



Construction and Validation of Four-Dimensional General Health Questionnaire based on Health-Oriented Approaches

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Abstract

Background: Health assessment has evolved recently with the evolution of perspectives and is now focused on a four-dimensional model. This study aimed at the construction and validation of the four-dimensional general health questionnaire based on health-oriented approaches.

Methods: This research was conducted in two stages. In the first stage, to make a questionnaire, based on theoretical foundations, interviews with experts, and review of existing questionnaires, the initial form of the questionnaire was made with 106 items and in a sample of 160 people (80 men and 80 women) was conducted. The results were analyzed by principal component analysis with varimax rotation and confirmatory factor analysis and the final form of 60 questions was developed. In the second stage, this form was implemented in a sample of 1651 people (791 males and 860 females) and its validity was calculated by validity coefficients of the criterion (convergent and divergent validity). Through correlation with Ryff psychological well-being scale (RSPWB) and goldberg general health questionnaire (GHQ), respectively, its reliability was calculated by Cronbach's alpha internal consistency and split-half methods.

Results: The results led to the extraction of 4 factors which were named physical health, mental health, social health, and spiritual health, and confirmatory factor analysis also confirmed these factors. Also, the results showed the high validity and reliability of this questionnaire.

Conclusions: This questionnaire can be used to assess health in physical, psychological, social, and spiritual dimensions. It can also be a basis for further research in the direction of developing questionnaires based on health-oriented approaches.

Keywords: Four-dimensional general health questionnaire, Health-oriented approach, Validation.

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Introduction

Providing a comprehensive definition of health is a difficult and complex task. Psychiatry equates normal behavior with health and abnormal behavior with illness.¹ Acceptance of this definition underestimates human potential. Accordingly, the world health organization (WHO) does not consider health as the absence of disease and distances itself from being a single factor, and in its last definition, health is considered as having

proper functioning in four areas of mental, physical, social, and spiritual. In fact, from the organization's point of view, health is based on three foundations: maintaining and providing mental health, eradicating pathogens and preventing mental illnesses, and creating a conducive ground for the growth and flourishing of personality and talents to the maximum capacity embedded in them.² Today, this world health organization's definition of health has become more acceptable. In this regard, psychological theories such as Maslow's self-actualization theory, Rodgers's full function, and Allport's perfect human being have accepted and used the assumptions based on the new look to health in shaping the concept of psychological health. In the continuation of this process, models such as the Jahoda model, Diener mental well-being model, six-factor model of psychological well-being of Ryff, and Ryan and Deci autonomy model were developed that in define and explain health was focused on individual's abilities and resources instead of disease, weakness and human stress. To the extent that many positive psychologists today used the term "well-being" instead of the concept of "health". Because they believed that this concept brings to mind most of the positive aspects of health.³

In the mental health dimension, great psychologists such as James, Rogers, Maslow, Froome, Frankel, and Jung have developed positive perceptions of healthy human and positive action and emphasizes beyond normalcy and the power to put all human talents into action, living in the present, novelty, self-acceptance with all its strengths and weaknesses, and responsibility for behavior and destiny.⁴ Other positivist theorists such as Ryff and Keyes (1995) and Diener (1994), respectively, presented the concepts of psychological well-being and mental well-being. Psychological well-being is a multi-component concept that includes six dimensions of self-acceptance, positive relationships with others, autonomy, mastery of the environment, purposeful living, and personal growth. Mental well-being is used by individuals to evaluate their lives. These assessments include emotional reactions to events, their mood, and life satisfaction. Life satisfaction is a mental and unique concept for every human being, which together with positive and negative emotions are the three basic components of mental well-being.⁵ Wright and Walton (2013) state that people with high levels of mental health are more insistent on solving life problems and are more resilient to the adverse feedback they receive from their environment. As a

result, they show higher levels of flexibility. On the other hand, flexibility as a positive trait will enable individuals to cultivate it to be safe from stress and other negative aspects that endanger their mental health and well-being.⁶

In the social health dimension, the world health organization has identified social well-being as one of the key components of health. However, due to the lack of valid tools, this concept is still the subject of political and social debates and different definitions and interpretations are proposed. Keyes (2003) believes that social well-being, along with mental and psychological well-being, is an important element of health and represents a more general experience that focuses on social tasks. According to him, social well-being is the evaluation and knowledge of an individual about how he functions in society, the quality of his relationships with other people and social groups; And shows whether the person has a proper function in his social world and to what extent this function.⁷ Also, Keyes discusses the operational dimensions of social well-being in terms of the health model and teachings of the positivist psychology movement, which include social integration, social acceptance, social contribution, social actualization, and social coherence.⁸ Ryan and Deci (2000) consider the need for belonging as one of the basic needs of humans in the field of social health.⁹ In this regard, research has found people who have more social contacts and group connections, will be a long life and it will affect a person's health, creating positive emotions and life satisfaction.^{10,11} In fact, individuals who can choose several close friends and freely share their feelings and intimate relationships with them, are healthier and happier.¹²

In the physical health dimension, according to the diagnostic and statistical manual of mental disorder (DSM), the physical symptoms due to psychological status that are involved in a person's general health include sleep disorders (insomnia or hypersomnia), stimulation or slowness of motion (mental feelings of restlessness or walking), fatigue or loss of power, irritability, types of physical pain, significant weight loss without abstinence or diet or weight gain, decreased or increased appetite, fatigue or lack of energy almost every day, having physical complaints and dissatisfaction with body health, heart palpitations and shortness of breath, disturbance of body temperature balance and stomach upset (feeling of butterfly in the abdomen).¹³ However, due to the development of a health-oriented approach to human existence, in recent years the term 'primary prevention' has gained considerable popularity and includes all measures to promote health and care to maintain health and prevent disease, such as eating in moderation, not smoking or taking illicit drugs, avoiding obesity or weight control, exercising and being physically active, getting enough sleep and healthy recreation, increasing endurance and endurance physical and disease resistance.¹² Of course, physical health does not depend only on these preventive measures; in addition to physical care, how you perceive physical symptoms is also important. Perception of symptoms that are related to the experience of stress, and the lower the perception of these symptoms in people, the better the physical health of people.¹⁴ Waterman (1993) also found that sometimes people are objectively not in good physical health, but have a high sense of well-being, and conversely, some people who are low in well-being but have no symptoms of the disease. Therefore, the interpretation of health status by the individual himself plays an important role in feeling

healthy. In general, physical health means that all parts of the body function properly and the person feels healthy.¹⁵

In the spiritual health dimension, what is presented in the scientific literature as spiritual health today is more indicative of the effect of spiritual beliefs on the health of individuals and the process of healing their diseases in a medical context. While in this research, the meaning of spiritual health includes a more comprehensive concept that requires the existence of some characteristics related to spirituality to prove the complete health of a person and is considered as a pillar of health. The dimension of health that researchers have concluded that without it other dimensions of health cannot have the desired maximum function and it is not possible to achieve a high level of quality of life.¹⁶ Spiritual health is having a life full of certainty about God, which includes a religious, social, and psychological combination of beliefs about oneself, others, the world around us, and ultimately God. Ellison (1983) also points out that spiritual health includes a psychosocial element and a religious element. The psychosocial dimension expresses one's feelings about who is it? What does it do and why? And where does it belong? The religious dimension expresses the connection with a higher power, namely God. Both dimensions involve excellence and moving beyond yourself. Findings indicate that spiritual health determines the integrity and integrity of the individual, and creates a sense of meaning and purpose or a sense of cohesion in human life, which is the most important predictor of health status.^{17,18} According to Park and Folkman (1997), this semantics is in fact the search for enduring beliefs, valuable goals, and the notion of order and coherence. Therefore, having faith in God and meaning and purpose in life, moral adherence, and paying more attention to the spiritual issues of life reduces anxiety and mental instability and its consequences, and thus increases health.¹⁹

Due to the change in the view to health from the medical, pathological, and one-dimensional aspects to the multidimensional, health-oriented, and positive aspects, the way of measuring this concept has also undergone a change. For example, in the past, tools were used such as the Goldberg's general health questionnaire (1972), in Forms 12, 20, 28, 30, and the Derogatis, Rickels, and Rock Symptoms Checklist (1976), that were based on the pathologist's perspective and the medical model to measure the absence or presence of mental illness.^{20,21} But over time, tools were used that are between the two perspectives of pathological and health-oriented, including the Ware mental and physical health questionnaire (short form 36 questions version 2),²² and then tools were developed based on the health-oriented approach that including the Hagiwara's physical symptoms questionnaire (1992), which has 31 items and measures four subscale of muscle responses, general symptoms, cardiovascular response and immune response,²³ the five- item satisfaction with life questionnaire by Dinner, Emmons, Larson, and Griffin (1985),²⁴ Ryff psychological well-being questionnaire (1989),²⁵ warwick-edinburgh mental well-being scale (2007),²⁶ Molavi, Turkan, Soltani and Palahang mental well-being questionnaire (2010),²⁷ Keyes social well-being questionnaire (1998),²⁸ Ellison spiritual well-being scale (1983),¹⁸ Gomez and Fisher Spiritual well-being scale (2003)²⁹ and Keys Comprehensive well-being scale (2002)³⁰ include emotional well-being (One-item scale of overall life satisfaction and 6-item scale of

positive emotions), psychological well-being (short form of 18 items of Ryff psychological well-being scale) and social well-being (short form of 15 items of Keyes social well-being scale). All of these tools were developed and used to measure the capabilities and optimal performance of humans in the four dimensions of health.³¹

An overview of the items in the previous questionnaires shows that there is no difference between mental, social, and spiritual health and no explanation of the boundaries for these three dimensions of health. However, many studies indicate the relationship between the four dimensions of health together,^{32,33} but items of some questionnaires, despite the emphasis on measuring a particular dimension, show a great deal of content with other dimensions; for example, some items of the Palotzin and Ellison spiritual well-being scale (1982) include “-I'm not sure about my future and -I feel that life is full of conflict and sadness”. The above statements measure mental health rather than spiritual health. In the Riff, psychological well-being questionnaire, items related to the subscale of positive relationships with others, mostly to measure social health, and items related to a purposefulness in life (having a purpose and meaning in life and believing in beliefs that guide life) focuses more on spiritual health, while it is used to assess mental health. Also, in the Keyes social well-being scale, the comprehension of society (social coherence) that includes understanding the events surrounding and the desire to understand the meaning of life beyond these events, measures spiritual health instead of social health.³⁴ As can be seen, some of the questions in the previous questionnaires, instead of measuring a particular dimension of health that was intended, measure another dimension of health and have made a mistake in measuring the concept that intends to examine.

In general, it can be said that according to the new definition of the world health organization of health, the emphasis on optimal performance and health promotion of humans, research that emphasizes the multi-component nature of health, the existence of a vacuum in the field of measuring the four dimensions of health, and the inevitable relationship between health dimensions and cultural contexts, social structure and contextual values of the society under study, which is Iranian culture, the importance of building a new, multidimensional and indigenous tool in our country seemed necessary. In this regard, the main purpose of this study was to build a four-dimensional general health questionnaire based on health-oriented approaches and to examine its psychometric properties.

Materials and Methods

The statistical population was 20 to 60 years old living in more than 30 cities and regions of Kerman province. The total sample size of the study was 1811 people (871 men and 940 women) who participated in this study voluntarily and available. Necessary conditions for participating in the research

were the satisfaction of the candidate to participate in the research, having at least a cycle degree, and no psychiatric or medical illness requiring the use of medication at the time of research. The present study was conducted in two stages. In this stage, a representative sample of about 160 people based on gender and age in Sirjan was selected through available sampling. First, individuals were classified into male and female groups, and then within each gender category, individuals were divided into eight age groups. In each of these groups, according to the proportion of individuals, the subjects were selected by convenience sampling and a preliminary form of a four-dimensional general health questionnaire was administered to them. In the second stage (assessing reliability and validity), to examine the psychometric indices of the questionnaire at the level of a larger sample, based on the variables of geographical dispersion (north, south, east, west, and center), gender, and age, approximately 1700 people were selected. To select 5 cities from more than 30 cities and regions of the province was used from the method of contingent and purposeful sampling, and to select individuals of different ages, sex, local geography, etc. in each of the 5 cities was used from available and stratified random sampling method. After collecting the questionnaires, 49 subjects were excluded from statistical analysis due to incomplete answers to the questionnaires. Thus, the final sample was reduced to 1651 people (791 men and 860 women) who were examined for statistical analysis (Table 1). To assess divergent and convergent validity, for the general health questionnaire (GHQ), 433 people (233 men and 200 women) and for the Riff psychological well-being questionnaire, 386 people from the previous sample (179 males and 207 females) were selected using an available sampling method.

The four-dimensional general health questionnaire was developed to assess the four physical, mental, social, and spiritual dimensions of general health. The main source of this questionnaire in the present study was exploratory interviews with specialists (psychiatrist, Ph.D. in health psychology, Ph.D. in general psychology, etc.), library resources, scientific research journals, and valid and certified letters questionnaires. At this stage, the theoretical foundations of health (physical, mental, social, spiritual, and general) that were mentioned in the research background were studied. Then, to measure human health according to the four existential dimensions (physical, mental, social, and spiritual) that the world health organization defines for humans, the variables that were mentioned in most sources, were extracted in sentences. At this stage, the prepared form had 284 items. During several sessions of consultation with psychiatrists and psychologists, some sentences were removed and some sentences were changed. Finally, the initial form of the questionnaire with 106 items was prepared and compiled. Six-degree Likert was selected for the response pattern: strongly disagree = 1, disagree = 2, somewhat disagree = 3, somewhat agree = 4, agree = 5, and strongly agree = 6.

Table 1. Distribution of sample group by city, gender, and age

City	20-30		31-40		41-50		51-60	
	Male	Female	Male	Female	Male	Female	Male	Female
Kerman	41	51	38	60	35	58	31	53
Sirjan	53	48	48	45	48	40	42	34
Zarand	42	39	39	40	41	40	41	39
Jiroft	41	42	38	37	37	36	35	34
Shahrababak	39	48	36	41	35	38	32	36

Then this form was performed on a sample group of 160 people and after answering the participants, they were asked about the content of the question and the objectivity and comprehensibility of the questions, and whether they thought the sentences were capable. Based on the participants' opinions (content of the question and the degree of difficulty in understanding the question) and also by calculating the internal consistency coefficient (Cronbach's alpha), some items were removed and some sentences were changed and finally, the 60-item form with four subscales, each containing 15 items, was prepared as the original form. This form was approved by a group of psychiatrists and psychologists and was presented as the final form for standardization in Kerman province, entitled the multi-dimensional general health questionnaire. The minimum and maximum scores of the subject in each of these subscales are 15 and 90, respectively. In this questionnaire, in addition to the scores related to each of the four dimensions of health, a total score is calculated to measure general health with a minimum of 60 and a maximum of 240 for each subject.

The general health questionnaire (GHQ) was used to assess the divergent validity of the four-dimensional general health questionnaire. This questionnaire was developed by Goldberg (1972) and is one of the screening tools based on the self-assessment method that is most used to assess mental health status in community-based samples. GHQ provides a continuous measure of current mental health status or psychological distress, which can be used to calculate the likelihood of a current disorder. The 28-item form was developed by Goldberg and Hillier (1979) based on factor analysis on the original form (60 questions) and includes four 7-item scales of physical symptoms, anxiety, social dysfunction, and depression. Goldberg and Hillier (1979) stated that its validity was 0.89 and the correlation of the questionnaire with the revised 90-item list (SCL-25-R) was 0.78. Shirbim et al. (2008) obtained the total scale reliability coefficient using Cronbach's alpha and halving methods, 0.88 and 0.89, respectively.³⁵

The psychological well-being scale (RSPWB) was used to assess the convergent validity of the four-dimensional general health questionnaire. This scale was designed by Ryff in 1989. The main form had 120 questions, but in subsequent studies,

shorter forms of 84, 54, and 18 questions were also suggested. This scale has six subscales of self-acceptance, positive relationships with others, autonomy, purposefulness in life, personal growth, and mastery of the environment. The reliability coefficient of this tool has been reported between 0.83 and 0.91.³⁶ Aghababaei and Farahani (2011) reported Cronbach's alpha of 0.82 for the whole scale and from 0.70 to 0.78 for its subscales and also confirmed its convergent validity by obtaining a positive and significant correlation of this questionnaire with life satisfaction scale, happiness questionnaire Oxford, and the Rosenberg scale of self-esteem.³⁷

All data were analyzed after collection and the results of which are given in the findings section.

Results

In order to analyze the data, SPSS software version 24 was used. In the first stage, in order to evaluate the construct validity of the initial form of the four-dimensional general health questionnaire with 106 items was used the exploratory factor analysis method was with varimax rotation. The sampling adequacy test showed that the sample is suitable for factor analysis (KMO=0.88). Also, Bartlett's test of Sphericity with approximate chi-square was obtained ($\chi^2 = 6.633$, Pvalue<0.001). Therefore, factor analysis was performed and 13 factors with a special value higher than 1 were obtained. These 13 factors together explain about 70% of the variance in the scale. Consideration of special values showed that about 4 factors have special values higher than 2. In order to select the final factors, in addition to the special criterion, the sloping diagram test was also considered. Considering that the curve or differences of special values that define the turning point of a sloping curve or the same point where the shape of the curve becomes horizontal (Hooman, 2001), looking at this curve, show that the turning point of the chart can be determined from the fourth factor onwards, which together explain about 50% of the variance. Therefore, according to the theoretical context of the questionnaire, based on which it has 4 theoretical components, it was decided that the next analysis will be based on 4 factors. In figure 1, the sloping line shows the special value of each factor.

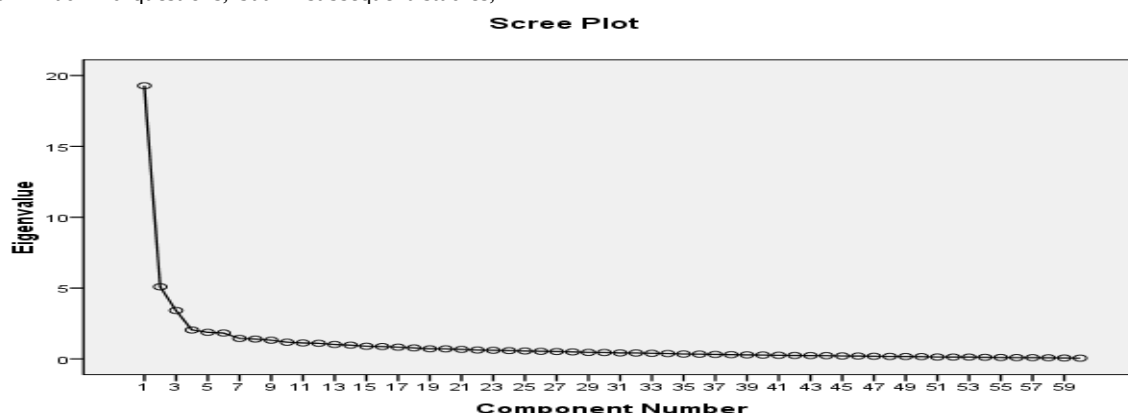


Figure 1. Sloping curve based on special value and number of components

In table 2, the results of factor analysis with the main components method are presented. As table 2 shows, among the factors, the first factor with a special value of 19.28 has the highest percentage of variance explained (32.13). This factor consists of 20 items with a factor load range between 0.42 and 0.83. Due to the nature of the questions that make up the first factor, this factor can be called the 'spiritual dimension'. The second factor consists of 18 items with a factor load range between 0.30 and 0.77. According to the relevant questions, the second factor can be named as 'physical dimension'. The third factor consisted of 17 items with a factor load range between 0.36 and 0.66. According to the relevant questions, the third factor can be named as 'psychological dimension'. The fourth factor consisted of 17 items with a factor load range between 0.31 and 0.73. According to the relevant questions, the fourth factor can be named as 'social dimension'. In total, the 4 existing factors explain 49.71% of the test variance, which is a relatively significant percentage.

Confirmatory factor analysis was performed using AMOS software to determine the factor validity of the obtained factors. In this method, if the chi-square statistic (χ^2) is low (Pvalue<0.05), the ratio of χ^2 to the degree of freedom (df) is less than 3, RMSEA is less than 0.1, and IFI and CFI are greater than 0.90, It can be concluded that the model consisting of the obtained factors has an acceptable fit. Looking at the results of table 3, it can be seen that the obtained model meets the mentioned conditions and is a suitable model.

In order to perform initial screening on the data, in addition to the exploratory factor analysis, Cronbach's alpha index was calculated for each item of the questionnaire. Items that showed higher significance and similarity with the whole test were selected as final items and included on a scale of 60 items (15 items for each of the four dimensions). The correlation coefficient of each question with the total score of the questionnaire was also calculated. The obtained correlations ranged from 0.40 to 0.72, which showed the optimal correlation coefficient of each questionnaire with the total score of the questionnaire. Table 4 shows factor loading, correlation coefficient, and Cronbach's alpha level of the items of each factor.

In the second stage, to evaluate the validity of the 60-item questionnaire, considering that the questionnaire is composed of 4 subscales, the correlation coefficients of the subscales with each other and with the total score of the questionnaire were obtained (Table 5). The results indicate that the correlation of the total score of the questionnaire with each of the 4 subscales is significant (Pvalue<0.01). The highest correlation between total score and 'psychological' subscales (r=0.83) and the lowest correlation between total score and 'physical' subscales (r=0.75). Among the correlations between the subscales, the 'spiritual and psychological dimensions show the highest correlation (r=0.65) and the two 'spiritual and physical' dimensions show the lowest correlation (r=0.42). All are significant (Pvalue<0.01). In general, all subscales show high correlation coefficients with the total score of the questionnaire. Also, the convergent and diagnostic (differential) validity of the four-dimensional general health questionnaire was calculated through the simultaneous implementation of the Riff psychological well-being scale and the general health questionnaire (GHQ) about the participants. The results showed that there is a significant positive relationship between the participants' scores in the four-dimensional general health questionnaire with the Riff psychological well-being scale (Pvalue<0.01) and a significant negative relationship with the general health questionnaire (Pvalue<0.01) (Table 6). These results confirm the convergent and diagnostic validity of the four-dimensional general health questionnaire.

The reliability of the questionnaire was calculated by two methods of internal consistency (Cronbach's alpha coefficient and split-half). Cronbach's alpha coefficients of items of the physical, mental, social, spiritual subscale, and general health scores for the sample of 1651 subjects were calculated at 0.84, 0.92, 0.86, 0.93, and 0.87, respectively. These coefficients indicated the internal consistency of the four-dimensional general health questionnaire. In the split-half method, by dividing the questionnaire questions into even and odd parts and using Spearman Brown and Guttman correlation coefficient index, the values of these coefficients are estimated at 0.95 and 0.95, respectively. These results also confirmed the satisfactory internal consistency of the four-dimensional general health questionnaire.

Table 2. Factor analysis of the four-dimensional general health questionnaire and its constituent factors

Factor	Special values	Total loads extracted		Total times in rotated mode		
1	19.28	32.13	32.13	9.43	15.72	15.72
2	5.09	8.48	40.61	7.99	13.32	29.04
3	3.41	5.69	46.31	7.71	12.85	41.89
4	2.04	3.40	49.71	4.69	7.82	49.71

Table 3. The results of the good fit indices of the obtained factors

Model fit indicators	χ^2 / df	IFI	CFI	RMSEA
	2.493	0.948	0.948	0.03

Table 4. Summary of factor analysis results and internal consistency indices of four-dimensional general health questionnaire items

Spiritual dimensional				Physical dimensional			
Item	Factor load	Corrected correlation of the total score -question	Cronbach's alpha if the question is omitted	Item	Factor load	Corrected correlation of the total score -question	Cronbach's alpha if the question is omitted
1	0.48	0.56	0.960	1	0.72	0.48	0.960
2	0.66	0.71	0.959	2	0.61	0.49	0.960
3	0.82	0.47	0.960	3	0.68	0.53	0.960
4	0.79	0.40	0.960	4	0.62	0.45	0.960
5	0.73	0.58	0.960	5	0.69	0.63	0.959
6	0.83	0.40	0.960	6	0.75	0.48	0.960
7	0.82	0.51	0.960	7	0.52	0.51	0.960
8	0.49	0.67	0.959	8	0.77	0.45	0.960
9	0.53	0.72	0.959	9	0.60	0.50	0.960
10	0.79	0.53	0.960	10	0.32	0.40	0.961
11	0.50	0.62	0.959	11	0.48	0.41	0.960
12	0.51	0.54	0.960	12	0.45	0.46	0.960
13	0.47	0.57	0.960	13	0.66	0.50	0.960
14	0.83	0.53	0.960	14	0.74	0.56	0.960
15	0.68	0.54	0.960	15	0.45	0.40	0.961

Pvalue<0.01**

Continuation of Table 4. Summary of factor analysis results and internal consistency indices of four-dimensional general health questionnaire items

Psychological dimensional				Social dimensional			
Item	Factor load	Corrected correlation of the total score -question	Cronbach's alpha if the question is omitted	Item	Factor load	Corrected correlation of the total score -question	Cronbach's alpha if the question is omitted
1	0.38	0.60	0.960	1	0.39	0.58	0.960
2	0.59	0.62	0.959	2	0.52	0.62	0.960
3	0.53	0.61	0.960	3	0.52	0.52	0.960
4	0.45	0.67	0.959	4	0.54	0.40	0.960
5	0.49	0.59	0.960	5	0.52	0.40	0.960
6	0.59	0.62	0.960	6	0.39	0.49	0.960
7	0.58	0.52	0.960	7	0.32	0.40	0.961
8	0.48	0.63	0.959	8	0.69	0.47	0.960
9	0.63	0.59	0.960	9	0.73	0.50	0.960
10	0.56	0.65	0.959	10	0.58	0.63	0.960
11	0.63	0.53	0.960	11	0.62	0.50	0.960
12	0.66	0.55	0.960	12	0.49	0.41	0.960
13	0.64	0.70	0.959	13	0.50	0.48	0.960
14	0.59	0.69	0.959	14	0.53	0.64	0.960
15	0.63	0.70	0.959	15	0.40	0.46	0.960

Pvalue<0.01**

Table 5. Correlation matrix of 4 subscales and total score of the four-dimensional general health questionnaire

Variables	1	2	3	4	5
1. Spiritual	-				
2. Physical	0.42**	-			
3. Psychological	0.65**	0.47**	-		
4. Social	0.64**	0.47**	0.58**	-	
5. Total score	0.82**	0.75**	0.83**	.82**	-

Pvalue<0.01**

Table 6. Correlation coefficients of four-dimensional general health questionnaire, GHQ and RSPWB

Variables	1	2	3
1. Four-dimensional general health	-		
2. General health (GHQ)	- 0.55**	-	
3. Riff psychological well-being (RSPWB)	0.57**	- 0.51**	-

Pvalue<0.01**

Discussion

Given the importance of measuring the four dimensions of health and the lack of a comprehensive questionnaire in this area, the first goal of the present study was to construct a four-dimensional general health questionnaire based on health-oriented approaches. To estimate the construct validity of the initial form of the questionnaire, the results of exploratory factor analysis showed that the questionnaire consisted of 13 factors, but by considering the sloping line curve and special values above 2, 4 factors were highlighted based on the content of the items of each factor, were respectively registered 'spiritual dimension', 'physical dimension', 'psychological dimension' and 'social dimension'. These factors accounted for about 49.71% of the total variance of the test and confirmatory factor analysis also confirmed the construct validity of this questionnaire. As can be seen, the spiritual dimension was identified as the first factor and had the highest variance. Because spiritual health, on the one hand, provides a harmonious and integrated connection between the inner forces of human existence, and on the other hand, with the characteristics of stability in the moral values of life, peace, fit, and harmony, feeling a close relationship with oneself, God, and the entire creative world is evident, can determine the totality and integrity of the individual. We can also refer to the special spiritual, inclusive and tangible culture in our country, which means human values, behaviors, and experiences of individuals.³⁸

In order to compile a shorter form, Cronbach's alpha index was calculated for each of the questionnaire questions and, the items that showed higher significance and similarity with the whole test were selected as the final items and were included in the 60 item scale (15 items for each of the four dimensions). As the findings in table 4 showed, the first factor was the 'spiritual dimension' that consists of 15 questions with the factor load which varies from 0.48 to 0.83. This factor includes awareness of who and what we are, the existence of meaningful values in life, coping with problems based on spiritual beliefs, purposefulness in all aspects of life, relaxation through prayer, feeling the constant presence of God and inclination to God, acceptance of events based on divine destinies, not being confused in distinguishing between good and evil and having a clear criterion in distinguishing. Although the present scale differs from the scales developed by other researchers related to this dimension of health in terms of a number of items and content, there are similarities between them. For example, the items of awareness of who and what we are, the existence of meaningful and purposeful values in life, and the sense of God's presence and inclination towards him were congruent with the religious well-being subscale measures the degree of satisfactory relationship between one and God as a transcendent power and ultimate reality, and the existential well-being subscale measures feeling of life satisfaction and having spirituality and purpose in life and is a sign of a person's feelings about who he is, what and why he does and where he belongs in the Palutzin and Ellison Spiritual well-being questionnaire (1982).¹⁶ In the spiritual well-being questionnaire of Park (2014), items related to two subscales of relationship with God (including worshipping God caused I am relieved, I seek refuge in God when I have a problem) and communication

with myself (I have clear and important goals in my life) are similar to the items of accepting life events based on divine destiny, coping with problems based to spiritual beliefs, relaxation through prayer, and feeling value and meaning and purpose in life.¹⁹ Also, some of these items have close meaning to the theories of virtuous well-being, which rely more than anything on the existence of meaning and purpose in one's life and the feeling of continuous personal change on.¹⁶⁻¹⁹ Dimatheo (2020) considers believing in God and relying on him in hardships as important factors in promoting health, this concept was also included in the items of the questionnaire and was approved.¹²

The second factor is the 'physical dimension' which consists of 15 questions with the factor load which varies from 0.32 to 0.77. These factors included having acceptable physical strength, lack of tension in the muscles of the body, regular heartbeat, having a restful and comfortable sleep and adequate rest, not having unreasonable anxiety, feeling refreshed after sleep, calm and regular breathing, being normal defecation, the avoidance of illicit drugs, the physical strength needed to fight disease, the necessary physical activity, the satisfaction of one's physical health, and the normal appetite. Some of the items in this dimension were congruent with the general health questionnaire (GHQ) questions that measure the subscale of physical symptoms, and the symptoms of anxiety and sleep disorders and include feeling well and being healthy, feeling weak and lethargic, need for medication, insomnia, nervousness and anxiety and inability to perform daily tasks.²⁰ Also, some items of the questionnaire were congruent with the questions related to the two subscales of general symptoms and the cardiovascular response of the Hagiwara physical symptoms scale (2002). The two items of having acceptable physical strength and satisfaction of one's physical health are similar to some items of ware mental and physical health questionnaire (short form of 36 questions).¹⁴ Studies have also shown that regular exercise and physical activity, having a healthy diet and normal bowel movements, getting enough sleep and feeling energized and refreshed after sleep, having healthy recreation, and avoiding drugs and illicit substances affects physical health and the ability to control stress and help with physical and mental health.¹²⁻¹⁵

The third factor, 'psychological dimension' consists of 15 questions, the factor load of the questions is from 0.38 to 0.66. The questions of this dimension included the right decision for the situation, having the necessary will to succeed, making good use of time towards goals, being satisfied with what you have to live happily, being flexible and adapting to life changes, and growing personality, inner satisfaction with behavior, enjoying work as a result, doing things with interest and satisfaction, succeeding in facing problems, enjoying new life experiences, having a motivating and forward-looking plan, be realistic about situations, easy expression of their desires. Some of these items were congruent with the subscales of the Ryff and Keyes psychological well-being questionnaire (1995), such as self-acceptance, autonomy, mastery of the personal development environment, and some items of the Diner life satisfaction questionnaire (1994).²⁵ Also, some items were congruent with two aspects of hedonism including positive emotion (such as optimism) and virtuousness including positive

action (such as being energetic, clear thinking, self-acceptance, personal growth, competence, and independence) of Warwick Edinburgh mental well-being questionnaire (2007).²⁶ Previous research has also emphasized the important role of problem-solving, having flexibility and fluidity, self-efficacy and self-perception, self-control, and self-acceptance as important components of mental health.^{3,5-9,11-12,23-37}

The fourth factor, 'social dimension' consists of 15 questions with a factor load of 0.32 to 0.73. The questions of this factor show satisfaction with their relationships with others, expressing intimacy to others, respect for the rights of others, patience in the face of the faults and shortcomings of others, a sense of belonging to society, and the need for collective life, importance to the comfort of others, readiness to learn on the others, having the ability to tolerate others, paying attention to the good qualities of people, helping people in need, giving importance to the growth of others, having the support of others and getting help from them in the face of problems. Some of these items were congruent with the items in the keys social well-being questionnaire, which includes the dimensions of social participation, social prosperity, social coherence, and social acceptance. Also, the results obtained from this study to confirm the effective role of social interactions, social support, sincere relationships with others, and a sense of belonging to the group and society in social health were congruent with research findings including the effective role of enjoying desirable social support on health, social harmony and altruism, interpersonal communication and interactions, appreciation and gratitude from others, the feeling of belonging and good relationship with the community on health.^{3,4,8,11,12,30,31}

In order to evaluate the second purpose of the study to assess the validity of the final form of the four-dimensional general health questionnaire (60 questions), the results of the correlation matrix of 4 -factor with the total score of the questionnaire, and convergent and diagnostic validity with the general health questionnaire (GHQ) and Ryff psychological well-being scale showed that the four-dimensional general health questionnaire has good validity. To evaluate the reliability, two indices of Cronbach's alpha coefficient and split-half method were calculated and confirmed. The results obtained from confirming the validity and reliability of the questionnaire were congruent with the results of studies of the factor structure of the comprehensive well-being scale,^{30,31} the psychometric properties of the 84-question psychological well-being test by Ryff et al.,^{27,30,36} the validity and reliability of the Persian version of the mental well-being scale in cancer patients,³⁴ psychometric properties of the short version of the Keyes social well-being questionnaire⁸ and the construction and validation of the spiritual well-being questionnaire among students,¹⁶ which all of these questionnaires contain components close to the questionnaire under construction.

Since the validity and reliability coefficients of this questionnaire were calculated relatively high, it can be said that the 'four-dimensional general health' questionnaire is a valid questionnaire to measure four dimensions of general health based on health-oriented approaches in Iran. This questionnaire can also be a basis for further research on the evolution of questionnaires based on health approaches.

It should be noted that the participants in this study were selected only from Kerman province, so caution should be exercised in generalizing the findings to the entire Iranian society. In addition, in this study, the reliability of the questionnaire was evaluated only using internal consistency methods (Cronbach's alpha coefficient and split-half method) and not enough information is available about the time stability of the findings. Therefore, it is suggested that the factor analysis of this questionnaire be performed on different populations by age and in different parts of the country, by health experts. Also, the psychometric indices of the scale should be checked to confirm the obtained coefficients and consider the reliability calculation by the retest method.

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Conflict of Interest

The authors declare that they have no conflict of interest.

References

- Vailant GE. Mental health. The American Journal of Psychiatry 2003;160:1373-84. doi:10.1176/appi.ajp.160.8.1373
- World Health Organisation. Mental health: concepts, emerging evidence, practice. Geneva: University of Melbourne; 2021.
- DiClemente RJ, Crosby RA, Kegler MC. Emerging theories in health promotion practice and research: Strategies for improving public health. San Francisco: JOSSEY-BASS; 2020.
- Schultz D. Growth psychology: models of the healthy personality. Tehran: Peikan Publish; 2021. [Persian].
- Ruggeri k, Garcia-Garzon E, Maguire A, Matz S, Huppert FA. Well-being is more than happiness and life satisfaction: a multidimensional analysis of 21 countries. Health and Quality of Life Outcomes 2020;18:176-92. doi:10.1186/s12955-020-01423-y
- Wright TA. Putting your best face forward: The role of emotion-based well-being in organizational research. Journal of Organizational Behavior 2014;35:1153-68. doi:10.1002/job.1967
- Keyes CLM. Promoting and protecting mental health as flourishing. American Psychological 2007;62:95-108. doi:10.1037/0003-066X.62.2.95
- Farokhnezhad Afshar P, Pirooz F, Ajri-Khamesiou M. Explaining social well-being in the perspective of retired men of the armed forces: A qualitative content analysis. Annals of Medical & Health Sciences Research 2018;8:209-14. [Persian].
- Peters D, Calvo RA, Ryan RM. Designing for motivation, engagement and well-being in digital experience. Frontiers in Psychology 2018;9:797. doi:10.3389/fpsyg.2018.00797
- Holt-Lunstad J. The major health implications of social connection. Association for Psychological Science 2021;30:251-59. doi:10.1177/0963721421999630
- Asadi M, Ghasemzadeh N, Nazarifar M, Niroumand Sarvandani M. The effectiveness of emotional-focused couple therapy on marital satisfaction and positive feelings towards the spouse. International Journal of Health Studies 2020;6:36-40. [Persian].
- Dimatteo MR. The psychology of health. Tehran: Samt; 2020. [Persian].
- Sadock BJ, Sadock VA, Ruiz P. Synopsis of psychiatry: Behavioral sciences/clinical psychiatry. Tehran: Arjmand; 2021. [Persian].
- Hagiwara AF. Identifying and comparing daily stress experience, physical and psychological health and coping strategies among Asian and American graduate students. PhD thesis, Physical Activities and Educational Services. United States: Ohio State University; 2002.

15. Kube T, Rozenkerantz L, Rief W, Barsky A. Understanding persistent physical symptoms: Conceptual integration of psychological expectation models and predictive processing accounts. *Clinical Psychology Review* 2020;76:101829. doi:10.1016/j.cpr.2020.101829
16. Hoseini A, Razaghi N, KhosroPanah AH. Aconcept analysis of spiritual health. *Journal of Religion and Health* 2019;58:1025-46. [Persian].
17. Bufford RK, Paloutzian RF, Ellison CW. The spiritual well-being scale 2012;19:56-70. doi:10.1177/009164719101900106
18. Ellison C. Spiritual well-being conceptualization and measurement. *Journal of Psychology and Theology* 1983;11:330-40. doi:10.1177/009164718301100406
19. Park CL. Meaning, spirituality, and health: Abrief introduction. *Revista Pistis & Praxis: Teologia e Pastoral* 2014;6:17-31. doi:10.7213/revistapistispraxis.06.001.DS01
20. Goldberg DP, Hillier VF. A scale version of general health questionnaire. *Psychological Medicine* 1979;9:131-45. doi:10.1017/S0033291700021644
21. Sereda Y, Dembitskyi S. Validity assessment of the symptom checklist SCL-90-R and shortened versions for the general population in Ukraine. *BMC Psychiatry* 2016;16:300. doi:10.1186/s12888-016-1014-3
22. Ware J. SF-36 health survey update. *Spine* 2000;25:3130-39. doi:10.1097/00007632-200012150-00008
23. Hagiwara AF. Identifying and comparing daily stress experience, physical and psychological health and coping strategies among Asian and American graduate students. PhD thesis, Physical Activities and Educational Services. United States: Ohio State University; 1992.
24. Margolis S, Schwitzgebel E, Ozer DJ, Lyubomirsky S. A new measure of life satisfaction: The riverside life satisfaction scale. *Journal of Personality Assessment* 2019;101:323-30. doi:10.1080/00223891.2018.1464457
25. Ryff C, Keyes C. The structure of psychological well-being revisited. *Journal of Personality and Social Psychology* 1995;69:719-27. doi:10.1037/0022-3514.69.4.719
26. Tennant R, Hiller L, Fishwick R, Platt S, Joseph S, Weich S, Parkinson J, Secker J, Stewart-Brown S. The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): Development and UK validation. *Health and Quality of Life Outcomes* 2007;5. doi:10.1186/1477-7525-5-63
27. Molavi H, Torkan H, Soltani I, Palahang H. Normative evaluation and validity and reliability of the subjective well-being questionnaire. *Iranian Journal of Psychiatry and Clinical Psychology* 2010;16:231-38. [Persian].
28. Keyes C. Social well-being. *social psychology quarterly* 1998;61:121-40. doi:10.2307/2787065
29. Gomez R, Fisher JW. Domains of spiritual well-being and development and validation of the spiritual well-being questionnaire. *Personality and Individual Differences* 2003;35:1975-91. doi:10.1016/S0191-8869(03)00045-X
30. Zhou L, Parmanto B. Development and validation of a comprehensive well-being scale for people in the university environment (PITT Wellness Scale) using a Crowdsourcing approach: cross-sectional study. *Journal of Medical Internet Research* 2020;22:222-30. doi:10.2196/15075
31. Joshanloo M, Rostami R, Nosratabadi M. Examining the factor structure of the Keyes comprehensive scale of well-being. *Journal of Developmental Psychology: Iranian Psychologists* 2007;3:35-51. [Persian].
32. Leung CH, Pong HK. Cross-sectional study of the relationship between the spiritual wellbeing and psychological health among university students. *Plos ONE* 2021;16. doi:10.1371/journal.pone.0249702
33. Bozek A, Nowak PF, Blukacz M. The relationship between spirituality, health-related behavior, and psychological well-being. *Frontiers in Psychology* 2020;11:1997. doi:10.3389/fpsyg.2020.01997
34. VanderWeele TJ, Kubzansky LD. Current recommendations on the selection of measures for well-being. *Preventive Medicine* 2020;1:106004. doi:10.1016/j.ypmed.2020.106004
35. Nazifi M, Mokarami HR, Akbaritabar AK, Faraji Kujerdi M, Tabrizi R, Rahi A. Reliability, validity and factor structure of the Persian translation of general health questionnaire (GHQ-28) in hospitals of Kerman university of medical sciences. *Journal of Advanced Biomedical Sciences* 2018;3:336-42. [Persian].
36. Calderon R, Kim G, Ratsameemonthon Ch, Pupanead S. Assessing the adaptation of a Thai version of the Ryff scales of psychological well-being: A PLS-SEM approach. *Scientific Research An Academic Publisher* 2020;11. doi:10.4236/psych.2020.117068
37. Aghababaei N, Farahani H. The role of appreciation in predicting psychological and actual well-being. *Journal of Developmental Psychology: Iranian Psychologists* 2011;8:75-85. [Persian].
38. Ghanbari R, Mohammadimehr M. Identification of dimensions and indicators of spiritual health: A qualitative study. *Journal of Education and Health Promotion* 2020;9:352. [Persian].