



Development and Psychometric Properties of the Family Support Questionnaire for Adherence to Low Fat Diet in Patients with Cardiovascular Disease

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Abstract

Background and Objectives: Social support is considered as a key factor in adherence to a low fat diet among patients with cardiovascular disease. The main objective of this study is to develop and evaluate the psychometric properties of the family support questionnaire for adherence to low fat diet in patients with cardiovascular disease.

Methods: The participants were 212 patients with cardiovascular disease who were discharged from 2 medical centers (Khatam Al-Anbiya and Ali Ibn Abi Talib) in the city of Zahedan. They were enrolled by the convenience sampling method. Internal consistency and Cronbach's alpha were used to test the scale's reliability and following, the exploratory factor analysis method (principal components analysis by using Varimax rotation) was used for the investigation factor structure.

Results: The principal components analysis (PCA) provided support for two-factor structure (emotional and instrumental support) of the family support questionnaire for adherence to low fat diet in patients with cardiovascular disease. Two-factor structure explained 83.29% of the variance. In this analysis, the first factor (emotional support) and second factor (instrumental support), respectively, explained 63.03% and 20.25% of variance. The questionnaire had acceptable internal consistency. The Cronbach's alpha coefficient for the questionnaire was 0.89 and for both instrumental and emotional support was equal to 0.71 and 0.99, respectively.

Conclusions: The present questionnaire is a valid and reliable instrument to measure family support for adherence to low fat diet in patients with cardiovascular disease.

Keywords: Social Support, Low Fat Diet, Cardiovascular Disease

1. Background

Cardiovascular diseases are the main cause of death and mortality in the world (1). Lifestyle modification, especially reducing the measure of saturated fat intake, is an important secondary factor for preventing cardiovascular disease (2). Decreasing the measure of saturated fat intake significantly reduces the risk of cardiovascular disease (3). Social support is one of the most important factors for maintaining a low-fat diet (4). Social support is defined as practical content of relationships that have 4 dimensions: emotional Support, instrumental support, informational support, and appraisal support (5). Social support is an effective factor in taking a proper diet and changing nutrition related behavior (6, 7). Social support is important, particularly in managing chronic diseases, therefore nutritional behavior of patients are influenced by so-

cial support. Those patients who received an inappropriate diet due to less social support may be at risk of cardiovascular disease (8, 9). Social support also is one of the effective factors that increase self-regulation behaviors for buying and consuming healthy food (10). Strong social support is associated with higher self-efficacy, so patients who suffer from cardiovascular diseases have more confidence to overcome the barriers of lifestyle change (11). In addition, social support influences low-fat diet intention and behaviors (12). Lack of social support that should be provided by family influences healthy behavior and can be risky for the heart and arteries performance (13). In addition, after the occurrence of cardiac disease, social support is a predictor of healthy nutrition (14). The role of family support in healthy nutrition behaviors is more prominent than friends support (15), as during rehabilitation phases, spousal support can promote the rate of healthy behaviors

(16), increase self-care (17) and maintain long-term healthy behaviors (18). Previous studies have provided some tools for investigating social support of nutritional behaviors (19-21) but to the best of our knowledge, in chronic diseases such as cardiovascular, there is no reliable and validate tool, especially in the field of family support of low-fat diet intake. Therefore, the present study seeks to design a family support questionnaire for adherence to low fat diet in patients with cardiovascular disease. In addition, this survey investigated men and women differences from social support view.

2. Methods

In this cross-sectional study, the number of 212 patients with cardiovascular disease who were discharged from Khatam Al-Anbiya and Ali Ibn Abi Talib (2 medical centers) in the city of Zahedan were enrolled by the convenience sampling method. Those patients were allowed to participate in the study that were volunteers and living with their families, therefore, those who were not living with their families were excluded from the research. The Ethics Committee of the Zahedan University of Medical Sciences confirmed the study. All patients were asked to sign a consent form for their participations. Data collecting tool in this study was a researchers made scale that was prepared based on Sallis et al., study (19). The scale contains 15 questions and focuses on social support that is provided by the family in adherence to low fat diet among patients with cardiovascular disease. The 4-points Likert scale that started from 1 (strongly disagree) to 4 (strongly agree) are considered for answering to the questions. Participants were asked to specify the truth or falsity of statements about their family support in the adherence to low-fat diet from 3 months ago.

The number of 10 related experts proved the content validity index and content validity ratio of the scale. For measuring the face validity of the scale, the questionnaire was distributed between 10 patients with cardiovascular disease in order to evaluate its difficulty level. So necessary changes in the questionnaire were made based on their views. To assess the reliability of the scale, 30 participants completed the questionnaire and it was evaluated through internal consistency method and Cronbach's alpha.

To investigate the factor structure, exploratory factor analysis using principal component analysis with SPSS software version 22 was used. There are several methods for factor extraction such as principal components analysis, principal factors, maximum likelihood factoring, image factoring, alpha factoring, and unweighted and generalized least squares factoring that among them, principal components analysis is one of the most used methods

(22). In this study, the Kaiser-Meyer-Olkin (KMO) was used for determining sampling adequacy for factor analysis and Bartlett's Test of Sphericity was used to fit the data for factor analysis. In addition, the eigenvalue, scree plot, Horn's parallel analysis, and Monte Carlo statistical program were used for extraction of factors. The independent samples t-test was used to determine the significant differences between men and women from the general, instrumental, and emotional support perspective.

3. Results

The mean age of the participants was 54.5 years that range from 28-88 years. In the current study, 134 participants (63.2) were female and 78 (36.8) were male. The 15 questions of social support scale were analyzed through principal components analysis and varimax rotation method. The investigation of correlation matrix showed that coefficients were 0.3 and above. Kaiser-Meyer-olkin value (KMO = 0.960) showed that the sample size was sufficient and Bartlett's test of sphericity (105, $P < 0.001$) specified that the data were appropriate for principal components analysis.

In the initial analysis, 3 factors with eigenvalues equal to and greater than 1 were detected, therefore, these values respectively explained 59.31, 18.92, and 7.37% of the variance. Totally, three-factor solution explained 85/61% of the variance. In the scree plot, investigation one point direction change was found after the second factor and the results of parallel analysis were also confirmed, therefore, two-factor analysis explained 78.23% percent of the variance. In this analysis, first and second factors, respectively, explained 59.31% and 18.92% of the variance. One of the variables (questions) was not loaded on any of the 2 factors, therefore, this question was deleted from the analysis and again two-factor analysis was implemented with 14 questions that finally 83.29% of variance was explained. In this analysis, the first factor (emotional support) and second factor (instrumental support), respectively, explained 63.03% and 20.25% of the variance (Table 1).

The independent samples t-test showed that there is no significant difference between men and women from the total, instrumental, and emotional support views (Table 2).

4. Discussion

This study examined the psychometric properties of the family support questionnaire, for adherence to low fat diet in patients with cardiovascular disease.

The principal components analysis (PCA) was provided support for two-factor structure (emotional and instrumental support) of the family support questionnaire for

Table 1. The Result of Exploratory Factor Analysis of the Questionnaire Using Principal Component Analysis with Varimax Rotation

Item No.	Factor Loading	
	1, Emotional Support	2, Instrumental Support
Q11. In the past three months, my family was happy because I adhere to a low fat diet.	0.948	
Q7. In the past three months, my family reminded me to adhere to a low fat diet.	0.946	
Q8. In the past three months, my family discussed with me when I use High fat diet.	0.936	
Q10. In the past three months, my family reminded me about the risks of High fat diet.	0.933	
Q6. In the past three months, my family talked with me about adherence to a low fat diet.	0.927	
Q14. In the past three months, whenever I encouraged my family adherence to a low fat diet they got angry.	0.926	
Q12. In the past three months, adherence to a low fat diet by me was important for my family.	0.919	
Q13. In the past three months, my family realized that I need for adherence to a low fat diet.	0.903	
Q9. In the past three months, the foods that were introduced to me by the family had low fat.	0.896	
Q5. In the past three months, my family, such as me, obeyed low fat diet.		0.934
Q4. In the past three months, my family deprived themselves from eating high fat food front of me.		0.922
Q3. In the past three months, my family used low fat diet.		0.916
Q2. In the past three months, my family just prepared the low fat foods.		0.675
Q1. In the past three months, my family just bought the low fat foods.	0.615	
Eigenvalues	8.825	2.835
Variance, %	63.038	20.253
Cumulative, %	63.038	83.291

Table 2. Comparison of Mean and Standard Deviation of Total, Emotional and Instrumental Family Support in Two Gender^a

Variable	Men	Women	P Value
Total support	43.30 (12.35)	43.38 (11.34)	0.96
Instrumental support	12.07 (5.27)	11.97 (5.26)	0.89
Emotional support	31.23 (9.08)	31.40 (8.39)	0.89

^aValues are expressed as mean (SD).

adherence low fat diet in patients with cardiovascular disease.

The first factor includes the items of emotional support (9 items). Emotional support consists of items associated with that empathy and care (5). The second factor includes the items of instrumental support (5 items). Instrumental support consists of items that are associated with providing services to meet the needs (5). These results were consistent with results of previous studies in which 2 instrumental and emotional supports were extracted from them (23-25). In this study, similar to Cyranowski et al., research, informational support was not achieved as separate subscale (26). In addition to the Eigenvalue and Scree plot, the 2 factors were proved by Horn's parallel analysis

with Monte Carlo statistical program. These findings confirmed the two-factor structure of family support in adherence to a low fat diet in cardiovascular patients. The questionnaire had acceptable internal consistency. The Cronbach's alpha coefficient for the questionnaire was equal to 0.89 and for both instrumental and emotional support, was 0.71 and 0.99, respectively. Social support is essential part of managing chronic diseases (27). Thus, this questionnaire could be used as a tool for measuring the rate of family support.

In addition, it can be used for evaluating the intervention that focuses on social support. There were no significant differences between men and women in term of the total, emotional, and instrumental support. Previous studies also reported no significant differences between men and women in the social support variable (28-30). To the best of our knowledge, this study is the first one that investigates the psychometric properties of the family support questionnaire for adherence to low fat diet in patients with cardiovascular disease.

This study is a cross-sectional one that does not let us know the source of causality; therefore, it is the first study limitation. The self-report nature of this scale can be accounted as another limitation. In addition, all the partic-

ipants were patients with cardiovascular disease, thus, as a third limitation, the results cannot be generalized to other groups. Therefore, we suggest that in the future studies, other groups who suffer from chronic illness should take into account for gaining better and acceptable results.

4.1. Conclusion

The present questionnaire is a valid and reliable instrument to measure family support for adherence to low fat diet in patients with cardiovascular disease.

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Footnote

Conflicts of Interest: The authors declare that there are no conflicts of interest.

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