Indonesian Cross-Culture Validation and Psychometric Testing of The Nurses' Occupational Stressor Scale 21 (Noss-21) Questionnaire

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ABSTRACT

Background: currently, many nurses experience stress because they have a lot of work. Even though the impact of stress on nurses can affect health services to patients. Therefore, a tool is needed to measure the level of stress at work in nurses.

Purpose: to transcribe and cross validate the NOSS-21 into Indonesian, and conduct psychometric tests on nurses in Indonesia.

Methods: the study used quantitative methods. This study used Brislin's Classic Model for translation and validation. Tests conducted using Pearson product moment and Cronbach Alpha as a construct test. The sample used amounted to 168 nurses in Yogyakarta.

Results: based on the results, the average value of I-CVI is 1.00, while based on the Pearson product moment test, it can be seen that 18 items are considered valid and 3 items are invalid. Although 3 items were invalid, but based on the importance of the questionnaire domain, the researcher decided to include these 3 items in the study. The reliability of the questionnaire is strongly reliable as the value is 0.899.

Conclusion: the Indonesian Nurses' Occupational Stressor Scale 21 (INOSS-21) questionnaire can be used as a questionnaire to measure nurses' occupational stress. The limitation of this study is that the study respondents were only from Islamic hospitals. In addition, not all nurses were included in the study, for example, polyclinic and pediatric ward nurses were excluded.

Keywords:
Cross-culture validation; Indonesian; NOSS-21; psychometrics

BACKGROUND
Nursing is one of the professions with high levels of stress, due to too much work. Job stress is an interaction between the job situation and a person's perception of the job. This can affect a person's performance (Rathi & Kumar, 2022). Currently, it is noted that nurses have both physical and psychological burdens. In addition, nurses are also recorded to have acute and chronic stress (Roberts & Grubb, 2014). Based on the data, it is known that 55% of nurses currently have a high physical burden and 62.5% have a moderate psychological burden (Widiyanti, 2020). The work of nurses is an increase in patients which results in an increase in services, the use of additional personal protective equipment (PPE) since Covid-19 (Yanti et al., 2021). Other nurse workloads include long working hours, moving equipment, and moving patients (Widiyanti, 2020). This makes nurses experience fatigue (WHO, 2020). The impact of both physical and psychological fatigue is a decrease in the quality of performance in nursing care for patients (Babapour et al., 2022). Therefore, the assessment of fatigue and work stress of nurses needs to be improved to provide maximum health services

OBJECTIVE
The purpose of this research is to transcribe and cross validate the NOSS-21 into Indonesian, and conduct psychometric tests on nurses in Indonesia.

METHODS
Questionnaire:
The questionnaire used was the NOSS-21 which consists of 21 items consisting of 9 subscales including:

Table 1. Item of NOSS-21 Scale

Subscale	Category	Number of items
1	Work Demands	3,5,11
2	Work–Family Conflict	10,20,21
3	Insufficient Support from Coworkers or Caregivers	12,13,15
4	Workplace Violence and Bullying	16
5	Organizational Issues	4,6,8
6	Occupational Hazards	1,19
7	Difficulty Taking Leave	2,8
8	Powerlessness	9,17
9	Unmet Basic Physiological Needs	7,14

Based on table 1, each item uses a Likert scale from 1 - 4, namely strongly disagree to strongly agree. The value has a range of 21 - 84 (Chen et al., 2020).

The Translation
Model Cross-culture was used Brislin's Classic Model for translation and validation (Brislin, 1970). Ballangrud et al., (2017) modified the Brislin's Classic Model, there were:
  1. Forward translation: The NOSS 21 was translated by two translators. The background of the translator is a freelance of English Program and the certified

translator who has health sciences background. They turn the NOSS-21 from English to Indonesian.

2. The Indonesian NOSS 21 was reviewed by the team there were two psychiatric nurses in psychiatric hospital, one psychiatric nursing lecturer, and one clinical psychologic. To calculated the item level CVI (I-CVI), they are asked to assess the relevance of the items with 4 point scale; there were 1 = *not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant* (Polit et al., 2007)*.* Based on Lynn, M.R (1986) the I-CVI must be 1.00, when the score was lower, it recommended to revised and they need two rounds of expert review (Polit & Beck, 2006). According to Guilford & Fruchter (1978), the I-CVI in very goodness validity which the value is 0.8 < mean I-CVI < 1.00; goodness validity = 0.6 < mean I-CVI < 0.8; enough = 0.4 < mean I-CVI < 0.6; lowest validity 0.00 < mean I-CVI < 0.2; not valid = below 0. In this study, the online conference was held to confirm the cultural relevance of the concept and the application in Indonesian health care setting.

3. Back-Translation was used the professional translators. The first translator was an English native and the second was PhD student in mental health department.

4. Comparison of the Indonesian NOSS-21 and the original of NOSS-21 by the authors of NOSS-21, the translators, the reviewers, and the researchers.

5. Questioner testing of Indonesian NOSS-21 (INOSS-21) was taken from 168 of nurses in PKU Muhammadiyah in Indonesia with convenience sampling. Altman et.al said that the aimed of this step was to determine the quality and appropriateness of the INOSS-21 used (Sundram & Romli, 2023). The inclusion of the respondents were nurses who had one year of experience, working at a Covid-19 hospital. The outpatients and operating nurses were excluded. This data was taken in June, 2022 and collected by the researcher assistant (nursing students) who had a discussion before.

This ethical clearance of the study was approved by Research Ethic Committee on PKU Muhammadiyah Yogyakarta Hospital with the approval number of 00173/KT.7.4/VI/2022. The respondents previously were signed the inform consent and they were voluntary.

Analyze

The Statistical Package for Social Sciences (SPSS) used to analyze the descriptive statistic of respondent's demographic data and validity reliability test. The Pearson Product-Moment and Internal Consistency (Cronbach's alpha coefficient). The r-table of the validity test is 0.1515 for 168 nurses who worked for at least 1 year in Islamic hospitals in Yogyakarta. Respondents who were excluded were nurses who worked in polyclinics and pediatric wards. The items are valid if the Pearson-r is higher than t-table. Furthermore, the Cronbach's alpha coefficient more than 0.7 indicates that the item was reliable (Surucu & Maslakci, 2020).

RESULTS

Demographic Characteristic

Descriptive characteristics of respondents are used to determine the distribution of age, length of work, gender, education, and functional position of nurses. The distribution of respondent characteristics can be seen in table 2

Table 2. Demographic Characteristics of Respondents

Variable	Mean ± SD	n (N = 168)	%
Age	38.96 ± 9.273		
Length of Service	16.04 ± 9.657		
Gender			
1. Male		28	16.7
2. Female		140	83.3
Education			
1. Diploma		118	70.2
2. RN		49	29.2
3. Master		1	0.6
Functional Position			
1. Associate		147	87.5
2. Lead of shift		13	7.7
3. Head of room		8	4.8

*SD = Standard Deviation

Based on the table 2, it can be seen that the average age of respondents is 38 years old with a length of service of 16 years. In addition, it can also be seen that the majority of nurses are female (83.3%) and diploma graduates (70.2%) with functional positions, namely executive nurses (87.5%).

Content Validity Index (CVI) Result

After two discussions, the final CVI value was 1. This value was obtained from the four experts who gave a score of 3 or 4 on each questionnaire statement item. The total number of items on the questionnaire is 21. This value can be seen in table 3.

Table 3. I-CVI Test

No Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert in Agreement	Item CVI	Interpretation
Q1	1	1	1	1	4	1	Valid
Q2	1	1	1	1	4	1	Valid
Q3	1	1	1	1	4	1	Valid
Q4	1	1	1	1	4	1	Valid
Q5	1	1	1	1	4	1	Valid
Q6	1	1	1	1	4	1	Valid
Q7	1	1	1	1	4	1	Valid
Q8	1	1	1	1	4	1	Valid
Q9	1	1	1	1	4	1	Valid
Q10	1	1	1	1	4	1	Valid
Q11	1	1	1	1	4	1	Valid
Q12	1	1	1	1	4	1	Valid
Q13	1	1	1	1	4	1	Valid
Q14	1	1	1	1	4	1	Valid
Q15	1	1	1	1	4	1	Valid
Q16	1	1	1	1	4	1	Valid
Q17	1	1	1	1	4	1	Valid
Q18	1	1	1	1	4	1	Valid
Q19	1	1	1	1	4	1	Valid
Q20	1	1	1	1	4	1	Valid
Q21	1	1	1	1	4	1	Valid
% Relevant	1.00	1.00	1.00	1.00			
			Average I-CVI			1.00	

Construct Validity and Reliability Results

The result of Pearson Product Moment correlation was 17 items valid and 3 items invalid. It can be seen based on the minimum Pearson r value, 0.1515. However, the Cronbach's Alpha coefficient was more than 0.7 which indicates the items were reliable (0.899).

Table 4. Content Validity and Reliability Result

No Item	Pearson-r	Pearson-r with df=(n-2) and p<0.05	Cronbach's alpha coefficient
Q1	0.599		
Q2	0.621		
Q3	0.093		
Q4	0.761		
Q5	0.017	0.1515	0.899
Q6	0.566		
Q7	0.593		
Q8	0.793		

No Item	Pearson-r	Pearson-r with df=(n-2) and p<0.05	Cronbach's alpha coefficient
Q9	0.534		
Q10	0.719		
Q11	0.591		
Q12	0.689		
Q13	0.774		
Q14	0.612		
Q15	0.720		
Q16	0.722		
Q17	0.566		
Q18	0.623		
Q19	0.651		
Q20	0.695		
Q21	0.019		

Q3 dan Q5 = Work demands, Q21 = Work-Family Conflict

Table 5. The Original NOSS-21

	Items	Strongly disagree	Disagree	Agree	Strongly agree
		1	2	3	4
1	I need to transport patients or equipment.				
2	I cannot ask for leaves for household emergencies.				
3	I have to bear negative sentiment from patients or their relatives.				
4	The on-call system affects my life.				
5	I have to maintain professional units other than my own.				
6	Not achieving a promotion (e.g., level 1 or 2) within the expected period affects my income.				
7	I cannot take an uninterrupted 30-minute mealtime break.				
8	I cannot excuse myself for feeling strong discomfort.				
9	It upsets me if patients' conditions do not improve.				
10	The burden of work makes it difficult for me to undertake my personal chores and/or engage in hobbies.				
11	Excessive duties in the workplace prevent me from attending to patients.				
12	I feel stressed because primary caregivers do not execute their tasks appropriately.				
13	Doctors' temperamental nature agitates me.				
14	I have no time to fulfill my personal needs (e.g., water consumption and toilet breaks).				
15	I worry that my colleagues' incompetence will affect patient safety.				
16	I feel stressed due to psychological abuse such as threats, discrimination, bullying, and harassment.				
17	I have insufficient time to offer mental health care to patients during working hours.				
18	The organization usually remunerates my overtime work at a low rate of pay.				

19	I feel stressed considering that my patients might be have contagious diseases such as SARS or AIDS.
20	The burden of work affects my domestic life.
21	I have to adapt my schedule for family activities/outings to accommodate my work responsibilities.

Table 6. The Indonesian NOSS-21 (INOSS-21)

No	Item	1	2	3	4
1	Saya perlu memindahkan pasien atau peralatan				
2	Saya tidak bisa meninggalkan pekerjaan untuk kepentingan rumah tangga yang bersifat mendesak/ darurat				
3	Saya bersabar saat mendengar kalimat sentiment dari pasien atau teman satu profesi				
4	Sistem On-Call mempengaruhi hidup saya				
5	Saya harus mengutamakan rasa profesionalitas diatas kepentingan pribadi				
6	Saya tidak menerima promosi jabatan (cont. level 1 atau 2) dalam kurun waktu tertentu, sehingga mempengaruhi gaji saya				
7	Saya tidak mampu istirahat 30 menit untuk makan				
8	Saya tidak bisa ijin pulang ketika merasa sangat tidak nyaman				
9	Saya sedih jika pasien tidak mengalami perkembangan kondisi				
10	Kejenuhan kerja membuat saya kesulitan untuk membagi waktu antara kehidupan pribadi dan atau hobi saya				
11	Tugas saya terlalu banyak di RS sehingga menghambat saya untuk melakukan asuhan keperawatan pada pasien				
12	Saya merasa stress karena perawat primer (penanggung jawab) tidak mengerjakan tugas dengan baik				
13	Sikap temperamental para dokter membuat saya gelisah				
14	Saya tidak memiliki waktu untuk memnuhi kebutuhan pribadi (minum, ke toilet)				
15	Saya khawatir jika kolega saya yang tidak kompeten akan mempengaruhi *patient safety*				
16	Saya merasa stress karena kekerasan psikologis seperti ancaman, diskriminais, bulliying, dan pelecehan				
17	Saya merasa tidak memiliki waktu untuk mengatasi kesehatan mental pasien selama jam kerja				
18	Rumah sakit memberikan remunerasi lembur saya dengan honor yang rendah				
19	Saya merasa stress jika pasien memiliki penyakit menular seperti: Sars, Covid-19				
20	Kejenuhan kerja mempengaruhi kehidupan pribadi saya				
21	Saya harus mampu mengatur jadwal untuk melakukan aktivitas keluarga sebagai upaya memenuhi tanggung jawab kerja				

DISCUSSION

The purpose of this study was to translate and cross-validate the NOSS 21 into Bahasa Indonesia among nurses in Yogyakarta, Indonesia. The original questionnaire was created by (Chen et al., 2020) as many as 21 items. Indonesia NOSS-21 (INOSS-21) is expected to contribute to the knowledge and mental awareness of nurses in Indonesia, especially about nurses' workload. NOSS-21 is an instrument to measure the level of work stress of nurses. Measuring nurses' stress levels provides many benefits, including increasing organizational comfort in the nurse's work climate, having a significant

impact on patient care goals, and improving the quality of patient care (Boren & Veksler, 2023; Hwang, 2022). Therefore, INOSS-21 is expected to be used by hospital management to see the level of work stress of nurses at work.

Cross-transcultural is a contract validity method, which develops an instrument by specifically selecting items and measuring aspects based on the theory of the phenomenon being studied in a consistent manner (Caron, 1999; Heale & Twycross, 2015). This research not only looks at values, but also things that influence culturally. This research does not only look at values,

In this study, there are several obstacles, including the work culture in Indonesia and the character of Indonesian nurses. This can be seen in item 3 "I have to bear negative sentiments from patients or their relatives", the majority of respondents filled in scores 3 and 4 which means that nurses often hold back if they hear negative sentences from families. However, the culture of patience can give Indonesian nurses the strength to endure, besides the research site is a hospital that has an Islamic value background. Patience is self-control, accepting efforts to overcome problems, enduring suffering, persistence, hard work, and being able to deal with pressure. Therefore, the value of patience can reduce a person's stress level and increase life satisfaction (Dilla & Susanti, 2022; Hafiz et al., 2015).

In addition, the culture of working sincerely in Indonesia also affects the results. Item no 5 is considered invalid, possibly due to the influence of a culture of sincerity at work. This is reflected in items no 5 and 21, namely "I have to maintain professional units other than my own"; "I have to adapt my schedule for family activities/outings to accommodate my work responsibilities". Both items are a reflection of working sincerely. Indonesian culture views that working sincerely is an act of worship. Work is a form of devotion and piety to God, so work can create a relationship of devotion between humans and their God (Lestari et al., 2020).

Although the 3 items were invalid, the researchers still included all three in the study because work demand and work-family conflict were represented by all three. Work demand is one of the stressors on nurses, one of which is the busy activities on the ward and the psychological resistance of nurses to the behavior of doctors and patients (Sarafis et al., 2016; Sharma et al., 2014). Work demand is caused by high needs at work combined with increased responsibility and lack of individual authority (Sarafis et al., 2016). In addition to work demand, in the questionnaire there is a work-family conflict which also affects job stress (Galib et al., 2023). Nurses with high work-family conflict can increase work stress which results in nurse health threats, burnout, and negative work performance (Achmad et al., 2023; Karakurt et al., 2023; Wang & Tsai, 2014; Wen et al., 2023). Therefore, these three items are still maintained in the INOSS-21 questionnaire.

The limitation in this study was the high work rate of nurses, which made some nurses not fill out the questionnaire correctly or not return it. In addition, the nurses included in this study were not all departments, such as polyclinic nurses. Another weakness is that the hospital used is still limited to Islamic hospitals, so that respondents have almost the

same value. Some of these things can affect the results or bias in data collection (Boutron et al., 2019). Based on these limitations, future research needs to be conducted with a wider range of respondents and involve general hospitals or hospitals with different belief backgrounds.

CONCLUSION

Indonesian NOSS-21 (INOSS-21) can be used as an instrument that measures the level of work stress of nurses. Although 3 items in this questionnaire are said to be invalid through the validity test, but because these items are considered important in influencing job stress, the three items are still included in the questionnaire. Future research is expected to involve nurses from various departments and religions. So as to get different cultural backgrounds.

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