Research Journal of Pharmaceutical, Biological and Chemical Sciences

Psychometric Properties Of Hope Scale In Mothers With Premature Infants Admitted To The Neonatal Intensive Care Unit.

Susan Penjvini[1]*, Sousan Valizadeh[2], Mariam Rassouli[3], Alireza Nikbakht Nasr abadi[4], and Majid Mansoori[5]

[1]PHD in nursing, Tabriz University of Medical Sciences, Tabriz, Iran and Assistant Professor, faculty of Nursing, Kurdistan University of Medical Sciences, Sanandaj, Iran.
[2]Associate Professor, Tabriz University of Medical Sciences, Tabriz, Iran.
[3]Assistant Professor, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
[4]Associate Professor, Tehran University of Medical Sciences, Tehran, Iran.
[5]Associate Professor, Department of pediatrics, Kurdistan University of Medical Sciences.

ABSTRACT

Concept of hope in mothers of premature infants admitted to the neonatal intensive care unit is of great importance and plays an enormous role in their quality of health. Therefore it is necessary to prepare a valid and reliable measure for this concept. The purpose of this study is to examine psychometrics properties (validity and reliability) of hope scale in mothers of premature infants admitted to intensive care units in Kurdistan and Kermanshah provinces. In this study, 126 mothers of premature infants were selected using convenience sampling. The study conducted using questionnaire on hope scale for mothers of premature infants, demographic characteristics, and depression Inventory of Beck et al., 1987 (the criterion measure). During the study construct and criterion validity of the tool was determined. The Reliability was determined using internal consistency and test-retest coefficient. Data were analyzed through factor analysis, correlation coefficient and Cronbach's alpha. Construct validity of the scale was analyzed using exploratory factor analysis (EFA). There were four sub-scales including "self esteem", "feelings of motherhood," "sense of peace" and "feeling of having positive energy". Correlation coefficient of scores for "scale for hope of mothers' of premature infants" were obtained by means of Beck depression inventory (r=0.134) which revealed no association between maternal depression and hope. Cronbach's alpha coefficient was $\alpha = 0.9320$. Correlation of scores which were conducted twice were measured as r=0.540. validity and reliability of "scale for hope of mothers' of premature infants" was appropriate and it could be used to measure hope in mothers of preterm infants.

Keywords: psychometric scale, validity, reliability, hope scale for mothers of premature infants

Corresponding author

INTRODUCTION

Birth of a child is often an expected event. After months of preparation, parents desire to have children. According to statistics, 10% of infants are premature [1,2]. Wong et al (2011) study showed that, regardless of their birth weight, premature infant are babies born before thirty-seven weeks of pregnanc [3]. Premature infants are at risk for a wide range of problems [4]; as a result, admission to the neonatal intensive care unit is inevitable [5]. This event is an unexpected birth experience for parents. It is a pre-birth and birth period problem and is the cause of death and illness in newborns [6]. Mothers use coping strategies such as hope and spirituality to cope with their stress which is associated with their psychosocial development. Some researchers believe that concept of hope is associated with that of matching concepts, faith and other means; thus, accepting the existing conditions can be considered as an effective response to stressors. Hope enhances physiological and psychological performance and its absence leads to the premature failure in people's function [7,8]. Based on the literature and research related to nursing, hope is an early stage of adaptation and coping strategies [9]. Hoping to have a better life leads to improvement in the individuals' compatibility [10]. Other studies indicate that we should expect to maintain health and achieve necessary goals [11]. Hope can have a healing effect on health outcomes, so one of the nurses' roles is to strengthen the client's expectation. Nurses are able to raise people's hope in a positive manner and by doing so improve their health outcomes [12]. In Iran, despite the importance of community health concepts such as hope, little research has been conducted in this regard. One reason may be lack of appropriate tools to measure this concept. Little progress in the social sciences and behavioral sciences are due to difficulties associated with the structure of scales [13]. During the past decade, psychometric properties were tested in nursing to design tools that are used for measuring various phenomena in the realm of nursing. To ensure validity and reliability of the obtained results, degree of precision of scales is important [14]. Data collection is one of the most important stages of research which requires the use of appropriate tools. To collect data, researchers should design their original questionnaire or use external valid and reliable questionnaires [15]. One of the tools that its reliability and validity was evaluated and approved to measure hope in teens is "Hopefulness Scale for Adolescents (HSA)". This scale was devised by Hinds and Gattuso in 1991 [16]. Hopefulness Scale for Adolescents in Iran was translated by Rassouli in 2008. Its psychometric properties were examined in adolescents living in the boarding centers [17]. Since psychometric properties of " hope scale for mothers with premature infants" were examined only in certain groups of mothers, in order to implement objective of research groups and research units that make up mothers' population, examining validity and reliability are essential. In other words, it is importance to study the concept of hope and its role in sustaining and improving the mothers' health. From the other side, unavailability of a suitable scale to measure this concept in mothers of preterm children requires us to examine validity and reliability of an appropriate scale. Designing a reliable and valid scale prepare the ground for future applied studies. Therefore, the aim of this study was to examine the psychometric properties of hope scale in mothers of premature infants between the years 2012-2013.

METHODS

This is a research methodology to design and determine psychometric properties of hope scale of mothers with premature children. LoBiondo and Haber (2006) believed that methodological study is regulated at the theoretical and applied aspects of mathematics, statistics, measurement, and other sciences that are associated with collection and analysis of data [14]. In this study, statements of women about their hopes were collected and analyzed using a phenomenological qualitative research. This was the result of a semi-structured interview with 12 mothers living in a special care unit who were willing to participate in the study. At first the word hope was defined based on the lived experience of the above mentioned mothers. Then the interviews were continued until data saturation. The quantitative part of the study was conducted by mothers of premature infants living in neonatal intensive care units of Kurdistan and Kermanshah provinces. We used convenience sampling in our study and selected 126 mothers. The instruments used in this study consisted of a questionnaire on demographic characteristics, hope scale of mothers of premature neonates admitted to the intensive care unit, and beck depression scale. Hope scale of premature mothers in this study was developed after several stages, ending up to 39 items. For the evaluation of psychometric properties we used hope scale construct validity using factor analysis method. Sampling adequacy test was evaluated using Kaiser-Mayer-Okin (KMO) which was 0.673. KMO value varies between zero and one. Higher values indicate better factor analysis. Values higher than 0.90, 0.80, and 0.60 are rated as excellent, good and fair respectively (Monroe, 2005). Factor analysis was justified to determine whether the correlation matrix obtained was significantly different from zero. In other words, we wanted to specify if there was enough correlation between interpolate

tools that could be integrated. Therefore, Bartlett's test was used resulting in a value of 5282.934 (p=0.000). For hope scale divergent validity, correlation was conducted using Beck Depression Inventory (r=0.134). There was no significant association between maternal depression and hope. Cronbach's alpha for 0.932 and test-retest reliability coefficient was performed twice with an interval of 2 weeks. Therefore, correlation coefficient between the two phases was 0.54. Since p value was 0.014, less than alpha, null hypothesis was rejected (p<0.05). This showed a relationship between the two phases for 20 mothers which indicated a correlation between mother's hope before and after the test.

Validity

To determine the amount of Cronbach's alpha for this scale after checking face and content validity it was consisted of 68 statements. Internal consistency was assessed using Cronbach's Alpha which was 0.594. After crossing out fifteen statements Cronbach's alpha value upgraded to 0.713. In the third stage, Cronbach's alpha reached to 0.874 after removing questions 5, 14 and 15. Finally, the scale of the sample consisted of 126 mothers of premature infants admitted to neonatal intensive care units which were performed and all of the questions in the questionnaire were answered. Hence, Cronbach's alpha raised to 0.932. Since the scale of mothers' hope in premature infants were used for the first time in Iranian mothers. Exploratory factor analysis was conducted to determine the agents included in the structure of the scale. Therefore, we used principal component factor analysis with varimax rotation.

Before performing factor analysis, Kaiser-Mayer-Okin (KMO) statistic and Bartlett's test were used to assess the equality of variance. KMO and Bartlett's Test series showed that despite wide variation between the coefficients correlation, the matrix was suitable for factor analysis [16]. Minimum load factor for the proposed statements were 0.3; therefore, in this study, the amount considered as 0.3. After entering data into SPSS version 17 they were analyzed using factor analysis, correlation, and Cronbach's alpha coefficients.

RESULTS

Based on the variance of agents in factor analysis the primary agents were selected. The first step of the factor analysis revealed 18 factors with special value of above 1. A total of 73.948 % of the variance was determined. In order to simplify the scale and ease of interpretation and naming of agents, 4 agents were chosen (with a variance of 73.948 %) were chosen which encompassed 29.529 % of the cases (Table 1).
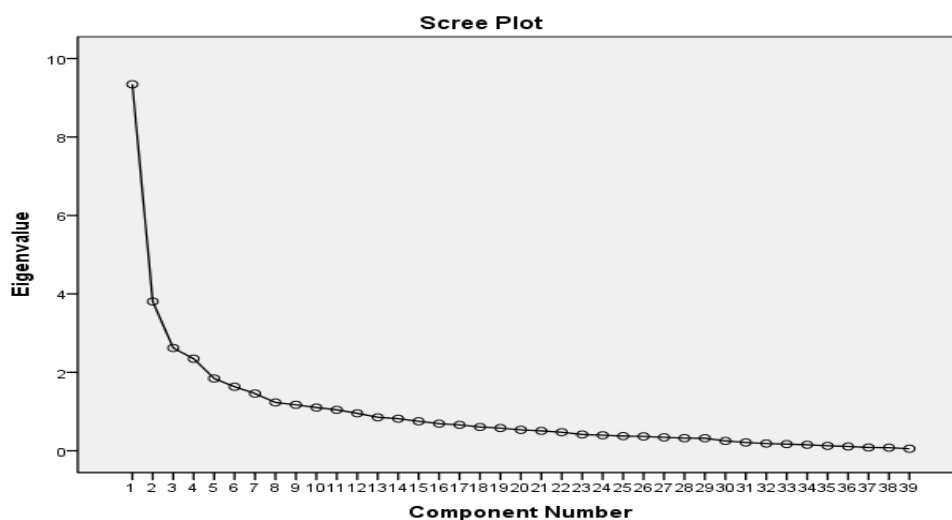
Figure 1: Scree plot

Table 1: Factor Analysis of Hope Scale in mothers of premature infants

NO	Statements	Agent	
		1	2
1	I feel the presence of my child	.836	.138
2	I have a positive view on life.	.835	0.153
3	I have a goal in my life	.789	0.162
5	I like to put my child on my chest	0.539	0.513.
6	I am happy because I have a child	.322	0.504
8	I enjoy watching the breast feeding of my child		.837
9	My previous experiences, prepare me for a better Life		0.771
10	My child made a new hope in my heart	0.662	0.332
11	Feeling of motherhood is relaxing	0.590	0.447
12	I'm trying to achieve my goals	0.536.	0.449
26	Nurses' support is important to me	.661	
27	I'm confident	.813	
28	Being helpful to my newborn make me hopeful	.875	
29	I want to grow up my baby in a healthy way	.660	.317
30	I have a deep inner strength	0.662	
31	I have been very successful in my life	0.479	
32	I feel I have a great life	0.520	0.612
33	I can give love and affection to others		0.681
34	I hope my baby become a one year old		0.832
21	I look at my problems from different views	0.478	
50	I look ahead	0.715	
51	I give positive energy to my child	0.788	
52	I speak to my newborn baby	0.799	
53	Hope give me power for caring	0.725	
54	Love toward my family gives me hope	0.786	
66	I wish to buy shoes and socks for my baby	0.615	
37	I believe that I can have peace	0.795	
55	I like to achieve things that have good results	0.746	
58	I am confident that my baby will recover	0.732	
59	I hope to be with my baby	0.700	
20	It is important to me that my baby gain weight	0.630	
35	I enjoy to touch my baby	0.772	
23	Independence of my baby to the device makes me happy	0.668	
36	Seeing my baby makes me hopeful	0.807	

Figure 1 Scree (gravel) also showed that presence of 4 agents is appropriate. In other words, Mothers Hope Scale divided into four scales. After attribution of the statements among four agents, statements with the highest factor loading were placed under their appropriate agents. These agents were named according to the nature and size of the variables and agents extracted from them had the maximum contribution, glossary of terms, implications of variables, existing theories, and previous studies (Homan and Asgari, 2000) [18]. The first agent consisted of 10 items which represented 21.576 % of the total variance. It was inserted under "feeling of motherhood", second agent with a value of 7.436 was "feeling valued". The third agent with a value of 5.682 was "feeling of positive energy". And the fourth agent was "feeling of peace" with a value of 5.337 of the total variance. The correlation between scores "scale of mothers' hope toward their premature infants" with Beck depression scale was conducted to assess the criterion validity of the scale (r= 0.134) which was statistically different (P=0.014). Cronbach's alpha coefficients obtained from analysis of questionnaires completed by mothers of premature infants was 932%. Cronbach's alpha under the first scale (feeling of motherhood) was 86.3. Cronbach's alpha of the second subscale (self esteem) was 82.9. Cronbach's alpha under the third subscale (having positive energy) was 2.84. The fourth subscale (feeling of peace) was 84.9. Pearson correlation coefficients between the scores obtained from two maternal responses to the hope scale were 0.540 which showed that scale stability was average.

DISCUSSION

This study was aimed to examine psychometric properties of "Hope scale of mothers of premature infants ". During the study we examined construct validity and criterion validity of the scale along with reliability, internal consistency, and stability. The results of the factor analysis represented four-dimensional structures. Designers of "hope Scale of mothers of premature infants" obtained the concurrent criterion

validity by examining the correlation between scores of maternal hope and their depression scores which revealed that there was no relationship between the two concepts (r=0.134). In this study, the results of internal consistency "hope scale of mothers of premature infants" was assessed using Cronbach's alpha and obtained correlation coefficients which were relevant with the results of other studies. The test-retest reliability coefficient showed average reliability (consistency) of the scale. In examining the stability of an instrument, estimates of the variable change over time. It determines time interval between the two periods that the test is conducted. Most researchers proposed a distance of at least two weeks for re-testing (to prevent possible impact of the first test) and up to one month (to reduce likelihood of the target phenomenon) [13,16]. However, checking the stability of the studied cases, where the variable is changed in a short period of time is not recommended [17]. The concept of hope may be fluctuating and is not a constant value at different time periods.

"Hope scale of mothers of premature infants" helps researchers to assess different aspects of hope in mothers of premature infants. In examining the psychometric properties of "Hope scale of mothers of premature infants", our study showed that validity and reliability of the scale was relatively high in all areas. Due to its simplicity of use and implementation, one can use it in other studies in which hope is a related variables and target groups are mothers.

ACKNOWLEDGMENTS

REFERENCES

[1]   Bahaeddin E, Raee V. NICU Nursing. Tehran: Boshra. 2007:133-7.
[2]   Penjvini S, Shahsawari SS. J Nursing Edu Pract 2013;3(9):p53.
[3]   Hockenberry MJ, Wilson D. Wong's Nursing Care of Infants and Children Multimedia Enhanced Version: Elsevier Health Sciences; 2013.
[4]   Brooten D, Kumar S, Brown LP, Butts P, Finkler SA, Bakewell-Sachs S, et al. Exempl Res Nursing Midwifery 2002:272.
[5]   Mok E, Leung SF. J Clin Nursing 2006;15(6):726-34.
[6]   Miles MS, Funk SG, Kasper MA. Res Nursing Health 1992;15(4):261-9.
[7]   Cantrell MA, Lupinacci P. J Adolescent Health 2004;35(6):478-85.
[8]   Rahimi F, Gharib A, Beyramijam M, Naseri O. Life Sci J 2014;11(1s).
[9]   Alexander ES, Onwuegbuzie AJ. Personality and Individual Differences 2007;42(7):1301-10.
[10]   Al Omari O, Wynaden D. The Sci World J 2014;2014.
[11]   Hinds PS, Quargnenti A, Fairclough D, Bush AJ, Betcher D, Rissmiller G, et al. Western J Nursing Res 1999;21(5):600-20.
[12]   Hinds PS, editor. Oncology Nursing Forum; 2004: Onc Nurs Society.
[13]   Nunnally JC, Bernstein IH, Berge JMt. Psychometric theory: McGraw-Hill New York; 1967.
[14]   LoBiondo-Wood G, Haber J. Nursing research: Methods and critical appraisal for evidence-based practice: Elsevier Health Sciences; 2013.
[15]   Munro BH. Statistical methods for health care research: Lippincott Williams & Wilkins; 2005.
[16]   Hinds PS, Quargnenti A, Bush AJ, Pratt C, Fairclough D, Rissmiller G, et al. European J Oncol Nursing 2000;4(1):6-17.
[17]   Rassouli M, Gharebagh Z, Safavi M, Haghani H. J Nursing Midwifery 2010;20(68).
[18]   Hoomon H-A. Psychol Res 2001;6(1&2):9-32.