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CASE STUDY

ADAPTING THE OLDENBURG BURNOUT INVENTORY INTO BAHASA INDONESIA FOR MEASURING BURNOUT IN MEDICAL RESIDENTS

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ABSTRACT

Background: Burnout is common among medical residents, and a non-commercial tool for assessing burnout for medical residents is needed. This study aimed to adapt the Oldenburg Burnout Inventory (OLBI) in Bahasa Indonesia for medical residents and to analyze its validity and reliability.
Case Discussion: The English version of OLBI was forward and backward translated to and from Bahasa Indonesia by English-language translation experts, and was appropriately modified by the authors. The respondents of the questionnaire were taken from pediatric residents in the first trial (48 subjects), and from internal medicine, pediatric, dermatology, surgery, and neurology residents in the second trial (109 subjects). The item-test correlation to measured construct validity was good for both trials. A confirmatory factor analysis was then undertaken to evaluate the goodness of fit (GOF), the root mean squared error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis index (TLI), standardized root mean squared residual (SRMR), and coefficient of determination (CD) in the second trial. The results of the one-factor model and multidimensional GOF of the 16 items were unsatisfactory ($\chi 2<0.05$ and RMSEA>0.08). The GOF of the two-factor analysis of burnout with 8 items (3 exhaustion items and 5 disengagement items) created the following results: $\chi 2=0.378$; RMSEA=0.025; CFI=0.995; TLI=0.993; SRMR=0.036; and CD=0.898. The Cronbach's alphas, for internal consistency reliability, in the first trial, second trial, and final model were 0.73, 0.87, 0.83, and 0.79, respectively.
Conclusion: An 8-items modified Bahasa Indonesia translation of the OLBI for medical residents to measure burnout has good reliability and validity.

Keywords: burnout, medical residents, Oldenburg Burnout Inventory, *Bahasa Indonesia*

ABSTRAK

Latar belakang: *Kelelahan adalah keadaan psikologis yang sering terjadi pada peserta program pendidikan dokter spesialis. Dibutuhkan adanya alat ukur kelelahan bagi peserta program ini yang murah dan mudah. Tujuan dari penelitian ini adalah untuk menerjemahkan Oldenburg Burnout Inventory (OLBI) ke dalam Bahasa Indonesia untuk residen dan menganalisis validitas dan realibilitas kuesioner tersebut.*
Diskusi kasus: *Penelitian ini menerjemahkan OLBI versi Bahasa Inggris diterjemahkan ke dalam Bahasa Indonesia secara dua arah oleh ahli Bahasa Inggris dan dimodifikasi oleh penulis. Pada tahap pertama, responden berasal dari residen anak (48 subjek). Pada tahap kedua, responden berasal dari residen penyakit dalam, anak, dermatologi, bedah dan saraf (109 subjek). Validitas kontruk dengan menggunakan item-test correlation menunjukkan hasil baik pada kedua tahap. Analisis faktor konfirmatori dilakukan dengan menilai*

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the goodness of fit (GOF) dari tahap kedua, yaitu the root mean squared error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis index (TLI), standardized root mean squared residual (SRMR), dan coefficient of determination (CD). Hasil GOF unidimensi dan analisis faktor (16 item) tidak memenuhi syarat ($\chi 2<0,05$ dan RMSEA>0,08). Analisis faktor (2 faktor) dengan 8 item (terdiri dari 3 item exhaustion dan 5 item disengagement) adalah $\chi 2=0,378$; the RMSEA=0,025; CFI=0,995; TLI=0,993; SRMR=0,036; CD=0,898. Hasil Cronbach's alpha, untuk menilai reliabilitas konsistensi internal, pada tahap pertama, kedua, dan model final (terbagi menjadi dimensi exhaustion dan disengagement) adalah 0,73; 0,87; 0,83, dan 0,79.
Kesimpulan: *Delapan-item Oldenburg Burnout Inventory versi Bahasa Indonesia untuk residen, memiliki reliabilitas dan validitas yang baik.*

Kata kunci : *kelelahan, residen,* Oldenburg Burnout Inventory, *Bahasa Indonesia*

PRACTICE POINTS

- An 8-item modified Bahasa Indonesia translation of the OLBI for medical residents had a strong goodness of fit; it could be used to measure burnout for medical residents in Indonesia.
- The resulting inventory contains fewer items than the Maslach Burnout Inventory, is free of cost, and measures two domains of burnout: exhaustion and disengagement, and wording as positive and negative statements.

INTRODUCTION

Learning environments have an important role for increasing or reducing burnout. Specific environments belong to medical residents – they predominantly work in hospital settings. Stressful working environments, paired with the complexities of working and learning during medical residency, and the heavy workloads of these residents may lead a psychological condition called burnout.[1] Burnout in medical residents is the concern of many studies, as its presence may lead to a reduced quality of care.[2] Recent studies have shown a high prevalence of burnout during medical residency.[3,4] To this day, there is a limited number of studies on burnout among Indonesian medical residents. Therefore, assessment of burnout in Indonesian medical residents is essential.

The sheer importance of the matter of burnout among medical residents brought attention to the measurement of this condition. The most common measurement of burnout is the Maslach Burnout Inventory (MBI), which consists of 22 items, and is treated as the gold standard for measuring burnout in many publications.[5] The MBI-HSS is a kind of burnout measurement for human services survey and has been translated to *Bahasa Indonesia*. Being a commercial tool, MBI's use is limited by price. It may not be used without permission from www.mindgarden.com.[5] Hence, for this study, we required an alternative, non-commercial tool to assess burnout for medical residents in Indonesia. If achieved, the tool can be published and freely distributed. A fewer number of items to the test may also lessen the time consumed for medical residents filling out the test.

The Oldenburg Burnout Inventory (OLBI) is an alternative measurement tool for burnout assessment. It is free and non-commercial, and consists of 16 items (fewer than MBI), It covers only two dimensions of burnout (exhaustion and disengagement), compared to the three dimensions covered in MBI – though the third dimension, personal accomplishment, has been put into question due to the uncertainty of whether it links to or is separate from the other two dimensions. OLBI contains a positive and negative wording system that offers bidirectional ways of questions.6 In addition, OLBI has been translated into several languages, such as Malay, Dutch, and Portuguese.[6–8] Notably, the Malay language resembles *Bahasa*

Indonesia – though there are important differences in the meanings of common words between Malay and *Bahasa Indonesia*. Thus, this study took on the goal to adapt and translate OLBI for *Bahasa Indonesia* for medical residents, and to analyze the final product's validity and reliability.

CASE DESCRIPTION

This was an analytic cross-sectional study conducted from April to June 2019. Two experts in translation between English and *Bahasa Indonesia* translated the English version of the OLBI to *Bahasa Indonesia* forward and backward. Then, the resulting translation was analyzed by the authors with the assistance of one of the English-language experts to assess its suitability in comparison to the original English version; the test was then adjusted to suit the conditions of medical residents in Indonesia. Both authors, one a lecturer in pediatric (Universitas Sebelas Maret) and the other an active medical resident in a teaching hospital (Dr. Moewardi Hospital), reviewed the content of the adaptation and assessed its relevance to the field of medicine in Indonesia.

As a first trial in April 2019, the *Bahasa Indonesia* translation was distributed online (via Google Forms) to pediatric residents at the Dr. Moewardi Hospital, Surakarta, Indonesia. The construct validity of the first trial version was measured by an item-test correlation, and then compared to the r table. Items score below the r table' score were modified by the authors with the assistance of a second English-language translation expert. This modified version was then distributed online as a second trial to pediatric, neurology, surgery, internal medicine, and dermatology residents at Dr. Moewardi Hospital Surakarta Indonesia in June 2019. As in the first trial, the construct validity for the second version was measured by an item-test correlation scores and then compared to the score in r table.

Next, the second *Bahasa Indonesia* translation of the OLBI was analyzed through a confirmatory factor analysis for both the unidimensional and multidimensional goodness of fit (GOF). Unidimensional GOF means that all items were considered as having one dimension. Multidimensional GOF meant that items were considered as having two dimensions (exhaustion and disengagement) for a two-factor analysis. The GOF was analyzed using a structural equation model (SEM) in Stata/MP 14.0. The cut-off result of model fit indices used in this study were the Chi-square test ($\chi 2$) (>0.05), root mean square of error approximation (RMSEA) (<0.08), comparative fit index (CFI) (>0.9), Tucker-Lewis index (TLI) (>0.9), standardized root mean squared residual (SRMR) (<0.08), and coefficient of determination (CD) (>0.70). When we found a poor-fit model, we adjusted the test to improve the model fitness based on the modification indices, standardized residual covariance, and standardized regression by removing items of the questionnaire. The internal consistency reliability of the first and second trials and the two-dimensional factor analysis were measured using Cronbach's alpha. All data analyses were performed by Stata/MP 14.0. This study received ethical approval from the Health Research Ethics Committee of the Dr. Moewardi General Hospital, Faculty of Medicine, Universitas Sebelas Maret (Number 909/VII/HREC/2019).

The first trial consisted of 48 subjects, of whom 31% were male and 69% were female. In the second trial, out of the 109 medical residents from 5 departments, 36 (33%) were male and 73 (67%) were female. The number of pediatric, surgery, internal medicine, dermatology, and neurology respondents were 45 (41%), 10 (9%), 21 (19%), 17 (16%), and 16 (15%), respectively. The proportions between departments were imbalanced, with the larger proportion being from pediatric residents.

Table 1 lists the final modifications to the *Bahasa Indonesia* translation of the OLBI, depicting forward and backward translations. The table shows the domain topic of each item, and depicts positive or negative wording. Almost all item scores in the first trial (except for items 1 and 13) were correlated with the total score (r>0.2845). The topics of item 1 and 13 were "interesting aspects" and "no other occupation," respectively. All item scores in the second trial were correlated with the total score (r>0.1882). The internal consistency of the questionnaire for burnout, exhaustion, and disengagement from first trial were 0.73, 0.72, and 0.75; while the results from second trial were 0.87, 0.75, and 0.77.

Table 1. Modification of the *Bahasa Indonesia* Translation of the OLBI

Items	Original English items	Modified items (Bahasa Indonesia)	Back-translation of modified items	Domain	Topic
1	I always find new and interesting aspects in my work	*Saya selalu menemukan sesuatu yang menarik dan baru dalam pekerjaan saya*	I always find something new and interesting in my work	D1	Interesting aspects (+)
2	There are days when I feel tired before I arrive at work	*Ada saatnya saya merasakan lelah sebelum sampai di tempat kerja*	There is time I feel tired before arriving at work	E1	Tired before work (-)
3	It happens more and more often that I talk about my work in a negative way	*Sering kali saya membicarakan pekerjaan saya dengan cara negatif*	I often talk about my job negatively	D2	Devaluation of work (-)
4	After work, I tend to need more time than in the past in order to relax and feel better	*Setelah bekerja, saya membutuhkan waktu lebih lama untuk santai dan merasa nyaman dibandingkan pada waktu sebelumnya.*	After working, I need more time to relax and to ease compared to the previous time	E2	Longer times for rest (-)
5	I can tolerate the pressure of my work very well	*Saya dapat menghadapi dengan baik tekanan-tekanan dalam pekerjaan*	I cope pressure at work well	E3	Manageable tasks (+)
6	Lately, I tend to think less at work and do my job almost mechanically	*Akhir-akhir ini saya cenderung malas berpikir dan menjalankan tugas hampir seperti robot.*	Recently I tend to be reluctant to think and just do task like a robot	D3	Mechanical execution (-)
7	I find my work to be a positive challenge	*Saya merasa pekerjaan sebagai tantangan positif*	I think that job is a positive challenge	D4	Challenging (+)
8	During my work, I often feel emotionally drained	*Selama bekerja saya sering merasa lelah secara emosional*	When I am working, I feel emotionally tired	E4	Emotionally drained (-)
9	Over time, one can become disconnected from this type of work	*Lama kelamaan, kita bisa tidak sanggup lagi menjalankan pekerjaan ini.*	Eventually, we are no longer able to do the job	D5	Inner relationship (-)
10	After working, I have enough energy for my leisure activities	*Setelah bekerja, saya masih sanggup untuk melakukan aktivitas hobi saya.*	After working, I am still able to do my hobby	E5	Fit for leisure activities (+)
11	Sometimes I feel sickened by my work tasks	*Kadang-kadang saya penat dengan tugas kantor.*	Sometimes I am fed up the work assignment	D6	Sick about work tasks (-)
12	After my work, I usually feel worn out and weary	*Setelah bekerja, biasanya saya merasa letih dan lelah*	After working, I usually feel fatigued and tired	E6	Worn out (-)
13	This is the only type of work that I can imagine myself doing	*Ini adalah satu-satunya jenis pekerjaan yang bisa saya kerjakan*	This is the only type of job I can do	D7	No other occupation (+)
14	Usually, I can manage the amount of my work well	*Biasanya saya bisa mengatur beban pekerjaan saya dengan baik*	Usually I can arrange my work load well	E7	Tolerable workload (+)
15	I feel more and more engaged in my work	*Saya merasa semakin nyaman dengan pekerjaan saya.*	I gradually feel more comfortable with my job	D8	More engaged (+)
16	When I work, I usually feel energized	*Ketika bekerja, saya merasa bersemangat.*	When I am working, I am enthusiastic	E8	Feel energized (+)

E: exhaustion; D: disengagement; (+): positive statement; (-): negative statement

The confirmatory factor analysis of the second *Bahasa Indonesia* translation of the OLBI results of the unidimensional GOF were χ^2=0.001; RMSEA=0.096; CFI=0.809; TLI=0.779; SRMR=0.082; and CD=0.89. The two-factor analysis of burnout (with all 16 items) resulted in χ^2=0.001; RMSEA=0.096; CFI=0.808; TLI= 0.777; SRMR= 0.083; and CD=0.909. The results of the one-factor model and two-factor analysis of the 16 items were unsatisfactory. Given the poor results, we sought to improve the fit of the model via the removal of several items. The two-factor analysis of burnout with 8 items resulted in χ^2=0.378; RMSEA=0.025; CFI=0.995; TLI=0.993; SRMR=0.036; and CD=0.898. (Table 2). The model was thus a better fit after removing 8 items (items 1, 4, 5, 7, 10, 13, and 14). In final form, the *Bahasa Indonesia* translation of the OLBI for medical residents consisted of 3 items for exhaustion, 5 items for disengagement, 7 items with negative statements and only 1 item regarding positive statements. The reliable and valid questions were determined to be items 2, 3, 6, 8, 9, 11, 12, and 15. The topics for exhaustion were "tired before work," "emotionally drained," and "worn out." The topics for disengagement were "devaluation of work," "mechanical execution," "inner relationship," "sick about work tasks," and "more engaged." The reliability analysis and standardized factor loadings of the 8 items in the *Bahasa Indonesia* adaptation of the OLBI (as the final model) are shown in Table 3. The covariate coefficient between exhaustion and disengagement in the final model was 0.92. The standardized factor loading of all items was >0.5, and the Cronbach's alpha of both dimensions was >0.7.

Table 2. The Confirmatory Factor Analysis of the *Bahasa Indonesia* Adaptation of the OLBI

	χ2 (>0.05)	RMSEA(<0.08)	CFI (>0.9)	TLI (>0.9)	SRMR (<0.08)	CD
Unidimensional	207.936 (p=0.001)	0.096	0.809	0.779	0.082	0.894
Two-factor analysis – 16 items	207.144 (p=0.001)	0.096	0.808	0.777	0.083	0.909
Two-factor analysis – 8 items	20.278 (p=0.378)	0.025	0.995	0.993	0.036	0.898

Table 3. The Reliability Analysis of the 8-item *Bahasa Indonesia* Translation of the OLBI

Point	Items	Standardized factor loading	Domain	Cronbach's alpha
2	*Ada saatnya saya merasakan lelah sebelum sampai di tempat kerja* (tired before work)	0.66	E	0.83
8	*Selama bekerja saya sering merasa lelah secara emosional* (emotionally drained)	0.78		
12	*Setelah bekerja, biasanya saya merasa letih dan lelah* (worn out)	0.70		
3	*Sering kali saya membicarakan pekerjaan saya dengan cara negatif* (devaluation of work)	0.71	D	0.79
6	*Akhir-akhir ini saya cenderung malas berpikir dan menjalankan tugas hampir seperti robot* (mechanical execution)	0.62		
9	*Lama kelamaan, kita bisa tidak sanggup lagi menjalankan pekerjaan ini* (inner relationship)	0.63		
11	*Kadang-kadang saya penat dengan tugas kantor* (sick about work tasks)	0.67		
15	*Saya merasa semakin nyaman dengan pekerjaan saya* (more engaged)^R	0.58		

DISCUSSION

In our study, we used the Oldenburg Burnout Inventory (OLBI) translated and adapted to *Bahasa Indonesia* as a tool for burnout measurements of medical residents. Some previous studies have assessed OLBI's reliability and validity for burnout in its original language (German), and in other languages, translations, and adaptations (e.g., English, Portuguese, Slovenian, Chinese, and Malay).[6–12] The respondents varied from general workers to college and medical students, with one study from Romania having used OLBI for psychiatric residents.[13] Our study is the first adaptation and translation of OLBI to *Bahasa Indonesia*, and the adaptation is specific aimed for use with medical residents. Through this, we have offered an alternative way to assess burnout in medical residents rather than by the use of MBI, although most previous studies have used the MBI for the purposes of burnout assessment.[4,14,15] It should be noted that the use of different tools across studies may create incomparable results. Hence, the prevalence of burnout must be carefully considered according to the tools used. With this adaptation, we could assess burnout in medical residents in Indonesia using a non-commercial tool; one with a fewer number of items, and with two assessed dimensions of burnout (exhaustion and disengagement). This may be easier to use and more widely accessible for any residency program directors and medical education researchers in Indonesia.

Burnout, as measured by MBI, consists of exhaustion, depersonalization, and lack of personal accomplishment referred to MBI.[16] OLBI contains simpler dimensions, using only exhaustion and disengagement. Exhaustion in OLBI covers affective, physical, and cognitive exhaustion, whereas MBI covers only affective exhaustion. Disengagement as an aspect, used in OLBI addresses a wider range of conditions OLBI than depersonalization in MBI.[6] A prior study by Qiao stated that burnout measurements, no matter the tool used, were more accurate when used in a multidimensional form, and when exhaustion was classified separately from the other dimensions.[11] An English translation of the OLBI produced similar results to our study in terms of reliability and validity, especially in a two-factor model.[9] A two-factor model was also found to be better in Malay translations of the OLBI (OLBI-M).[7] One study in Slovenia also revealed that a two-factor model was better than a unidimensional model, although all models of the Slovenian adaptation of the OLBI were determined to be unfit to measure burnout.[12] In addition, the Polish version of the OLBI used different multidimensional factors and loading factors than the original OLBI.[17] Our study showed that the final model was a fit. Our final model addresses two dimensions of burnout (exhaustion and disengagement). In order to assess each dimension, the final model can create unique values for the exhaustion and disengagement scores. The final model also addresses an interaction between both dimensions (with a covariate coefficient of 0.92). Previous studies have also found correlation between the two constructs.[6,7,9,10] Our study supports a stable internal structure of OLBI across different languages while using a two-factor model.

Our final model proposed 8 items for the *Bahasa Indonesia* translation of the OLBI (3 items for exhaustion and 5 items for disengagement). Similarly, the study in Malaysia reduced the OLBI-M to 9 items, consisting of 5 items for disengagement and 4 items for exhaustion. However, only 2 items in the OLBI-M were similar to our study: items 3 and 9 (which both relate to disengagement, involving devaluation of work and inner relationships).[7] A study on the student version of the Portuguese translation of the OLBI removed only 2 items for achieving GOF (items 5 and 13, involving manageable tasks and no other occupation).[10] Our study also removed these items. The different removed items across these studies might be caused by the varying subject and participant backgrounds (workers, students, or medical residents), and also by the range of languages used. Unique participants and subjects may lead to different aspects of the topic of burnout. The 3 items for exhaustion in our final model clearly refer to exhaustion before, during, and after work. The 5 items for disengagement also clearly refer to the relationship between medical residents and their job.

In the OLBI-M, only 3 of the 9 items were negative sentences. In contrast, 7 of the 8 items in our study were negative statements, with the only positive

item being item 15: "I feel more and more engaged in my work." Answers agreeing with this statement indicated that the medical residents had grown more comfortable as they worked through the semester. Of note, most respondents did not agree with this statement due to the stressful conditions of life as a medical resident. One study by Qiao concluded that positive statements should be removed from the inventory as they do not describe burnout effectively.[11] Because the OLBI uses both positive and negative statements, we still propose using both in our model.

Our study had some limitations. Due to Indonesia's diversity of cultural backgrounds and geographical territories, statements and questions in the language can be open to multiple interpretations. This study was undertaken in one local setting (institution/teaching hospital) and was carried out only among medical residents. The unbalanced proportions of the respondents' departments might also have led to a selection bias.

CONCLUSION

This study has created an adaptation of the Oldenburg Burnout Inventory (OLBI) for the Bahasa Indonesia language, for the purposes of measuring burnout in medical residents.

RECOMMENDATION

There should be further examination of the questionnaire used in order to assess the efficacy and validity of this tool for subjects within different settings or institutions. Future research may also assess the validity of OLBI adaptations in comparison to the Maslach Burnout Inventory, the gold standard for burnout measurement. The cut-off point of burnout (whether of exhaustion or disengagement scores) may also be needed for assessing the association of burnout with other aspects, such as quality of care, medical error, or anxiety, etc. The notion of burnout as a latent variable derived from construct variables (exhaustion and disengagement) could also be explored by another model, such as partial least square of structured equation model. This tool should be reassessed to determine its utility for other employees.

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COMPETING INTERESTS

The authors declare that there are no competing interests related to the study.

LIST OF ABBREVIATION

OLBI : Oldenburg Burnout Inventory
MBI : Maslach Burnout Inventory
GOF : goodness of fit
RMSEA: root mean square of error approximation
CFI : comparative fit index
TLI : Tucker-Lewis index
SRMR : standardized root mean squared residual

AUTHORS' CONTRIBUTION

YAnnang Giri Moelyo - conceptualization, methodology, writing (original draf), funding acquisition, project administration, writing – review and editing

Muchtar Hanafi - funding acquisition, project administration, writing (review and editing), formal analysis, visualization

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