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# Validation study of the Fertility Problem Inventory in Iranian infertile patients

**Reza Omani Samani, Amir Almasi-Hashiani, Fatemeh Shokri, Saman Maroufizadeh, Samira Vesali, Mahdi Sepidarkish** *

*Department of Epidemiology and Reproductive Health, Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran*

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**KEYWORDS**

Fertility Problem Inventory (FPI);
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**Abstract** *Introduction:* Developing a tool for measuring patient's problems is a vital step in the process of infertility treatment and research. Fertility Problem Inventory (FPI) is a questionnaire, which was made by Newton in 1999 to detect fertility problem associated within fertile couples, including 46 questions and five domains. Since validity and reliability of any instrument should be evaluated in the new environment and culture, the aim of this study was to assess the validity and reliability of the FPI in Iranian infertile couples. *Materials and methods:* Four hundred and ten patients in different stages of infertility treatment filled Fertility Problem Inventory. Forty-five patients answered the questionnaire twice at an interval of 2 weeks. Reliability and validity of the questionnaire were measured by Cronbach's alpha, interclass correlation, test retest, inter-rater agreement (IRA), exploratory factorial analyses and multi-trait scaling analysis. *Results:* Using a conservative approach, the IRA for the overall relevancy and clarity of the tool was 88.34% and 92.14%, respectively. Overall appropriateness and clarity were 92.23% and 94.48%, respectively. Overall integrity of the instrument was determined to be 87%. Cronbach's alpha coefficient was greater than 70% for all domains. The ICC ranged between 0.78 (Relationship concern) and 0.92 (Sexual concern). Exploratory factorial analyses demonstrate five fields suitable for instrument. The correlation of each item with its own scale (Rho $\geqslant$ 0.4) represented a high convergent validity. In the discriminant validity of the tool, the correlation of each item with its own hypothesized domain was also greater than its correlation with other areas of the questionnaire. *Conclusion:* The results showed that Persian version of the FPI is a reliable and valid instrument for measuring the fertility problems in infertile patients.

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* Corresponding author at: Department of Epidemiology and Reproductive Health, Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, P.O. Box: 16635148, Tehran, Iran. Fax: +98 2123562678.
E-mail addresses: r.samani@gmail.com (R.O. Samani), mahdi.sepidarkish@gmail.com (M. Sepidarkish).

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## 1. Introduction

In the past two decades, infertility has increased about 50%, so that of every 6 couples in reproductive age, one couple suffers from infertility (1). It has been identified as critical in the life, and threats the stability of individual and social relations (2). The World Health Organization (WHO) proposed infertility as a health problem around the world. In a study at the International Institute of Health in Belgium, France, and the Netherlands, it is shown that infertility is considered the fourth rank from the list of 12 critical events after the death of the mother, father, and spouse in fidelity according to the intensity of the tension among stressful life experiences by infertile women (3).

More than one and a half million couples face infertility problems in Iran (4). According to the screening in 2005, about a quarter couples experience primary infertility (5). Infertility is not just a medical issue, but often infertile couples are faced with crisis in all aspects of life (6). Couples who have been in this crisis situation are more than others at risk for depression, anxiety, low self-esteem, and dissatisfaction (7). The problem of infertility is more deeply in Iranian culture, in which there are large families. Since parents and relatives play an important role in the lives of couples, a delay in pregnancy makes a concern in couples because of curiosities and pressures by their family and others (8). This kind of attitude is not only related to Iranian community, but also is seen in other communities, and there are similar reactions to infertility in different communities (9). Infertile people are more susceptible to high extreme depression and anxiety. Lack of attention to emotional disorders in infertile couples and secondary symptoms of infertility develop a vicious cycle reducing the successful treatment (10). In addition to the physical and psychological problems of infertility, deficiency of standardized tools to measure fertility problem leads to a lack of awareness and undermining the problem (11,12).

The overall tools for fertility problems assessment generally measure the structure of fertility problems, and have no sensitivity required for precise measurement of fertility problems in infertile people. Other dedicated tools, such as infertility self-efficacy scale, infertility reaction scale, and coping scale for infertile couples, include fewer areas, and have no ability to assess all areas of fertility problems (13–15).

The Fertility Problem Inventory (FPI), built by Newton in 1999, is a multi-dimensional tool, and able to measure the stress and problems of infertility. Validity and reliability of the questionnaire were approved in different countries (16). However, it is necessary to confirm validity and reliability of every tool before the use of any tool in a society and culture. The aim of this study was to standardize and evaluate the validity and reliability of FPI in Iranian infertile patients.

## 2. Methods

The study population was infertile patients, referred to Royan Institute, a referral infertility treatment center in Tehran, the capital of Iran. Simple random sampling was done based on the medical records of patients in this center. After necessary coordination with the authorities of the center and taking permission, the number of sample size required was selected using a table of random numbers. At first contacts with patients were established, and then the purpose of the study was explained. Fulfilling the questionnaire was patient's informed consent.

### 2.1. Translation, validity, and reliability

The original English version of FPI was translated into Persian by two independent expert translators independently. The translated version was reviewed by translators and one of the researchers, and compared with the original English version. After discussing the existing differences, final agreement on the translation was carried out, and ultimately a final translation was developed. The other two professional translators translated the Persian version to English, while they were independent and unaware of the content of the original version. All translations were reviewed, and the Persian version was developed by a selected team of specialists (17).

### 2.2. Face and content validity

To assess face and content validity of FPI, the questionnaire was sent to 10 experts in psychology, sexology, and methodology via e-mail. The validity index for each question, and total validity were calculated. To equalize the experts' conception of content validity indices (relevancy, clarity, and comprehensiveness of the tool), the definitions of these indices were sent with the questionnaire. Relevancy, clarity, and comprehensiveness were defined as follows, respectively. Ability of selected questions to reflect the content was as relevancy, questions' lucidity concerning their wording and concept was clarity; the instrument ability to include all content domains or areas was comprehensiveness. The experts were asked to review clarity and relevancy of every item, and comprehensiveness of the total questionnaire to give scores from 1 to 4 (1 = inappropriate, 2 = somewhat appropriate, 3 = appropriate, 4 = quite appropriate). Experts' responses were obtained within 1–3 weeks (18,19).

The inter-rater agreement (IRA) is the degree of observed agreement among the experts who participated in the study about the relevancy and clarity of the questions by a conservative approach (20). To measure IRA for relevancy as well as clarity of the instrument, the number of the questions which all (100%) of the experts selected "quite appropriate" and "appropriate", or "somewhat appropriate and "inappropriate" for relevancy and clarity (that is, the number of questions that all experts agreed on the rate of their appropriateness for relevancy and clarity) was divided by the total number of items. The acceptable level (cutoff point) of this index was considered 80% in this study. To calculate the clarity as well as relevancy of each question, the total number of experts who selected "appropriate" or "quite appropriate" for the clarity and relevancy of each item was divided by the total number of the experts (21).

To measure the relevancy of the total tool, the total number of the questions with appropriate relevancy was divided by the total number of questions. Total clarity of the tool was calculated in the same way. The level of 80% was considered acceptable. The comprehensiveness of tool was achieved by dividing the number of experts who detected the comprehensiveness of the tool as appropriate by the total number of experts.

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