

# Reliability and validity of "Job Satisfaction Survey" questionnaire in military health care workers

Gholami Fesharaki M.\* *PhD*, Talebiyan D.<sup>1</sup> *MD*, Aghamiri Z.<sup>1</sup> *MSc*, Mohammadian M.<sup>1</sup> *MSc*

\* *Department of Biostatistics, Faculty of Medicine, Tarbiat Modares University, Tehran, Iran;*

<sup>1</sup> *Department of Education & Research, Najmieh Hospital, Baqiyatallah University of Medical Sciences, Tehran, Iran*

## Abstract

**Aims:** Today, measuring the job satisfaction is of the challenges that have increasingly occupied managers' minds. Considering the lack of a standard tool for measuring job satisfaction among the health care workers, this study was planned and carried out with the main purpose of preparation and standardization of the Job Satisfaction Survey questionnaire.

**Methods:** This cross-sectional analytical study was carried out in September 2010. 301 employees of the Najmieh e Subspecialty Hospital were selected by stratified sampling method and answered the Job Satisfaction Survey questionnaire. Concurrent validity and confirmatory and exploratory factor analysis were used in order to examine the construct validity and Cronbach's Alpha method was used to examine the reliability. SPSS 16 and AMOS 18 were used to analyze data, using analytical statistical methods including Chi-square test.

**Results:** Samples consisted of 301 subjects including 239 (81.8%) women and 53 (18.2%) men. The explanatory Factor analysis showed 7 factors with 62% total variance and 0.82 Kaiser-Meyer-Olkin Index. The results were also confirmed with confirmatory factor analysis (relative Chi-square=1.18, RMSEA=0.04, GFI=0.93, AGFI=0.91). The reliability of the questionnaire was reported 0.86 using the Cronbach's Alpha method.

**Conclusion:** Considering that the validity and reliability indexes of the questionnaire are reported in acceptable range, the new version of Job Satisfaction Survey questionnaire is a valid and reliable questionnaire for measuring job satisfaction among military health care workers.

**Keywords:** Standardization, Job Satisfaction Survey, Reliability, Validity, Health Care Worker, Military

## Introduction

Undoubtedly, today, one of the major challenges which have increasingly occupied the mind of supervisors and managers is measuring the amount of job satisfaction [1, 2]. This concept means the extent of feelings and positive attitudes of a person of his occupation and it is indicative of his feeling and high values for doing his occupational activity [3]. But it must be said that one of the issues which is discussed in measuring of job satisfaction as any other psychological variables is the assessment tool for this concept. Generally, job satisfaction is measured through two methods of conducting interviews and using the questionnaire of self-administration. In terms of applicability, the first method namely interview cannot be used in different studies due to being time-consuming and not having applicability in studies with big sample size. Thus, in most studies the second method namely self-administration questionnaire is used for measuring job satisfaction [4]. In terms of self-administration questionnaire, there are already different tools among which the following tools can be mentioned:

The questionnaire of "Job Satisfaction Survey" (JSS) with 36 questions and measuring 9 sub domain of four

questions, the questionnaire of "Job Descriptive Index" (JDI) with 72 questions and 5 sub domain with the titles of "work", "payment", "promotion", "supervision" and "colleagues" [5], The Minnesota job satisfaction questionnaire (MSQ) with 20 subdomain and 2 small and big scales [6, 7], the questionnaire of "Job in General" (JIG) based on personal feelings to the job with 18 questions and with the Likert scales and three options of "yes", "no" and "not sure" [8], Brayfield's & Rothe's job satisfaction questionnaire with 18 questions based on likert scale with five grades (totally agree to totally disagree) with practical approach and with the assumption of measuring job satisfaction through feedback of person of his job [9], the job satisfaction questionnaire of Hazard with 25 questions and 8 sub domains of "job security", "rights and benefits", "the conditions of working environment", "communication with colleagues", "job opportunity", "supervision", "policymaking", "management and life relations" [10], the index of organizational reactions (IOR) with 42 questions and based on the feelings of a job [10] and the questionnaire of "job diagnostic survey" (JDS) [11]. Given the current gap in the standard instrument for measuring job satisfaction in health care workers, we decided to standardize the questionnaire of JSS in the

\* Correspondence; Email: mohammad.gholami@modares.ac.ir

cross-sectional questionnaire. The issue that why JSS questionnaire was chosen from different job satisfaction questionnaires, is due to following reason: firstly because in contrary to questionnaire such as Minnesota (short form), JDS, JIS and *Brayfield and Rothe* questionnaire which only measure the job satisfaction, this questionnaire besides measuring job satisfaction investigates the sub domains of job satisfaction as well. Also, unlike the questionnaires such as IOR and JDI and Minnesota questionnaire (long form) that have many questions, this questionnaire has relatively small number of questions in more fields. Moreover, JSS questionnaire unlike other job satisfaction questionnaire uses a Likert scale with 6 options that is indicative of more states of replier. Therefore, the current research was designed and implemented based on the main purpose of preparation and standardization of job satisfaction estimation questionnaire.

## Methods

This study is analytic study that was conducted in August 2010. The population of research included all health care workers in Najmieh specialty hospital. 301 subjects were selected from these people through stratified sampling method of hospital units. Considering that the aim of this study was to standardize and to evaluate the validity and reliability of the questionnaire and since the sample size of 200 is suitable in using such methods, the considered sample size is enough for this investigation [12]. Inclusion criteria were: employment or treaty, having at least one year of work experience and no pension. Exclusion criteria were the presence of overt physical disease or mental illness, particularly in the observed subjects. The measurement tools included the JSS questionnaire, the Minnesota job satisfaction questionnaire and demographic information questionnaire. JSS questionnaire responses are measured with a six item scales (Disagree very much, disagree moderately, disagree slightly, agree slightly, agree moderately, Agree very much) [13]. In JSS questionnaire the amount of total satisfaction can be measured with sum of 9 sub domain. The previous studies have reported the reliability coefficient of 0.6 to 0.91 [4]. The reliability of the questionnaire and the method of coding of this questionnaire in each domain and total score through the methods of Alpha Cronbach and test-retest based on *Spector* study in 1985 has been shown in Table 1. The validity of the questionnaire has been investigated through the concurrent method and using JDI questionnaire and

the coefficient of 0.61 to 0.80 has be calculated for each of sub-domains of this questionnaire with the JDI questionnaire that shows a good validity for this questionnaire [13]. Since in measuring the job satisfaction and any other psychological index, the most important point is the assurance of researcher in not changing the MI measurement [14] and since in the study of *Watson et al.* from 9 domains of questionnaire only 8 domains (all domains except the reward domain) could get an acceptable score of this criterion, only these eight domains were used for standardization of the questionnaire. Minnesota job satisfaction questionnaire with two short scale (20 questions) and long (100 questions) form and 20 sub domains is one of the most common questionnaires in the domain of job satisfaction. The number of questions in each domain in long scale of this questionnaire is 5 questions and it is one question in short scale. Most of the researchers use short form of this questionnaire because of having few questions and measuring the final score of job satisfaction. In this study, the short form of this questionnaire was used for investigating the predictive validity of this questionnaire. The validity and reliability of this questionnaire has been confirmed in numerous foreign studies [6]. Also, in internal studies its reliability and validity has been confirmed [15]. For instance, in the study of *Gholami Fesharaki et al.* its reliability has been reported 0.87 [16].

**Table 1-**Number of question in each domain, along with coding and the reliability coefficient according to the *Spector* study

| Coefficient→<br>Domain↓ | Alpha | Retest | Question<br>number* |
|-------------------------|-------|--------|---------------------|
| Pay                     | 0.75  | 0.45   | 28, 19r, 10r, 1     |
| Promotion               | 0.73  | 0.62   | 33, 20, 11, 2r      |
| Supervision             | 0.82  | 0.55   | 30, 21r, 12r, 3     |
| Fringe Benefits         | 0.73  | 0.37   | 29r, 22, 13, 4r     |
| Contingent Rewards      | 0.76  | 0.59   | 32r, 23r, 14r, 5    |
| Operating Procedures    | 0.62  | 0.74   | 31r, 24r, 15, 6r    |
| Colleagues              | 0.60  | 0.64   | 34r, 25, 16r, 7     |
| Nature of work          | 0.78  | 0.54   | 35, 27, 17, 8r      |
| Communication           | 0.71  | 0.65   | 36r, 26r, 18r, 9    |
| The final score         | 0.91  | 0.71   | -                   |
| The sample size         | 2870  | 43     | -                   |

Moreover, the demographic information of people like age, sex, marital status, membership type, education level, working shift was also collected.

JSS questionnaire was first translated into Persian and then the validity of translation was evaluated through forward-backward translation validity method [14]. For conducting this method, first, the JSS questionnaire was given to two psychological

specialists who were fluent in English and they were asked to translate the questionnaire independently and then remove the problems of translation through agreement with each other. Then two other people, who were fluent in Farsi and English and were unaware about the subject of JSS questionnaire, were asked to translate the translated questionnaire to English. Then, this questionnaire and the main questionnaire were given to the group of specialist who were fluent in both English and Farsi languages to remove any potential problems and the validity of the questionnaire was ensured in this way. After this step, the resulting questionnaire was implemented on few subjects on an experimental basis and the possible problems were amended for the ultimate application of the test. Finally, at first the researcher introduced himself to the repliers of the questionnaire, and after assuring the repliers about the privacy of the responses and stating the purpose of research, the questions of JSS questionnaire was given to them and they were asked to reply to the questions without considering the time.

It should be noted that the repliers answer the questions which had no name without any force and with relaxation. Finally the obtained data were analyzed in collection and not individually. Also, prior to the study, written permission for standardization of questionnaire was given from the primary maker of this questionnaire.

In order to analyze the data, descriptive statistics (mean, standard deviation and correlation) and inferential statistics (exploratory factor analysis and confirmatory factor analysis) and SPSS 16 and AMOS 18 were used. For validity of questionnaire various methods such as construct validity and predictive validity were used. For investigating the constructive validity exploratory and confirmatory factor analyses were used. At first, questions of questionnaire which reduced the efficiency of data for exploratory factor analysis was evaluated using anti image matrix that the results of this investigation led to omission of three questions (questions 4, 16, and 18) out of total of 32 questions in the questionnaire. Prior to the exploratory factor analysis the question with reverse domains were coded in reverse form in accordance with table one and then in analyzing the exploratory factor the amount of compliance of questions with extracted factor using 301 was observed.

In order to confirm the factor structure assumed in the measuring of job satisfaction, the share of each variable (questions) in the measurement of desired components was analyzed using Amos program. Since

the Chi-square statistics of k measures the difference between observed and evaluated matrix, its high value indicates the poor fit of model and level of significance of more than 0.05 is considered as the confirmation of model and confirmatory factory structure. However, in using chi-square test it should be noted that this statistic is influenced by two factors of sample size and the violation of multi-variant normality hypothesis. Usually when the sample size is 75 to 200, chi-square value is a reasonable value for fitness, but for models with larger sample sizes, chi square is always statistically significant and its significant level is always less than 0.05. Therefore, besides the chi square report, usually an informal size namely "relative Chi-square" is used. Although this index lacks a fixed criterion for an acceptable model, sizes less than two is usually considered as a desirable index for goodness of fitness.

## Results

246 (7.81%) of participants in the study were female and 57 (9.18%) were unmarried. The mean of age for subjects was  $7 \pm 5.36$  and the mean of their work experience was  $11.71 \pm 6.9$ . 63 participants (20.9%) had diploma or less than that, 50 subjects (16.6%) had associate degree, 129 subjects (42.9%) had bachelor degree, 17 (5.6%) of subjects had masters and PHD and 42 people (14%) were specialist. 188 cases (62.5%) were working in morning shift and 49 cases (16.3%) were working in night shift.

Exploratory factor analysis led to identification of 7 factors with cumulative variance of 62% and Kaiser-Meyer-Olkin (KMO) was 0.82. In table 2, the extracted percent of variance for each factor, the coded value for each questions and the naming of new domains considering the previous domains of questionnaire has been presented.

Significant value for a given factor structure was reported equal to 0.3 that was indicative for non confirmation of model. Since the amount of relative Chi-square was equal to 1.18 and less than 2, the proposed model for explaining the structure of given factor was confirmed. Also, other indices of confirmatory factor analysis, such as the Root Mean Square Error of Approximation of less than 0.05 (RMSEA) and higher values of 0.9 for Goodness Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI), the fitness was established in this model. Therefore, it can be said that other indices of adequacy also confirmed the confirmatory factor analysis of JSS job satisfaction estimation questionnaire.

**Table 2-** The weights of extracted factors from exploratory factor analysis with varimax rotation (weights less than 0.3 are not displayed).

| Named factors                       | Income and rewards | Supervision | Nature of work | Communication | Promotion | Operating Procedures | Colleagues |
|-------------------------------------|--------------------|-------------|----------------|---------------|-----------|----------------------|------------|
| Percent of variance for each factor | 12.7%              | 9.9%        | 9.3%           | 8.3%          | 7.3%      | 7.1%                 | 6.8%       |
| Question 1                          | 0.74               | -           | -              | -             | -         | -                    | -          |
| Question 10                         | 0.66               | -           | -              | -             | -         | -                    | -          |
| Question 19                         | 0.61               | -           | -              | -             | -         | -                    | -          |
| Question 2                          | -                  | -           | -              | -             | 0.76      | -                    | -          |
| Question 11                         | -                  | -           | -              | -             | 0.73      | -                    | -          |
| Question 20                         | -                  | -           | -              | -             | 0.57      | -                    | -          |
| Question 33                         | -                  | -           | -              | -             | 0.64      | -                    | -          |
| Question 3                          | -                  | 0.83        | -              | -             | -         | -                    | -          |
| Question 12                         | -                  | 0.82        | -              | -             | -         | -                    | -          |
| Question 21                         | -                  | 0.81        | -              | -             | -         | -                    | -          |
| Question 30                         | -                  | 0.76        | -              | -             | -         | -                    | -          |
| Question 4                          | 0.66               | -           | -              | -             | -         | -                    | -          |
| Question 13                         | 0.67               | -           | -              | -             | -         | -                    | -          |
| Question 22                         | 0.79               | -           | -              | -             | -         | -                    | -          |
| Question 6                          | -                  | -           | -              | -             | -         | 0.58                 | -          |
| Question 24                         | -                  | -           | -              | -             | -         | 0.53                 | -          |
| Question 31                         | -                  | -           | -              | -             | -         | 0.45                 | -          |
| Question 7                          | -                  | -           | -              | -             | -         | -                    | 0.72       |
| Question 16                         | -                  | -           | -              | -             | -         | -                    | 0.72       |
| Question 25                         | -                  | -           | -              | -             | -         | -                    | 0.79       |
| Question 34                         | -                  | -           | -              | -             | -         | 0.51                 | -          |
| Question 8                          | -                  | -           | 0.40           | -             | -         | -                    | -          |
| Question 17                         | -                  | -           | 0.83           | -             | -         | -                    | -          |
| Question 27                         | -                  | -           | 0.91           | -             | -         | -                    | -          |
| Question 35                         | -                  | -           | /              | -             | -         | -                    | -          |
| Question 9                          | -                  | -           | -              | 0.55          | -         | -                    | -          |
| Question 18                         | -                  | -           | -              | 0.75          | -         | -                    | -          |
| Question 26                         | -                  | -           | -              | 0.75          | -         | -                    | -          |
| Question 36                         | -                  | -           | -              | 0.56          | -         | -                    | -          |

Using information from 23 departments, the Spearman Correlation Coefficient was 0.44 ( $p=0.005$ ) that is by itself was indicative of high predictive validity of JSS questionnaire.

The overall Cronbach's alpha value of questionnaire was calculated equal to 0.86 that was indicative of the goodness of overall reliability of the questionnaire. For all sub domains except the domain of "Operating Procedures" (0.57), the value of reliability index was observed in the acceptable range.

## Discussion

Timely and appropriate use of human resources is the most efficient way to get rid of the bottlenecks and difficulties in economic, social and educational development because the resources and manpower, are the most essential productive, constructive, growing and developing factor for country [15]. One of the efforts of management for maintaining human resources is creating satisfaction in staff and preventing of their dissatisfaction. Despite the numerous articles and studies that have been done on

job satisfaction, there is not much information in this area that is due to lack of proper measurement of these structures [18]. Hence, considering the importance of measuring job satisfaction, the need for a valid tool to measure this concept in health care workers, determining the individual differences of the staffs, and the weaknesses and strengths of working conditions in the field of human resource management, in a cross sectional study, we investigated the standardization of JSS job satisfaction questionnaire in the health care staff. The reason for choosing JSS questionnaire was its good reliability and validity in previous studies and its little number of questions in many domains.

For investigating the validity of questionnaire, diverse methods such as translation validity, construct validity and predictive validity was used. Firstly, the translation validity of the questionnaire was investigated using forward-backward method. This step was done with a particular sensitivity in order to avoid any problem in transition stage of questionnaire from the original text to Farsi. Therefore, it may well be to ensure about the content validity and translation

of this questionnaire. Then for evaluating construct validity two exploratory and confirmatory factor analysis were used. At this stage with removing three questions and obtaining the indexes such as identification of 7 factors with cumulative variance of 62% and index of KMO 0.82 for exploratory factor analysis and relative Chi-square index less than 2 (1.18), RMSEA less than 0.05 (0.04), GFI and AGFI more than (0.93 and 0.91 respectively) as an indicator of model appropriate for analyzing confirmatory factors, validity of the questionnaire was ensured. To examine the predictive validity using previous data and also using the Spearman Correlation Coefficient, the amount of 0.44 with the meaningfulness of 0.005 was observed that was indicative of suitable predictive validity of the questionnaire. Therefore, the validity of translated versions of the questionnaire was confirmed. The value of reliability indices of this questionnaire also for all sub domains except the domain of "Operating Procedures", were satisfactory and in comparison with that of similar questionnaires that were designed, built and translated in this domain, they had very high reliability index [4, 13].

With regard to the advantages of this questionnaire, such as few numbers of questions and its appropriate domain and its high reliability and validity, the use of this tool as the appropriate questionnaire in measuring job satisfaction is recommended. Appropriate sample size and various indices of reliability and validity of the questionnaire in the questionnaire are the strength of this study and not choosing of samples from different hospitals as a population of sampling was its weakness that this issue led to difficulty of generalization of these results to the whole population.

## Conclusion

Considering that the indices of reliability and validity of the questionnaire are all in satisfactory level, a new version of the JSS questionnaire can be used as a reliable and valid questionnaire for measuring job satisfaction of military health care staff.

**Acknowledgement:** We appreciate all staff, students and hospital treatment and training staff for their

sincere cooperation in this research.

## References

- 1- Watson AM, Thompson LF, Meade AW. Measurement invariance of the job satisfaction survey across work contexts. New York; 22<sup>nd</sup> Annual Meeting of the Society for Industrial and Organizational Psychology, 2007.
- 2- Liu CI, Borg PE. Spector, measurement invariance of the German job satisfaction survey used in a multinational organization: Implications of Schwartz's culture model. *J Appl Psychol*. 2004;89(6):1070-82.
- 3- Chandan J. Organizational behavior. New Delhi: Vikas Publication; 1997.
- 4- Spector PE. Job satisfaction: Application, assessment, causes and consequences. London: Sage Publication; 1997.
- 5- Smith PC, Kendal LM, Hulin CL. Measurement of satisfaction in work and retirement. Chicago: Rand McNally; 1969.
- 6- Weiss DJ. Manual for the Minnesota stratification questionnaire (Minnesota studies in vocational rehabilitation, no. 22). Minneapolis: University of Minnesota; 1969.
- 7- Lofquist LH, Dawis RV. Adjustment to work: A psychological view of man's problem in a work oriented society. New York: Appleton Century Crofts; 1969.
- 8- Ironson GH. Constitution of a job in general scale: A comparison of global, composite and specific measure. *J Appl Psychol*. 1989;74:193-200.
- 9- Brayfield AH, Rothe HD. An index of job satisfaction. *J Appl Psychol*. 1951;35:307-11.
- 10- Fernandez SMM. He studies of occupational satisfaction and its determining factors among health professionals working in one of the areas in Madrid. *Rev Esp Salud Publica*. 1995;69(6):487-97.
- 11- Hackman JR, Oldham GR. Development of job diagnostic survey. *J Appl Psychol*. 1975;60:159-70.
- 12- Hazard MB, Dean F, Connell WF. Statistical methods for health care research. 5<sup>th</sup> ed. Lippincott: Williams and Wilkins; 2005.
- 13- Spector PE. Measurement of human service staff satisfaction: Development of the job satisfaction survey. *Am J Community Psychol*. 1985;13:693-713.
- 14- Drasgow F. Scrutinizing psychological tests: Measurement invariance and equivalent relations with external variables are the central issues. *Psychol Bull*. 1984;95:134-5.
- 15- Hooman HA. Development and standardization of a job satisfaction scale. Tehran: State Management Training Center Publication; 2002. [Persian]
- 16- Gholami Fesharaki M. The study of factors involved in job satisfaction of worker who works in Najmie subspecialty hospital in 2010-2011. Tehran: Najmie Subspecialty Hospital; 2001. [Persian]
- 17- Kalantari K. Structural equation modeling in social and economical research. Tehran: Saba Publication; 2008. [Persian]
- 18- Nagy MS. What to do when you are dissatisfied with job satisfaction scales: A better way to measure job satisfaction. Virginia: Radford University Press; 1996.