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ORIGINAL ARTICLE

Psychometric properties of the Indonesian version of the nursing home survey on patient safety culture

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Abstract

Introduction: The development of resident safety culture in nursing homes (NH) represents a major challenge for governments and NH owners, with a requirement for suitable tools to assess safety culture. Indonesia currently lacks suitable safety cultures scales for NH.

Objectives: To evaluate the psychometric properties of the translated Indonesian version of the Nursing Home Survey on Patient Safety Culture (NHSOPSC-INA).

Methods: This study was a cross-sectional survey conducted using NHSOPSC-INA. A total of 258 participants from 20 NH in Indonesia were engaged. Participants included NH managers, caregivers, administrative staff, nurses and support staff with at least junior high school education. The SPSS 23.0 was used for descriptive data analysis and internal consistency (Cronbach's alpha) estimation. The AMOS (version 22) was used to perform confirmatory factor analysis (CFA) on the questionnaire's dimensional structure.

Results: The NHSOPSC CFA test originally had 12 dimensions with 42 items and was modified to eight dimensions with 26 items in the Indonesian version. The deleted dimensions were 'Staffing' (4 items), 'Compliance with procedure' (3 items), 'Training and skills' (3 items), 'non-punitive response to mistakes' (4 items) and 'Organisational learning' (2 items). The subsequent analysis revealed an accepted model with 26 NHSOPSC-INA items (root mean square error of approximation = 0.091, comparative fit index = 0.815, Tucker-Lewis index = 0.793, CMIN = 798.488, df = 291, CMIN/Df = 2.74, GFI = 0.782, AGFI = 0.737, $p < 0.0001$) and a factor loading value of 0.538–0.981. Expert feedback confirmed the relevance of the instrument items (content validity index [CVI] = 0.942).

Conclusion: The modified NHSPOSC-INA model with eight dimensions (26 items) fits the data set in the context of Indonesian NH services.

Implications for practice: The NHSPOSC-INA is a valid and reliable instrument for assessing staff perceptions of NH resident safety culture in Indonesia. The questionnaire can now be used to evaluate interventions for resident safety in Indonesian NH.

KEYWORDS
nursing homes, older adult, reliability, safety culture, validity

1 | INTRODUCTION

Quality long-term care is required to meet the care needs of the growing population older population globally. Long-term care covers various services and situations, from home assistance to nursing home (NH) services. Nursing homes are required by individuals with complex conditions requiring a high level of nursing care which otherwise would not be met within individuals' own homes (Schols & Gordon, 2017). However, are NH residents more likely to experience physical weakness, cognitive issues, and functional impairment and are potentially vulnerable to adverse outcomes, including patient safety events such as falls and pressure ulcers (Hëib et al., 2013; Simmons et al., 2016). In addition, adverse outcomes in NH may result from inadequate monitoring, lack of detection of early signs of illness, medical errors, inappropriate nursing interventions, poor communication and incomplete patient reporting (Ammouri et al., 2015; Pazokian et al., 2014; Wagner et al., 2013).

According to the 2019 National Socio-Economic Survey (Susenas), the population aged 60 years and over in Indonesia has hit 25.7 million, making up 9.6% of the total population of Indonesia (TNP2K, 2020). The total population of East Java is 41.4 million people, with an older adult population of 13.57% (Badan Pusat Statistik, 2023). Only 872 older adults, which is 0.002% of the total population in East Java, resided in government-owned NHs in 2017 (Social Welfare Services of Jawa Timur, 2017). An estimated 2300 older adults (0.006% of the East Java's total population) resided in private NHs (Dinas Kominfo Prov. Jatim, 2020). Therefore, the total number of older adults living in NHs in East Java is approximately 0.0008% of the total population.

Nursing homes differ from acute care hospitals in several aspects: the occupants, the application of the medical care model and care provision (Bonner et al., 2008). Further, the profile of care workers in Indonesian care homes differs from those in other countries, as care providers within the Indonesian setting tend to be social workers, with the involvement of nurses and doctors. NH offers long-term care for older adults through the provision of daily necessities (food, clothing and shelter), health care, recreational activities and rehabilitation (Indarwati et al., 2019; Pratono & Maharani, 2018). The development of a safety culture requires employees to be actively aware of the potential for adverse outcomes in particularly challenging in these environments. Residents are vulnerable, often requiring a high level of attention while at the same time not having the capacity to speak up for themselves. NH staff, on the contrary, are often underappreciated, overworked and poorly rewarded (Halligan & Zecevic, 2011; Wagner et al., 2009). The first step towards the evaluation of NH resident safety culture necessitates the development of an appropriate assessment tool (Cappelen et al., 2016; Zúñiga et al., 2013).

Safety culture evaluation is critical to assess the level of safety awareness and is required to determine the effectiveness of interventions to improve safety culture (Castle et al., 2010). In recent years, various questionnaires have been developed and used to measure safety culture in NH. Among the questionnaires used to measure safety culture, the Nursing Home Survey on Patient Safety Culture (NHSOPSC) is the most widely accepted instrument (Banaszak-Holl et al., 2017; Cappelen et al., 2017, 2018;

Implications for Practice

What does this research add to existing knowledge in gerontology?

- The Nursing Home Survey on Patient Safety Culture with versions in French, Norwegian, Swedish and Chinese showed good psychometric properties although the number of items and dimensions differed from the original version.
- The Indonesian version of the safety culture scale makes it possible to provide an overview to international readers of safety culture in Indonesian and Southeast Asian nursing homes.

What are the implications of this new knowledge for nursing care with older people?

- Further studies on safety culture in nursing homes can be carried out across cultures and languages to enhance research in this much-needed area.
- The Indonesian version of the Nursing Home Survey on Patient Safety Culture needs to be systematically validated in the broader Indonesian population and countries with similar characteristics, such as Southeast Asia.
- Positive safety culture and adopting sustainability practices, nursing homes can provide high-quality care that promotes the health and well-being of older adults while ensuring that resources are used efficiently and responsibly.

How could the findings be used to influence policy or practice or research or education?

- The Indonesian version of the Nursing Home Survey on Patient Safety Culture is useful instrument that will enable research, quality improvement and benchmarking activities in nursing homes.
- An understanding of staff perceptions of safety will inform policies on appropriate strategies to improve the quality of services in nursing homes.
- Safety culture evaluation in a nursing home can lead to advocating for policies, implementing best practices, conducting research and providing education and training to promote a positive safety culture and sustainable practices, which can improve patient outcomes, reduce waste and ensure responsible resource use.

Castle et al., 2011; Kusmaul & Sahoo, 2019; Li et al., 2019; Ree & Wiig, 2019; Smith et al., 2018; Temkin-Greener et al., 2020; Thomas et al., 2012; Titlestad et al., 2018). Developed by the Agency for Healthcare Research and Quality (AHRQ), the original version of the NHSOPSC includes 42 survey items. Another commonly administered tool is the Safety Assessment Questionnaire (SAQ) (Bondevik et al., 2017; Buljac-Samardzic et al., 2016). Another instrument in use is the Hospital Survey on Patient Safety Culture (HSOPSC) (Lee et al., 2019), which has been adapted to assess NH safety culture. The HSOPSC (Irwandy et al., 2015; Misnaniarti et al., 2016) and SAQ (Ningrum et al., 2019) have previously been translated into Indonesian to evaluate the safety climate in Indonesian hospitals. However, these two instruments were not specifically designed to assess NH safety culture and may lack utility for this setting.

Thus, this study intended to evaluate the validity and psychometric properties of the Indonesian version of the NHSOPSC (NHSOPSC-INA) using staff perceptions of patient safety culture in Indonesian NH. A valid NHSOPSC-INA can then be used to measure the NH safety culture in Indonesia.

2 | METHODS

This was a cross-sectional survey conducted among full-time NH employees. STROBE guidelines (von Elm et al., 2008) were followed for the conduct of this study.

2.1 | Participants and data collection

A convenience sampling strategy was used to recruit participants from 20 NH in Indonesia. The inclusion criteria were staff who have worked in the NH for a minimum of one-month and junior high school education. Government-owned and private NH that provided care for older adults exclusively, each with a minimum of 15 employees, were included. Informed consent was signed by each participant before enrolment. This research was conducted based on the ethical principles for research involving humans (WHO, 2020).

Participants included managers, nurses, nursing assistants, social workers, as well as administrative and supportive staff through two methods: Google Forms for NH outside the province of East Java and postal mail for NH in the East Java area. Questionnaires were sent to each NH director and then distributed to respondents who met the study inclusion criteria. Each respondent received a separate envelope containing a participant information sheet, an informed consent form and an NHSOPSC-INA questionnaire. Completed questionnaires were placed back into the envelopes and given to the NH chief.

Each NH was given 1 week to complete and return the questionnaires to the researcher. The reminder was sent to the director of the NH by message and phone call. The nursing home chief informed the researcher of any delays in completing or returning the questionnaire. This survey was conducted from April to May 2021.

2.2 | Instrument

The original NHSOPSC was developed in the English language and has been translated into Danish, French, German, Italian, Japanese, Korean, Norwegian, Portuguese and Spanish. The English version has shown acceptable levels of reliability, with the lowest value of 0.71 and the highest of 0.86. The Norwegian version with 10 factors reached acceptable reliability with a Cronbach's alpha value >0.60 (Cappelen et al., 2016). The French version has seven dimensions with Cronbach's alpha values of 0.720–0.865 (Teigné et al., 2019). Cronbach's α coefficient for the Chinese version of the NHSOPSC was 0.94 (Lin et al., 2017).

The questionnaire was divided into four sections (A, B, C and D) and included two additional questions: (a) whether respondents would tell their friends that this was a safe nursing home for their family and (b) give an overall rating of population safety and background variables (Castle et al., 2010; Sorra et al., 2016). The NHSOPSC-INA's 42 items are scored on a 5-point Likert scale (1 = 'strongly disagree' to 5 = 'strongly agree'). A reverse score was applied to eight items that contained negative words.

2.3 | Translation procedures

The translation process was carried out using World Health Organisation's (WHO, 2013) recommendations, and the first version of the NHSOPSC-INA included advanced translation, expert panel, back translation, pre-testing and cognitive interviews (AHRQ, 2010; WHO, 2013). In the first instance, the NHSOPSC questionnaire was translated from English to Indonesian by a translator with healthcare training, nearly 10 years of experience in patient safety research, and English language proficiency—studied for more than 5 years and an in English-speaking country. An expert panel comprising five bilingual experts with experience in the healthcare were invited to compare the original and translated versions of the questionnaire. The first expert panel session also included a translator.

Back translations were performed on phrases with cultural differences from the original language, such as the word 'resident' having been changed to 'older adult'. The phrase 'and previous residence' was added to 'hospital' in item B3, because nursing homes in Indonesia often admitted residents directly from their own homes or social services' shelters rather than hospitals.

Pre-testing was conducted to determine whether respondents could understand the questionnaire. This stage included five respondents from one targeted nursing home; three were social workers, a nurse and a manager. The NHSOPSC-INA version was delivered to the five responders, who had 15 minutes to read and comprehend it. The researcher then posed the following queries: 'Do you understand the NHSOPSC questionnaire?', 'Does the questionnaire address the circumstances in your workplace?', 'Is there any correction for the NHSOPC-INA instrument?' These questions emphasised whether the items were relevant and understandable to the user.

2.4 | Statistical analysis

2.4.1 | Descriptive statistics

Descriptive statistics (frequency, percentage, mean, min-max and standard deviation [SD]) were applied accordingly to describe the NHSOPSC-INA survey items and respondent characteristics (Table 1).

2.4.2 | Response rate and variability

Response rates and variability were assessed by frequency analysis. Response variability was considered low when 90% or more of the respondents chose 'agree/strongly agree' or 'most of the time/always'. Response rate and variability reporting ensures that the sampling meets sample quality, suitability and representativeness. It also minimises bias (Holtom et al., 2022).

TABLE 1 Characteristics of respondents ($N = 253$).

Characteristics	*n*	%
Age (year)		
Mean: 37.81	SD: ±11.139	Min–Max: 20–70 (year)
Gender		
Female	141	55.7
Male	112	44.3
Education		
Junior high school	15	5.9
Senior high school	102	40.3
Diploma	70	27.7
Bachelor	54	21.3
Master	12	4.7
Job category		
Manager	18	7.1
Nurse	66	26.1
Nurse aides	15	5.9
Social workers and physiotherapist	65	25.7
Administrative staff	29	11.5
Supporting staff	60	23.7
Working experience in nursing homes		
<2 months	2	0.8
2–12 months	17	6.7
1–2 years	36	14.2
3–5 years	43	17.0
6–10 years	60	23.7
>10 years	95	37.5
Direct contact with residents		
Yes	161	63.6
No	92	36.4

2.4.3 | Content validity

The content validity of the Indonesian NHSOPSC was assessed by nine gerontology-trained nurses: two NH nurses, two from the Indonesian gerontology nursing organisation and five gerontology researchers and academic lecturers. Using a survey approach, they were asked to rate each item for its understandability by nursing home personnel (yes/no) and relevance to resident safety on a 4-point scale (1 = not relevant; 2 = somewhat relevant; 3 = quite relevant; 4 = very relevant).

For each item, the item content validity index (I-CVI) was calculated by dividing the number of experts who rated it '3' or '4' by the total number of experts. The I-CVI value ranges from 0 to 1. If I-CVI > 0.79, the item is relevant; if I-CVI = 0.70–0.79, the item needs to be revised; and if I-CVI < 0.70, the item is deleted (Zamanzadeh et al., 2015). The average scale content validity index (S-CVI) is the mean of all I-CVIs and should be at least 0.90 (Polit & Beck, 2014; Rodrigues et al., 2017).

2.4.4 | Reliability test used Cronbach alpha and composite reliability

Cronbach's alpha coefficients were used to measure the internal consistency and dimensions of the NHSOPSC-INA. It was acceptable if the alpha values were >0.60 (Cappelen et al., 2016; Zúñiga et al., 2013). Composite reliability (CR) is a method for assessing the contribution or significance of an item by examining the loading factor. The CR value is good if >0.7 (Byrne, 2016).

2.4.5 | Construct validity used confirmatory factor analysis

Structural equation modelling was used to evaluate how the original 12 factors matched with the nursing home data in Indonesia. Missing data, including the 'not applicable or do not know' response options, were managed through pairwise deletion by default when using this estimator. The comparative fit index (CFI), Tucker–Lewis index (TLI) and root mean square error of approximation (RMSEA) were used to determine the most suitable model (Maydeu-Olivares, 2017; Xia & Yang, 2019). CFI levels above 0.9, TLI levels above 0.90 (Hu & Bentler, 1999) and RMSEA values less than 0.10 were recommended as conformance (Marquier, 2019). Factor loading was expected to be above 0.50 (Marquier, 2019).

2.4.6 | Convergent and discriminant validity

Convergent validity is indicated by the average variance extracted (AVE) value greater than >0.5. Discriminant validity was used to identify differences between constructs, achieved if the correlation value of the construct is smaller than the square root of AVE (Byrne, 2016).

2.4.7 | Validity based on its relationship to the overall rating question

The two questions were used as complementary questions that were developed by AHRQ as an overall rating of the NH (AHRQ, 2010). The first question, 'I will tell friends that this is a safe nursing home for their families', was explored using descriptive statistics (*n*, %). Correlation between the second overall rating question, Please give this nursing home an overall rating on patient safety, and the NHSOPSC-INA dimension in SPSS (version 23.0; IBM SPSS). A p-value of less than 0.05 was considered significant (Cappelen et al., 2016).

3 | RESULTS

3.1 | Descriptive statistics

From an original total of 275 invited participants, 258 (93.82%) participants from 20 nursing homes returned the NHSOPSC-INA questionnaire. After the data cleaning process, 253 questionnaires were included in the analysis process; five of the 258 questionnaires were excluded because they were incorrectly completed, having more than 10 blank question items. Forty-two questionnaires were excluded due to missing data, as respondents selected the response 'does not apply or do not know', bringing the total number of respondents to 211 (see Figure 1).

More than a quarter of respondents were qualified nurses (*n* = 66, 26.1%). Almost half had completed senior high school education (*n* = 102, 40.3%). More than a third of all respondents (*n* = 95, 37.5%) had more than 10 years of experience working in NH, mostly working directly with care home residents (*n* = 161, 63.6%). The respondents' characteristics are presented in Table 1.

3.2 | Response rate and variability

The responses 'does not apply' or 'do not know' were also considered missing data. The item with the largest number of missing responses was A18, 'staff feel safe reporting their mistakes', for which there were 10 missing responses (Table 2). The NHSOPSC-INA items were assessed on a scale of 1 to 5. Five alternative answers had been used for 25 items—alternative answers 2–5 for 14 items and alternative answers 1, 3, 4 and 5 for three items (A1, C1 and D6).

Response variability was below 90% for all items, ranging from 3.2% to 62.5%. The item 'Staff opinions are ignored in this nursing home (B9)' had a response variability of 3.2%, while the item 'Staff are given all the information they need to take care of patients (B10)' had a response variability of 62.5%.

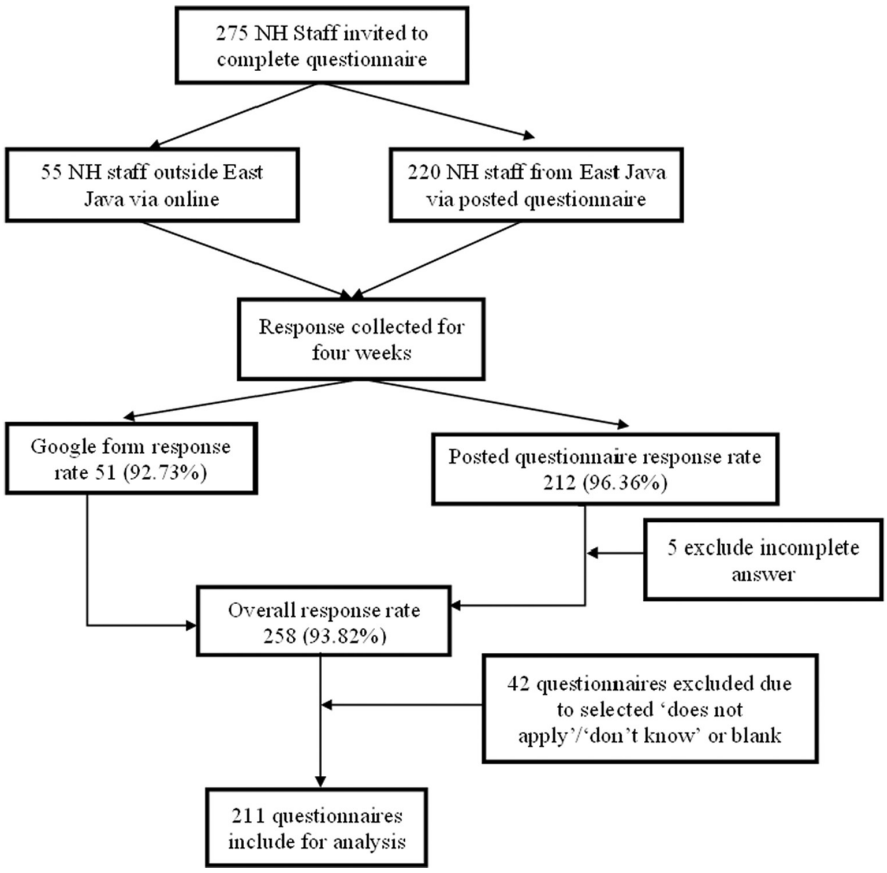

FIGURE 1 Flowchart of participants.

TABLE 2 Dimensions with corresponding mean and SD, responses to the 'does not apply or do not know' category and missing value ($N = 258$).

Dimension/items	Mean (SD)	Missing	Overall response rate	Does not apply or do not know	Response variability
F1 Teamwork (TW)					
A1 Staff in this nursing home treat each other with respect	4.29 (0.62)	0	257 (93.45%)	1	90 (35.6%)
A2 Staff support one another in this nursing home	4.30 (0.55)	0	257 (93.45%)	1	86 (34.0%)
A5 Staff feel like they are part of a team	4.21 (0.58)	0	256 (93.09%)	2	70 (27.7%)
A9 When someone gets really busy in this nursing home, other staff help out	4.07 (0.81)	0	258 (93.82%)	0	75 (29.6%)
F2 Staffing (ST)					
A3 We have enough staff to handle the workload	3.71 (0.93)	0	257 (93.45%)	1	39 (15.4%)
A8 (Neg.) Staff have to hurry because they have too much work to do	2.50 (1.05)	0	256 (93.09%)	2	32 (12.6%)
A16 Residents' needs are met during shift changes	4.17 (0.53)	0	255 (92.73%)	3	56 (22.1%)
A17 (Neg.). It is hard to keep patients safe because so many staff quit their jobs	3.62 (1.12)	0	252 (91.64%)	6	13 (5.1%)
F3 Compliance with procedure (CWP)					
A4 Staff follow standard procedures to care for patients	4.25 (0.51)	0	256 (93.09%)	2	70 (27.7%)
A6 (Neg.). Staff use shortcuts to get their work done faster	3.11 (1.14)	0	255 (92.73%)	3	20 (7.9%)
A14 (Neg.). To make work easier, staff often ignore procedures	2.20 (1.05)	0	255 (92.73%)	3	48 (19.2%)
F4 Training and skills (TnS)					
A7 Staff get the training they need in this nursing home	3.93 (0.83)	0	249 (90.55%)	9	53 (20.9%)
A11 Staff have enough training on how to handle difficult patients	3.76 (0.89)	0	254 (92.36%)	4	34 (13.4%)
A13 Staff understand the training they get in this nursing home	3.91 (0.81)	0	254 (92.36%)	4	42 (16.6%)
F5 Non punitive response to mistakes (NPRM)					
A10 (Neg.). Staff are blamed when a patient is harmed	3.05 (1.11)	0	258 (93.82%)	0	17 (6.7%)
A12 (Neg.). Staff are afraid to report their mistakes	3.56 (0.97)	0	251 (91.27%)	7	11 (4.3%)
A15 Staff are treated fairly when they make mistakes	3.89 (0.79)	0	256 (93.09%)	2	40 (15.8%)
A18 Staff feel safe reporting their mistakes	3.43 (1.01)	0	248 (90.18%)	10	26 (10.3%)
F6 Hands off (HD)					
B1 Staff are told what they need to know before taking care of a patient for the first time	4.41 (0.83)	0	255 (92.73%)	3	144 (56.9%)
B2 Staff are told when there is a change in a patient's care plan	4.45 (0.81)	1	253 (92%)	4	150 (59.3%)
B3 We have all the information we need when residents are transferred from the hospital	4.42 (0.85)	1	249 (90.55%)	8	151 (59.7%)
B10 Staff are given all the information they need to take care of patients	4.47 (0.81)	4	253 (92%)	1	158 (62.5%)
F7 Feedback and communication about incidents (FCAI)					
B4 When staff report something that could harm a patient, someone takes care of it	4.38 (0.88)	1	253 (92%)	4	142 (56.1%)
B5 In this nursing home, we talk about ways to keep patients from accidents happening again	4.40 (0.90)	1	256 (93.09%)	1	151 (59.7%)
B6 Staff tell someone if they see something that might harm a patient	4.49 (0.82)	1	255 (92.73%)	2	157 (62.1%)
B8 In this nursing home, we discuss ways to keep patients safe from harm	4.52 (0.71)	5	252 (91.64%)	1	155 (61.3%)

TABLE 2 (Continued)

Dimension/items	Mean (SD)	Missing	Overall response rate	Does not apply or do not know	Response variability
F8 Communication openness (CO)					
B7 Staff ideas and suggestions are valued in this nursing home	4.35 (0.82)	1	257 (93.45%)	0	137 (54.2%)
B9 (Neg.) Staff opinions are ignored in this nursing home	4.19 (1.05)	3	251 (91.27%)	4	8 (3.2%)
B11 It is easy for staff to speak up about problems in this nursing home	4.20 (0.95)	4	253 (92%)	1	127 (50.2%)
F9 Supervisor expectations and actions promoting patient safety (SE)					
C1 My supervisor listens to staff ideas and suggestions about patient safety	4.21 (0.50)	5	251 (91.64%)	2	59 (23.3%)
C2 My supervisor says a good word to staff who follow the right procedures	4.09 (0.615)	4	253 (92%)	1	50 (19.8%)
C3 My supervisor pays attention to patient safety problems in this nursing home	4.24 (0.557)	4	254 (92.36%)	0	73 (28.9%)
F10 Overall perceptions of patient safety (OPRS)					
D1 Patients are well cared for in this nursing home	4.38 (0.539)	0	258 (93.82%)	0	101 (39.9%)
D6 This nursing home does a good job keeping patients safe	4.20 (0.491)	5	253 (92%)	0	58 (22.9%)
D8 This nursing home is a safe place for patients	4.23 (0.537)	5	253 (92%)	0	68 (26.9%)
F11 Management support for patient safety (MSRS)					
D2 Management asks staff how the nursing home can improve patient safety	4.04 (0.511)	5	249 (90.55%)	4	33 (13.0%)
D7 Management listens to staff ideas and suggestions to improve patient safety	4.17 (0.569)	5	253 (92%)	0	60 (23.7%)
D9 Management often walks around the nursing home to check on patients' care	4.09 (0.567)	5	253 (92%)	0	47 (18.6%)
F12 Organisational learning (OL)					
D3 (Neg.) This nursing home lets the same mistakes happen again and again	4.10 (0.813)	5	251 (91.27%)	2	75 (29.6%)
D4 It is easy to change to improve patient safety in this nursing home	3.75 (0.774)	5	251 (91.27%)	2	22 (8.7%)
D5 This nursing home is always doing things to improve patient safety	4.15 (0.548)	5	253 (92%)	0	52 (20.6%)
D10 When this nursing home makes changes to improve patient safety, it checks to see whether the changes worked	4.08 (0.55)	5	250 (90.90%)	3	42 (16.6%)

Note: (Neg.), negative statement with a reverse score.

3.3 | Content validity

Nine gerontologists evaluated the NHSOPSC-INA questionnaire as relevant; 36 of its 42 items received an I-CVI of >0.79. Six items with an I-CVI value <0.79 were reformulated in collaboration with the experts. The S-CVI value was 0.942, indicating that this questionnaire was considered relevant.

3.4 | Reliability

The NHSOPSC-INA model (Data S1) analysis revealed (Table 3) that eight dimensions reached an acceptable level of internal consistency with Cronbach's alpha values >0.60, between 0.701 and 0.855. Also, all dimensions resulted in a CR higher than 0.70, between 0.710 and 0.861.

3.5 | Construct validity

According to the NHSOPSC's standard dimensions, the confirmatory factor analysis (CFA) first tested the 12 latent factors ($n = 211$). The first test for model fit was acceptable (RMSEA = 0.077, CFI = 0.738, TLI = 0.721, CMIN = 1823,788, df = 807, CMIN/Df = 2.26, GFI = 0.699, AGFI = 0.664, $p < .0001$). However, the CFA results (see Table 3) revealed that some items had a factor loading of less than

TABLE 3 AVE, Composite Reliability (CR) and Cronbach Alpha value of NHSOPSC-INA (8 dimensions).

Dimensions	AVE	CR	Cronbach alpha
F1 TW	0.410	0.734	0.713
F6 HD	0.516	0.808	0.803
F7 FCAI	0.609	0.861	0.855
F8 CO	0.452	0.710	0.701
F9 SE	0.631	0.837	0.830
F10 OPRS	0.576	0.796	0.779
F11 MSRS	0.590	0.812	0.811
F12 OL	0.567	0.723	0.720

Abbreviations: CO, communication openness; CWP, compliance with procedure; FCAI, feedback and communication about incidents; HD, hands off; MSRS, management support for patient safety; NPRM, non punitive response to mistakes; OL, organisational learning; OPRS, overall perceptions of patient safety; SE, supervisor expectations and actions promoting patient safety; ST, staffing; TnS, training and skills; TW, teamwork.

0.5; thus, dimensions F2, F3, F4 and F5 and items D3 and D4 were removed from the NHSOPSC-INA. After deleting the seven items, the NHSOPSC-INA with 35 items was re-tested and established a better fit (RMSEA = 0.091, CFI = 0.815, TLI = 0.793, CMIN = 798.488, df = 291, CMIN/Df = 2.74, GFI = 0.782, AGFI = 0.737, $p < .0001$). In the final NHSOPSC-INA model, the first order factor loading varied between 0.561 and 0.935 and the second order factor loading between 0.538 and 0.981 (Table 4).

3.6 | Convergent and discriminant validity

The discriminant validity is achieved if the AVE root square is greater than the correlation value. Table 5 shows some correlation values had greater values than AVE root square (F6 – F8, F9 – F12, and F11-F12). These results indicate similarities between dimensions F6 – F8, F9 – F12 and F11-F12. However, the NHSOPSC-INA version mostly showed good results in convergent validity for each dimension (see Table 3), internal consistency and composite reliability, so the researcher did not change the dimension.

3.7 | Validity based on relation to 'overall rating question' items

The SPSS correlation analysis used the Pearson product–moment correlation and established a weak relationship between all factors in the NHSHOPSC-INA (8 dimensions) and the overall rating question, 'Please give this nursing home an overall rating of patient safety' (E2), with a range of 0.105 to 0.291 (Table 6).

Most respondents gave a 'good' rating (55.7%, $n = 141$) and a few gave a 'moderate' rating (2.8%, $n = 7$). No respondent gave a 'bad' rating. The overall rating question, 'I would tell friends that this is a safe nursing home for their family' (E1), gathered mostly 'yes' responses (90.9%, $n = 230$), some 'maybe' ratings (7.1%, $n = 18$) and only a few 'no' answers (2%, $n = 5$).

4 | DISCUSSION

The development of safety culture in NH is essential as older residents are at high risk for potential harm due to cognitive and sensory disorders. In addition, there are differences between the hospital and nursing home models of nursing care. Doctors are often not available at all times in NH, so if there is a change in condition or medication, communication is carried out via telephone, which may lead to a delay in treatment (Bonner et al., 2008). A valid instrument to evaluate the safety culture in NH needs to be developed in Indonesia to positively influences patient safety.

This survey-based study conducted in Indonesia has validated the Indonesian version of the NHSOPSC in a nursing home setting. This study had a higher response rate (93.82%) than similar validation studies which had used the Safety Assessment Questionnaire (SAQ) in Indonesia (82%) (Ningrum et al., 2019) or other countries, including Switzerland (66%) (Zúñiga et al., 2013), Norway (69%) (Cappelen et al., 2016) and the United Kingdom (37%) (Waterson et al., 2010). This present study has also included a larger number of homes compared to similar studies conducted in Switzerland (9 NH) and Norway (12 NH).

The CFA analysis against NHSOPSC-INA yielded different results from the original version. The original version of the NHSOPSC, with 12 dimensions, has been tested psychometrically with satisfactory results, and it recommended using the full NHSOPSC to assess the safety culture in NH (Sorra et al., 2016). In contrast, our validation process has led to the reduction to eight dimensions. Other validation studies have also led to the reduction of dimensions. A previous Swiss study has identified nine dimensions (Zúñiga et al., 2013), while a Norwegian study identified 10 dimension (Cappelen et al., 2016). Cultural adjustment cannot be avoided to address differences in organisational culture, service delivery patterns, staffing and nursing home regulations (Lin et al., 2017) in Indonesia compared to the United States (US), where the original NHSOPSC was developed.

Due to the differences in size and organisational model of nursing homes in Indonesia and the United States, the difference between facilities and unit levels in nursing homes does not apply to the sample in this study. In Indonesia, NH assists with daily living activities and provides medical care for older people with or without chronic diseases. There is little differentiation according to the actual needs of the patients or level of care, as the same institution will house both individuals who require assisted living services as well as those with nursing care needs. Nevertheless, the provision of medical care is limited to the administration of oxygen and nebulizers, oral medications, maintenance of an active and passive range of motion, insulin injection, wound care, urinary catheter care and intravenous saline infusion. The resident will be referred to the hospital if complex medical treatment is needed.

TABLE 4 Confirmatory factor analysis of the 8-factor model.

	First test		Second test		
Dimension/item	First order λ	Second order λ	First order λ	Second order λ	Conclusion
F1 TW		0.677		0.658	Valid
Item A1	0.686		0.687		
Item A2	0.639		0.640		
Item A5	0.643		0.642		
Item A9	0.589		0.587		
F2 ST		0.423	-	-	Deleted
Item A3	0.652		-		
Item A8 (neg.)	−0.363		-		
Item A16	0.773		-		
Item A17 (neg.)	0.042		-		
F3 CWP		0.136	-	-	Deleted
Item A4	0.736		-		
Item A6 (neg.)	−0.702		-		
Item A14 (neg)	0.624		-		
F4 TnS		0.451	-	-	Deleted
Item A7	0.837		-		
Item A11	0.688		-		
Item A13	0.894		-		
F5 NPRM		0.384	-	-	Deleted
Item A10 (neg.)	−0.091		-		
Item A12 (neg)	−0.020		-		
Item A15	0.702		-		
Item A18	0.696		-		
F6 HD		0.561		0.538	Valid
Item B1	0.706		0.704		
Item B2	0.787		0.790		
Item B3	0.576		0.573		
Item B10	0.784		0.784		
F7 FCAI		0.555		0.547	Valid
Item B4	0.696		0.696		
Item B5	0.786		0.788		
Item B6	0.841		0.840		
Item B8	0.793		0.791		
F8 CO		0.658		0.638	Valid
Item B7	0.766		0.633		
Item B9 (neg.)	0.608		0.608		
Item B11	0.633		0.766		
F9 SE		0.778		0.789	Valid
Item C1	0.813		0.815		
Item C2	0.759		0.754		
Item C3	0.810		0.812		

(Continues)

TABLE 4 (Continued)

Dimension/item	First test		Second test		Conclusion
	First order λ	Second order λ	First order λ	Second order λ	
F10 OPRS		0.671		0.685	Valid
Item D1	0.742		0.561		
Item D6	0.923		0.935		
Item D8	0.742		0.734		
F11 MSRS		0.938		0.938	Valid
Item D2	0.742		0.737		
Item D7	0.780		0.785		
Item D9	0.781		0.781		
F12 OL		0.960		0.981	Valid with two items deleted
Item D3 (neg)	0.109		-		
Item D4	0.341		-		
Item D5	0.696		0.708		
Item D10	0.807		0.795		

Note: (Neg.), negative statement with a reverse score.

Abbreviations: CO, communication openness; CWP, compliance with procedure; FCAI, feedback and communication about incidents; HD, hands off; MSRS, management support for patient safety; NPRM, non punitive response to mistakes; OL, organisational learning; OPRS, overall perceptions of patient safety; SE, supervisor expectations and actions promoting patient safety; ST, staffing; TnS, training and skills; TW, teamwork.

TABLE 5 Discriminant validity of NHSOPSC-INA instruments.

	F1 TW	F6 HD	F7 FCAI	F8 CO	D9 SE	F10 OPRS	F11 MSRS	F12 OL
F1 TW	0.640							
F6 HD	0.237	0.718						
F7 FCAI	0.211	0.677	0.780					
F8 CO	0.407	0.725	0.618	0.672				
F9 SE	0.584	0.461	0.322	0.565	0.794			
F10 OPRS	0.486	0.164	0.255	0.328	0.535	0.759		
F11 MSRS	0.691	0.427	0.515	0.562	0.714	0.665	0.768	
F12 OL	0.533	0.528	0.549	0.538	0.796	0.753	0.928	0.753

Abbreviations: CO, communication openness; CWP, compliance with procedure; FCAI, feedback and communication about incidents; HD, hands off; MSRS, management support for patient safety; NPRM, non punitive response to mistakes; OL, organisational learning; OPRS, overall perceptions of patient safety; SE, supervisor expectations and actions promoting patient safety; ST, staffing; TnS, training and skills; TW, teamwork.

Funding for nursing homes in Indonesia can come from various sources, including the government, private individuals, non-profit organisations and corporate entities. The government may provide funding for nursing homes through programs such as social welfare and healthcare initiatives. Private individuals may pay out-of-pocket for nursing home care or receive financial assistance through insurance or government programs. Non-profit organisations and corporate entities may fund nursing homes as part of their social responsibility or community outreach efforts (Undang-Undang Republik Indonesia No 13 Tahun 1998 Tentang Kesejahteraan Lansia, 1998).

In comparison, US nursing homes and assisted living services are different facilities. Medical care in US NH is provided round the clock for people with chronic illness, including older people, while in assisted living facilities, residents have access to varying levels of medical attention depending on their individual needs. US NH(s) is certified with 60% funding by Medicaid and Medicare. In addition, several US NH(s) specifically offer services to people with Alzheimer's and hospice care (Michas, 2021; Stanborough, 2021).

The nursing home in Indonesia delivers long-term care for older adults with or without health problems. Many older residents live in Indonesian NH as they have been neglected and do not have family members to claim them. Only a small proportion of NH residents have identifiable family members. Within the Indonesian culture, it is uncommon for adult children to admit their older parents to NH, due to the sense of obligations that they are required to care for their older parents within their own homes. The care provided comprises mainly social assistance with minimal healthcare input (Indarwati

TABLE 6 Correlation between the 8-dimension model of the Indonesian NHSOPSC and the outcome measure item, 'Please give this nursing home an overall rating on patient safety' (E2), ($N = 211$).

Dimensions	E2
F1 = Teamwork	0.291[a]
F6 = Hands off	0.145[b]
F7 = Feedback and communication about incidents	0.152
F8 = Communication openness	0.197[a]
F9 = Supervisor expectations and actions promoting patient safety	0.105
F10 = Overall perceptions of patient safety	0.262[a]
F11 = Management support for patient safety	0.212[a]
F12 = Organisational learning	0.169[b]

[a]Correlation is significant at the 0.01 level (2-tailed).
[b]Correlation is significant at the 0.05 level (2-tailed).

et al., 2019; Pratono & Maharani, 2018). Not all nursing homes in Indonesia have divisions into units which address different levels of dependence. Oversight of services is either provided by the NH owner, care manager or service coordinator, with the absence of a legislated regulator.

The four dimensions that are not suitable with the NHSOPSC-INA model can be explained by the management system of NH in Indonesia. The management system tends to be social and familial, which may lead to a lack of clear roles and responsibilities and an emphasis on interpersonal relationships rather than task completion. Hence, workload is not usually considered, and staff is expected to complete all tasks to an acceptable standard. Few or any standard operating procedures (SOPs) exist for NH in Indonesia. The lack of SOPs makes it difficult to assess compliance with procedures, leading to the deleted 'compliance with procedures' dimension. Training and development opportunities for staff are also not widely available in nursing homes in Indonesia, hence is not presently a useable benchmark for quality, resulting in the deletion of the 'training and skill' dimension. Reporting, documenting and incident handling processes in NH in Indonesia are also not optimal. The lack of a proper documentation process and incident handling system make identifying and reporting incidents challenging, leading to a lack of applicability of the 'non-punitive response to mistake' dimensions. This, however, suggests that the situation may change over time and the removed dimensions may need to be restored and re-evaluated as long-term care develops in Indonesia.

After the 16 items were removed, this study's findings found that CR and Cronbach alpha values for the eight latent dimensions were more than 0.6, and factor loading for all question items was greater than 0.5. This was done to achieve acceptable internal consistency and a model that fits the Indonesian nursing home setting. However, the deletion of seven items will affect research comparing safety cultures across countries. Hence, the benchmarking process may be constrained.

The original NHSOPSC and the Indonesian version included only two overall ranking questions. The overall rating on resident safety correlated weakly with the eight dimensions. Further, the 90% positive response to whether they would tell their friends that the NH is a safe place for their family also fit well with the overall rating. The rating scores obtained within this present study were comparatively higher than previously published scores from the United States (75%) (Famola et al., 2016) and Norway (86%) (Cappelen et al., 2016). The observed discrepancy between rating scores and actual safety culture may reflect on the expectation of respondents but may only be based on relative comparisons with the conditions the resident would otherwise be subject to within their own homes. Further research could be enhanced by the inclusion of data related to adverse events in nursing care homes.

This study is limited by the existence of only two items within the organisational learning (dimensions). Three or more items are recommended for adequate factor interpretation (Pedhazur & Schmelkin, 1991). The differences in the characteristics of each nursing home were not considered because the researchers only focused on individual perceptions of safety. This raises the possibility of research bias, as each nursing home may have differences in NH safety management and policies.

5 | CONCLUSION

In conclusion, this study highlights the importance of psychometric evaluation before recommending measurement scales in a new setting. Our findings provide valuable insights into using the NHSOPSC in the Indonesian NH sector and suggest that further development is necessary to ensure the instrument's validity and reliability. Specifically, the NHSOPSC may require additional culturally and contextually relevant items. Despite this, our results suggest that the 26-item NHSOPSC-INA is a suitable and acceptable instrument for assessing staff perceptions of patient safety culture in NH that share similar characteristics to those in Indonesia. Ultimately, these tools can support efforts to improve patient safety and quality of care in NH in Indonesia and other culturally similar settings.

6 | IMPLICATION OF PRACTICE

First, the study highlights the need for further research with a broader sample size in countries with similar NH characteristics to Indonesia. This research can inform the development of patient safety culture assessment tools that are tailored to the unique features of different nursing home settings. Second, the study emphasises the importance of generalising terminology to all NH staff, not just those directly involved in care delivery. This approach can improve the accuracy and effectiveness of safety culture assessments. Third, this study's findings can be used to measure the effects of interventions to enhance the safety culture in NH and increase staff awareness of client safety issues. The tool will also help NH staff identify areas of strengths as well as deficiencies in care for older people and inform the steps taken to improve safety culture and care quality.

Increasing awareness of client safety issues in NH can also help prepare nursing homes to face the hazards of climate change, such as extreme heat, natural disasters and infectious diseases. By prioritising risk management, open communication and continuous improvement, nursing homes can identify and address potential hazards related to climate change, reduce the likelihood of harm to their residents and staff, and ensure they are prepared to adapt to changing circumstances. Further, safety culture will also ensure environmental sustainability if quality improvement measures include the need to conserve water and electricity, and encourage recycling practices as well as minimising plastic waste.

AUTHOR CONTRIBUTIONS

Rista Fauziningtyas: Conceptualisation, Methodology, Validation, Data analysis, Investigation, Writing—original draft and Visualisation. Chong Mei Chan and Tan Maw Pin: Conceptualisation, Methodology, Investigation, Writing—review—editing, and Visualisation. Inge Dhamanti and Graeme D. Smith: Validation, Investigation, Writing—review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest in this study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Ethical approval was obtained for this study from University of Malaya Research Committee with reference number UM.TNC2/UMREC_1218.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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