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An Investigation of the Factor Structure and Validity of Responsible Participation of Couples in Childbearing Scale

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Abstract

Background: There is a paucity studies on partners' discussions about child bearing in Iran. To shed some light on this understudied subject, we need to develop a valid and reliable instrument at first.
Objectives: To formulate a questionnaire that evaluates the responsible participation of couples in childbearing decision making.
Methods: In this paper, a mixed-method sequential explanatory design was used to design the proper instrument. The questionnaire was developed and tested in three stages. In stage 1, an item pool was generated. In stage 2, content validity was assessed and in stage 3, validity (exploratory factor analysis and confirmatory factor analysis) was performed.
Results: At the first step, a 13-item instrument was designed, with the results yielding a content validity index of 0.80 for the instrument. The principal component analysis was applied to a sample population consisting of 450 couples to identify the factor structure of the inventory. According to the results, values of 4.458 (df = 78, P < 0.001) and 0.84 were obtained for Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy respectively. As such, three factors with a total variance of 62% were extracted, out of which four factors had acceptable reliability with a Cronbach's alpha of 0.60 to 0.85. The results of confirmatory analysis of RPCF questionnaire demonstrated the acceptable fitness of the model (CFI = 0.95 TLI = 0.94 and RMSEA = 0.05 and x^2/ df = 2.99).
Conclusions: Our results showed that the instrument consisted of three dimensions and exhibits high internal consistency. Also this study approved the use of RPCFQ to measure responsible participation of couples in childbearing.

Keywords: Factor Analysis, Questionnaire, Participation, Childbearing, Scale

1. Background

In most parts of the world, particularly in developing countries, there are still male-dominated cultures (1). The results of a study by Drose Vase (2010) in Uganda (as a country with high fertility rate) reveal that men are mainly in charge of decisions about childbearing (2). However, in Sub Saharan regions in Africa, family customs bestow men with supremacy and control over procreative power of women (3). Women's ability to help seeking from health provider is often determined by husband (4, 5). A research indicates that male involvement in maternal health is considerably low. A number of obstacles were identified which hampered from male involvement in maternal health. They included low levels of knowledge, embarrassment and social stigma (6).

In traditional Iranian families, women spend most of their time at home tending to their family, especially children. Men, due to their position in the pyramid of power, possess higher power in making decisions related to families. Verbal communication between couples is usually limited. Men often tend to influence the attitude of their wife towards childbearing and making decision about the method of reproduction. In fact, they determine where to use a birth control method or not (7).

In recent years, the issues of female empowerment and gender equality have been the subject of growing attention to the extent that women's empowerment and gender equality was stressed as a worldwide priority in the Program of Action in the 4th international conference on population and development in Cairo in 1994 (8). In the decision-making about fertility, the first sensible phase is the proper communication of couples. In this regard, three main aspects of communication include: a negotiation of family size or family planning between the couple; the consensus of partners about a preferred family planning and fertility method, and finally an appreciation of partner's attitudes about each other (1). However, there is a paucity studies on partners' discussions about child bear-

ing in Iran (9).

2. Objectives

This paper attempts to formulate a questionnaire that evaluates the responsible participation of couples in childbearing decision making.

3. Methods

The study population consisted of engaged couples referring to four healthcare centers with premarital counseling services (Vahdat, Shahid Qodsi, Samen, and Danesh Amooz centers) couple who willing to participate in the study (convenience sampling) were included. Nunnaly recommended ratio of 10 patients per variable (10). Sample size of 450 couple which is higher than the recommended minimal value allowed to us to reach a 6% power for correlation between "bilateral accountability" and "gender-based distribution of chores" and 9% power for correlation between "bilateral accountability" and "gender-based distribution", and 100 % power for correlation between "agreement to become a parent" and "bilateral accountability".

The questionnaire was developed and tested in three stages. In stage 1, an item pool was generated. In stage 2, content validity was assessed and in stage 3, validity (exploratory factor analysis and confirmatory factor analysis) was performed.

In stage 1, two approaches were used to generate an initial item pool of qualitative studies and review the existing literature. First, the semi-structured interviews were conducted with 54 qualified couples and a number of key informants living in urban areas of Mashhad, who were selected using purposeful sampling method. Interviews were taped and transcribed verbatim and analyzed using the qualitative content analysis technique, as defined by Graneheim and Lundma (11). Then, Initial item pool consisted of 13 items and formatted using 5- point Likert scales.

In stage 2, content validity was assessed. After deciding upon the design of the items, an evaluation of the instrument in terms of content validity was made. To this end, ten faculty members of Mashhad University of Medical Sciences specialized in the field of nursing, midwifery; reproductive health and medical education were chosen to assess the content validity of the instrument. In this evaluation, Waltz and Bausell's content validity index (CVI) was used. The specialists evaluated the relevancy, transparency, and ease of understanding of each questionnaire item using a 4- point Likert scale (ranging from 1 to 4).

The CVI score of each statement was computed by dividing the number of expert consensuses (determined by a score of 3 and 4 in the Likert scale) by the total number of evaluations made by experts. The statement was considered as acceptable if the CVI was 0.79. The face validity of questionnaire was evaluated by experts and 10 engaged couples. According to their feedbacks, some changes were made in the original version of questionnaire.

In stage 3, construct validity and internal consistency were assessed. Construct validity (exploratory factor analysis and confirmatory factor analysis) was evaluated. Further, methods of internal consistency were utilized to assess the reliability of RPCF, such as Cronbach's alpha.

3.1. Measures

The questionnaire was designed to assess extent of couples' involvement in childbearing (consisting of three scales with 13 items) addresses three concepts related to the responsible participation of couples in fertility, including 1- "agreement on becoming a parent"; 2- "bilateral accountability"; 3- "gender-based distribution of chores". To this purpose, a 4-point Likert scale ranging from 1 (strongly negative) to 5 (strongly positive) was used to score all items. The scores of Q9, Q10, Q11, Q12 and Q13 were reversed at the time of calculation. According to the results, higher scores were indicative of less traditional views of childbearing. To extract the factor structure of the questionnaire, both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used. For this purpose, first Bartlett's sphericity was carried out to determine whether correlation matrix was identifying matrix. Then, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was computed to evaluate the fitness of analysis and to determine the extent of interrelation of various variables. A principal-axis factor (PF) analysis was also performed using SPSS software (SPSS 11.0; SPSS, Inc., 2001). To determine the number of significant factors in this study, eigenvalues greater than one as well as screen plot were employed. After constructing a model based on the results of EFA, confirmatory factor analysis (CFA) was carried out by Amos 17.0 software (SPSS, Inc., Chicago, IL). To test the hypothesis regarding the fitness of study with the five-factor model constructed by EFA, the root mean square error of approximation (RMSEA), Tucker-Lewis Index (TLI), and the comparative fit index (CFI) were adopted. The factor loadings for each item of the (RPCF) based on a cut point of (40).

3.2. Key Messages

Attempts to formulate a questionnaire that evaluates the responsible participation of couples which there is no questionnaire

4. Results

The sample population comprised of 450 couples with a mean age of 22.16 ± 4.84 for females and 26.02 ± 4.6 for males. Considering the level of education, 49.7% of female and 45.6%.of male participants held a university degree. Also, as shown in Table 1, 92.7 and 91.9% of male and female subjects were born in the city of Mashhad. According to the results, values of 4.458 (df = 78, P < 0.001) and 0.84 were obtained for Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) respectively, which showed that sampling is adequate to perform factor analysis.

Table 1. Socio-Demographic and Clinical Characteristics of the Sample Used to Validate the EFESO Questionnaire[a]

Socio-Demographic Characteristics	N[1/4]527
Sex	
Female	449 (0.50)
Male	447 (0.50)
Age	
Female	22.16
Male	26.02
Women level of education	
Illiterate	2 (0.4)
Primary school	15 (3.3)
Middle school	62 (13.8)
High school	147 (32.7)
University	223 (49.7)
Husband level of education	1 (0.2)
Illiterate	15 (3.4)
Primary school	82 (18.3)
Middle school	145 (32.4)
High school	204 (45.6)
Location birth	
City	827 (92.3)
Rule	69 (7.7)
Income	
< 300, $	85 (9.5)
300 - 600	392 (43.8)
600 - 800	12 (1.3)
> 8000	407 (45.4)

[a] Values are expressed as No. (%).

In total, three factors with an eigenvalue greater than 1.00 could be extracted (Table 2). Also, the screen plot suggested the possibility of extracting three factors. The eigenvalues of the first three factors were 3.6, 2.62 and 1.94 with the three factors accounting for 62% of variances. The first factor, labeled as "bilateral accountability", consisted of four items. The second factor, labeled as "agreement on becoming a parent", consisted of four items. The last factor, labeled as "gender-based distribution of chores", was made of four items. The inter correlations of factors are presented in Table 3. Of note, the subscale "agreement to become a parent" was observed to be positively correlated with "bilateral accountability"(r = 0.311, P < 0.01) and "gender-based distribution of chores"(r = 0.01, P = -0.167). "Bilateral accountability" was observed to be positively correlated with "gender-based distribution" (r = 0.02, P = 0.21). According to the results, factor 1 (α = 85.2), factor 2 (α = 0.81), and factor 3 (α = 0.58) had acceptable internal consistency. In addition to exploratory factor analysis, the confirmatory factor analysis was also conducted with the results revealing the acceptable fit of the model (CFI = 0.95 TLI = 0.94 and RMSEA = 0.05 and x2/ df = 2.99). Principal component analyses with varimax rotation of the Iranian version of the RPCFQ are demonstrated in Table 1.

5. Discussion

This study proposed and tested novel instrument, which lays the ground for future researches. The questionnaire is very short (13 items), but it covers wide variety of dimension related to responsible participation between couples. The questionnaire seemed to be well- understood by couples, as it had very low rate of missing data. The results of the factor analysis regarding the responsible participation of couples in childbearing provided a three-factor solution. The three factors consisted of 13 items that explained 60% of variances. Three measures were found to be reliable having a Cronbach's alpha ranging from 0.77 to 0.85.

The results of hypothesis testing revealed a significant correlation between measures and a satisfactory degree of fitness was observed base on confirmatory analysis (CFI = 0.97 TLI = 0.96 and RMSEA = 0.05 and x^2/ df = 3.28). Overall, the questionnaire distinguished groups in which the extents of responsibility and traditional views could make a difference differ based on the level of education and gender. It was found that educational level influenced the degree of consensus over parenting responsibility (Table 3). The instrument under study demonstrated an acceptable level of consistency and reliability. However, further test-retest reliability is required to explore the stability of the measures diachronically. Moreover, an assessment of construct validity in different contexts and study populations are required to evaluate the convergent validity and divergent validity. There were several limitations in this

Table 2. Principal Component Analysis with Varimax Rotation of the Iranian Version of the RPCFQ

No.	Variables	Factor 1	Factor 2	Factor 3
1	Men should feel responsible for the health of their wifes	0.847		
2	Men should know the basics of childbirth	0.831		
3	My husband and I should be sufficiently aware of the tasks related to our child	0.815		
4	My husband and I need to talk about how to raise our child	0.731		
5	I think the psychological preparation of couples is necessary for parenthood		0.886	
6	I think it is important to know your spouse prior to childbearing.		0.883	
7	I think it is important for couples to be compatible before childbearing		0.790	
8	I believe that couple's decision on the number and timing of childbearing is a shared one		0.748	
9	The use of family planning methods is detrimental to men's health			0.789
10	It is better to practice female contraception for the birth control			0.776
11	Women are responsible for the use of contraceptives			0.772
12	Men need to decide on the number of children they desire to have			0.666
13	It is a mother's responsibility to take care of the children and father is charged with the upbringing of children			0.586

Table 3. Responsible Participation of Couples Scores of Demographic Characteristics

Variables	Valid No.	Agreement on Becoming a Parent	P Value	Valid No.	Bilateral Accountability	P Value	Valid No.	Gender-Based Distribution of Chores	P Value
Sex			0.245			0.014			0.006
Female	449	15.01 ± 1.583		449	30.11 ± 1.95		449	20.43 ± 2.99	
Male	447	15.13 ± 1.52		435	29.79 ± 1.95		435	19.89 ± 2.85	
Education			P < 0.001			P < 0.001			P < 0.001
Illiterate	3	15 ± 1.732		3	30.66 ± 2.309		3	15.66 ± 2.88	
Primary school	30	14.8 ± 1.669		29	28.68 ± 1.853		29	20.20 ± 3.25	
Middle school	144	14.65 ± 1.85		140	29.41 ± 2.338		140	19.23 ± 2.97	
High school	292	14.98 ± 1.54		290	29.78 ± 1.996		290	20.07 ± 2.92	
University	427	15.29 ± 1.41		422	30.33 ± 1.708		422	20.57 ± 2.81	

study that should be addressed. The first limitation was the poor methodology caused by the adoption of convenience sampling rather than random sampling, which raised concerns about the research biased. The second limitation was the generalization of findings. In this paper, the structure factor was analyzed on a sample of engaged couples. Finally, due to given the study design, we were unable to test the changes diachronically, for example after the marriage of participants further studies on diverse. Populations and various settings such as married couples and cross-cultural contexts, which may affect the responsible participation in childbearing, are required.

Our results showed that the instrument consisted of three dimensions and exhibits high internal consistency. Also this study approved the use of RPCFQ to measure responsible participation of couples in childbearing.

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Footnote

Conflict of Interests: All authors have no conflicts of interests to declare.

References

1. Mosha I, Ruben R, Kakoko D. Family planning decisions, perceptions and gender dynamics among couples in Mwanza, Tanzania: a qualitative study. *BMC Public Health.* 2013;**13**:523. doi: 10.1186/1471-2458-13-523. [PubMed: 23721196].
2. De Rose LF, Ezeh AC. Decision-making patterns and contraceptive use: evidence from Uganda. *Popul Res Policy Rev.* 2009;**29**(3):423–39. doi: 10.1007/s11113-009-9151-8.

3. Brabin L, Kemp J, Obunge OK, Ikimalo J, Dollimore N, Odu NN, et al. Reproductive tract infections and abortion among adolescent girls in rural Nigeria. *Lancet.* 1995;**345**(8945):300–4. [PubMed: 7837866].
4. Mullany BC, Becker S, Hindin MJ. The impact of including husbands in antenatal health education services on maternal health practices in urban Nepal: results from a randomized controlled trial. *Health Educ Res.* 2007;**22**(2):166–76. doi: 10.1093/her/cyl060. [PubMed: 16855015].
5. Beegle K, Frankenberg E, Thomas D. Bargaining power within couples and use of prenatal and delivery care in Indonesia. *Stud Fam Plann.* 2001;**32**(2):130–46. doi: 10.1111/j.1728-4465.2001.00130.x. [PubMed: 11449862].
6. Mullany BC. Barriers to and attitudes towards promoting husbands' involvement in maternal health in Katmandu, Nepal. *Soc Sci Med.* 2006;**62**(11):2798–809. doi: 10.1016/j.socscimed.2005.11.013. [PubMed: 16376007].
7. Mehdizadeh SH. Factors affecting couples' relationships in rural households in Tehran. *Study women.* 2014;**1**:121–62.
8. Programme of action of the international conference on population and development 1994. Available from: https://www.google.com/.
9. Khadivzadeh T, Latifnejad Roudsari R, Bahrami M, Taghipour A, Abbasi Shavazi J. "Caring for my family integrity": fertile couples' first childbearing experience in the urban society of Mashhad, Iran. *Hum Fertil (Camb).* 2015;**18**(1):60–9. doi: 10.3109/14647273.2014.925591. [PubMed: 25162473].
10. Nunnaly Nunnaly JO. Psychometric theory. New York:: McGraw-Hill; 1978.
11. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today.* 2004;**24**(2):105–12. doi: 10.1016/j.nedt.2003.10.001. [PubMed: 14769454].