



Original Research / Orijinal Araştırma

## Inter- and Intra-Rater Reliability of the Measure of Patient-Centered Communication

### Hasta Merkezli İletişim Ölçüm Aracının Değerlendirici İçi ve Değerlendiriciler Arası Güvenilirliği

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#### Abstract

**Introduction:** The patient-centered clinical method allows the biopsychosocial model to be implemented in clinical practice. It is critical to look at the use of the patient-centered clinical method, which has been shown to benefit both patients and clinicians, particularly in primary care. The Measure of Patient-Centered Communication (MPPC) is a theory-based instrument for assessment of patient-physician interaction. The aim of this research is to investigate the inter- and intra-rater reliability of the MPCC tool in Turkish. **Methods:** Audiovisual recordings of 60 patient-physician consultations of 30 family physicians were evaluated. Three researchers independently assessed and scored these interviews with MPCC by following the instructions in the manual of the tool. Evaluators reassessed the randomly selected 20 consultations 15 days later to determine the intra-rater reliability. For each component score and the overall score, ICC estimates, and their 95% confidence intervals were calculated based on a mean-rating (k=3), consistency, 2-way mixed-effects model. **Results:** The ICCs for overall score and component one were 0.810 and 0.820, respectively, for all 60 consultations, demonstrating strong inter-rater reliability. Components two and three had ICCs of 0.646, indicating strong reliability, and 0.537, indicating moderate reliability. All researchers' intra-rater correlation scores for all score groups ranged between 0.989 and 0.698, indicating good to excellent reliability. **Conclusions:** MPCC tool is reliable in its current form as it is translated into another language and conducted in another sociocultural environment.

**Key words:** Patient-Centeredness, Primary Care, Family Medicine, Physician-Patient Communication

#### Özet

**Giriş:** Hasta merkezli klinik yöntem, biyopsikosozyal modelin klinik ortamda uygulanabilmesi açısından yol göstericidir. Hem hasta hem de hekim açısından fayda sağladığı bilinen hasta merkezli klinik yöntemin, özellikle birinci basamak ortamında kullanımının araştırılması önemlidir. Hasta Merkezli İletişim Ölçüm Aracı (HMİÖA) hasta – hekim görüşmesinin gözlemsel olarak değerlendirilmesini sağlayan, teoriye dayalı bir ölçüm aracıdır. Bu çalışmanın amacı HMİÖA'nın Türkçe olarak değerlendirici içi ve değerlendiriciler arası güvenilirliğini araştırmaktır. **Yöntem:** 30 aile hekimi tarafından yapılan 60 hasta-hekim görüşmesinin görsel-ışitsel kayıtları değerlendirildi. Üç araştırmacı birbirinden bağımsız olarak bu görüşmeleri HMİÖA rehberliğinde değerlendirdi ve puanladı. Araştırmacılar 15 gün sonra rastgele seçilmiş 20 görüşmeyi değerlendirici-içi güvenilirliğin saptanması amacı ile yeniden değerlendirdiler. Her bir bileşen puanı ve toplam puan için ICC kestirimleri ve %95 güven aralıkları ortalama-puan (k=3), tutarlılık, 2 yönlü karma etki modeli temelinde hesaplandı. **Bulgular:** Toplam puan ve birinci bileşen puanı için değerlendiriciler arası güvenilirlik mükemmel olup ICC katsayıları, sırası ile 0.810 ve 0.820 idi. İkinci bileşen puanı katsayısı 0.646 ve üçüncü bileşen puanı katsayısı 0.537 olup sırası ile iyi ve orta düzeyde güvenilirliği ifade etmekteydiler. Değerlendirici-içi korelasyon katsayıları ise tüm değerlendiriciler ve tüm puan grupları için 0.989 ve 0.698 arasında olup iyi düzeyde ile mükemmel arasında değişmekteydi. **Sonuç:** Farklı bir dile çevrilen ve farklı bir sosyokültürel ortamda uygulanan HMİÖA bu hali ile güvenilirirdir.

**Anahtar kelimeler:** Hasta Merkezlilik, Birinci Basamak, Aile Hekimliği, Hasta-Hekim İletişimi

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## Introduction

The environment in which the patient-centered clinical method is used is the primary care setting where patient-physician consultation takes place. Each consultation is a part of an ongoing relationship and, in addition to the examination of new complaints, may be held for a variety of reasons, such as the monitoring of chronic diseases, preventative care, counseling, and administrative procedures. Since the second half of the 20th century, principles of patient-physician interaction have been subjected to a significant paradigm shift. The traditional physician-centered approach, predominantly determined by the biomedical paradigm, was gradually being replaced by a patient-centered approach in which the individual's biopsychosocial issues are recognized and evaluated.<sup>1-3</sup>

For the first time, Balint expressed concerns about the conventional approach and claimed that physicians could not fully comprehend the illness of their patients by interrogating them with successive questions rather than listening.<sup>4</sup> Starting from this point of view, Engel developed the biopsychosocial model in the 1970s. This model refers to all the characteristics of the individual with their psychological and social nature and thus overrides the biomedical method, which only evaluates the patient physiologically and tries to reach a diagnosis.<sup>3,5</sup>

Each patient has his/her own feelings, expectations, and ideas about their illnesses, primarily determined by their biological, psychological, and social background. The meaning of the illness for the patient is crucial for us to reflect his/her own world. The biopsychosocial conceptual model has led to considerable benefits in medical education and research. The patient-centered clinical method offers a way to enact the biopsychosocial model in clinical practice.

Even though patient-centeredness is a core value for all clinical practices, it constitutes the backbone of family practice. The patient-centered clinical method consists of four interactive components: exploring both disease and illness experience, understanding the whole person, finding common ground, and enhancing the patient-physician relationship.<sup>6,7</sup>

The advantages of patient-centered care are strongly supported by the international literature. Patient-centered medical practice increases patient and physician satisfaction as well as patient compliance. It also reduces the health concerns of the patient and improves self-reported health. Some biological health outcomes, such as blood pressure and HbA1c, also showed improvements with patient-centered care. A patient-centered approach reduces the poor quality of medical practice and leads to less diagnostic testing and less referral.<sup>8,9</sup>

In Turkey, although patient-centered care is not considered as a priority in primary health care by the ministry, there are continuous efforts to strengthen and develop family medicine and primary care. As an essential technique in family practice, learning and introducing the patient-centered clinical method in primary care may make a significant contribution to these efforts.

It is important to investigate the usage of the patient-centered clinical method, which has been shown to be beneficial for both patients and physicians especially in primary care. There are many scales that assess patient-centeredness. The Measure of Patient-Centered Communication (MPCC) is one of the most commonly used measures for observational evaluation of patient-physician consultation. One of the most distinctive features of MPCC is that its theory-based construction. MPCC was used to measure patient-centered communication in many studies of teaching and evaluating patient-centeredness.<sup>7,10,11</sup>

## The Measure

MPCC was developed in 1986 and updated in 1995 and 2001. Inter-rater and intra-rater reliabilities were studied for all versions of the measure, and it has shown to be reliable in English. It was developed specifically to assess the behaviors of the physician and the patient ascribed by the patient-centered clinical method.

MPCC tool measures three components of the patient-centered clinical method. The first component is the exploration of both the disease and illness experience. Exploration of the disease consists of two sub-headings namely 'Symptoms and/or Reasons for Visit' and 'Prompts.' Exploration of illness experience has four sub-headings: 'Feelings,' 'Ideas,' 'Effect on Function,' and 'Expectations.' There is no subheading for the second component in which the individual is recognized as a whole. The third component defines common ground achieved by the physician and the patient has three sub-headings: 'Problem Definition,' 'Goals of Treatment and Management,' and 'Responded Appropriately to Disagreement with Flexibility and Understanding'.<sup>10</sup> The coder primarily focuses on patient's statements relevant to the patient-centered clinical method and places them under the appropriate component and heading. After writing the statement in appropriate place the coder must assign process categories which describes physician's response or lack of response to patient's statement.

After entire interview is coded the coder assign scores for each heading and calculate the scores of Components I, II and III as well as overall Patient Centered Score. Details of the coding and scoring are described in manual of the Measure.<sup>12</sup>

This method will be utilized by family medicine educators and researchers to evaluate the patient-centeredness of family physician consultations for both vocational education and health care evaluation. When utilizing the scale in other languages, the translation and implementation processes may alter the intra- and inter-language reliabilities obtained in the original language. The aim of this study is to assess inter-rater and intra-rater reliability of the MPCC tool in Turkish.

## Methods

### Design:

This is a reliability and agreement study in cross-sectional design and aimed to assess inter-rater and intra-rater reliability of MPCC in the Turkish language.

### Study Sample:

The audiovisual recordings of 60 patient-physician consultations with 30 family physicians were analyzed. These recordings were made for a thesis of a resident (Mustafa Gökhan Şen, MD) of Dokuz Eylül University Faculty of Medicine, Department of Family Medicine.<sup>13</sup> The aim of this study was to assess primary care physicians' patient-centeredness. The convenience sampling method was used to select family physicians. They are mostly acquainted with the department's faculty and are easily accessible. Each participating family physician consulted with two previously trained simulated patients in two separate scenarios (either diabetes or trauma). In both circumstances, patients were taught so that difficulties relating to the patient's 'reasons for visit' and 'illness experience' could only be exposed through appropriate questions. The physicians who took part in the study gave written permission for the recordings to be utilized for education or research in the future.

### Evaluation:

MPCC tool was translated into Turkish by three researchers in accordance with the guidelines and discussed whether the Turkish text was concordant with the content of the manual, which describes how to use MPCC tool.<sup>12</sup> After these discussions, researchers contacted Dr. Moira Stewart, one of the developers of the measure, and with her guidance, final consensus was reached on the translation and on how to use the manual. In addition, apart from 60 consultations used in study, written English transcripts of two consultations were evaluated by Dr. Stewart to facilitate consensus and the three researchers evaluated three consultations for testing purposes.

Sixty patient-physician consultations of 30 family physicians with two simulated patients were transcribed verbatim. Then three researchers independently evaluated and scored these interviews with MPCC in accordance with the instructions in the manual of the tool. For each consultation scores for all three components were obtained as well as overall MPCC score. All three researchers reassessed the randomly selected 20 consultations 15 days later to determine the intra-rater reliability.

### Analysis:

The overall score, the first component score, the second component score, and the third component score for each patient interview were transferred to the database. ICC estimates and their 95% confidence intervals were calculated using SPSS statistical package version 18.0 based on a mean-rating (k=3), consistency, 2-way mixed-effects model.

Inter- and intra-rater reliabilities were considered as poor for ICC values less than .40, fair for values between .40 and .59, good for values between .60 and .74, and excellent for values between .75 and 1.0.<sup>14</sup> Statistical significance was accepted as  $p < 0.05$ .

The study was approved by Adnan Menderes University Medical Faculty Non-Interventional Clinical Research Ethics Committee with the protocol number of 2016/1026 on 19.01.2017.

## Results

Of the 30 family physicians, 66.7% were male and 90% were general practitioners. Two-third of them were between 41-50 years of age. All of the participants were working in primary care and in the public sector. The

majority of them (93.3%) had been working for 10 years or more. The demographic characteristics of the family physicians participating in the study is shown in Table 1.

**Table 1:** Demographic characteristics of the physicians consulted 2 simulated patients with diabetes and trauma scenarios (2012) (n=30)

		Number (n)	%
<b>Sex</b>	Female	10	33.3
	Male	20	66.7
<b>Specialty</b>	Family Medicine Specialist	3	10.0
	General Practitioner	27	90.0
<b>Age</b>	30-40	6	20.0
	41-50	20	66.7
	51-60	4	13.3
<b>Professional experience</b>	10 years and more	28	93.3
	Less than 10 years	2	6.7

Correlation Analysis between Researchers

For all 60 consultations inter-rater reliability was excellent for the overall score and the score for component one, good for component two and moderate for component three. Table 2 shows inter-rater ICC coefficients for all consultations.

**Table 2.** Inter-rater ICCs (Intraclass Correlation Coefficients) coefficients for all consultations with simulated patients regardless of the scenario, (2019) n=60

MPCC Scores	ICC*	Lower bound	Upper bound	value	df1	df2	Sig
<b>Overall</b>	0.810	0.708	0.880	5.260	59	118	0.000
<b>Component 1</b>	0.820	0.724	0.887	5.557	59	118	0.000
<b>Component 2</b>	0.646	0.456	0.777	2.822	59	118	0.000
<b>Component 3</b>	0.537	0.290	0.708	2.161	59	118	0.000

ICC Reliability Analysis

When inter-rater reliability was assessed separately for each different type of case i.e. diabetes and trauma, in the consultations for the history of diabetes, there was no significant correlation among the researchers in the third component of the MPCC tool ( $p > 0.05$ ). Apart from that, for both the history of diabetes and history of trauma, there were significant correlations for the overall and component scores parallel with the values obtained for all patients regardless from the history of the patient. Table 3 and Table 4 shows ICC coefficients of consultations for diabetes history and trauma history respectively.

**Table 3.** ICC coefficients in consultations of the simulated patient with the history of diabetes (2019) n=30

MPCC Scores	ICC	Lower bound	Upper bound	value	df1	df2	Sig
<b>Overall</b>	0.877	0.775	0.937	8.133	29	58	0.000
<b>Component 1</b>	0.880	0.781	0.939	8.357	29	58	0.000
<b>Component 2</b>	0.699	0.448	0.847	3.321	29	58	0.000
<b>Component 3</b>	0.354	- 0.184	0.671	1.549	29	58	0.078

ICC Reliability Analysis

**Table 4.** ICC coefficients in consultations of the simulated patient with the history of trauma, (2019) n=30

MPCC Scores	ICC	Lower bound	Upper bound	value	df1	df2	Sig
<b>Overall</b>	0.717	0.481	0.856	3.536	29	58	0.000
<b>Component 1</b>	0.656	0.369	0.825	2.908	29	58	0.000
<b>Component 2</b>	0.590	0.248	0.791	2.439	29	58	0.002
<b>Component 3</b>	0.520	0.120	0.756	2.083	29	58	0.009

ICC Reliability Analysis

To determine the concordance within each researcher, intra-rater ICC's with 95% confidence intervals were calculated by using the same method. Intra-rater correlation levels of all researchers for all score groups were between good and excellent. Intra-rater ICC's for all researchers, determined with the 20 randomly selected consultations is shown in Table 5.

**Table 5.** Intra-rater ICC's of consultations re-evaluated by three raters (OB, DG and TG) after fifteen days from first evaluation, (2019) n=20

		ICC	Lower bound	Upper bound	value	df1	df2	Sig
<b>Overall Score</b>	1. rater	0.949	0.872	0.980	19.752	19	19	0.000
	2. rater	0.938	0.842	0.975	16.002	19	19	0.000
	3. rater	0.726	0.308	0.892	3.651	19	19	0.003
<b>Component 1</b>	1. rater	0.937	0.841	0.975	15.903	19	19	0.000
	2. rater	0.867	0.663	0.947	7.508	19	19	0.000
	3. rater	0.755	0.381	0.903	4.081	19	19	0.002
<b>Component 2</b>	1. rater	0.989	0.971	0.995	87.316	19	19	0.000
	2. rater	0.909	0.771	0.964	11.029	19	19	0.000
	3. rater	0.698	0.237	0.880	3.309	19	19	0.006
<b>Component 3</b>	1. rater	0.844	0.606	0.938	6.409	19	19	0.000
	2. rater	0.899	0.745	0.960	9.890	19	19	0.000
	3. rater	0.734	0.328	0.894	3.757	19	19	0.003

ICC Reliability Analysis

## Discussion

Our study showed that Measure of Patient Centered Communication (MPCC) tool can reliably be used in family practice in Turkey. MPCC tool is one of the most frequently used measures for studying patient centeredness throughout the world. It was first developed in Canada in 1986 and then revised in 1995 and 2001. Reliability studies of first and succeeding versions were conducted by developers of the tool, who are experienced researchers in communication, and overall inter-rater reliability was found to be between 0.80 and 0.83.<sup>7,12</sup> Intra-rater reliability was found to be 0.73 whereas its validity was found to be 0.63-0.85.<sup>7,11</sup> Almost all additional reliability studies of the MPCC were done in either Canada or United States. These studies were based on its original manual and overall reliability of the tool varied between 0.66 and 0.79 (Pearson and Kappa correlation coefficients).<sup>15-17</sup> In our study MPCC tool was implemented in a different language and a different culture. Our ICC of 0.81 expresses excellent reliability and is comparable with the reliabilities of first two versions of the original tool founded by developers of the measure. When the components of the tool were evaluated separately, an excellent inter-rater reliability was obtained for the first component just like overall reliability. Inter-rater reliability levels of second and third components were good and moderate respectively.

In a 2003 study, Shields et al., aimed to determine emotional expressions in the outcomes of patient-physician communication and two researchers evaluated a total of 193 consultations of 100 family physicians with two standardized patients by using MPCC tool. In this study, the inter-rater reliability for the overall score was 0.79 and found to be 0.67, 0.89 and 0.43 for the three components respectively.<sup>16</sup> It is noteworthy that the third component had the lowest reliability coefficient. On the other hand, a study by Clayton et al. in 2011 found the highest agreement for the third component ( $r = 0.92$ ); the overall score and the other two component scores were 0.66; 0.69 and 0.76.<sup>17</sup> In this study, real patients applied to the primary care were used and a total of 174 interviews were evaluated.

Munro et al. modified the MPCC in 2014 and conducted a reliability analysis on a sample of young individuals. The MPCC was created to assess and evaluate the first three components of a six-component patient-centered care model; the following three components were not evaluated. Munro et al. modified the MPCC for preventive health interventions by deleting the first component and incorporating the last three because the scale was insufficient in patient interviews when mostly preventive health interventions were discussed. In this study, the interviews of six health care providers, two of whom were physicians and four nurses, with 11 adolescents aged between 17 and 23 years in three health centers were analyzed. In the study evaluating the compliance of the two evaluators, the overall agreement for the five components of the patient-centered care model (modified MPCC) was 86.6% and the kappa reliability coefficient was 0.78.<sup>15</sup> As is seen, different studies with different health issues revealed different reliability coefficients both in overall and component scores. Generally, however, overall inter-rater reliability, including our study, was generally above the accepted threshold of 0.70.<sup>18</sup> The greatest variability was observed in the third component, as in our study, in which the lowest agreement was also observed in the third component. This may be due to the fact that first and second components evaluated domains of consultation we are used to in general practice of medicine. As for the third component, it assesses another domain, called finding common ground, that we are not so familiar in our daily practice. This situation has been noticed by the developers of the scale and it is stated in the user guide of the scale.

Instead of actual outpatients, we used two simulated patients whose responsibilities had been previously taught. Some studies used simulated patients, and the authors of these studies acknowledged the benefits of utilizing simulated patients in such research. The severity and context of the presenting complaint, for example, can be standardized by utilizing simulated patients. This strategy also eliminates the possibility of unintended and unplanned physician-patient pairings.<sup>16,19</sup> Despite these stated advantages, it should be kept in mind that simulated patients also may have negative impact on measuring reliability of the scale. Evaluations made with patients who have different characteristics and different problems rather may give better or worse results than simulated patient assessments, and we recommend that further studies on this subject should be done.

In our study, we also evaluated consultations with history of trauma and diabetes separately. In the consultation with trauma scenario, third component showed strong correlation, although diabetes scenario showed no correlation. Similarly, in another study with two different scenarios, each scenario yielded different results.<sup>19</sup>

No matter how objective an instrument is, there are many factors such as age and gender that affect the results of this tool.<sup>19</sup> Cultural differences can be such a factor. In addition, as mentioned in the study by Munro et al., the use of the vehicle in preventive health services seems to be troublesome.<sup>15</sup> However, our study showed that the MPCC tool is reliable in its current form in another language and another sociocultural environment. Although the scale was translated in accordance with the translation techniques of the World Health Organization and there has been a long consensus-building process among the evaluators before the main evaluation. It should be kept in mind that social and cultural differences in patient consultations may affect the reliability of the scale and hence scale scores.

When it comes to measurement of patient centeredness, there are other cross-cultural adaptations of the scales. For example, Physician - Patient Orientation Scale was translated into four different languages spoken in Visegrad countries and public preference of patient centeredness was investigated in 4000 subjects. Authors concluded that demographic characteristics of individuals are more determinative than their nationality with respect to their preferences of patient-centeredness.<sup>20</sup> Similarly, another instrument for measurement patient centered communication developed in US is translated into a completely different language and culture (Arabic) and found to be valid and reliable with similar properties to the original scale.<sup>21</sup> These findings suggested that dimensions of the patient centeredness are suited well across cultures and languages. Our study is, as far as we know, the first reliability study undertaken in a language other than the original

language in which the MPCC tool was developed. The results of our study revealed that the inter- and intra-rater reliability of MPCC on the overall score was excellent. The third component's reliability levels were slightly lower.

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