaded on the first factor, and variables of willful murder and unemployment rate were loaded on second factor. Totally, these two factors explained 68.25 percent of social health variance (48.65 percent by the first factor and 19.60 percent by second one). The researchers named the first and second factors as "Diathesis" and "Problem" respectively.

**Fig. 1:** Scree plot of factors (components)

## Discussion

In the present study, we tried for the first time to investigate empirically the concept of social health in Iran. According to factor analysis in our study, an Iranian healthy society can be defined as a society that is stout with less deviance and problem, i.e. with

more and more literate and insured people, controlled growth rate and less and less willful murder, poverty and unemployment.

There are some differences and similarities between this concept and concepts of other studies. As it can be seen in following sentences, although the measures are somehow different but most of the indices of social health, used in other parts of the world, use indicators similar to our study:

Literacy and education: availability of learning opportunities (Ontario index) (9); high school drop-out (Fordham index) (8);

Insurance/ health: adequate access to health care (Ontario index) (9); prevention-focused and accessible health care (North Carolina index) (10); accessibility and appropriateness of health care/access to basic health care (Eastern Mediterranean index) (11); infant mortality rate and health care coverage in adults (Fordham index) (8).

Poverty: adequate access to food, water, shelter, income, security, job and recreation by public (Ontario index) (9); poverty in children and elderly (Fordham index) (8);

Murder: security (Ontario, North Carolina, Eastern Mediterranean) (9, 10, 11); violent crime (Fordham index) (8).

Unemployment: adequate access to job by public (Ontario index) (9); job for seekers (North Carolina) (10); adult unemployment (Fordham index) (8).

But what makes our concept local and special is its attention to population growth. This matter points to one of the Iranian society entanglements in recent years. Following substantial reduction in mortality rates in 1950s, Iran had experienced a booming population growth. The number of its population had tripled in 30 years and mounted to 50 million in 1980s. Now Iran has one of the youngest populations in the world and is experiencing a transient fertility phase (19). However, the importance of population growth in Iran's social health index can have some policy implications. Iran is one of the most successful countries in family planning (20). Its fertility rate fell from 7.0 births per woman in 1979 to 1.9 births per woman in 2006 (21). According to our index of social

health, Iran has to stick firmly with its current family planning programs to make a healthy society and any change in population policies should be made carefully.

Due to its young population, the employment has been one of the most challenging matters for Iran in recent years. As our study also shows, the unemployment is a matter of focus for health experts too. We have to give more weight to employment if we are to improve social health. As statistics says 12.3% of Iranian people are unemployed and this matter is worse in marginalized parts and groups of the country (22). Although the government has put its stamina on this matter, but the problem somehow remains. "Home business" and "easy start-up business" are initiatives that is hoped to work in some ways. However, there are more investments needed.

Poverty was another determinant of social health that needs a special attention. There is a strong relationship between poverty and sustainable development and social welfare in a country. There is no doubt that in a country with higher rates of poverty, it would be really hard to make improvements in other determinants of social health and consequently in social health. Unemployment, illiteracy, uncontrolled population growth and crime are the inevitable companions of poverty. Iran has had some plans to decrease its poverty rate and release more people off poverty trap. According to statistics, three percent of Iranian people live in absolute poverty (23). However, the just introduced "targeted subsidies plan" that is being performed in Iran is capable of making remarkable changes in peoples' lives and improve poverty rates in Iran.

According to a well-known model (ecologic model) of violence, biological, social, cultural, economic and political factors all have a significant role in violence (24). However, it is believed that social factors are the most important determinants of violence (25). As it was revealed in our study violence has a strong association with health in its various dimensions (physical, mental and social) (26). Due to some cultural issues, Iran lacks a reli-

able data on violence. However, as violence is one of the Iran's social health components, in the first place it might be better to devise some initiatives to get access to better violence data. Then, it would be much easier to make effective interventions.

There is no doubt that the more people of a country are literate, the better they are in obtaining and protecting health. Iran's "home schooling" program is referred as one of the effective ways to improve literacy worldwide. However, the literacy rate is still low in some regions and among some groups of Iranian people, especially women. It might be the reason why experts chose the literacy as a component of social health in Iran. According to data, 85% of Iranian people are literate (23). This can be improved in some ways. Enrichment of "home schooling" and "literacy movement" initiatives in marginalized parts of the country, like rural regions, are of ways that can improve literacy rate in Iran.

Insurance coverage is another determinant of social health in Iran. About 10 percent of people in Iran are under no insurance coverage (27). There have been some effective programs to tackle this matter. "National social safety nets" program ratified by government in 2005 is one of those strategies. "Family physician" program is another strategy. It has been performed in rural settings from 2004 and has some fruitful and promising achievements (28). It is now planned to extend to urban areas and cover all of Iranian population. It is hoped that this program could make a remarkable difference in this way. Improvement of social health can be one of its results.

From the above-stated matters, it can be drawn that social health concept is a dynamic and fluid concept. Hence, in different societies depending on their achievements and situations and in different times there would be different concepts of social health. So, it can be suggested that there should be a redefinition of concept every 5 or 10 years in every country. This can enormously help in policy making.

The most notable limitation of our study was the lack of data. Indeed, we intended to include more indicators of social health on which experts agreed in Rafiey and colleagues study. But lack of data about most of indicators failed our intention. It seems that by entering more indicators into factor analysis, stronger empirical evidence will be provided.

## Conclusion

Considering importance of poverty, violence, literacy, insurance coverage, population growth and unemployment in formation of a health society, these factors should be consistent parts of Iran's social health policy agenda. Above that, as most of these factors are beyond the health sector, a strong inter-sectoral collaboration is needed to achieve that healthy society.

## Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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