Clinical and Experimental Health Sciences

# The Nursing Needs Assessment Scale for Women with Infertility: Turkish Validity and Reliability Study

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**Received:** 10.05.2024 **Accepted:** 31.10.2024

**ABSTRACT**

**Objective:** This study was designed and conducted to establish the Turkish validity and reliability of "The Nursing Needs Assessment Scale for Women with Infertility (NNASIW)."

**Methods:** Originally developed in Korean, the scale contains 18 items, and a sample of 262 infertile women was included, multiplying each item by 10. In the analysis of this methodological study, second-order multifactor Confirmatory Factor Analysis (CFA), independent samples t-test, split-half reliability analysis, and Cronbach's alpha were utilized.

**Results:** The CFA goodness-of-fit values of the scale were: $\chi^2 = 221.326$, $\chi^2/df = 1.72$, AGFI = .89, CFI = .98, GFI = .91, RMSEA = .052, and NFI = .96. Factor loadings for all variables ranged from .39 to .99, and they were found to contribute significantly to the scale ($p<.001$). Statistically significant differences were noted between the lower and upper 27% groups for the total score and sub-dimensions of the scale, which originally had four sub-dimensions ($p < .001$). A high, positive, and significant correlation was found between the two halves of the scale ($p <.001$). The overall Cronbach's alpha value of the scale was .88, with sub-dimension alpha values ranging between .70 and .99.

**Conclusion:** The NNASIW is confirmed to be a valid and reliable measurement tool for assessing the nursing needs of infertile women.

**Keywords:** Care needs, infertility, nursing, reability, scale, validity.

## 1. INTRODUCTION

The World Health Organization (WHO) classifies infertility as a disease affecting the reproductive systems of both men and women, characterized by the failure to conceive after 12 months or more of regular, unprotected sexual intercourse. The incidence and reasons for infertility differ across various populations. Recognized by WHO as a significant international health issue, infertility impacts millions globally who are of reproductive age. Current statistics indicate that approximately one in six individuals worldwide will experience infertility at some point in their lives (1). According to Turkey Demographic and Health Survey (TDHS-2013) data, the prevalence of infertility in Turkey is 8.6%, and the proportion of women who have used assisted reproductive techniques (ART) at least once is 4.2%, which is an increase compared to previous years. However, although there is no precise data on the prevalence of infertility in our country in recent years, the demand for infertility treatment has been increasing year by year (2).

Infertility, impacting millions globally and frequently leading to severe consequences, is a crucial aspect of sexual and reproductive health and rights. It is addressed within this context, underscoring its significance in global health discussions. Therefore, it is critical to understand the extent of infertility to ensure access to quality fertility care, reduce risk factors and outcomes, and develop appropriate interventions (1, 3). The diagnosis of infertility is defined as a life crisis that is unique to the individual, has uncertain outcomes, brings medical, psychological, social, and economic problems, and has cultural, religious, and class aspects (4). Each cycle of infertility diagnosis may bring a bumpy journey in emotions such as anger, betrayal, guilt, sadness, and hope/hopelessness. It can also affect sexual confidence, desire, and performance (5). In addition to the diagnosis of infertility, ART also increases the physical, emotional, social, and economic burdens of women and couples and may cause an increase in stress, anxiety, depression, etc (6). Individuals or couples



*DOI: 10.33808/clinexphealthsci.1481793*

may enter into a life crisis that they have to cope with. Even family unity is disrupted, and divorces increase.

To cope with this life crisis, individuals and couples need information and professional counseling about infertility, ART, procedures, what to expect, etc., medical support, and holistic, individual/couple-specific nursing care that covers all these (7). Counseling is a fundamental aspect of nursing care, particularly in the realm of infertility, where it involves a three-stage process. These stages include patient-centered care, which focuses on collecting and analyzing information, followed by inferential and decision-making counseling. The second stage, infertility counseling, encompasses decision-making, support, and crisis counseling. The final stage, psychotherapy, involves crisis and therapeutic counseling (8). When there is a gap between an individual's actual health and optimal health level, meeting nursing needs is essential to achieve the goal of optimal health (9), and infertile women often need to be informed about treatment, symptom management, psychosocial, supportive, and spiritual needs (10, 11).

The nursing requirements for women experiencing infertility can differ significantly from the diagnostic phase to the treatment stage and may vary individually (12, 13). Therefore, nursing care should be provided with an individualized, holistic, humanistic approach to the needs of infertile women. In order to plan and provide nursing care wholly and accurately, the personal status of individuals, their physical and psychological care needs, their general health status, their level of knowledge about infertility, their perception, understanding, and concerns about diagnosis and treatment, their support needs and preferences should be taken into consideration. In this context, there is a need for an accurate assessment of these women's needs for nursing care, information, education, and support systems, and for this, measurement tools are needed. When the measurement tools in the literature are examined, we come across tools such as infertility stress assessment (14), coping with stress (15), and quality of life assessment (16).

In Turkey, a specific measurement tool to assess the nursing care needs of infertile women has yet to be established. This study seeks to fill that gap by evaluating the validity and reliability of the Turkish version of the "Nursing Needs Assessment Scale for Women with Infertility" (NNASIW), with the goal of enriching the literature and aiding nurses who work in this field.

## 2. METHODS

### *2.1. Design and Setting*

This methodological scale validity-reliability study was conducted between February and June 2022 in Istanbul In Vitro Fertilization and Women's Health Center in 262 infertile women who applied for treatment and volunteered to participate. First, written permission was obtained from the experts who developed NNASIW.

Following the necessary permissions, the scale underwent language and content validation. The ethics committee of Maltepe University granted approval for the study (Decision no: 2021/04-07; Date: 05.02.2021), and written permission was secured from the institution to carry out the research. During the implementation of the scale, infertile women who volunteered for the study were provided with a brief overview and signed an informed consent form (Figure 1).

Evaluation of the validity of the scale was carried out in 6 consecutive stages. These are: translation, synthesis, back translation, content validity, pilot study and construct validity (Figure 1).

#### *2.1.1. Translation*

It is recommended that the first translation should always be done by at least two people working independently of each other and that one of the experts should be informed about the subject matter and the other should be uninformed (17). Therefore, during the translation of the NNASIW into Turkish, one expert translator in Korean and two experts in English Language and Literature performed the translation process independently.

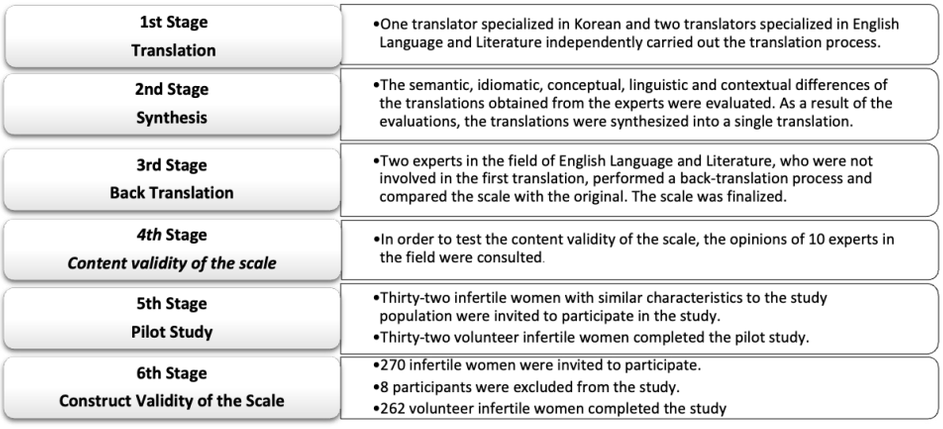


***Figure 1.*** *The stages of the study*

#### *2.1.2. Synthesis*

The translation versions obtained from the experts were compared by the researchers, and their linguistic, semantic, idiomatic, conceptual, and contextual similarities/differences were evaluated. As a result of the evaluations, a consensus was reached on the wording of the items.

#### *2.1.3. Back translation*

According to Coster and Mancini (17), it is advisable that the back-translation process be conducted by experts who were not included in the first translation to ensure objectivity and accuracy. Consequently, two experts in English Language and Literature, who had no part in the first translation, undertook the back-translation of the document. This method helps in verifying the translation's fidelity to the original text and maintaining the precision of the technical terms used in the scale. The back-translations were compared with the original scale, and it was decided, in collaboration with the scale's author, that they were linguistically, semantically, and expressively similar, and no adaptive changes were needed.

#### *2.1.4. Content validity*

Following the translation of the trial form, the next step recommended by the literature involves soliciting expert opinions to pinpoint any inadequate translation concepts and discrepancies between the two languages, necessitating further translation adjustments (18). Experts review each item using a Likert-type scale categorized as "Necessary," "Useful but not necessary," and "Not necessary" to express their evaluations (19). For this study, the Content Validity Ratio (CVR) and Content Validity Index (CVI) were determined in accordance with the evaluations of between 5 and 40 experts, as suggested by Lawshe (20). To assess the content validity of the scale in question, the translated and language-validated trial form was presented to a total of 10 experts—six academicians and four clinician nurses, all specialists in their fields. They were requested to evaluate the items in terms of content validity, ensuring the scale accurately reflects the necessary concepts and terminology relevant to infertility nursing care.

#### *2.1.5. Pilot study*

In accordance with the guidelines suggested by Erkuş (21) the pilot study's sample should mirror the target group of the original scale in terms of key demographic characteristics such as age range, education level, and gender. This is crucial for ensuring that the findings are relevant and applicable to the intended population. Following these principles, a pilot study involving 32 infertile women who share similar characteristics with the study population was conducted. This sample size aligns with the recommendations Şeker and Gençdoğan (22), who suggest that 30-50 participants typically provide sufficient data for pilot studies. The purpose was to assess if the Turkish language and content-validated trial form was understandable to the target group. The outcomes of the pilot study indicated that the scale items were well understood by the participants, and consequently, no revisions were deemed necessary for the scale items. This step is essential to confirm the scale's usability and ensure its items are interpreted correctly before broader application.

#### *2.1.6. Construct validity*

The original NNASIW has four factors that explain a latent construct. In this study, a second-order multifactor model was used as CFA for the scale's construct validity. Before factor analysis, Kaiser-Meyer-Olkin (KMO) value and Bartlett's Test of Sphericity ($\chi 2$) analysis were performed to determine the suitability of the data set for factor analysis and the factorizability of the scale. Then, a second-level multifactor CFA diagram was created for factor analysis, and the Maximum Likelihood estimation method was utilized because the data were normally distributed. To evaluate the reliability of the scale, the Cronbach Alpha reliability coefficient and two-half test consistency were used (for two-half test consistency, odd-numbered items in the scale were ranked as the first half and even-numbered items as the second half). The internal consistency of the items was analyzed using a "t-test in independent groups." For the total score and sub-dimensions of the scale, 27% lower and upper group comparisons were made.

### *2.2. Participants*

In this study, adherence to sample size recommendations is critical for establishing the reliability and validity of the NNASIW. Following the guidelines set forth by Mokkink et al. (23), the sample size for a validity-reliability study should range from five to ten times the number of items on the scale. Additionally, the International Test Commission suggests a minimum sample size of 200 to effectively uncover a scale's psychometric structure (24). To meet these standards, the study initially included 270 infertile women who volunteered to participate. However, eight participants were later excluded for not meeting the sampling criteria, resulting in a final sample size of 262 women. This sample size is sufficient to perform a robust analysis of the scale's validity and reliability, ensuring the results are statistically significant and reflective of the target population's characteristics.

*Inclusion criteria*

- Those who are at 20-50 years of age,
- Those who are diagnosed with infertility and in the process of treatment,
- Those who do not have a psychological or chronic illness that requires treatment,
- Those who can speak, read, and write Turkish and are capable of understanding and accurately responding to questions,
- Participants who volunteered to take part in the study were included in the sample.

### 2.3. Instruments

Data were collected using the Participant Identification Form and Nursing Needs Assessment Scale for Women with Infertility – NNASIW.

*Participant Identification Form:* It is a questionnaire consisting of 25 structured questions to determine the participants' socio-demographic, obstetric, and infertility-related characteristics.

*Nursing Needs Assessment Scale for Women with Infertility (NNASIW):* It was developed by Park, Shin, and Lee (2020) to assess the nursing needs of infertile women. This four-point Likert-type scale comprises 18 items and four sub-dimensions. Sub-dimensions of the scale are "Physical and psychological nursing care needs (Items 1-6)", "General information needs about infertility (Items 7-11)", "Perception, understanding, and concerns about infertility treatment (Items 12-15)" and "Support needs (Items 16-18)". The items of the scale are scored between 1-4 as "Not at all necessary=1", "Not always necessary=2", "Necessary=3" and "Absolutely necessary=4". The scores to be obtained from the subgroups of the scale are 6-24 points for the first sub-dimension, 5-20 points for the second, 4-16 points for the third, and 3-12 points for the fourth. The minimum total score achievable on the scale is 18, while the maximum is 72. Higher scores indicate more significant nursing needs among infertile women. Cronbach's alpha value was reported as .92 in the original scale, and the subgroups' alpha values were reported between .88—.91 (7).

### Data Collection

Women who met the sampling criteria were included in the sample by random sampling method, one of the simple random sampling methods. After consent was obtained from the women, they were given a Diagnostic Form and a Scale Form and were asked to answer the forms by self-report.

### 2.5. Data Analysis

In the data analysis phase, the SPSS 26 package program was used for descriptive statistics, and the AMOS 23 package program was used to examine model fit. Statistically, $p<.05$ was considered statistically significant. Frequency, mean, and standard deviation (SD) were calculated as descriptive statistics for primary socio-demographic, obstetric, and infertility-related data, including general characteristics of the participants. KMO value and Barlet's Sphericity Tests were conducted to evaluate the suitability of the data set, including the normality and factorizability of the scale. CVI and CVR were calculated for content validity. Second-order multifactor CFA was performed for construct validity. Factor loadings, chi-square statistic ($\chi 2$), chi-square statistic/degree of freedom ($\chi 2$ /df), goodness-of-fit index (GFI), comparative fit index (CFI), adjusted goodness-of-fit index (AGFI), normalized fit index (NFI) and root mean square error of approximation (RMSEA) were used to evaluate the fit of the model. Independent samples t-test was employed to assess internal consistency. The tool's reliability was examined using two-half test consistency and Cronbach's alpha.

## 3. RESULTS

The mean age of the 262 infertile women who participated in the study was 36.7±6.0 years; 50% had undergraduate/graduate degrees, and 51.5% were employed. Primary infertility was present in 54.6% of the women; the female factor was the most common cause of infertility with 55.0%, 45.4% had a history of pregnancy, and 35.9% had a history of miscarriage/abortion. The rate of experiencing the first ART was 21.8%, the rate of undergoing more than one In Vitro Fertilization-Embryo Transfer/Intracytoplasmic Sperm Injection-Embryo Transfer (IVF-ET/ ICSI-ET) treatment was 73.6%, the median number of attempts was 2/time, and the median duration of treatment was 18/month (Table 1). Among those who experienced two or more treatments, the rate of IVF/ICSI +ET was 84.4% and Intrauterine Insemination 27.1%.

***Table 1.*** *Characteristics of participants*

| **Characteristics** | **N=262** | |
|---|---|---|
| | **n (%)** | |
| ***Socio-economic and obstetric characteristics*** | | |
| **Education** | | |
| <8 years | 39 | (14.9) |
| 8 years | 33 | (12.6) |
| High School | 59 | (22.5) |
| Undergraduate and postgraduate | 131 | (50.0) |
| **Social security** | | |
| Exist | 241 | (92.0) |
| None | 21 | (8.0) |
| **Employment status** | | |
| Working | 135 | (51.5) |
| Not working | 127 | (48.5) |
| **Cycle regularity** | 181 | (69.1) |
| **History of pregnancy** | 119 | (45.4) |
| **Experience in childbirth** | 43 | (16.4) |
| **Experience with miscarriage/abortion** | 94 | (35.9) |
| ***Specific characteristics of infertility*** | | |
| **Type of infertility** | | |
| Primer | 143 | (54.6) |
| Secondary | 119 | (45.4) |
| **Infertility factor** | | |
| Female factor | 144 | (55.0) |
| Male factor | 26 | (9.9) |
| Both male and female factors | 38 | (14.5) |
| Unexplained cause | 54 | (20.6) |
| **Number of infertility treatment (ART) trials** | | |
| Newly diagnosed and not yet started treatment | 12 | (4.6) |
| First ART trials | 57 | (21.8) |
| Those with ≥2 ART trials | 193 | (73.6) |
| ***Mean values*** | **Mean±SD (min-max)** | |
| Mean age of women/year | 36.7±6.0 (21-49/year) | |
| Mean age of spouse/year | 39.4±6.7 (24-57/year) | |
| ***Median values*** | **Median (min-max)** | |
| Duration of marriage/month | 60.0 (6-360/month) | |
| BMI | 25.2 (17.3-40.6) | |
| Infertility diagnosis time /month | 24.0 (1-288/month) | |
| Infertility treatment duration/month | 18.0 (1-276/month) | |
| Number of IVF/ICSI +ET trials | 2.0 (0-11 trials) | |

*BMI:Body Mass Index*

### 3.1. Content Validity

In the study, the CVR values of the opinions of 10 experts on the items in the trial form with a 3-point rating ranged between .80 and 1.0, the CVI value for the whole form was .98, and CVI>CVR, so the items were not changed.

### 3.2. Construct Validity

In the study, KMO = .88; χ2= 4783.16; p<.001. According to the results of the CFA diagram, the goodness of fit values of the scale were: χ2=221.326, χ2 /df=1.72, GFI=.91, CFI=.98, AGFI=.89, NFI=.96 and RMSEA=.052 (Figure 2). In the CFA, the factor loadings and significance of the latent variables of the scale were examined, and it was seen that the factor loadings of all variables ranged between .39 and .99 and contributed significantly to the scale (t: 5.149 / 53.846; p< .001) (Table 2).

### 3.3. Reliability

Given that the factor loadings for the items on the scale exceeded .39, none of the items were eliminated. A statistically significant difference was observed between the lower and upper 27% quantiles in terms of both the total score and the sub-dimensions of the scale. (p< .001) (Table 3).

The total Cronbach α value of the scale was found .88. The sub-dimension Cronbach α values were found F1= .72, F2= .99, F3= .94, and F4= .70. In the split-half reliability analysis, a high, positive, and significant correlation was found between the two halves of the scale, indicating consistent internal reliability ($r^2$:.77; p< .001). The mean total score of the scale was found 50.1±9.7 (Table 3).

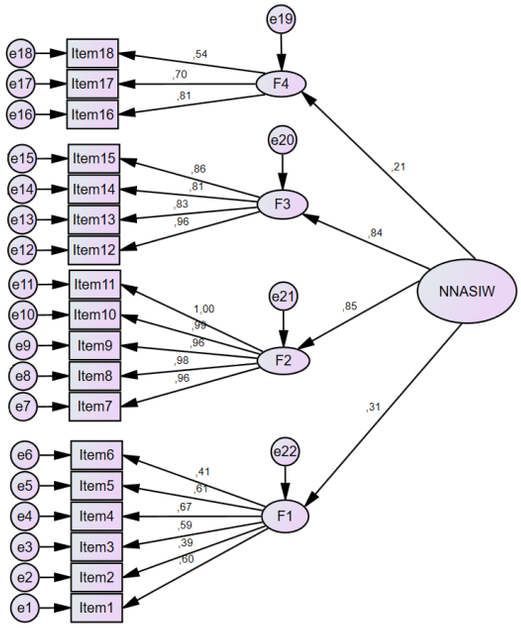


***Figure 2.*** *Second-order multifactor CFA diagram for the structure of the scale*

***Table 2.*** *Confirmatory factor analysis results*

| No | x̄ | SD | Factor Load | t | p | No | x̄ | SD | Factor Load | t | p |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item1** | 2.00 | .98 | .60 | 7.01 | .000 | **Item10** | 3.13 | .96 | .99 | 48.71 | .000 |
| **Item2** | 1.77 | .97 | .39 | 5.15 | .000 | **Item11** | 3.15 | .95 | .99 | 52.03 | .000 |
| **Item3** | 2.09 | 1.07 | .59 | 7.01 | .000 | **Item12** | 3.30 | .94 | .96 | 19.42 | .000 |
| **Item4** | 2.26 | 1.02 | .67 | 7.01 | .000 | **Item13** | 3.24 | .97 | .83 | 7.32 | .000 |
| **Item5** | 2.21 | 1.05 | .61 | 6.58 | .000 | **Item14** | 3.27 | .91 | .81 | 18.34 | .000 |
| **Item6** | 1.39 | .78 | .41 | 5.16 | .000 | **Item15** | 3.27 | .94 | .86 | 21.10 | .000 |
| **Item7** | 3.14 | .96 | .96 | 39.82 | .000 | **Item16** | 3.46 | .84 | .81 | 18.41 | .000 |
| **Item8** | 3.15 | .95 | .98 | 53.85 | .000 | **Item17** | 3.47 | .69 | .70 | 7.22 | .000 |
| **Item9** | 3.18 | .96 | .95 | 39.82 | .000 | **Item18** | 2.63 | 1.01 | .54 | 6.87 | .000 |

***Table 3.*** *Reliability analysis results of the scale*

| NNASIW Factors and Total | Group | N | x | SD | t | p | Cronbach α | Mean±SD (Min-Max) |
|---|---|---|---|---|---|---|---|---|
| F1 | Subgroup | 70 | 7.33 | 1.05 | -36.334 | .000 | .72 | 11.7±3.8 (6-24) |
| | Upper Group | | 16.79 | 1.91 | | | | |
| F2 | Subgroup | 70 | 9.57 | 3.86 | -22.549 | .000 | .99 | 15.7±4.7 (5-20) |
| | Upper Group | | 20.00 | 2.90 | | | | |
| F3 | Subgroup | 70 | 8.47 | 2.74 | -22.913 | .000 | .94 | 13.1±3.4 (4-16) |
| | Upper Group | | 16.00 | 2.85 | | | | |
| F4 | Subgroup | 70 | 6.96 | 1.66 | -23.177 | .000 | .70 | 9.6±2.0 (3-12) |
| | Upper Group | | 11.73 | .45 | | | | |
| TOPLAM | Subgroup | 70 | 37.10 | 6.43 | -28.158 | .000 | .88 | 50.1±9.7 (18-68) |
| | Upper Group | | 60.64 | 2.75 | | | | |
| Split-Half Method Results | | n | Mean | SD | r | $r^2$ | p | |
| First Half | | | 25.8 | 5.4 | | | | |
| | | 262 | | | .88 | .77 | .000 | |
| Second Half | | | 24.4 | 4.6 | | | | |

## 4. DISCUSSION

This study is for the Turkish validity of the **NNASIW** developed by Park, Shin, and Lee (7). The study confirmed that the scale retained its 4-factor and 18-item structure with the second-level multifactor CFA. The fit values were found to be at the desired level. The t-values, factor loadings, 27% lower and upper group comparison, Cronbach α reliability coefficient, and two-half test consistency values of all items were excellent.

The degree of validity of a scale is determined by how well it fulfills the intended purpose for which it was designed. Various techniques are available for evaluating the validity of a scale, each tailored to explore different aspects of its effectiveness (19). This study evaluated the content, construct, and internal validity of the scale. CVR and CVI values were used for content validity. Ten expert opinions were consulted for the scale. For CVR, a minimum CVR value of .80 obtained from 10 experts is accepted as the necessary criterion for content validity (25). This study determined that the CVR values for the items varied from .80 to 1.0; the CVI value for all items was .98 in total and CVI>CVR. In parallel with these results, it was concluded that the Turkish version of the scale met the necessary criteria for content validity at an excellent level, and no changes were made to the items. In the original version of the scale, it was reported that the CVR values were .80 and above, as in our results as a result of the 4-point rating for content validity (7).

Factor analysis may only be suitable for some data sets. The suitability of the data set for factor analysis is assessed using the KMO coefficient and Bartlett's Test of Sphericity. The KMO coefficient is used to determine the adequacy of the sample size for factor analysis in research. Unlike Bartlett's Test of Sphericity, which provides a test statistic, the KMO value serves as a criterion to assess the proportion of variance in the variables that might be caused by underlying factors (19), and .50 is unacceptable .90 is regarded as excellent, .80 as very good, .70 and .60 as mediocre, and .50 as poor (26). Bartlett's Test of Sphericity assesses the suitability of data for factor analysis by testing the hypothesis that the correlation matrix is an identity matrix. If the calculated test statistic is significant, it is interpreted that the data matrix meets the normality assumption required for factor analysis (19). In addition, the significance of the chi-square statistic calculated for Barlett's test of sphericity can be seen as evidence of the normality of the scores (27). According to the findings obtained in this study, the KMO value (KMO=.88; $\chi2$=4783.16; p < .001) was similar to the original study (KMO =.93; $\chi2$=11.121; p <.001) (7) and was suitable for factor analysis.

CFA is recognized as a distinct research method within structural equation modeling (28). It builds upon Exploratory Factor Analysis (EFA), which examines the underlying structure of the data (29). While EFA helps generate hypotheses by identifying potential patterns and relationships among variables, CFA rigorously tests these hypotheses. It evaluates whether there is a significant relationship among the factors, which variables are associated with specific factors, whether the factors operate independently of each other, and whether they adequately explain the model (30). In scale development studies, verification of the measurement model obtained after EFA with CFA is important for the validity of the construct (31). To assess the model fit following a CFA, the factor loadings, t-values, and goodness of fit indices of the items are considered essential (32). Each item's t-value should exceed 1.96 to be statistically significant (33). Harrington (2009) (34) suggests that factor loadings should not fall below .30, with loadings of .71 and above considered excellent, .63 very good, .55 good, .45 good/acceptable, and .32 poor. $\chi2$ p>.05, x2/df<5, AGFI>.90, CFI>.90, GFI>.90,

RMSEA<.08 (35) and NFI>.90 (36). The CFA results confirmed the 4-factor structure of the original scale. The factor loadings of the latent variables of the scale varied from .39 to .99., whereas in the original study, they ranged between .63 and .93 (7). The t-value of each item was above 1.96. When the findings related to the sub and upper 27% groups were evaluated together, it was evident that both in the sub-dimensions and in the total scale, those who scored low on the scale and those who scored high on the scale could be distinguished significantly. When the goodness of fit indices related to the model were analyzed, it was seen that all indices gave very good results. The outcomes of the factor loadings, t-values, and fit indices for the scale items, which range from good to acceptable levels, indicate that the model is adequately explanatory of the desired structure.

Reliability can be defined as the ability of a test or scale to consistently reflect the phenomenon aligned with the conceptual framework. This means that the measurement tool should yield consistent results when applied across different locations, at various times, and among different subsets drawn from the same overall population (37). While a reliability coefficient of ≥.70 is generally considered acceptable for a Likert-type scale, it is desired to be as close to 1 as possible. A Cronbach's alpha coefficient between .80 and 1.0 signifies excellent reliability, values from .60 to .80 suggest moderate reliability, scores between .40 and .60 denote poor reliability, and a range from .00 to .40 indicates unreliability of the scale (38). In this study, the total Cronbach's alpha value of .88 showed high reliability, and the Cronbach's alpha values of F2 and F3 sub-dimensions showed high reliability similar to the original scale (F1:.91; F2:.88; F3:.89; F4:.89) (7). and the Cronbach's alpha values of F1 and F4 showed moderate reliability.

The Split-Half Method divides the form into two halves. After the two halves are administered to the subjects simultaneously, reliability is estimated by the correlation between the scores obtained by the subjects from the halves. In the two-half test consistency, the correlation between the two halves is anticipated to be as high and statistically significant as possible (19). This study observed a high, positive, and significant correlation between the two halves of the scale ($r^2$=.77; p< .001). In the original scale, all correlation coefficients were reported to be between .75 and .94 (7). Considering the two-half test consistency, Cronbach α reliability coefficient in the sub-dimensions of the scale, and the total scale, it was concluded that the 4-factor structure of the scale could reliably be measured.

## 5. CONCLUSION

Based on the analysis conducted in the study, it was concluded that the Turkish version of the Nursing Needs Assessment Scale for Women with Infertility (NNASIW) achieved the necessary criteria for content validity at an excellent level. The sample size was deemed adequate for factor analysis as per the Kaiser-Meyer-Olkin (KMO) measure, and the Confirmatory Factor Analysis (CFA) model successfully explained the intended structure. Furthermore, the overall Cronbach's alpha value of the scale indicated high reliability, affirming that the 4-factor structure of the scale could reliably measure the constructs it intended to assess. Thus, the Turkish version of the NNASIW is a valid and reliable tool that can be used to assess the nursing needs of infertile women within the Turkish population.

***Funding:*** *The author(s) received no financial support for the research.*

***Conflicts of interest:*** *The authors declare that they have no conflict of interest.*

***Ethics Committee Approval:*** *This study was approved by Ethics Committee of MaltepeUniversity, Noninvasive Clinic Ethics Committee (Approval date: 05.02.2021; Number: 2021/04-07)*

***Peer-review:*** *Externally peer-reviewed.*

***Author Contributions: (Initials only)***

*Research idea: TB,HY*
*Design of the study: TB,HY*
*Acquisition of data for the study: TB*
*Analysis of data for the study: TB, PJ*
*Interpretation of data for the study: TB, HY*
*Drafting the manuscript: TB*
*Revising it critically for important intellectual content: HY,TB*
*Final approval of the version to be published: TB, HY, PJ*

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**How to cite this article:** Bozdemir T, Yıldız H, Park J. The Nursing Needs Assessment Scale for Women with Infertility: Turkish Validity and Reliability Study. Clin Exp Health Sci 2024; 14: 1048-1055. DOI: 10.33808/clinexphealthsci.1481793