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Measuring family functioning: validation and adaptation of the family APGAR into Indonesian

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ABSTRAK

***Latar Belakang**: Fungsi keluarga merupakan bagian penting dari perawatan terutama untuk keluarga yang merawat lanjut usia Fungsi keluarga sangat penting untuk difahami. Instrumen yang valid dan reliabel untuk mengukur fungsi keluarga di Indonesia masih terbatas dan sangat dibutuhkan.*

***Tujuan :**Penelitian ini bertujuan untuk melakukan adaptasi intrumen penelitian, melakukan validasi, dan mengukur reliabilitas dari the family APGAR versi Indonesia.*

***Metode**: Penelitian ini menggunakan desain cross-sectional, dan sebagai bagian dari penelitian yang mengukur kesiapan subjektif keluarga untuk perawatan jangka panjang di rumah. Sebanyak 125 caregiver yang merawat keluarga dengan lanjut usia di rumah sakit. Semua caregiver telah dilakukan wawancara tatap muka langsung. Instrumen the family APGAR yang terdir dari lima pertanyaan, diterjemahkan dalam Bahasa Indoneisa dan diterjemahkan lagi dalam Bahasa aslinya, kemudian dilakukan validasi, dan dilakukan uji reliabilitas dengan menggunakan metode baku yang telah ditentukan. Korelasi matrik dilakukan untuk mengevaluasi korelasi masing – masing pertanyaan sebelum proses validasi dilakukan. Uji hipotesis ditentukan dengan menggunakan nilai signifikansi P = < 0,05 dengan Confidance Interval (CI = 95%). Uji statistik dilakukan dengan menggunakan software statistik STATA14.*

***Hasil:** Sebanyak 125 responden dengan usia rata-rata (mean) 52,60 tahun (CI = 12,29) telah dilakukan wawancara. Mayoritas responden dari penelitian ini adalah perempuan 84 (62,20%), berstatus pekerja (85/68,00%). Korelasi antar item pertanyaan antara 0,77 hingga 0,90 dan rata-rata korelasi pertanyaan adalah 0,61. Koefisien reliabilitas dengan Cronbach alpha 0,89.*

***Kesimpulan**: Versi Indonesia dari APGAR adalah instrument penelitian yang valid dan reliabel yang dapat digunakan untuk mengukur fungsi keluarga di kalangan masyarakat Indonesia. Studi lebih lanjut tentang penggunaan instrumen untuk mengukur karakteristik masyarakat yang berbeda-beda sangat disarankan dengan menggunakan kategori penilaian seperti pada penelitian sebelumnya.*

KATA KUNCI *: fungsi keluarga; pengasuh keluarga; perawatan informal*

ABSTRACT

***Background**: Family function is an important part of family caring particularly for those with aged people in the household. Understanding family functioning is imperative. A valid and*

reliable tool for measuring the family functioning of Indonesian family caregivers is limited.
Objectives: *This study aimed to examine cross-cultural adaptation, validity, and reliability of the Indonesian version of the family APGAR.*
Methods: *A cross-sectional design was performed as a part of a study measuring subjective family readiness for long-term care at home. A total of 125 family caregivers who were caring for older family members completed face-to-face interviews. A five-items of the family APGAR were translated, validated, and tested its reliability using standardized methods. The correlation matrix was performed to identify item correlations prior to the validation process. Hypothesis testing used a significance value of P = < 0.05 with a confidence interval (CI = 95%). The statistical test was performed using STATA14 statistical software.*
Results: *In 125 respondents with a mean age of 52.60 years (CI = 12. 29) were interviewed. The respondents were mostly female 84 (62.20%), employed (85/68.00%). Item test correlation was ranging from 0.77 to 0.90 and the average item correlation was 0.61. Pearson coefficients were presented. The coefficient of scale reliability was Cronbach alpha 0.89.*
Conclusion: *The Indonesian version of the family APGAR was a valid and reliable tool used for measuring family functioning among Indonesian. Further study on the use of the instrument in different settings and community characteristics was suggested using categorical level from previously measured.*
KEYWORD: *family functioning; family caregivers; informal care*

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INTRODUCTION

An individual with chronic health conditions has inevitable effects on the family as a unit or family as a member of society. It is because of the dynamic connections among people in the family or another term called households. The family may share positive contributing factors toward health improvement or negative risk factors of their health conditions within or among members possibly through various social characteristics of shared housing, neighborhood, community, society, and culture (1). In another word, family members would have a common impact with those having a chronic disease (2).

The family is defined as a unit of two or more persons united by marriage, blood, adoption, or consensual union, generally interacting and communicating with each other (1) or the family is ordinary people living in the same house. Hence, caring for families with chronically ill may affect several aspects. They include emotional impacts, financial aspects, social life, time commitments, personal relationships, and family activities (2). Furthermore, there was a huge impact of the patient's illness on the relative's quality of life. Caring for a family with chronic illness affects the state of emotional and psychological well-being such as the development of psychological distress, depression, and anxiety level. It was also related to physical issues, sleep quality, social, leisure, and daily activities, as well as family relationships and financial impacts (3). A study also indicated that family caregivers for older people with chronic diseases had poorer mental well-being (4). As a basic functional unit of society, the impacts of patients' diseases on the family dynamic are often lacked recognition and underestimated.

Studies presented the association between family function and health. Evidence indicated

there was a highly significant correlation between the dimension of family functioning and self-esteem for adolescents (5). In terms of caring for older people, those who have good family functioning were associated with positive perceptions of aging, a vice versa (6). This may depend also on some conditions such as the impact of intergenerational support particularly in caring for older people because high intergenerational support has positive effects on physical health, mental status, and physiological function (7).

Caring for older people with chronic conditions where care delivery is provided across healthcare settings with numerous healthcare interactions, and back-and-forth transition between home and hospital or to other healthcare facilities will affect family caregiver condition (8). The importance of family structure and family function is a part of understanding and complaint management of the individual patient and their family troubles (9). Hence, family function measurement is imperative. This can provide an important contribution to the understanding of family conditions. This study aims to examine the validity and liability of the Indonesian version of the APGAR family scale.

MATERIALS AND METHODS

A validity and reliability study was conducted using a cross-sectional approach. Data from this study was a part of a survey of family readiness in the implementation of family-based long-term care. The study followed the recommended methods for validity study since its inception including adaptation and psychometric tests (10-12).

Data was collected at a district hospital in Yogyakarta from January to July 2022. The population was family caregivers who were responsible for the patient's care during and after hospital treatments. We defined family caregivers as responsible persons in providing voluntary care to other family members who were unable to care for themselves due to their illness or disability (13). Predefined inclusion and exclusion criteria were developed. Subjects who were caring for patients aged 60 and older or caring for patients diagnosed with chronic illnesses including stroke, heart diseases, diabetes mellitus, cancer, and kidney diseases that required long-term care or complex care at home were included. Subjects who were caring for the patient for at least 12 months or frequently using healthcare facilities for treating their chronic illness were also recruited. We excluded subjects if they were caring for patients with chronic illness but the patients were independently taking care of themselves. If the caregivers were unwilling to follow the study, they were unable to provide informed concerns, or paid caregivers were also excluded.

In total, 30 respondents were recruited for a pre-test questionnaire (14). Field testing for adapted instruments used 125 respondents following guidelines for adequate samples (15). This study was reported following the strengthening and reporting of observational studies (STROBE) guidelines (16).

Ethical approval for this study was obtained from the Ethical Board of the University of Alma Ata Yogyakarta with the reference number. This was a voluntary, no-commission, anonymous study.

The family APGAR scale

It is a questionnaire that is designated in measuring five areas of family functioning (9) that was intended to be used by physicians in clinical settings. The APGAR reflects the following acronyms Adaptability, Partnership, Growth, Affection, and Resolve. Adaptability represents the use of within and extrafamilial resources, Partnership is the family's ability to share resources, Growth refers to family maturity of physical and emotional state, Affection is caring or loving family relationship, and Resolve is family commitments. This questionnaire has five items that are rated on a three-point Likert

scale ranging from 0 (hardly ever) to 2 (almost always). The family function is measured using three categorical levels, including a highly functioning family (score 7 - 10), a moderately dysfunctional family (score 4 - 6), and a severely dysfunctional family (score 0-3). The reliability test for the original version of the family AFGAR indicates excellent reliability (Cronbach Alpha = 0.91).

Adaptation, Translation, and Content validity

To obtain concept equivalency between the original and the target version, there were focus group discussions with experts to ensure scale relevance with the study (10, 15). Forward and backward translations were conducted by two professional English translators for each process, of which in the forward translation, one of the translators was a research team who was a bilingual gerontologist. Before performing backward translation, synthesis was done to detect errors and ambiguous items. The translated version was discussed to determine optimal consistency achievement before qualitative expert judgments. An expert committee consisting of experts on hospital management, medical-surgical nursing, psychologists, community nursing, and gerontologist was suggested for item review and rating of each item. The rating was ranging from point one to four where point one represented very irrelevant items, and point four as very relevant items. A pre-test questionnaire was performed in 30 samples that have equal characteristics with the target setting of the study. The stage aimed to examine the retention of equivalency in the applied condition. The finding was used to re-evaluate items.

Psychometric properties

We recruited 125 subjects for field testing and psychometric property analysis of the Indonesian version of the family AFGAR. The sample was determined based on an item-to-subject ratio ranging from 1:3 to 1:20 (10, 15). Data collection was by face-to-face interviews with research assistants that were recruited from the hospital. Research assistants were subject to training to collect data in terms of questionnaire administration and ethical concerns. Informed consent and information sheets must be delivered and explained to research subjects. Instrument reliability was tested and presented with Cronbach Alpha value.

Statistical analysis

Continuous and categorical data were presented as mean, standard deviation (SD), frequency, and percentage. Item test correlation was presented to measure the correlation of each item with an overall scale, of which if any pair of items has a correlation coefficient below 0.30, one of the items would be dropped for further analysis (17). Content validity was performed by calculating scores of expert judgments. Content validity ratio (CVR) and Content validity index (CVI) were generated using Lawshe's and Aikens's formula (18, 19). CVR was determined greater than 50% ranging from perfect disagreement (-1) to perfect agreement (+1). CVI was generated in two forms, item-level content validity index (I-CVI) and scale-level content validity index (S-CVI) by dichotomizing rating items as relevant (1) if items scored 3 and 4, and not relevant (0) if items scored 1 and 2 (19, 20). Internal consistency of the scale was estimated to have a Cronbach alpha score of more than 0.70 (10, 15, 20).

RESULTS AND DISCUSSION

RESULT

The demographic characteristics of caregivers are presented in **Table 1**. All research subjects completed the interview, with a mean age of 52.60 years (SD = 12.29). Caregivers were mostly female (84/62.20%), employed (85/68.00%), and married 117 (93.60%). Was

4.80% (6) subjects with no education, 32 (25.60%) graduated junior high school, 39.20% (49) from senior high school, and 38 (30.40%) from university. Subjects with employed status were 85 (68.00%). Caring was measured in days of caring per week at 5.49 (SD = 1.77), hours of caring per day at 4.33 (SD = 4.04), and period of caring (in a month) at 70.99 (SD = 69.82).

Table 1. Demographic characteristic family caregivers (n=125)

Characteristics	Total respondents (n=125) N (%)
Age, mean (SD)	52.60 (12.29)
Gender, n (%)	
Male	41 (32.80)
Female	84 (67.20)
Marital status, n (%)	
Single	1 (0.80)
Married	117 (93.60)
Widow/Widower	7 (5.60)
Education level, n (%)	
No school	6 (4.80)
Junior high school	32 (25.60)
Senior high school	49 (39.20)
University	38 (30.40)
Job status, n (%)	
Unemployed	40 (32.00)
Employed	85 (68.00)
Income, n (%)	
Lower minimum income	76 (60.80)
Upper minimum income	49 (39.20)
Relationship to patients, n (%)	28 (22.40)
Children	75 (60.00)
Spouse	12 (9.60)
Siblings	4 (3.20)
Parents	6 (4.80)
Paid caregiver	
Days of caring per week, mean (SD)	5.49 (1.77)
Hours of caring per day, mean (SD)	4.33 (4.04)
Duration of caregiving in month, mean (SD)	70.99 (69.82)

SD; standard deviation

Table 2 presents the results of the item-test correlation, item-rest correlation, and average inter-item correlation of the Indonesian version of the family APGAR. Pearson's coefficient correlation of pair items with total score indicated a high correlation with a coefficient ranging from 0.77 to 0.90. The corrected item-total correlation yielded coefficients of 0.66 to 85 that represented a high correlation among the five items with the total score.

Table 2. The results of Pearson coefficients matrix

Variables	Apgar1	Apgar2	Apgar3	Apgar4	Apgar5
Apgar1	1				
Apgar2	0.67*	1			
Apgar3	0.48*	0.65*	1		
Apgar4	0.51*	0.80*	0.57*	1	
Apgar5	0.60*	0.66*	0.49*	0.71*	1

*Indicated the significance is 0.005

Table 3. The result of item-test correlation, item-rest correlation, and average interitem correlation of the Indonesian version of the family APGAR (n= 125)

Item	Item-test correlation	Item-rest correlation	Average interitem correlation	alpha
Item 1	0.78	0.66	0.65	0.88
Item 2	0.90	0.85	0.56	0.83
Item 3	0.77	0.63	0.66	0.88
Item 4	0.86	0.78	0.59	0.85
Item 5	0.83	0.73	0.61	0.86
Test scale			0.61	0.89

Reliability

The scale reliability coefficient was 0.89, with average interitem covariance of 0.169. This means that the Indonesian version of the family APGAR is a valid and reliable measurement tool to examine family functioning.

DISCUSSION

In this study, we found that the Indonesian version of the family APGAR was valid and reliable for use in measuring Indonesian family functioning, particularly for those caring for older people with chronic diseases.

At the beginning of the development of the APGAR, the authors set objectives to measure the qualitative of the family members' satisfaction with each of the five basic components of the family function (9). The instrument is used for measuring the concept until nowadays. Our analysis of the APGAR showed that the family APGAR is a reliable instrument for measuring family functioning in caring for older people. This is relevant and supported by the previous study. The psychometric properties of the family APGAR in the Brazilian elders yielded a c Cronbach alpha of 0.80 confirming the measurement tool's valid and reliable (21). According to Nakayama et at., the translation, validation, and reliability of the family APGAR showed that the Japanese version of the family APGAR was a valid and reliable tool with a score of internal consistency of 0.85 (22). There have been generated different values of Cronbach alpha between our study and the previous ones. It is assumed due to the heterogeneity of the population in the study. The family APGAR has been used in various studies. A systematic review and meta-analysis that assessed the use of the family APGAR for chronic illnesses and patients' non-psychiatric issues presented a valid and reliable of tool for nurses in the clinical practice (23).

CONCLUSION AND RECOMMENDATION

The family APGAR is a valid and reliable measurement tool to identify qualitative family satisfaction in the domains of family function.

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Conflicts of Interest: The authors declare no conflict of interest.

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