

# The Turkish Version of the Childbirth Experience Questionnaire: Reliability and Validity Assessment

## Doğum Deneyimi Anketinin Türkçe Versiyonu: Güvenilirlik ve Geçerlilik Değerlendirmesi

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### ABSTRACT

**Objective:** This study has been performed to examine the validity and reliability of the Turkish Form of the Childbirth Experience Questionnaire (CEQ).

**Methods:** The study conducted in the methodological research type has been performed in a public hospital between May and September 2015 with 250 women who had normal vaginal delivery and agreed to participate in the study. Introductory information form and CEQ have been used as data collection tools. Validity analysis of the data has been conducted with content validity index, confirmatory factor analysis, reliability analysis; Pearson product-moment correlation and Cronbach Alpha (Cronbach  $\alpha$ ) reliability coefficient.

**Results:** The Cronbach  $\alpha$  reliability coefficient of the whole questionnaire is 76. There was no difference between the test retest measurement ( $p>0.05$ ). The confirmatory factor analysis showed that the questionnaire was conformed with the model in the original questionnaire, that it validated the pattern with 22 items and four factors ( $X^2/SD=436.76/203$ , root mean square error of approximation=0.070, standard-ized root mean squared residual=0.078, confirmatory fit index=0.91, non-normed fit index=0.81, goodness-of-fit index=0.87, adjusted goodness of fit index=0.82).

**Conclusion:** It has been determined that the CEQ questionnaire is similar to the original questionnaire and is a valid and reliable measurement tool for assessing the birth experience of women in delivery rooms in our country.

**Keywords:** Validity, reliability, childbirth, satisfaction

### ÖZ

**Amaç:** Bu çalışma, Doğum Deneyimi Ölçeği'nin (CEQ) Türkçe Formu'nun, geçerlik ve güvenilirliğinin incelenmesi amacıyla yapıldı.

**Yöntemler:** Metodolojik araştırma tipinde yürütülen çalışma, bir kamu hastanesinde, Mayıs-Eylül 2015 tarihleri arasında, normal vajinal doğum yapmış ve çalışmaya katılmayı kabul eden 250 kadınla gerçekleştirildi. Veri toplama aracı olarak tanıtıcı bilgi formu ve CEQ kullanıldı. Verilerin geçerlik analizi; kapsam geçerlik indeksi, doğrulayıcı faktör analizi, güvenilirlik analizi; Pearson momentler çarpımı korelasyonu ve Cronbach Alfa (Cronbach  $\alpha$ ) güvenilirlik katsayısı ile yapıldı.

**Bulgular:** Ölçeğin tümünün Cronbach  $\alpha$  güvenilirlik katsayısı 76'dır. Ölçeğin zamana göre değişmezliğini değerlendirmek için dört hafta aralıklarla yapılan test tekrar test ölçüm puan ortalamaları arasında fark bulunmamıştır ( $p>0.05$ ). Doğrulayıcı faktör analizi, ölçeğin, orijinal ölçekteki modelle uyumlu olduğunu, 22 maddeli dört faktörlü yapıyı doğruladığını ( $X^2/SD=436,76/203$ , kök ortalama kare hata=0,070 ( $p<0,05$ ) standartlaştırılmış kök ortalama karesi artıkları=0,078, doğrulayıcı uyum indeksi=0,91, normsuz uyum indeksi=0,81, uygunluk indeksi=0,87, düzeltilmiş iyilik uyum indeksi=0,82) göstermiştir.

**Sonuç:** CEQ'nun orijinal ölçekle benzer bir yapıda olduğu ve ülkemiz doğumhanelerinde kadınların yaşadığı doğum deneyimini değerlendirmek için geçerli ve güvenilir bir ölçme araç olduğu söylenebilir.

**Anahtar Kelimeler:** Güvenilirlik, geçerlik, doğum, memnuniyet

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## INTRODUCTION

Birth rates are increasing in Turkey as well as in the whole world (1). The birth is seen as a very ordinary and common occurrence by many people and societies. However, the whole process from the success of the pregnancy to the continuation and the birth is a complete miracle (2). For this reason, the birth can be described as an "ordinary miracle".

Until recently, health services have been mostly interested in the medical aspects of this miraculous event, such as reducing perinatal mortality and morbidity rates. As a consequence, the birth has evolved from being natural to a medical process (3). In contrast, natural birth trends that have gained momentum by 1960s-1970s have been an important milestone in terms of the alteration of this traditional perspective (2,4). In addition, scientific evidences have revealed that factors such as trainings of preparation to birth, woman's feeling of safety, perception of control, pain control, spouse's support, midwifery/nursery care and environmental comfort are more effective on reaching positive consequences at birth rather than interventions such as routine episiotomy at birth, vaginal examination, continuous electronic fetal monitoring, enema, early admission in delivery room, routine oxytocin induction (3,5-8).

Besides all these, perinatal care plans organized are affecting the birth experience of women and their families positively. As a result, a positive birth experience strengthens the connection between mother and baby, decreases the postpartum depression rates and also affects the expectations and decisions of mother about the next pregnancies and births, positively (9,10).

The fact that the results can be measured is also important as well as the professional implementation of purposive care plans. In this context, mother's way to express her birth experience will be a good reference for the evaluation of perinatal services received. In addition, the evaluation of the birth period in detail will provide the early recognition of negativities and prevent postpartum processes to be adversely affected.

Although there are scales that assess women's birth experiences in our country, these scales focus on one direction or one sub-dimension of birth. Therefore, there is no measurement tool that allows the evaluation of women's birth experiences on different dimensions and all dimensions (11-14). This study was carried out

to adapt "Childbirth Experience Questionnaire" (CEQ), used to evaluate women's birth experiences on different dimensions, into Turkish and to evaluate it's validity and reliability.

## METHODS

### Type of Research

This study was designed and implemented methodologically.

### Location and Time of the Research

The study was carried out between 01.05.2015-01.09.2015 in the delivery room of clinic of obstetrics and gynecology in a public hospital affiliated to the ministry of health.

### Sample of the Research

The sample of the research consisted of 250 women who gave birth to a single live baby between the 37<sup>th</sup> and 42<sup>nd</sup> gestational weeks, did not carry any maternal or fetal risk during the pregnancy, had vaginal delivery, were on the first postpartum day, understood and communicated in Turkish and agreed to participate in the study. Since the fact that 5-10 people should be included for each questionnaire item is suggested, the size of the sample was planned to be 220, multiplying the number of items in questionnaire (22 items) by 10, however, the sample was decided to include 250 people considering possible losses (15), and the study was completed with 250 people.

### Ethical Aspects of the Research

In order to be able to implement the CEQ in Turkey, necessary written permissions were obtained first from Anna Dencker who has developed the questionnaire, via email, then from the Clinical Research Ethics Committee of a University (IRB no: 10840098-254), from the hospital where the study was carried out (Decision no: 95273397/770) and from the women who participated in the study after giving information about the study.

### Data Collection Tools

In the collection of the data, two forms were used, the participant information form which was prepared by the researchers using literature and similar works, and the CEQ.

### Participant Information Form

The information form consisted of 20 questions in total questioning socio-demographic (age, education status, income level, chronic disease etc.) characteristics and obstetric-gynecological (number of pregnancy, number of birth, number of abort and curettage etc.) characteristics of participants.

### Childbirth Experience Questionnaire

The CEQ, which will be tested for validity and reliability, has been developed to measure the birth experience of women in different dimensions. The questionnaire developed by Dencker et al. (16) (2010) consists of 4 sub-dimensions and 22 items: 8 items in the birth process (1, 2, 4, 5, 6, 19, 20, 21), 5 items in professional assistance/support (13, 14, 15, 16, 17), 6 items in perceived security/memories (3, 7, 8, 9, 18, 22), 3 items in agreement in decisions (10, 11, 12). The first 19 items of the questionnaire are scored using the quartile likert scale and the last three items are scored using the visual analogue scale score (0-40=1, 41-60=2, 61-80=3, 81-100=4). Since scale's 3<sup>th</sup>, 5<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, and 20<sup>th</sup> questions contain negative expressions, the scoring is made in reverse direction (1= completely agree, 2= mostly agree, 3= partially agree, 4= disagree). The high score indicates that the mother had a good birth experience (16).

### Data Collection and Evaluation

The data collected from primiparous and multiparous pregnant women on the first day after birth right before being discharged by face to face interviews were analyzed by using the SPSS 21.0 package program (SPSS Inc., Chicago, Illinois USA) and the SPSS Amos (Analysis of Moment Structures) 6.0 program. In the reliability analysis, Pearson Correlation coefficient was calculated by using test-retest test method in the evaluation of time invariance. In internal consistency evaluation, Pearson's product-moment correlation coefficient was calculated for item-total correlation coefficient and Cronbach alpha reliability coefficient was calculated for internal consistency coefficient. For the content validity of the questionnaire, Lawshe technique was used in evaluating expert opinions and confirmatory factor analysis (CFA) was applied in evaluating structure validity.

## RESULTS

It was found that the average age of the pregnant women participated in the validity and reliability study of the CEQ

was  $26.37 \pm 5.27$  [minimum (min)=17, maximum (max)=42] years and the average duration of education was  $6.96 \pm 2.97$  (min=1, max=16). It was determined that a large majority of pregnant women (94.0%) did not work, more than half (53.2%) had income equal to the expense, and had a social insurance (61.6%). Nearly half of the pregnant women (41.6%) were found to experience three or more pregnancies and to give birth (33.2%), very few were found to experience abort (16%) and curettage (5.6%), more than half of them were determined to be pregnant for 40 weeks and more (51.6%), and to be followed up for nine times and more in the prenatal period (54.4%).

### Ensuring Language Equivalence of the Questionnaire

The English original form of CEQ was translated into Turkish by a faculty member of a Faculty of Foreign Languages and an English lecturer to assess the content validity. The final version of the Turkish version of the questionnaire, which was formed by selecting the most appropriate expressions by the researchers, was evaluated by a literature teacher and then was translated into English by a Gynecology and Obstetrics Specialist who has not seen the original questionnaire, has lived abroad for many years and who understands and speaks both languages (Turkish and English). The questionnaire, which was translated into English, was re-translated into Turkish again by two faculty members of the Faculty of Foreign Languages. After comparing the original version of the questionnaire with the English translation and making the necessary arrangements, Dencker et al. (16) opinions on the suitability were received. The final translation was presented to 14 different specialists (10 from nursing of obstetrics and gynecology, 3 from midwifery and one from psychiatric nursing) and it was decided that there was no semantic difference between the final translation of the questionnaire and the original version.

### Validation Study

#### Content Validity

After the language validity of the questionnaire, the Turkish version of the questionnaire was given to 14 specialists in order to determine the content validity. Scores between 1 and 4 were requested to be assessed in terms of the measurement level of each item. Opinion differences among the specialists were examined by Lawshe technique and the data obtained from the specialists were evaluated

by the content validity index (CVI). The CVI of the items was calculated as 0.93.

As a result of the evaluations made by the specialists, the questionnaire which was reached to an agreement, was applied to a group of 30 people who were not included in the research sample, as a pilot scheme and assessed and necessary corrections were made.

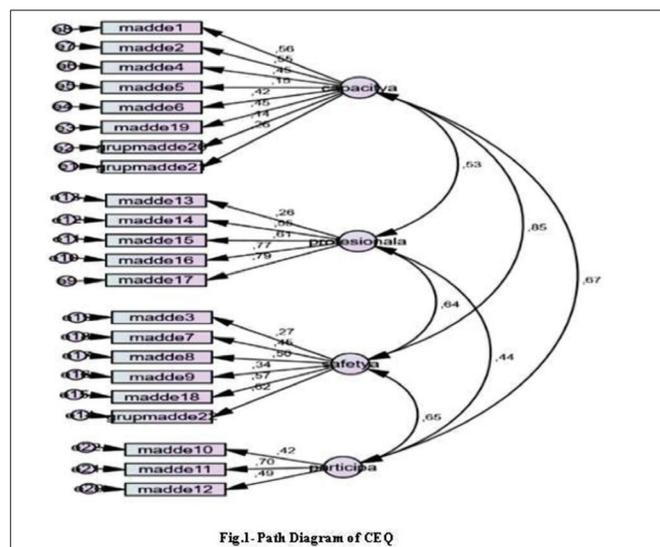
### Construct Validity

CFA was conducted to confirm the consistency of the factors for the construct validity in the adaptation of the CEQ. As a result of the confirmatory factor analysis, the fit indices are found as follows: Chi-square=436.76 (p=0.000), degree of freedom=203, root mean square error of approximation (RMSEA)=0.070 (p<0.05), standard-ized root mean squared residual (SRMR)=0.078, confirmatory fit index (CFI)=0.91, non-normed fit index (NNFI)=0.87, adjusted goodness of fit index (AGFI)=0.82. The factor loadings obtained as a result of confirmatory factor analysis (CFA) of all items were between 0.34 and 0.79. The obtained path diagram is given in Figure 1. According to the path diagram, the questionnaire measures four factors with 22 items.

### Reliability Study

#### Item Analysis

The item-total score correlations of the CEQ are given in Table 1. When the item-total score correlations of 22 items for reliability study of the CEQ were examined, the



**Figure 1:** Path diagram of childbirth experience questionnaire CEQ: Childbirth experience questionnaire

reliability coefficient was found between 0.25-0.57 and the relationship between item scores and total questionnaire scores was positively and statistically significant (p<0.001) (Table 1).

When the item-sub-dimension total score correlations of each sub-dimension of CEQ were examined, the reliability coefficients of eight items in the dimension of birth process (Pearson Correlation) were between r=0.35 and 0.61, the reliability coefficients of five items in the dimension of professional assistance/support were between r=0.54 and 0.77, the reliability coefficients of six items in the dimension of perceived security were between r=0.52 and 0.69 and the reliability coefficients of three items in the dimension of agreement in decisions were between r=0.65 and 0.78. The correlation coefficients of all items were found to be positive and statistically significant (p<0.001) (Table 1). When the item sub-dimension total score correlation was examined, the scores of the items with the reverse scores were evaluated after correction (conversion).

### Internal Consistency Reliability Coefficient

Cronbach's alpha reliability coefficient for internal consistency in the reliability study of CEQ was  $\alpha=0.56$  for the birth process dimension;  $\alpha=0.73$  for professional assistance/support dimension;  $\alpha=0.63$  for perceived security/memories dimension,  $\alpha=0.64$  for agreement in decisions dimension and  $\alpha=0.76$  for the whole questionnaire (Table 1).

### Test and Re-test

Test-retest measurements with 30 women for every other four weeks were evaluated by Pearson Product-Moment Correlation and t-test in order to test time invariance of CEQ adapted into Turkish. When the relationship between the scores of the CEQ and the sub-dimension scores obtained from the first and second application was examined by Pearson correlation analysis, reliability coefficient between the scores of two measurements of the questionnaire and it's four sub-dimensions were between 0.41 and 0.87, and there was a positive, strong and statistically significant relationship found (p<0.001) (Table 2). There was no statistically significant difference between the mean scores of the participants in the test and retest tests when compared by the t test in the dependent groups (p>0.05, Table 2).

## DISCUSSION

In this study, the adaptation of the CEQ, which was used to assess women's birth experience in different dimensions and in all dimensions, into Turkish, and the evaluation of validity and reliability were conducted.

In the first stage of the adaptation of the CEQ to the Turkish society, the necessary steps were taken to ensure language equivalence and the language equivalence stage was carried out (17). It was determined that specialists of the questionnaire items agreed with a high percentage

**Table 1:** Item-Sub-dimension total score correlations of the childbirth experience questionnaire's (CEQ) sub-dimensions (n=250)

Sub-dimensions and items of the questionnaire	Item-sub-dimension total score correlation coefficient		Item-total score correlation coefficient		Cronbach alpha $\mu$
	r	p	r	p	
<b>Birth process</b>					
Item 1	0.61	0.000	0.54	0.000	0.56
Item 2	0.60	0.000	0.51	0.000	
Item 4	0.56	0.000	0.43	0.000	
Item 5	0.35	0.000	0.25	0.000	
Item 6	0.50	0.000	0.45	0.000	
Item 19	0.57	0.000	0.42	0.000	
Item 20	0.37	0.000	0.25	0.000	
Item 21	0.38	0.000	0.28	0.000	
<b>Professional assistance/support</b>					
Item 13	0.54	0.000	0.28	0.000	0.73
Item 14	0.70	0.000	0.48	0.000	
Item 15	0.72	0.000	0.51	0.000	
Item 16	0.74	0.000	0.57	0.000	
Item 17	0.77	0.000	0.58	0.000	
<b>Perceived security</b>					
Item 3	0.52	0.000	0.35	0.000	0.63
Item 7	0.53	0.000	0.46	0.000	
Item 8	0.69	0.000	0.50	0.000	
Item 9	0.60	0.000	0.40	0.000	
Item 18	0.55	0.000	0.57	0.000	
Item 22	0.65	0.000	0.57	0.000	
<b>Agreement in decisions</b>					
Item 10	0.65	0.000	0.41	0.000	0.64
Item 11	0.78	0.000	0.51	0.000	
Item 12	0.70	0.000	0.43	0.000	

**Table 2:** Comparison of test and re-test mean scores of childbirth experience questionnaire and sub-dimensions, and correlations (n=30)

Questionnaire and sub-dimensions	First application mean $\pm$ SD	Second application mean $\pm$ SD	t	p	r	p
CEQ (Total)	64.33 $\pm$ 21.90	63.13 $\pm$ 10.99	0.372	0.713	0.60	0.000
1. Birth process	23.96 $\pm$ 17.41	22.20 $\pm$ 4.30	0.597	0.555	0.41	0.000
2. Professional assistance/support	15.90 $\pm$ 4.15	15.60 $\pm$ 3.58	0.814	0.423	0.87	0.000
3. Perceived security/Memories	17.10 $\pm$ 4.23	17.96 $\pm$ 3.44	-1.783	0.085	0.78	0.000
4. Agreement in decisions	7.36 $\pm$ 3.11	7.36 $\pm$ 2.78	0.000	1.000	0.82	0.000

t: Paired samples t-test, r: Pearson correlation test, SD: Standard Deviation.

in the process of evaluating the content validation. Therefore, there is an agreement on the applicability and understandability of the items of the questionnaire among the specialists. In other words, content validity was ensured. CFA was performed to confirm the suitability of four factor and 22-item structure for the CEQ construct validity. Frequently used goodness of fit tests were chi-square fit statistics, SRMR, CFI, NNFI, GFI and AGFI (18). In the confirmatory factor analysis, the goodness of fit statistics should be at the desired level (17,19). For a model to be acceptable, the chi-square value is expected to be significant, however, in practice it is usually significant because this value is very sensitive to sample size. Instead, the chi-square value is divided by the degree of freedom, and if the resulting value is less than or equal to two, the model is a good model, and if it is five or less, the model has an acceptable goodness of fit ( $X^2=436.76$ ;  $df=203$ ,  $X^2/df=2.15$ ) (18). Accordingly, it was determined that the model has an acceptable goodness of fit. The fact that RMSEA is equal to or less than 0.08, and p is less than 0.05 (statistically significant), indicates that the fit is good; if it is equal to or less than 0.10, it indicates that the fit is weak (18). The value of RMSEA was found to be significant in this study; it shows that the fit is good. SRMR is less than 0.10 (20). CFI, GFI, AGFI, and NNFI values range from 0 to 1, the fact that CFI value is between 0.90 and 0.97 indicates that the model has an acceptable fit (18). In this study, it was observed that RMSEA value was less than 0.08, SRMR value was below 0.10, CFI value was above 0.90, NNFI, GFI, AGFI values were close to acceptable fit values. The fit indicators of the CFA of the Turkish version of the CEQ were determined and this model was found to be appropriate in theoretical and statistical point aspects.

Test-retest, internal consistency and item analysis were performed in the reliability analysis of the CEQ. Test-retest reliability is the ability to give consistent results to a practice with a measurement tool in all applications and the ability to show time invariance (17). The lack of statistical significance of the test retest analysis of CEQ is seen to be a finding that supports the reliability of the scores obtained from the questionnaire in terms of consistency at the time. On the other hand, another criterion that reflects the reliability of a questionnaire is "internal consistency". Cronbach's alpha reliability factor is preferred to evaluate internal consistency (17). The higher the alpha coefficient of the questionnaire, the more likely it is that the items of the

questionnaire consist of items that are consistent with each other at that measure, and that have the same properties (19). In the literature, it has been stated that Cronbach's alpha coefficient ranges between 0 and 1 and that the questions in the questionnaire determine whether they form a whole to explain a homogenous structure (17,19,21). Accordingly, internal consistency in the reliability study of CEQ was observed to be in desired level with both literature knowledge and foreign studies (16,22,23).

If the items in one questionnaire are of equal weight and independent units, the correlation coefficient between each item and the total values is expected to be high. The higher the correlation coefficient is, the higher the relationship with the quality to be measured. It is suggested that correlations should not be negative and should be above 0.25 or even 0.30 (17,19). However there is no specific standard on item-total score correlation coefficient to be considered as insufficient reliability. The higher the correlation coefficient is, the better the reliability of the materials (17,19). It was determined that each sub-dimension of CEQ provides these features for the reliability study when the item-total score correlations are considered (24,25).

## CONCLUSION

The CEQ, which can be used to evaluate women's birth experience in different dimensions, is a valid and reliable questionnaire for our country. In the light of these results, it can be suggested to use "CEQ" as an appropriate measurement tool in evaluation of the experiences of women on birth and studies to be conducted, in consideration of the fact that this questionnaire is easy and understandable and can be filled easily in a short time. It can also guide midwives and nurses in identifying the women's characteristics related to their birth experiences and planning appropriate care.

## Ethics

**Ethical Committee Approval:** Clinical Research Ethics Committee of a university (IRB No: 10840098-254), from the hospital where the study was carried out (Decision no: 95273397/770) and from the women who participated in the study after giving information about the study.

**Informed Consent:** Informed consent was obtained.

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

## Authorship Contributions

Concept: R.M., N.Ş., Design: R.M., N.Ş., Data Collection or Processing: R.M., Analysis or Interpretation: R.M., N.Ş., M.D., Literature Search: R.M., Writing: M.D

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