

# Turkish validity and reliability study for the person-centered maternity care scale

Zeliha Özşahin<sup>1</sup> , Sümeyye Altıparmak<sup>1</sup> , Yeşim Aksoy Derya<sup>1</sup> , Burcu Kayhan Tetik<sup>2</sup>   
and Feyza Inceoğlu<sup>3</sup> 

<sup>1</sup>Department of Midwifery, Faculty of Health Sciences, Inonu University, Malatya, Turkey

<sup>2</sup>Department of Family Medicine, Inonu University Medical Faculty, Malatya, Turkey

<sup>3</sup>Department of Biostatistics, Malatya Turgut Ozal University Medical Faculty, Malatya, Turkey

## Abstract

**Aim:** The objective was to adapt the person-centered maternity care scale (PCMCS) developed by Afulani et al. in 2017 to Turkish and to perform the validity and reliability study of this scale.

**Methods:** The population of this methodological study consisted of 280 mothers who were referred to the postpartum service of a public hospital in eastern Turkey. Linguistic validity, context validity, and pilot practice studies regarding the PCMCS that could be used in the first nine postpartum weeks were performed. Explanatory factor analysis and confirmatory factor analysis were performed to assess the construct validity of the form. Reliability of PCMCS was tested through the Cronbach's  $\alpha$  internal consistency coefficient, total item correlation, and test-retest analysis.

**Results:** The Turkish version of the PCMCS a 21-item scale with three sub-dimensions was obtained. These three sub-dimensions found as a result of explanatory factor analysis and confirmatory factor analysis supported the scale structure. Cronbach's  $\alpha$  reliability coefficient scale was adequate for total and sub-dimensions.

**Conclusion:** Turkish version of PCMCS was found to be a valid and reliable instrument to be used for assessing the person-centered maternity care for women in the postpartum period.

**Key words:** maternity care, PCMC, person-centered care, person-centered maternity care scale, reliability and validity, Turkish adaptation.

## Introduction

Person-centered maternity care (PCMC) is a significant factor that decreases the abortus rates and affects the rate of mortality among mothers.<sup>1</sup> It is a delivery service that develops the idea of seeking the ways to be healthy, and that is Sleighs respectful-sensitive to the preferences, needs, and values of women and their families.<sup>2</sup> This system includes the sensitivity of health professionals, communication between people and health professionals, inter-personal treatment, personal participation, and relevant structures.

Behaving women unethically and negligently or even insulting them during delivery indicates that the PCMC is weak at that location of service. As women reflect their poor experiences to the society, the demand for the delivery care services may demand.<sup>2-5</sup> A study conducted in Africa on the experiences of women during delivery indicated that young women with a poor financial status were afraid of seeing poor attitudes toward them in health facilities and of being stigmatized.<sup>3</sup> Moreover, a study conducted in Turkey indicated that 76.5% of women were not satisfied with their delivery process. The same study reported that

Received: November 6 2020.

Accepted: June 13 2021.

**Correspondence** Yeşim Aksoy Derya, Department of Midwifery, Faculty of Health Sciences, Inonu University, 44280 Malatya, Turkey.  
Email: yesim.aksoy@inonu.edu.tr

women expected interest, smiles, and psychological support from the midwives, and that they wanted their pains to be relieved and their questions to be answered.<sup>6,7</sup> Accordingly, delayed, unnecessary, insufficient, and harmful care should be minimized.<sup>8–10</sup> PCMC plays a key role in this regard. In addition to improving the health of mothers and newborns, PCMC has the notion of improving the satisfaction from health services.<sup>7,11,12</sup>

Every woman has the right to receive sexual and reproductive health services with dignity and respect, which is also valid during the delivery process.<sup>3,13</sup> Department of Public Services and Management underlined the importance of an open, transparent and reliable relationship between the midwives and women during the provision of the health service.<sup>3</sup> The consensus of mother and newborn health dated 2009 recognized the deficiencies in the care provided during pregnancy, delivery, and postpartum periods and stressed that the maternity care should be developed and provided faster in these.<sup>4</sup> Many countries recommend PCMC to increase the quality of delivery care services.<sup>14,15</sup> The main components of this care are the caring models supervised by midwives who are considered as important actors in terms of increasing women's preferences and person-centered care.<sup>16,17</sup> A measurement tool that can measure the respectful and sensitive care services called PCMC and experienced by women is not present in Turkey. Increased awareness on PCMC revealed the need for such an instrument. This study aimed to adapt the PCMC Scale developed by Afulani et al.<sup>7</sup> in 2017 to Turkish and to perform its validity and reliability study.

## Methods

### Design and participants

This methodological study was conducted at a Public Hospital in the east of Turkey. The population consisted of mothers who were in the puerperal service of the relevant hospital between July and October 2020. The proposed size of sample should be at least 5–10 times greater than the number of items in a measurement tool during the process of adapting this measurement tool into a different culture.<sup>18,19</sup> Accordingly, the sample consisted of 280 mothers, a figure that is 10 times higher than the number of items in the scale ( $n = 28$ ). Mothers who met the inclusion criteria were selected from the relevant population through the random sampling method.

Inclusion criteria:

- Being literate
- Having no issues of communication
- Experience of vaginal delivery
- Being in the first 9 weeks of postpartum period
- No diagnosis of any psychiatric conditions

### Instruments

Data were collected through the “Personal Introduction Form” and Turkish version of the scale that was originally named “Person-Centered Maternity Care (PCMC)” and that could be used in the postpartum period, as the latter was finalized after the linguistic and context validity was ensured and pilot practices were performed. Moreover, face-to-face interview method was performed to collect data. The interviews lasted approximately 10 min.

#### Personal introduction form

This form includes items that consisted of certain demographic and obstetric characteristics (age, pregnancy week, employment status, income level, educational status, place of residence, form of delivery) of puerperal women.

#### Person-centered maternity care scale

Developed by Afulani, Smith, Golub, and Sudhinaraset in Kenya in 2016, this scale consisted of 30 items and three sub-dimensions: dignity and respect/item (4, 5, 6, 7, 21, and 22), communication and autonomy/item (2, 3, 8, 9, 10, 11, 12, 13, and 16), and supportive care/item (1, 14, 15, 17,18, 19, 20, 23, 24, 25, 26, 27, 28, 29, and 30). The items 21 and 22 in the scale were reversely coded. Except the item 13, 17, and 18 (five options; coded as 0, 1, 2, 3, 4), all items had four options (scores as “no, never” 0, “yes, occasionally” 1, “yes, often” 2, and “yes, always” 3). The minimum score to be obtained from the scale was 0, while the maximum was 90; lower scores indicated poorer PCMC.<sup>7</sup>

#### Turkish adaptation process

The Turkish adaptation process consisted of three steps: linguistic validity, context validity, and pilot practices.

The translation of PCMC Scale from English to Turkish was first performed by the researchers and expert linguists, and then the translated form was reviewed by other expert linguists and compared with the original scale. Following the comparison, items of both forms were found to have the same

meanings, and the linguistic validity process was completed.

The English and Turkish forms of the scale were submitted to 10 teaching staff (five from the Department of Midwifery, four from the Department of Gynecology and Obstetrics Nursing, and one from the Department of Family Medicine) who were experts in their fields for context validity, and experts were asked to score the items with points ranging from 1 to 4 (1: item not suitable, 2: item to be made suitable, 3: item suitable but requires revision, 4: item totally suitable) and to assess the items of the scale for suitability and clarity. Through the Kendall W analysis, suitability of experts' opinions was reviewed.<sup>20</sup> Based on experts' opinions, items 29 and 30 (Could you access to water in the health facility? Could you access to electricity in the health facility?) were excluded as there was no issue of accessing to water and electricity in Turkey. No statistically significant difference was found between the scores obtained from other items, and experts' answers to the items were found to be consistent (Kendal W = 0.075;  $p = 0.623 > 0.05$ ).

Considering experts' opinions, the pilot practice was performed with 30 people, and the data obtained from this practice were not included in the main sample. No item that was misunderstood was found in the assessment performed following the pilot practice, and the Turkish form of the scale with 28 items was implemented on the participants.

## Psychometric Testing of PCMC

### Validity

The sufficiency and size of the sample were tested before the factor analysis to ensure the construct validity of the scale. For that purpose, Kaiser-Meyer-Olkin (KMO) test was used. To determine whether the scale suited the factor analysis, Barlett's Test of Sphericity analysis was performed. The KMO values used to decide whether the data were suitable for factor analysis were interpreted as "perfect" when they were between 0.90 and 1.00, "very well" when between 0.80 and 0.89, "well" when between 0.70 and 0.79, "moderate" when between 0.60 and 0.69, and "poor" when between 0.50 and 0.59. The desired KMO value for performing factor analysis was above 0.60; as the value of Bartlett's Test of Sphericity increases, the data become more suitable for factor analysis.<sup>21,22</sup>

Validity analysis is "the degree of an instrument tool in terms of correctly measuring an attitude without mixing it with another attitude."<sup>23</sup> Two values, namely composite reliability (CR) and average variance extracted (AVE), are calculated in the validity analysis. The results obtained from the CR value analysis indicating how much a latent variable was represented by the variables that constituted the latent variable were generally in parallel to the calculated Cronbach's  $\alpha$  coefficient. CR results should be 0.70 and higher. The AVE value indicating the mean variance value in the observable variables which are related to a theoretically non-observable structure should be greater than the non-explainable variance and 0.50.<sup>24</sup>

While examining the scale factor structure, the popular principal component analysis was used, and results were assessed based on the idea that the factor loads regarding the items obtained at the end of the analysis should be at least 0.30.<sup>25</sup> CFA was performed to support the correctness of the sub-dimensions obtained through EFA. The threshold values regarding the goodness of fit index for the model were as follows:  $\chi^2/sd$  rate obtained at the end of CFA as  $\leq 5$ , RMSEA value as  $\leq 0.08$  and GFI, CFI, and IFI values as  $> 0.90$ .<sup>26</sup>

### Reliability

Reliability values regarding the scales were found through the Cronbach's  $\alpha$  (alpha) coefficient. This coefficient value ranges between 0 and 1. As the value gets closer to 1, the reliability regarding the internal consistency of a scale increases. Accordingly, values under 0.50 cannot be accepted, while values between 0.50 and 0.60 are weak. Moreover, values between 0.60 and 0.70 are questionable, and values between 0.70 and 0.80 are acceptable, while figures between 0.80 and 0.90 are good, and 0.90 and 1.00 are perfect in terms of reliability.<sup>27,28</sup> Internal consistency coefficients calculated in the scales are affected by the number of items in the scale. Therefore, as the number of items in a scale increases, the internal consistency coefficient will also increase.<sup>27</sup> If the number of items in a scale is low, a value of 0.50 is considered to be sufficient for the reliability of the scale.<sup>29</sup> Moreover, in case of a scale with a few items, Cronbach's  $\alpha$  or correlation coefficients between the items of a scale as well as the CR coefficients can be utilized to determine the internal consistency. In the event that the calculated values of correlation between the items are over 0.20, the reliability of this scale is considered to be sufficient.<sup>30</sup> For

PCMC, the total item correlation coefficients were examined to review the relationship between the scores obtained from test items and the total score from the test.

Thirty mothers were included in the study for the test-retest analysis of the scale. The invariance of the scale by time was measured through the test-retest correlation.<sup>31</sup>

### Data analysis

The data set initially underwent the reliability analysis and EFA on Statistical Program in Social Sciences (SPSS) version 25. To determine whether there was a relationship between the independent variables (factor sub-dimensions), variance inflation factor (VIF) analysis was performed. Finally, after performing CFA on AMOS 23 package software, goodness of fit and test values of the model whose Structural

Equation Modeling was established were interpreted. The significance level was accepted VI as 0.05.

### Multivariate normal distribution

In order to use CFA and EFA methods, which are multivariate analysis methods, the data were first checked for multiple normal distribution. The value obtained from the formula " $a \times (a + 2)$ " (a: number of observed variables) should be greater than the Mardia's Coefficient (the multivariate value in AMOS).<sup>32</sup> The skewness and kurtosis values of data indicated that the  $\pm 2$  threshold was ensured, and the data were accepted to show normal distribution. A total of 287 participants were included in the study and seven of these participants were eliminated because they were below the value of  $p < 0.01$ , which was obtained depending on the Mahalanobis distance result,<sup>33</sup> and analysis was carried out with 280 questionnaires. The multivariate normal distribution control of the data was controlled by the "Observations farthest from the centroid (Mahalanobis distance) Menu" in the AMOS program. The skewness value of the model was calculated to be 6.576 and since it was less than 8, multivariate normal distribution was provided.<sup>34</sup>

**TABLE 1** Distribution of sociodemographic variables of mothers in the postpartum period ( $n = 280$ )

Variables	<i>n</i>	%
Education		
Illiterate	19	6.8
Literate	48	17.1
Primary school	57	20.4
Middle school	68	24.3
High school	77	27.5
Undergraduate and above	11	3.9
Working status		
Working	53	18.9
Not working	227	81.1
Living place		
Urban	155	55.4
Rural	125	44.6
Social security		
Yes	238	85
No	42	15
Economical situation		
Good	65	23.2
Middle	175	62.5
Bad	40	14.3
Living child		
No	23	8.2
One	103	36.8
2nd	80	28.6
3 and above	74	26.5
Planned pregnancy		
Yes	209	74.6
No	71	25.4
Total	280	100
Age (mean $\pm$ SD)	27.75 $\pm$ 5.60	

Abbreviation: SD, standard deviation.

### Ethical issues

Patience Afulani was contacted through e-mail and asked for her permission in the early stages of adapting PCMC into Turkish culture. Then, written permission was obtained from the institution where the study was conducted, and approval of the Committee of Non-Interventional Clinical Studies within the Health Sciences Department at Inonu University (Decision No: 2019/281) was received. In addition, informed consent form was administered to the participants, and those who were voluntary were included.

### Results

Table 1 presents the distribution of the socio-demographic variables of women in the postpartum period. Mean age of the participating women was  $27.75 \pm 5.60$  years. Of them, 18.9% were employed, 81.1% were unemployed, 62.55 had income equal to expenses, 27.5% were high school graduates, 55.4% lived in an urban area, 36.8% had one child, and 74.6% had planned pregnancy (Table 1).

**TABLE 2** Factor loadings and item-total correlations of the PCMC scale

Questions (abbreviation of scale items)	Dignity and respect	Communication and autonomy	Supportive care	Mean ± SD	Corrected item-total correlations
4 (treated with respect)	0.886			3.04 ± 1.96	0.315
5 (friendly)	0.905			2.72 ± 0.83	0.568
6 (visual privacy)	0.882			2.27 ± 0.99	0.489
7 (record confidentiality)	0.879			3.03 ± 0.89	0.538
1 (time to care)	0.059 <sup>a</sup>			1.18 ± 1.17	0.418
2 (introduce self)	0.121 <sup>a</sup>			0.89 ± 0.96	0.023
3 (called by name)		0.852		2.88 ± 0.84	0.554
8 (involvement in care)		0.837		2.54 ± 0.91	0.626
9 (consent to procedures/exams)		0.831		2.58 ± 0.95	0.493
10 (delivery position choice)		0.829		2.07 ± 0.95	0.494
11 (language)		0.816		3.03 ± 0.88	0.519
12 (explain exams/procedures)		0.808		2.59 ± 0.97	0.597
13 (explain medicines)		0.795		2.68 ± 1.13	0.493
16 (able to ask questions)		0.488		2.95 ± 0.96	0.624
17 (labor support)			0.193 <sup>a</sup>	1.04 ± 0.93	0.217
18 (labor support)			0.067 <sup>a</sup>	1.32 ± 0.92	0.313
14 (talk about feeling)			0.891	2.17 ± 0.94	0.570
15 (support anxiety)			0.869	2.51 ± 0.04	0.576
19 (attention when need help)			0.868	2.72 ± 0.91	0.606
20 (control pain)			0.809	2.68 ± 0.93	0.534
21 (verbal abuse)	0.061 <sup>a</sup>			1.11 ± 1.15	0.008
22 (physical abuse)	0.047 <sup>a</sup>			0.98 ± 1.01	0.383
23 (enough staff)			0.730	2.78 ± 0.92	0.406
24 (took best care)			0.866	2.74 ± 0.87	0.731
25 (trust)			0.613	2.86 ± 0.86	0.672
26 (crowded)			0.079 <sup>a</sup>	0.89 ± 1.06	0.069
27 (clean)			0.647	2.24 ± 0.94	0.359
28 (trust)			0.652	2.89 ± 0.95	0.617
% Variance explained	17.007	26.498	27.874	Total = 71.379	

Abbreviations: PCMC, person-centered maternity care; SD, standard deviation. and <sup>a</sup>Factor load <0.30.

**Validity**

Following the KMO analysis, patients’ KMO coefficient was 0.92 while their  $\chi^2$  value following the Barlett’s test of Sphericity analysis was 5271.281. Test results were statistically significant ( $p = 0.001 < 0.05$ ). Based on the KMO results, sample size was sufficient and suitable for factor analysis.

As a result of the EFA performed for the validity of 28-item PCMC, factor load value ranged between 0.882 and 0.905 for the dignity and respect sub-dimension, 0.488 and 0.852 for communication and autonomy, and 0.613 and 0.891 for supportive care. In addition, 17.007% of the total variance consisted of dignity and respect sub-dimension, while 26.498% consisted of communication and autonomy, and 27.874% was explained by the supportive care. The

rate of explaining the total variance was 71.379% (Table 2). Items 1, 2, 17, 18, 21, 22, and 26 were excluded owing to their low factor loads (factor load <0.30). Therefore, the 21-item three-dimensional “Person-Centered Maternity Care Scale” was achieved.

The goodness of fit indices calculated to test the suitability of the model in the structural equation modeling are displayed in Table 3 in detail. The CFA used to form the non-observable variables through the observable variables while creating a model is a commonly utilized method.<sup>34</sup> The CFA was implemented on the scale, and correctness of the dimensions was tested.

The CFA goodness of fit indices regarding the PCMC were as follows:  $\chi^2$  726.227, df 186 ( $p < 0.05$ ),  $\chi^2$ /df 3.904, RMSEA 0.102, GFI 0.792, CFI 0.896, and

**TABLE 3** CFA goodness of fit indices for PCMC scale

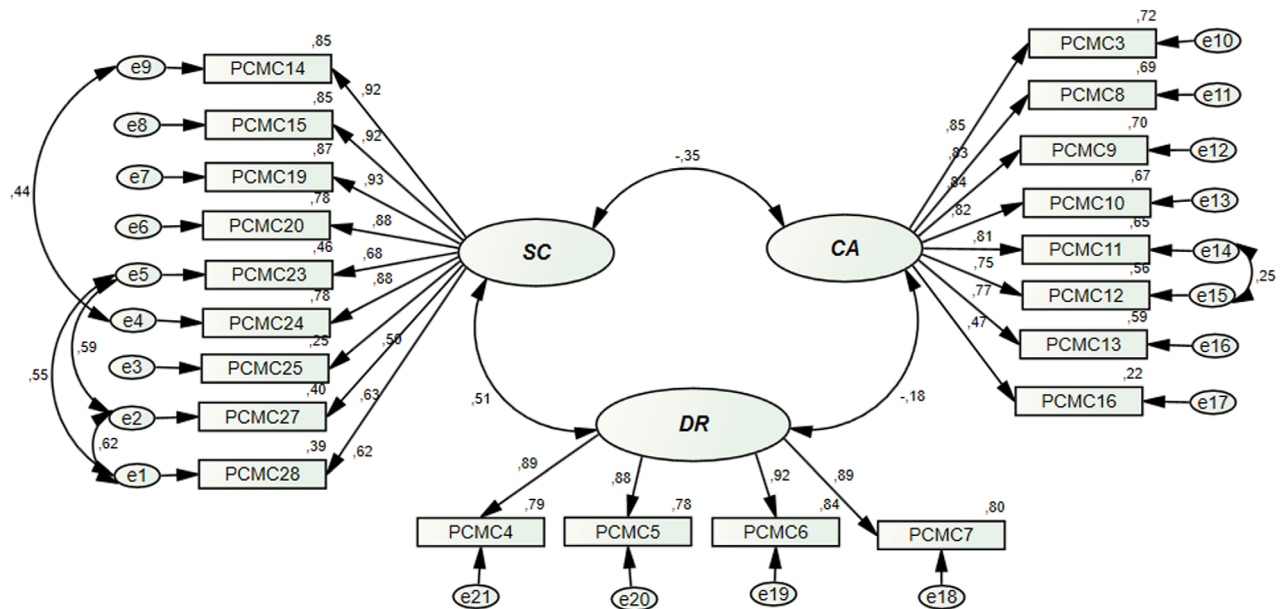
Fit index	First model	Model 2	Good fit	Acceptable compliance
CMIN	726.227	408.973	The model with the smallest value is more compatible	
sd	186	181		
P	0.001	0.001	$p < 0.05$	
$\chi^2$ /sd	3.904	2.260	$\leq 3$	3–5
GFI	0.792 <sup>a</sup>	0.885 <sup>a</sup>	$\geq 0.95$	0.90–0.95
IFI	0.897 <sup>a</sup>	0.957	$\geq 0.95$	0.90–0.95
CFI	0.996	0.956	$\geq 0.97$	0.95–0.97
RMSEA	0.102	0.067	$\leq 0.05$	0.05–0.08

Abbreviations: CFA, confirmatory factor analysis; CFI, Comparative Fit Index; CMIN, minimum difference/mismatch coefficient; GFI, goodness of fit index; IFI, Bollen’s Incremental Fit Index; P, statistical, significant; PCMC, person-centered maternity care; RMSEA, root mean square error of approximation; sd, degree of freedom;  $\chi^2$ /sd, dividing the minimum difference value by the degrees of freedom. and <sup>a</sup>Values are not in the desired range.

IFI 0.897 (Table 3). The desired results regarding the goodness of fit indices in the initially-prepared model could not be achieved in the assessment. In cases where a good fit index cannot be obtained, model modifications are made depending on the covariances between observed and unobservable variables in the confirmatory factor analysis. These modifications are now created on the basis of error terms, and the residual error term of the unobservable variable is denoted by “e.”<sup>35</sup> Therefore, modification indices regarding the model were examined and the dual residual terms with the highest value were e1–e2, e1–e5, e2–e5, e4–e9, and e14–e15. Covariance was drawn between these terms, and model was re-formed and

calculations were performed accordingly. As covariance cannot be drawn for the residual terms between the dimensions, attention was paid to the detail that drawings had the same dimensions.<sup>36</sup> The covariance’s drawn between these dual error terms indicated that there was a common structure explaining an abstract concept between these error terms. This explanation was related to the common structure formed by these dual terms, rather than the factors. These two error terms collectively explained a case that was statistically significant.

Error covariance’s regarding these items were related, and a second CFA model was achieved. Following the changes, CFA goodness of fit indices were



**FIGURE 1** Drawing diagram for the results of person-centered maternity care scale in IBM SPSS AMOS 24

**TABLE 4** PCMCS and sub-dimensions Cronbach's alpha values

Scale	Cronbach's alpha
PCMCS	0.821
Dignity and respect	0.613
Communication and autonomy	0.774
Supportive care	0.743

Abbreviation: PCMCS, person-centered maternity care scale.

as follows:  $\chi^2$  408.973, df 181 ( $p < 0.05$ ),  $\chi^2/df$  2.260, RMSEA 0.067, GFI 0.885, CFI 0.956, and IFI 0.957 (Table 3). Following the second CFA model, the PCMC Scale diagram is displayed in Figure 1.

### Reliability

As a result of Cronbach's  $\alpha$  reliability analysis performed to measure the internal consistency of PCMC scale, the total internal consistency coefficient of the scale was 0.821, while the internal consistency coefficient value was 0.613 for dignity and respect sub-dimension, 0.774 for communication and autonomy, and 0.743 for supportive care (Table 4).

The correlation values between the mean score of first practice and secondary practice regarding the PCMC, the latter of which was performed 3 weeks later, ranged (Table 5) between 0.983 and 1.00. A positive and statistically significant relationship was found within all dimensions and sub-dimensions in relation to the PCMC ( $p < 0.05$ ). In addition, the  $t$  test within the dependent groups did not significantly differ in the pre and post-test stages ( $p > 0.05$ ).

The lowest and highest scores obtained by 280 mothers from the entire scale were 21 and 65, respectively, and women's mean score was  $39.96 \pm 7.98$ . The lowest and highest scores obtained from "Dignity and Respect" were 0 and 12, while the mean score was  $6.38 \pm 2.91$ . In addition, the lowest

and highest scores obtained from "Communication and Autonomy" were 7 and 26, while the mean score was  $14.94 \pm 4.99$ , and the lowest and highest scores obtained from "Supportive Care" were 9 and 27, while the mean score was  $16.66 \pm 6.22$  (Table 6).

## Discussion

### Validity

To test the construct validity of PCMC adapted into Turkish, EFA and CFA were performed. Before conducting the factor analysis, KMO analysis was performed to test the sufficient and suitability of the sample size. KMO value of PCMC Scale was 0.92. The same value was 0.91 in the original version<sup>7</sup> and in the Indian version.<sup>37</sup> The  $\chi^2$  value of 5271.281 and tested sample size analysis value of  $p = 0.001 < 0.05$  indicated that the sample size was sufficient and suitable for performing factor analysis (Table 2).

Varimax Rotation was used in the EFA stage of the factor analysis. Factor load values ranged between 0.488 and 0.905. The rate of explanation regarding the total variance was 71.379% (Table 2). The original form of PCMC scale consists of 30 items. The factor loads which are related to the items found at the end of EFA used to examine the scale factor structure should be at least 0.30.<sup>7,25,38</sup> The items 1, 2, 17, 18, 21, 22, and 26 (How did you feel about the amount of time you waited?, During your time in the health facility did the doctors, nurses, or other health care providers introduce themselves to you when they first came to see you?, Were you allowed to have someone you wanted [from outside of staff at the facility, such as family or friends] to stay with you during labor?, Were you allowed to have someone you wanted to stay with you during delivery?, Did you feel the doctors, nurses, or other health providers shouted at you,

**TABLE 5** PCMCS and sub-dimensions test-retest values

PCMCS		Mean $\pm$ SD	$t$	* $p$ value	$r$	** $p$ value
SC	Test	15.20 $\pm$ 4.67	0.283	0.778	0.986	0.001
	Retest	14.87 $\pm$ 4.45				
CA	Test	15.07 $\pm$ 4.62	0.313	0.755	0.987	0.001
	Retest	14.70 $\pm$ 4.43				
DR	Test	7.10 $\pm$ 2.58	0.001	1.000	1.000	0.001
	Retest	7.10 $\pm$ 2.58				
PCMC	Test	37.37 $\pm$ 10.44	0.265	0.792	0.994	0.001
	Retest	36.67 $\pm$ 10.03				

Abbreviation: CA, Communication and autonomy; DR, Dignity and respect; PCMCS, person-centered maternity care scale; SC, Supportive care; SD, standard deviation;  $t$ , dependent samples  $t$  test;  $r$ , pearson correlation analysis. and \* $p > 0.05$ ; \*\* $p < 0.05$ .

**TABLE 6** PCMCS scoring information

Scale	Min–Max scores to receive from the scale	Min–Max scores in received from the scale	Mean $\pm$ SD
PCMCS	0–66	21–65	39.96 $\pm$ 7.98
Dignity and respect	0–13	0–12	6.38 $\pm$ 2.91
Communication and autonomy	0–26	7–26	14.94 $\pm$ 4.99
Supportive care	0–27	9–27	16.66 $\pm$ 6.22

Abbreviations: Max, maximum; Min, minimum; PCMCS, person-centered maternity care scale; SD, standard deviation.

scolded, insulted, threatened, or talked to you rudely?, Did you feel like you were treated roughly like pushed, beaten, slapped, pinched, physically restrained, or gagged?, Thinking about the labor and postnatal wards, Did you feel the health facility was crowded?) whose factor loads were under 0.30 were excluded from the analysis. Based on experts' opinions, items 29 and 30 (Could you access to water in the health facility? Could you access to electricity in the health facility?) were excluded without consulting to experts' opinions as there were no institutions that could not have access to electricity and water in Turkey. Consequently, 21-item Turkish version was achieved (Table 2). Results were largely consistent with the results of EFA factor analysis regarding the original scale,<sup>7</sup> items were collected under three factors in the Turkish version, which was also the case for the original form of the scale, and construct validity was ensured (Figure 1).

Correctness of items was tested by applying CFA on the three-dimensional scale with 21 items that were obtained through EFA. The  $\chi^2$ /sd rate found at the end of CFA was  $\leq 5$ , while RMSEA was  $\leq 0.08$  and GFI, CFI, and IFI values were higher than 0.90, which were accepted as the lower threshold value for the goodness of fit index regarding the model data.<sup>22</sup> The goodness of fit index values calculated in the first model regarding the scale were  $\chi^2$  726.227, df 186 ( $p < 0.05$ ),  $\chi^2$ /df 3.904, RMSEA 0.102, GFI 0.792, CFI 0.896, and IFI 0.897. Following the examination of the modification indices regarding the model, the residual terms with the highest value were e1–e2, e1–e5, e2–e5, e4–e9, and e14–e15, and calculations were performed after the model was re-formed by drawing covariance's between these dual residual terms. As desired results regarding the goodness of fit indices obtained from the first model were not achieved, error covariance's regarding these items were correlated and a second CFA model was applied (Figure 1). The CFA goodness of fit indices calculated

for the newly-established model with the error covariance's drawn between the dual residual terms were as follows:  $\chi^2$  408.973, df 181 ( $p < 0.05$ ),  $\chi^2$ /df 2.260, RMSEA 0.067, GFI 0.885, CFI 0.956, and IFI 0.957 (Table 3). The model was found to show acceptable goodness of fit. The CFA analysis results supported the three-factor scale structure that arose from the EFA. In the relevant scale, the higher scores on “dignity and respect,” “communication and autonomy,” and “supportive care” sub-dimensions indicate that puerperant's satisfaction with maternity care services is high. When satisfaction with maternity care services is high, women are more likely to choose the same health facility for their next birth.<sup>7</sup> Using the three-factor scale with validity and reliability in Turkish society may contribute to women's health by improving the birth experiences of women.

### Reliability

Reliability of PCMC was assessed through Cronbach's  $\alpha$  internal consistency coefficient, total item correlation, and test–retest analysis. Following the Cronbach's  $\alpha$  reliability analysis performed to measure the internal consistency of 21-item PCMC that could be used during the first nine weeks in the postpartum period, the internal consistency coefficient of “dignity and respect” sub-dimension was 0.613, while it was 0.774 for “communication and autonomy” and 0.743 for “supportive care”; the total internal consistency coefficient was 0.821 (Table 4). In the original form of the scale developed by Afulani et al.,<sup>7</sup> Cronbach's  $\alpha$  internal consistency coefficient was 0.63 for “dignity and respect” sub-dimension, 0.73 for communication and autonomy” sub-dimension and 0.72 for “supportive care” sub-dimension; the total internal consistency coefficient was 0.86.<sup>7</sup> Regarding the Indian form, Cronbach's  $\alpha$  internal consistency coefficients were 0.70, 0.67, 0.71, and 0.85, respectively, while they were 0.66, 0.78, 0.75, and 0.88, respectively, in the Kenyan form. Cronbach's  $\alpha$



internal consistency coefficients were 0.62, 0.72, 0.66, and 0.84, respectively, in the Ghanaian form.<sup>2</sup> The Cronbach's alpha internal consistency coefficients suited the original scale and other scales translated into other languages,<sup>2,7,8</sup> and Turkish version of PCMC was highly reliable in terms of its total structure and sub-dimensions.

The total item correlation coefficients were  $\geq 0.20$ , meaning they were over the acceptable threshold in terms of item selection, and the total item correlation coefficients ranged between 0.315 and 0.568 for "dignity and respect," 0.493 and 0.626 for "communication and autonomy," and 0.406 and 0.731 for "supportive care." High correlation coefficient for each item indicates that the item is effective and sufficient for measuring the desired attitude. The correlation between each item and total score was acceptable and statistically significant ( $p < 0.05$ ) in the present study. The total item correlation coefficients obtained from the scale ranged between 0.315 and 0.731, and the total reliability value of the scale was 0.821 (Table 2).

The correlation values ranged between 0.983 and 1.00 between the mean scores regarding the first practice implemented on 30 patients for test-retest analysis and second practice that was performed 3 weeks later (Table 5); a positive and statistically significant relationship was found ( $p < 0.05$ ). Moreover, the  $t$  test value did not significantly differ in the pre- and post-test stages within the dependent groups ( $p > 0.05$ ), and the scale was invariant against the time.

Regarding the mean scores from PCMC, the total mean score from the scale was  $39.96 \pm 7.98$ ; the mean score of "dignity and respect" sub-dimension was  $6.38 \pm 0.91$ , while it was  $14.94 \pm 4.99$  for "communication and autonomy," and  $16.66 \pm 6.22$  for "supportive care." In the 30-item original version, the total mean score was  $59.8 \pm 13.1$ , while it was  $14.8 \pm 2.9$  for "dignity and respect,"  $14.4 \pm 5.5$  for "communication and autonomy," and  $30.15 \pm 6.7$  for "supportive care." Regarding the Indian version of PCMC, the total mean score from 27-item scale was  $50.3 \pm 10.9$ , while it was  $14.1 \pm 3.48$  for "dignity and respect,"  $9.6 \pm 4.3$  for "communication and autonomy," and  $26.7 \pm 5.19$  for "supportive care."<sup>8</sup> There were differences between the mean scores owing to the different number of items between country-specific versions. Healthcare infrastructure, cultural structure, and health perception of each country differ. Health services should be improved and culturally appropriate care should be given in regions where women's satisfaction with maternity care is low. In addition, while

interpreting scale scores, factors affecting the results should not be ignored and it should be kept in mind that women's perception levels may differ culturally.

## Conclusion

Results of the present study were consistent with the results of the original scale. Three-factor structure of the scale obtained through the EFA was confirmed with the results of CFA. Based on the experts' opinions, items 29 and 30 were excluded as there were no Turkish institutions that had no access to electricity and water. Owing to low factor loads, items 1, 2, 17, 18, 21, 22, and 26 were also excluded, and the 21-item scale with three sub-dimensions was formed (Appendix 1). Cronbach's  $\alpha$  internal consistency coefficient, total item correlation, and test-retest analysis of the scale had high correlation. These results indicated that the Turkish form of PCMC was valid and reliable. In addition, PCMC scale may contribute to the development of person-centered maternal care.

## Limitations

Participants are taken from the women giving birth in a public hospital in Turkey is the limitation of the research. It cannot be generalized to the general population since it is performed in a single center. Also found in the original scale of 29 (Could you access to water in the health facility?), and 30 (Could you access to electricity in the health facility) items are exempted under the expert opinion is not appropriate physical infrastructure of the health institutions in Turkey. Therefore, intercultural differences should be taken into account when comparing mean scores in future studies.

## Acknowledgments

We would like to thank the mothers who participated in and completed this questionnaire.

## Conflict of Interest

The authors have no conflicts of interest to disclose.

## Data Availability Statement

Author elects to not share data.

## References

1. Van den Broek NR, Graham WJ. Quality of care for maternal and newborn health: the neglected agenda. *BJOG*. 2009;**116**: 18–21.
2. Afulani PA, Phillips B, Aborigo RA, Moyer CA. Person-centred maternity care in low-income and middle-income countries: analysis of data from Kenya, Ghana and India. *Lancet Glob Health*. 2019;**7**:96–109.
3. Bohren MA, Vogel JP, Hunter EC, Lutsiv O, Makh SK, Souza JP, et al. The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review. *PLoS Med*. 2015;**12**:e1001847. <https://doi.org/10.1371/journal.pmed.1001847>
4. Abuya T, Warren CE, Miller N, Njuki R, Ndwiga C, Maranga A, et al. Exploring the prevalence of disrespect and abuse during childbirth in Kenya. *PLoS One*. 2015;**10**: e0123606. <https://doi.org/10.1371/journal.pone.0123606>
5. Bradley S, McCourt C, Rayment J, Parmar D. Disrespectful intrapartum care during facility-based delivery in sub-Saharan Africa: a qualitative systematic review and thematic synthesis of women's perceptions and experiences. *Soc Sci Med*. 2016;**169**:157–70.
6. Uysal B. Evaluation of women's birth experience and postpartum satisfaction [master's thesis]. Eskişehir Osmangazi University Faculty of Health Sciences, Midwifery Program. Eskişehir, Turkey, 2017.
7. Afulani PA, Diamond Smith N, Golub G, Sudhinaraset M. Development of a tool to measure person-centered maternity care in developing settings: validation in a rural and urban Kenyan population. *Reprod Health*. 2017;**14**(1):1–18. <https://doi.org/10.1186/s12978-017-0381-7>
8. Afulani PA, Diamond-Smith N, Phillips B, Singhal S, Sudhinaraset M. Validation of the person-centered maternity care scale in India. *Reprod Health*. 2018;**15**:147.
9. Montagu D, Giessler K, Nakphong MK, Roy KP, Sahu AB, Sharma K, et al. Results of a person-centered maternal health quality improvement intervention in Uttar Pradesh, India. *Plos One*. 2020;**15**:e0242909.
10. Rao M, Clarke A, Sanderson C, Hammersley R. Patients' own assessments of quality of primary care compared with objective records based measures of technical quality of care: cross sectional study. *Br Med J*. 2006;**333**:19–22.
11. De Labrusse C, Ramelet AS, Humphrey T, MacLennan SJ. Patient-centered care in maternity services: a critical appraisal and synthesis of the literature. *Womens Health Issues*. 2016;**26**:100–9.
12. Sudhinaraset M, Giessler K, Golub G, Afulani P. Providers and women's perspectives on person-centered maternity care: a mixed methods study in Kenya. *Int J Equity Health*. 2019;**18**:1–15.
13. Asefa A, Bekele D. Status of respectful and non-abusive care during facility-based childbirth in a hospital and health centers in Addis Ababa, Ethiopia. *Reprod Health*. 2015;**12**:1–9.
14. Petit-Steeghs V, Lips SR, Schuitmaker-Warnaar TJ, Broerse JE. Client-centred maternity care from women's perspectives: need for responsiveness. *Midwifery*. 2019;**74**:76–83.
15. World Health Organization, 2018. WHO recommendations: intrapartum care for a positive childbirth experience. [Cited 19 Oct 2020]. <https://www.who.int/reproductivehealth/publications/intrapartum-care-guidelines/en/>.
16. Hunter A, Devane D, Houghton C, Grealish A, Tully A, Smith V. Woman-centred care during pregnancy and birth in Ireland: thematic analysis of women's and clinicians' experiences. *BMC Pregnancy Childbirth*. 2017;**17**:1–12.
17. Rubashkin N, Warnock R, Diamond-Smith N. A systematic review of person-centered care interventions to improve quality of facility-based delivery. *Reprod Health*. 2018;**15**:1–22.
18. Ozshahin Z. The effect of training given in line with the health promotion model aimed at increasing fertility awareness on fertility awareness in women [PhD thesis]. Inonu University Faculty of Health Sciences, Midwifery Program. Malatya, Turkey, 2020.
19. Karakoc FY, Donmez L. Basic principles of scale development. *Medical Education World*. 2014;**13**:39–49.
20. Bowling A, Ebrahim S. *Handbook of health research methods. Investigation, measurement and analysis*. 1st ed. New York, NY: McGraw-Hill Education; 2005.
21. Alpar R. *Applied statistics and validity-reliability*. Ankara: Detay Publications; 2012.
22. Akin A. The validity and reliability of the Turkish version of the Berkeley expressivity scale. *Procedia Soc Behav Sci*. 2011;**30**:27–33.
23. Tekin H. *Measurement and evaluation in education*. Ankara: Mars Printing House; 1977.
24. Barazani Y, Katz BF, Nagler HM, Stember DS. Lifestyle, environment, and male reproductive health. *Urol Clin North Am*. 2014;**41**:55–66.
25. Buyukozturk Y. Factor analysis: basic concepts and its use in scale development. *Educ Admin Theory Pract*. 2002;**32**: 470–83.
26. Gürbüz S. *Structural equation modeling with AMOS*. Ankara, Turkey: Seçkin Publishing; 2019; p. 33–44.
27. Urbina S. *Essentials of psychological testing*. 2nd ed. USA: John Wiley & Sons. Inc; 2014.
28. Gliem JA, Gliem RR. Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education. 2003.
29. Raines-Eudy R. Using structural equation modeling to test for differential reliability and validity: an empirical demonstration. *Struct Equ Model Multidiscip J*. 2000;**7**:124–41.
30. Briggs SR, Cheek JM. The role of factor analysis in the development and evaluation of personality scales. *J Pers*. 1986;**54**:106–48. <https://doi.org/10.1111/j.1467-6494.1986.tb00391.x>
31. Gozum S, Aksayan S. A guidelines for transcultural adaptation of the scale II: psychometric characteristics and cross-cultural comparison. *HEMAR-G*. 2003;**5**(1):3–14.
32. Mardia KV. Applications of some measures of multivariate skewness and kurtosis in testing normality and robustness studies. *Sankhya, Indian J Stat*. 1974;**36**:115–28.
33. Batmaz H, Ulusoy Y, Inceoglu F. The mediating role of digital game addiction in the correlation between cyber victimization and cyber bullying. *Int Soc Sci Stud J*. 2020;**6**: 5093–108.
34. Inceoglu F. Competitive models in confirmatory factor analysis and a clinical application [PhD thesis]. Inonu University

- Faculty of Health Sciences, Biostatistics and Medical Informatics Department Joint Doctoral Program. Malatya, Turkey, 2018.
35. Meydan CH, Sesen H. *Structural equation modeling AMOS applications*. Ankara, Turkey: Detay Publishing; 2011.
36. Civelek ME. *Essentials of structural equation modeling*. Istanbul: Beta Publications; 2018.
37. Afulani PA, Sayi TS, Montagu D. Predictors of person-centered maternity care: the role of socioeconomic status, empowerment, and facility type. *BMC Health Serv Res*. 2018; **18**:1–16.
38. Karaman H, Atar B, Aktan DC. The comparison of factor extraction methods used in exploratory factor analysis. *GUJGEF*. 2017;**37**:1173–93.

## Appendix I. Kişi Odaklı Annelik Bakım Ölçeği (Person-centered maternity care scale)

### Scale Items

1. Sağlık kuruluşundaki hekimler ve diğer sağlık personelleri size isminizle hitap etti mi? (Did the doctors, nurses, or other health care providers call you by your name?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
2. Sağlık kuruluşundaki hekimler ve diğer sağlık personelleri size saygılı davrandılar mı? (Did the doctors, nurses, or other staff at the facility treat you with respect?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
3. Sağlık kuruluşundaki hekimler ve diğer sağlık personeli size arkadaşça davrandılar mı? (Did the doctors, nurses, and other staff at the facility treat you in a friendly manner?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
4. Yapılan muayeneler sırasında kendinizi rahatsız hissetmemeniz için, üzeriniz (bir perdeyle, bir bezle ya da bir battaniyeyle) kapatıldı mı? (During examinations in the labor room, were you covered up with a cloth or blanket or screened with a curtain so that you did not feel exposed?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
5. Bu sağlık kuruluşunda sağlık bilgilerinizin gizli tutulacağını veya güvenli bir şekilde saklanacağını düşünüyor musunuz? (Do you feel like your health information was or will be kept confidential at this facility?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
6. Hekimlerin ve diğer sağlık personellerinin, bakımınız ile ilgili kararlara sizi dahil ettiğini hissettiniz mi? (Did you feel like the doctors, nurses or other staff at the facility involved you in decisions about your care?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time) (4) Herhangi bir karar vermek zorunda kalmadı (Did not have to make any decisions)
7. Hekimler ve diğer sağlık personelleri, sizinle ilgili işlem yapmadan önce izninizi/rızanızı aldılar mı? (Did the doctors, nurses or other staff at the facility ask your permission/consent before doing procedures on you?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
8. Doğum süresince, kendi seçtiğiniz pozisyonunda mıydınız? (During the delivery, do you feel like you were able to be in the position of your choice?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
9. Hekimler ve diğer sağlık personelleri sizin anlayabileceğiniz bir dilde konuştular mı? (Did the doctors, nurses or other staff at the facility speak to you in a language you could understand?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
10. Hekimler ve diğer sağlık personelleri, muayene ve işlemlerin neden yapıldığı hakkında size açıklama yaptılar mı? (Did the doctors and nurses explain to you why they were doing examinations or procedures on you?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
11. Hekimler ve diğer sağlık personelleri ilaçların size ne amaçla verildiğini açıkladı mı? (Did the doctors and nurses explain to you why they were giving you any medicine?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time) (4) Hiç ilaç almadım (Did not get any medicine)

12. Hekimler ve diğer sağlık personelleri sizinle neler hissettiğinizle ilgili konuşmalar mı? (Did the doctors and nurses at the facility talk to you about how you were feeling?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
  13. Hekimler ve diğer sağlık personelleri endişelerinizi ve korkularınızı anlamaya çalıştılar mı? (Did the doctors, nurses or other staff at the facility try to understand your anxieties and fears?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time) (4) Endişelerim ve korkularım yoktu (Did not have any anxieties or fears)
  14. Herhangi bir sorunuz olduğunda hekimlere ve diğer sağlık personellerine rahatlıkla sorabildiniz mi? (Did you feel you could ask the doctors, nurses or other staff at the facility any questions you had?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
  15. Yardıma ihtiyaç duyduğunuzda, hekimlerin ve diğer sağlık personellerinin bunu önemseydiğini hissettiniz mi? (When you needed help, did you feel the doctors, nurses or other staff at the facility paid attention?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
  16. Hekimler ve diğer sağlık personelleri, ağrılarınızı kontrol altına almanız için ellerinden gelen her şeyi yaptılar mı? (Do you feel the doctors or nurses did everything they could to help control your pain?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
  17. Bakımınızın sağlanması için yeterli sayıda sağlık personeli olduğunu düşünüyor musunuz? (Do you think there was enough health staff in the facility to care for you?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
  18. Sağlık kuruluşundaki hekimlerden ve diğer sağlık personellerinden verilebilecek en iyi bakımı aldığınızı hissettiniz mi? (Did you feel the doctors, nurses or other staff at the facility took the best care of you? )  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
  19. Hekimlere ve diğer sağlık personellerine bakımınız konusunda tamamen güvenebileceğinizi hissettiniz mi? (Did you feel you could completely trust the doctors, nurses or other staff at the facility with regards to your care?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
  20. Banyolar, tuvaletler ve sağlık kuruluşunun genel çevresinin temizliğiyle ilgili ne düşündünüz? (Thinking about the wards, washrooms and the general environment of the health facility, will you say the facility was very clean, clean, dirty, or very dirty)  
(0) Çok kirli (Very dirty) (1) Kirli (Dirty) (2) Temiz (Clean) (3) Çok temiz (Very clean)
  21. Sağlık kuruluşunda genel olarak kendinizi güvende hissettiniz mi? (In general, did you feel safe in the health facility?)  
(0) Hayır, asla (No, never) (1) Evet, birkaç kez (Yes, a few times) (2) Evet, çoğu zaman (Yes, most of the time) (3) Evet, her zaman (Yes, all the time)
-