

Artikel Asli/Original Articles

The Measure of Processes of Care 20-Item (MPOC-20): Validity and Reliability of the Malay Version

(The Measure of Processes of Care 20-Item (MPOC-20): Kesahan dan Kebolehpercayaan Versi Bahasa Melayu)

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ABSTRACT

*The paediatric rehabilitation service in Malaysia is shifting from the traditional child-focused approach to a family-centred approach. At present, there is a lack of an evaluation tool to assess to the quality of paediatric rehabilitation services, and whether the services are in line with the principles of the family-centred service. This study was undertaken to assess validity and reliability of the Malay version of the Measure of Processes of Care 20-item (MPOC-20) questionnaire in evaluating family-centered approach in children rehabilitation services in Kuala Lumpur. The original English version of the MPOC-20 was translated into Malay language, before it was administered to 102 parents of children receiving rehabilitation service at the Occupational Therapy Unit, UKM Medical Centre. The component structure of the MPOC-20 Malay version was examined using principal component analysis with Varimax rotation to explore the factor structures after translation. Cronbach's alpha was calculated to determine the internal consistency reliability of the factors identified in the MPOC-20 Malay version. The resultant four-factor model explained 64 % of the variance in the Malay MPOC-20 responses. All four factors were similar to the five factors described in the original MPOC-20. All the 20 items were retained, with relocation of some items into a new factor. The Malay version of the MPOC-20 showed good internal consistency with Cronbach's alpha values ranging from 0.75 to 0.90. This study demonstrates that the Malay version of the MPOC-20 is valid and reliable, and is suitable for evaluation of the quality of child rehabilitation services in the Malaysian context.*

*Keywords: Rehabilitation; occupational therapy; questionnaire; translation; paediatric*

ABSTRAK

*Perkhidmatan rehabilitasi pediatrik di Malaysia sedang giat beranjak dari pendekatan berpusatkan kanak-kanak kepada pendekatan berpusatkan keluarga. Di masa ini, terdapat kekurangan alat penilaian untuk menilai kualiti perkhidmatan rehabilitasi pediatrik serta sama ada perkhidmatan tersebut adalah selari dengan prinsip perkhidmatan berpusatkan keluarga. Kajian ini bertujuan untuk mengkaji kesahan dan kebolehpercayaan soal selidik Measure of Processes of Care 20-item (MPOC-20) versi Bahasa Melayu untuk menilai pendekatan perkhidmatan berpusatkan keluarga dalam perkhidmatan rehabilitasi kanak-kanak di Kuala Lumpur. Soal selidik MPOC-20 versi Bahasa Inggeris yang asli diterjemahkan kepada Bahasa Melayu terlebih dahulu sebelum diberikan kepada 102 orang ibu bapa kepada kanak-kanak yang menerima perkhidmatan rehabilitasi di Unit Terapi Carakerja, Pusat Perubatan Universiti Kebangsaan Malaysia. Struktur komponen MPOC-20 versi Bahasa Melayu ditentukan menggunakan analisis komponen utama dengan putaran Varimax untuk mengkaji struktur faktor setelah diterjemahkan. Cronbach's alpha dikira untuk menentukan konsistensi dalaman faktor yang dikenal pasti dalam MPOC-20 versi Bahasa Melayu. Model empat faktor yang terhasil merangkumi 64% varians dalam respons MPOC-20 versi Bahasa Melayu. Keempat-empat faktor tersebut adalah hampir serupa dengan lima faktor yang terdapat dalam MPOC-20 versi asli. Kesemua 20 item dikekalkan dengan pemindahan sesetengah item kepada faktor yang baru. MPOC-20 versi Bahasa Melayu menunjukkan konsistensi dalaman yang bagus dengan nilai Cronbach's alpha 0.75 hingga 0.90. Kajian ini menunjukkan bahawa MPOC-20 versi Bahasa Melayu mempunyai nilai kesahan dan kebolehpercayaan yang baik, serta sesuai digunakan untuk menilai kualiti perkhidmatan rehabilitasi kanak-kanak di Malaysia.*

*Kata kunci: Rehabilitasi; terapi carakerja; soal selidik; terjemahan; pediatrik*

INTRODUCTION

Family-centred service has become an essential foundation in many early intervention programs involving children with special educational needs. It focuses on the needs of the whole family unit, rather than on the child alone as

commonly seen with the traditional child-centred approach (Espe-Sherwindt 2008). The family-centred approach views parents as partners in the care of the child, and encourages collaboration between the health care professionals and parents or caregivers in providing a better caring process for the child (King et al. 1996; King et al. 1997). In this

context, both therapists and parents possess the important and necessary knowledge regarding a child's intervention and are responsible in the decision-making processes as well as setting up the child's rehabilitation goals (Bamm & Rosenbaum 2008; Hanna & Rodger 2002).

The Measure of Processes of Care (MPOC) is the most widely used instrument to measure family-centred services in paediatric settings. The instrument was developed as a clinical and research tool to gain information on how parents of children with disabilities and chronic health conditions evaluate the services provided to their children and themselves, as well as the impact that the service delivery has on the children and their families (King et al. 1996; King et al. 2004). The MPOC has five domains that assess the key components concerning family-centred services; the components being (1) access to information, (2) respect and support, and (3) cooperation (King et al. 1996). A substantial body of evidence demonstrates that compared with more traditional models of practice, family-centred approach is associated with better quality of life (Blue-Banning et al. 2004), stronger self-efficacy beliefs, satisfaction, and positive parenting behaviour among the parents (Dunst et al. 2007). Benefits for children include developmental gains and skill development, and better psychological adjustment (Cunningham & Rosenbaum 2014). This shows the importance of service providers being aware of how they can best carry out rehabilitation services in line with the philosophy and ideology of family-centred service.

In Malaysia, the concept of family-centred service is gaining momentum in paediatric rehabilitation services. Ensuring quality in the delivery of family-centred services can prevent mistreatment and help enforce appropriate early intervention programmes in the paediatric population. To help gain information in improving the quality of child rehabilitation services in Malaysia, the services need to be evaluated in terms of user experience, which in this context are mainly the parents. Thus, to achieve a good quality family-centred care or service is to meet or exceed the client's parents' expectations. The MPOC assessment not only equips healthcare providers with information about how family-centred their service is, but may also contribute valuable insights into the improvement of their family-centred practice (King et al. 2004). To date, MPOC has been used in various settings, including children rehabilitation centres, children hospitals, urban hospitals, university hospitals, and community centres. Numerous disabilities and conditions of children were studied, including type 1 diabetes, physical disabilities, cerebral palsy, cancer, and acquired brain injury, as well as general developmental disorders (Cunningham & Rosenbaum 2014). The instrument has a long (MPOC-56) and a short (MPOC-20) version and both versions have demonstrated good validity and reliability (King et al. 2004). MPOC-20 has items distributed among the same five domains as in the MPOC-56 and is better applied as a measure of parents' perceptions of the elements of family-centred services (King et al. 2004). The instrument has been translated

into several languages (Arabic, Dutch, French, Japanese, Chinese, Norwegian) and is being used in many different countries (Cunningham & Rosenbaum 2014). A Malay version of the MPOC is currently not available. Since family-centred care is gaining grounds in paediatric rehabilitation services in Malaysia, this provides an important argument to validate a Malay translation of the MPOC.

The main objective of this study was to assess the validity and reliability of the Malay version of the Measure of Processes of Care 20-item (MPOC-20) questionnaire. The English version of MPOC-20 was first translated into the Malay language, before the construct validity and internal consistency reliability were determined.

## MATERIALS AND METHODS

### PARTICIPANTS

A convenience sample of parents of children aged below 18 years with various diagnoses (*i.e.* learning difficulties, autism, attention deficit hyperactivity disorder, Down's Syndrome, cerebral palsy) were recruited from the Occupational Therapy Unit, Universiti Kebangsaan Malaysia Medical Centre in Kuala Lumpur. The inclusion criterion of this study was that the children of the parents must have received at least three sessions of treatment at the above mentioned unit. Parents of the children that had been discharged from the Occupational Therapy Unit were excluded. The final selection consisted of 102 parents, *i.e.* either mothers or fathers of 102 children, with 60% ( $n = 61$ ) of them being mothers of the children.

### INSTRUMENT

The instrument used in this study was the 20-item Measure of Processes of Care (MPOC-20), a shorter and improved version of the original 56-item MPOC questionnaire. MPOC-20 is a self-administered, parent-completed assessment that was designed to evaluate the quality of service through the perception of parents (King et al. 2004). The instrument is designed to capture the essential features of family-centred services through the following five factors: (1) *enabling and partnership* (3 items), (2) *providing general information* (5 items), (3) *providing specific information about the child* (3 items), (4) *coordinated and comprehensive care for child and family* (4 items), and (5) *respectful and supportive care* (5 items). Each item in the questionnaire starts "*In the past year, to what extent do the people who work with your child...*" followed by a description of a specific attitude or behaviour of the health care professional in the organisation or centre. A 7-point Likert scale is used to capture the response, with 1 being 'not at all' to 7 being 'to a very great extent'. A score of 0 is also included to indicate 'non-applicable' items. An MPOC factor score is calculated as mean of the ratings for the items in each factor, with scores ranging from 1.00 to 7.00. Reliability of the original MPOC-20 using the Cronbach's alpha ranged from 0.83 to 0.90, indicating a high internal consistency. For validity,

the inter correlation in all the factor scores ranged from 0.56 to 0.87 (King et al. 2004).

for Child Disability Research Group (CanChild Group), before the study was carried out.

#### TRANSLATION

Translation of the MPOC-20 into the Malay language followed an established forward-backward translation. The original MPOC-20 was translated into Malay by two separate individuals who were Malay native speakers. The provisional Malay version of the questionnaire was then back-translated into English by individuals with qualifications in Teaching English as a Second Language (TESL) and fluent Malay speakers. This backward translation was compared with the original English version. Any minor adjustments to the Malay version of the MPOC-20 were discussed and agreed by the translating team. The final version of the translated questionnaire was then tested independently in a pilot sample of individuals who were native Malay speakers for problems in acceptance and comprehension of the contents.

#### ETHICAL ISSUES

This study was approved by the UKM Medical Centre Ethical Committee Board under the registration code NN-173-2011. Permission to use and translate the original MPOC-20 was sought from the developer, CanChild Center

#### STATISTICAL ANALYSES

The construct validity of the Malay MPOC-20 was examined using the principal component analysis to explore the possible factors underlying the items in the translated questionnaire. For each of the factors, Cronbach's alpha values were computed to determine the internal consistency of the Malay version of MPOC-20. Alphas in the range of 0.70 and 0.90 are indicators that the items in a particular factor measure the same aspect (Streiner 2003). All analyses were performed using the SPSS version 20.0 (SPSS Inc., Chicago, IL).

### RESULTS

The demographic characteristics of the families and children in this study are outlined in Table 1. The respondents consisted of a variety of races; the majority were Malays (68.6%), followed by Chinese (27.5%), and Indians (2.9%). The ages of the children whose parents participated in this study ranged from 1 to 18 years, with a mean ( $\pm$  SD) of  $7.0 \pm 3.6$  years. Most of the children (93%) were less than 12 years of age and 73% of them were males.

TABLE 1. Demographic characteristics of parents and children (n = 102)

Category	n	%	Mean SD
Parent's Age (years)			38.0 $\pm$ 6.4
20-40	69		34.5 $\pm$ 3.9
41-65	33		45.2 $\pm$ 4.0
Parent's Gender			
Male	41	40.2	
Female	61	59.8	
Parent's Race			
Malay	70	68.6	
Chinese	28	27.5	
Indian	3	2.9	
Others	1	1.0	
Parent's Occupation			
Government	27	26.5	
Private	35	34.3	
Self-employed	19	18.6	
Unemployed	21	20.6	
Parent's Educational Level			
SPM and below	48	47.1	
Tertiary	54	52.9	
Children's Age (years)			7.2 $\pm$ 3.5
1-12	93	91.2	6.4 $\pm$ 2.7
13-18	9	8.8	14.7 $\pm$ 1.4
Children's Gender			
Male	73	71.6	
Female	29	28.4	

CONSTRUCT VALIDITY

The construct validity of the MPOC-20 Malay version, determined using factor analysis with a criterion of Kaiser’s eigenvalue above one, revealed slight differences in the factor loading compared to the original version. Rearrangement of the items reduced the original five factors to only four factors, which were (1) *enabling, partnership, and comprehensive care*, (2) *providing general information*, (3) *providing specific information about the child*, and (4) *respectful and supportive care*. Factors 2 and 3 represented the factors in the original MPOC-20 with all items retained. Factors 1 and 4 retained all the original items but with some relocation of new items. Factor 1 was given a slight modification to its name to accommodate the loading of new items. Items 5, 6, 10 were loaded on

the *coordinated comprehensive care* factor in the original MPOC-20, but they loaded on the newly-named *enabling, partnership and comprehensive care* factor in the Malay version. Item 12 from the same factor was relocated on the *respectful and supportive care* factor.

Items 1, 3, and 9 from the original *respectful and supportive care* factor were loaded onto *enabling, partnership and comprehensive care* factor in the Malay version. The rearrangement of the items is shown in Table 2. Loading values for all items were between 0.46-0.84 as shown in Table 3. Items with rotated factor loadings above 0.40 were proposed to have substantive importance to a given factor (Field 2005). The cumulative variance explained by all factors was 64%. The total number of items in the questionnaire remained unaltered.

TABLE 2. Comparison for items arrangement in MPOC-20 original and MPOC-20 Malay version

Factor	MPOC-20: Original	Item	MPOC-20: Malay	Item
1	Enabling and Partnership	4, 7, 8	Enabling, Partnership and Comprehensive Care	1, 3, 4, 5, 6, 7, 8, 9, 10
2	Providing General Information	16, 17, 18, 19, 20	Providing General Information	16, 17, 18, 19, 20
3	Providing Specific Information About the Child	2, 14, 15	Providing Specific Information About the Child	2, 14, 15
4	Coordinated and Comprehensive Care	5, 6, 10, 12	Respectful and Supportive Care	11, 12, 13
5	Respectful and Supportive Care	1, 3, 9, 11, 13		

TABLE 3. Factor loadings of the 20 retained items in MPOC-20 Malay version

Item	Item Description	Original Factor	Factor loading	Variance %
Factor 1				26.65%
1	Help you to feel competent as a parent?	5	0.68	
3	Provide a caring atmosphere rather than just give you information?	5	0.72	
4	Let you choose when to receive information and the type of information you want?	1	0.63	
5	Look at the needs of your ‘whole’ child (e.g. at mental, emotional, and social needs) instead of just at physical needs?	4	0.80	
6	Make sure that at least one team member is someone who works with you and your family over a long period of time?	4	0.49	
7	Fully explain treatment choices to you?	1	0.77	
8	Provide opportunities for you to make decisions about treatment?	1	0.66	
9	Provide enough time to talk so you don't feel rushed?	5	0.78	
10	Plan together so they are all working in the same direction?	4	0.83	
Factor 2				14.05%
16	Give you information about the types of services offered at the organization or in your community?	2	0.69	
17	Have information available about your child's disability (e.g. its causes, how it progresses, future outlook)?	2	0.46	
18	Provide opportunities for the entire family to obtain information?	2	0.58	
19	Have information available to you in various forms, such as a booklet, kit, video, etc.?	2	0.81	
20	Provide advice on how to get information or to contact other parents (e.g. organization’s parent resource library)?	2	0.70	

Continue

TABLE 3. *Continued*

Item	Item Description	Original Factor	Factor loading	Variance %
Factor 3				12.66%
2	Provide you with written information about what your child is doing in therapy?	3	0.71	
14	Provide you with written information about your child's progress?	3	0.80	
15	Tell you about the results from assessments?	3	0.76	
Factor 4				11.06%
11	Treat you as an equal rather than just as the parent of a patient?	5	0.62	
12	Give you information about your child that is consistent from person to person?	4	0.596	
13	Treat you as an individual rather than as a 'typical' parent of a child with a disability?	5	0.838	

Factor: 1; Enabling, Partnership and Comprehensive Care, 2; Providing General Information, 3; Providing Specific Information about the Child, 4; Respectful and Supportive Care

#### INTERNAL CONSISTENCY

Cronbach's alpha was calculated to determine the internal consistency of the four factors identified in the MPOC-20 Malay version, as shown in Table 4. Three out of four factors showed Cronbach's alpha values of above 0.80, demonstrating high internal consistency. Cronbach's alpha for Factor 4 (respectful and supportive care) was 0.75, still

indicating a good internal consistency (Streiner 2003). This data also supported the construct validity of the four factors and demonstrated the homogeneity of the contents in each scales. Additionally, the correlation between the four factors of MPOC-20 Malay version was calculated using Pearson's correlation coefficient, as shown in Table 5. All factors correlated significantly with all of the other factors ( $p < 0.001$ ).

TABLE 4. Mean factor scores and internal consistency of MPOC-20 Malay version

Factor	Number of items	Mean $\pm$ S.D	Cronbach's alpha
Enabling, partnership and comprehensive care	9	47.19 $\pm$ 7.60	0.90
Providing general information	5	21.64 $\pm$ 5.73	0.80
Providing specific information about the child	3	13.43 $\pm$ 3.92	0.80
Respectful and supportive care	3	14.86 $\pm$ 3.44	0.75

TABLE 5. Correlation between the factors in MPOC-20 Malay version

Factor	2 Providing general information	3 Providing specific information about the child	4 Respectful and supportive care
1 Enabling, partnership and comprehensive care	0.56 *	0.70 *	0.78 *
2 Providing general information		0.66 *	0.75 *
3 Providing specific information about the child			0.74*

\* $p < 0.001$

#### DISCUSSION

The main objective of this study was to examine the validity and reliability of the Malay version of MPOC-20. These initial findings indicate that the MPOC-20 Malay version showed a good reliability and managed to capture the intended construct of the original version.

For an instrument to be used in a different language, it is necessary to demonstrate that it has a similar validity and reliability as the original instrument (Beaton et al.

2000). For this, factor analysis is the method most used to determine validity for use of an instrument in a different culture (Streiner & Norman 2003). In the context of this study, perceptions on the quality of healthcare services for children may differ from that of the western cultures. Thus, some differences were expected to be present when a questionnaire that was originally designed for usage in the Western countries is translated into the Malay language.

The analysis performed in the present study revealed both differences and similarities in the distribution of items

in the Malay version compared to the original version. In the Malay version, combination and rearrangement of the questionnaire items reduced the original five factors to four factors, which are (1) *enabling, partnership, and comprehensive care*, (2) *providing general information*, (3) *providing specific information about the child*, and (4) *respectful and supportive care*. Factor 1 in the Malay version was a proposed combination of the *enabling and partnership* and *coordinated comprehensive care* factors represented in the original version. Most of the relocated items loaded quite strongly (0.6-0.8) on this modified factor, except for two items which had an acceptable loading factor of 0.46 and 0.48. However, removing these items did not affect the internal consistency of the factor. Thus, it can be deduced that all the relocated items corresponded adequately to the constructs of the new factor. Despite the rearrangement of some of these items, the construct validity was found to be acceptable for the four factors of the MPOC-20 Malay version. This finding is in parallel with the Japanese (Himuro et al. 2012) and Dutch (van Schie et al. 2004) MPOC-20 translations, in which both studies revealed some differences and similarities in the distribution of items compared to the original version. Furthermore, MPOC was originally developed for use in children's rehabilitation centres (King et al. 1996). The setting utilised in this study was an occupational therapy unit housed in a government hospital, servicing both adults and children alike. Though the items are general enough for application of MPOC in other settings, potential limitation brought by the context of the professional practice of the therapists addressed in this study as well as cultural background may play a role in the underlying similarities and differences reported by the factor analysis.

The internal consistencies of the four factors determined by using *Cronbach's* alpha ranged from 0.75 (respectful and supportive care) to 0.90 (enabling, partnership and comprehensive care). The high alpha values indicated a good consistency between the items in each factor and were comparable to that of the findings from other studies involving the Norwegian (Hagen & Bjorbækmo 2012), Japanese (Himuro et al. 2012), and Dutch (van Schie et al. 2004) translations with alpha values ranging from 0.62 to 0.93, 0.76 to 0.83, and 0.80 to 0.95 respectively. The correlation coefficients of items between the four factors were also found to be quite high. These findings therefore show that the items are highly related to their own factors and the four factors are related to each other.

The current study should be interpreted in light of its strengths and limitations. This study was the first initiative to translate MPOC-20 into the Malay version. So far, to our knowledge there is little documentation about family-centred service in the Malaysian setting. With this effort we hope to spread the usage of the Malay MPOC-20 to assist local rehabilitation therapists determine the strengths and weaknesses of their service delivery according to the principles of family-centred service. However, as this was a pilot study, therefore a relatively small sample size were

used and limited to only a single hospital facility. Hence, future studies conducted in other contexts, such as in private rehabilitation centres, would create an additional body of evidence and help widen its usage in various clinical settings. Further evaluation of reliability and validity through test-retest analysis and concurrent validity may also help to strengthen the psychometric properties of the MPOC-20 Malay version.

## CONCLUSION

The present study provides preliminary support for the psychometric properties of the MPOC-20 Malay version, which can be considered as a valid and reliable instrument to evaluate the processes of paediatric rehabilitation services in Malaysia.

## ACKNOWLEDGEMENT

The authors wish to thank the Occupational Therapy Unit of Universiti Kebangsaan Malaysia Medical Centre for their cooperation and assistance in this study. Also thanks to the reviewers whose comments and suggestions helped improve and clarify this manuscript.

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Received: 14 January 2015  
 Accepted for publication: 17 July 2015