Development and Psychometric Properties of Managerial Competence Scale for First-Line Nurse Managers in Indonesia

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Abstract

This study aimed to develop and psychometrically test the managerial competence scale for first-line nurse managers (FLNMs) in Indonesia. The scale was based on items derived from an integrative review and interviews with experts. A total of 300 FLNMs from 16 public hospitals were randomly selected for this test of psychometric properties. A principal component analysis generated seven dimensions with 43 items as a final scale, with overall Cronbach's α of .95 while the dimensions' Cronbach's α ranged from .71 to .90. The findings demonstrate that the scale is valid and reliable as a vehicle for assessment of managerial competence of FLNMs.

Keywords

instrument development, managerial competence, first-line nurse managers, Indonesia

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Introduction

Managerial competence of first-line nurse managers (FLNMs) is crucial in health care, particularly in hospital settings. These leaders must deal with complex situations; whether to retain staff, to meet budget targets, or to assure patient safety (Chase, 2010; Trossman, 2011). They must have excellent skills in nursing as well as business-related tasks, both of which require critical thinking. Today's FLNM's roles have changed from having mainly a clinical focus to having an increasing managerial focus in their work (Gunawan, Aungsuroch, & Fisher, 2018).

Given the central role that nurse managers play in improving patient care, assessing their managerial competence is a great way to evaluate the skill and knowledge they possess. However, there is a dearth of appropriate instruments related to this concept, especially in the Indonesian setting.

Several instruments to measure FLNMs' managerial competence have been developed. However, there is a degree of ambiguity in the way managerial competence is described with a variety of dimensions being described. For instance, the instrument developed by Chase (2010) used the terms of competency and skill interchangeably. Competence focuses on what a nurse manager can accomplish rather than personal traits and characteristics. The dimensions described by Chase (2010) include technical skills, human skills, conceptual skills, leadership, and financial management. DeOnna (2006) describes an instrument with the dimensions promoting staff retention; recruiting staff; facilitating staff development; performing supervisory responsibilities; ensuring patient safety and quality care; conducting daily unit operations; managing fiscal planning; facilitating

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interpersonal, group, and organizational communication; leading quality improvement initiatives; promoting a professional practice model; and developing self. The instrument presented by Donaher, Russell, Scoble, and Chen (2007) describes dimensions of developing self, recruiting personnel, developing employees, utilizing knowledge and skills of each employee, and retaining employees for organizational success. All these instruments are manifested in two distinct approaches to managerial competence, namely, (a) a task that is necessary to fulfill and (b) the skills that nurse managers must have to fulfill the role (Gunawan & Aungsuroch, 2017).

The definition of managerial competence varies as well. Literature suggests that managerial competence is defined as the knowledge, skills, experience, and characteristics needed to support the achievement of core work objectives (Hroník, 2007). However, this definition excludes the managerial tasks that are important. Another definition is that managerial competence refers to sets of behaviors that enable individuals to demonstrate effective performance of tasks within the organization (Woodruffe, 1991). In summary, there has been no standard conceptual definition of managerial competence.

In this study, based on our concept analysis, FLNMs' managerial competence refers to the behavior of a FLNM (head nurse, nursing unit manager, ward sister, ward leader, and ward manager) in applying knowledge, skills, and attitudes to perform specific managerial tasks, functions, or job responsibilities (Gunawan & Aungsuroch, 2017). This statement is in accordance with the Indonesian Nurse Association and Indonesian Nurse Manager Association definition: competence as the knowledge, skills, and attitudes that can be observed as a behavior to complete the specified tasks based on a known standard (Indonesian National Nurses Association, 2012; Indonesian Nurse Managers Association, 2016).

However, while the Indonesian National Nurse Association, Indonesian Nurse Manager Association, and Department of Health of Indonesia have all developed the competence of FLNMs, there are differences in terms of dimensions of managerial competence of FLNMs promoted by these agencies (see Table 1). Moreover, there is no single instrument identified to measure the dimensions that have been created. The existing instruments are mostly from Indonesian educational institutions based on the general managerial functions, which consist of planning, organizing, directing, controlling, and evaluating (Almidawati, 2015; Yatimin, 2013). There is a gap among Indonesian National Nurse Association, Indonesian Nurse Manager Association, Department of Health of Indonesia, and educational institutions in developing managerial competence instrument to assess FLNMs.

In summary, there were no standard instruments with sound psychometric properties identified for the Indonesian context to measure managerial competence of FLNMs. This study aimed to psychometrically develop a scale to measure managerial competence of Indonesian FLNMs.

Methods

Study Design

This study consisted of two phases of instrument development (DeVellis, 1991), namely, (a) construction of the initial instrument using four steps and (b) a psychometric evaluation phase with one step.

Phase I: Instrument construction. *Step 1. To determine clearly what is to be measured.* Concept analysis was completed and described in a previous study by the researchers, resulting in the definition of managerial competence of FLNMs, which refers to the behavior of FLNM (head nurse, ward sister, ward manager, nursing unit manager, and ward leader) in applying knowledge, skills, and attitudes to perform specific managerial tasks, functions, or job responsibilities (Gunawan & Aungsuroch, 2017).

Step 2. To generate an item pool, which consisted of four stages, namely:

(a) Generated item pools from existing scales in the International literature with a total of 370 items and 23 dimensions (American Nurses Credentialing Center, 2006; American Organization of Nurse Executives, 2005; Chase, 1994; DeOnna, 2006; Donaher, 2004; Krajcovicova et al., 2012; Mathena, 2002; Pillay, 2008; V. C. Sherman, 1980) and in the National literature with a total of 139 items and 19 dimensions (Almidawati, 2015; Department of Health, 1999; Indonesian National Nurses Association, 2012; Indonesian Nurse Managers Association, 2016; Pabuti, 2001; Wahyuni, 2007; Warsito, 2006) (see Table 1).

(b) Conducted in-depth interviews with Indonesian nursing experts. From six experts who had been contacted, four experts replied and were interviewed. All experts had at least 5 years managerial experience, and all of them were selected for their publications and academic prestige in the Indonesian nursing professional arena. Three of them hold doctorate in nursing degrees (two were experts in nursing administration and one in nursing education) and the other expert holds a master's degree in nursing and works in community settings. The questions for interview were started from these basic questions: *(a) What do you think about the first-line nurse managers' managerial competence in Indonesia? and (b) what is*

Table 1. Attributes of Managerial Competence of First-Line Nurse Managers.

Authors	Attributes of managerial competence	Items
International literature		
Chase (1994)	Technical skill, human skill, conceptual skill, leadership skill, and financial management	53 items
Donaher (2004)	Developing self, recruiting personnel, developing employees others, utilizing knowledge and skills of each employee, and retaining employees for organizational success	58 items
DeOnna (2006)	Promoting staff retention, recruiting staff, facilitating staff development, performing supervisory responsibilities, ensuring patient safety and quality care, conducting daily unit operations, managing fiscal planning, facilitating interpersonal, group and organizational communication, leading quality improvement initiatives, promoting professional practice model, and developing self.	93 items
American Organization of Nurse Executives (2005)	The science (managing the business), the art (leading the people), and the leader within (creating the leader in yourself)	115 items
Pillay (2008)	Specific health-care skills, planning, organizing, leading, control, legal and ethical issues, and self-management	51 items
Mathena (2002)	Interpersonal skills, clinical skills, technical skills, financial skills, staff development skills, resource management, political skills, and general skills	8 dimensions—No items identified
Krajcovicova, Caganova, and Cambal (2012)	Knowing the organization, leading and managing people, managing resources, and communicating effectively	4 dimensions—No items identified
American Nurses Credentialing Center (2006)	Organization and structure, economics, human resources, ethics, and legal regulatory	5 dimensions—No items identified
V. C. Sherman (1980)	Planning, organizing, staffing, communicating, decision-making, as well as controlling	6 dimensions—No items identified
	Total: 370 items and 23 dimensions	
Indonesian literature		
Department of Health (1999)	Planning, directing and implementing, evaluating, controlling, and researching, managing resource in implementing nursing care (assessing, diagnosing, planning, implementing, and evaluating)	31 items
Almidawati (2015)	Planning, organizing, directing, evaluating, and controlling	5 dimensions—no items identified
Warsito (2006)	Planning, organizing, staffing, directing, and controlling	5 dimensions—no items identified
Wahyuni (2007)	Planning, staffing, directing, evaluating, and quality control	5 dimensions—no items identified
Pabuti (2001)	Staffing nursing management, nursing unit management, nursing care management, education, and staff development management	4 dimensions—no items identified
Indonesian Nurse Managers Association (2016)	Professional practice, ethics, legal, culture sensitive, nursing care and management, planning, organizing, directing, staffing, controlling, monitoring and evaluation, leadership, professional, personal, quality development, nursing education, and soft skills	100 items
Indonesian National Nurses Association (2012)	Managing resources fairly and transparent, being a role model, and applying theory and model of nursing to improve performance	8 items
	Total: 139 items and 19 dimensions	

Table 1. Continued.

Authors	Attributes of managerial competence	Items
Expert interview		
Results of experts interview	Self-management, persuade or convince others, integrity, flexibility, creativity, communicate effectively, decision-making, vision direction, acceleration, human resource management, continuing education, policy management, quality oriented, networking, budgeting, conflict management, teamwork, negotiation, information management, and customer oriented	20 items

Total of all items: 529 items and 42 dimensions.

the item/component/dimension to be included in the managerial competence of first-line nurse managers in Indonesia? The interviews then continued with further questions based on the response of respondents. Interviews were conducted both online and face-to-face and ranged from 45 to 60 minutes in length. All of their comments generated 20 additional items for the instrument.

(c) We combined the items from the literature review and experts interviews using content analysis with Indonesian nursing experts and senior researchers. After four meetings between March 2017 and August 2017, the items were compared, contrasted, and combined from a total of 529 items and 42 dimensions to 62 items as the first version of the scale.

(d) After construction of the item pool, experts were asked to determine the format of the instrument. They agreed that scaling responses should be defined with a 5-point Likert-type scale. Participants responded by choosing one of five categories (1 = *none of the time*, 2 = *once in a while*, 3 = *sometimes*, 4 = *quite often*, and 5 = *always*). There was 75% agreement among the four experts used in this step.

Step 3. Validation of the instrument by an expert panel. The panel consisted of four experts (the same experts in Step 1) were asked to rate the relevance of each item (62 items) and then calculated using item-content validity index (I-CVI) and scale-content validity index (S-CVI). I-CVI was computed based on the number of experts giving a rating 3 or 4 to the relevancy of each item, divided by the total number of experts. S-CVI consisted of two methods, namely, (a) S-CVI/Universal Agreement (S-CVI/UA) which was the number of items considered relevant by all the judges (or number of items with CVI equal to 1) divided by the total number of items and (b) S-CVI/Average (S-CVI/Ave) which was the sum of I-CVIs divided by the total number of items (mean of I-CVI; Zamanzadeh et al., 2015). The validation results showed that I-CVI in each item ranged from 0.83 to 1, S-CVI/Ave = 0.976 and S-CVI/UA = 0.859. In this step,

there were three items added and one item deleted, based on expert agreement according to I-CVI (>.70) and S-CVI (>.80), which are considered acceptable (Davis, 1992; Polit & Beck, 2010). The added items were then sent to all experts and asked them to rate the relevance of the remaining 64 items as the Indonesian First-Line Nurse Managers' Managerial Competence Scale (I-FLNMMCS) version I.

Before sending to the experts, the items were translated into Indonesian language by an Indonesian nursing expert who was very good in English for nursing. It was then back translated into English by a linguist from Chandra Education Center, Indonesia. Afterward, both English and Indonesian versions were sent to all experts to check both versions while doing item evaluation. Some additional suggestions resulted from this step.

Step 4. To pilot the instrument (pretesting), in conditions similar to those anticipated in subsequent trials (DeVellis, 1991). There were two steps of pretesting in this study: face validity and pilot testing. The face validity of the I-FLNMMCS version I with 64 items was evaluated by seven FLNMs and one middle-line nurse manager by interview. The evaluation focused on the clarity, ease of understanding, and length appropriateness of the overall questionnaire. The results indicated that (a) instructions for filling out the questionnaire were clear and understandable by all participants and (b) one item was deleted because it was too abstract and fourteen items were identified as *not easy to understand* with confusing statements in the Indonesian version. We then consulted a Linguist for revision. This step resulted in 63 items as the I-FLNMMCS version II.

After face validity was established, pilot testing was done using I-FLNMMCS version II with 63 items. Seventeen FLNMs from two public hospitals were in the pilot testing group, as it is recommended that the scale should be administered to 15 to 30 subjects (Burns & Grove, 2005). The sample for the pilot test was 82% females and 18% males, with an average age of 37 years. The educational preparation of the sample included 23% of them having bachelor's degree, 70% a diploma degree, and 7% a higher diploma.

Eight respondents worked in a surgical unit (47%), six worked in a medical unit (35%), two worked in outpatient wards (11%), and one worked in a surgery unit (7%). The pilot results included (a) the removal of 11 items. The lowest item-total correlation was deleted first, and the remaining items were reanalyzed until no single item was lower than .30 of corrected item-total correlation (Cristobal, Flavian, & Guinaliu, 2007) and (b) the I-FLNMMCS version III (52 items) was used for further examination of the psychometric properties. There was no single negatively stated item in the questionnaire, and therefore, reverse coding was not necessary for analysis.

Phase II: Evaluation of the psychometric properties. There was only one step in this phase, Step 6, a field testing of the instrument for reliability and validity with a large sample of FLNMs. The internal consistency reliabilities were estimated during this phase.

Sample

A sample of 314 FLNMs from 16 public hospitals was selected for the evaluation of validity and reliability of the instrument. Recommendations for item-to-response ratios ranged from 1:4 (Rummel, 1988) to 1:10 (Nunnally, 1978) or 300 participants. This involved a multistage sampling process consisting of three stages:

1. Indonesia consists of five big islands (Java, Sumatera, Sulawesi, Kalimantan, and Papua). The number of public hospitals in these islands is Java island = 795 hospitals, Sumatra island = 321 hospitals, Kalimantan island = 112 hospitals, Sulawesi island = 336 hospitals, and Papua island = 32 hospitals). The total number of public hospitals on the five islands is 1,596 (Ministry of Health of Indonesia, 2016).
2. Indonesia has four types of public hospitals, namely, Types A, B, C, and D. Type A hospital (up to 1,500 beds) is designed to provide top (national) referral care, Type B hospital (between 100 and 400 beds with a variety of specialists) provides more advanced referral care at the provincial level, and Type C hospital (50–100 beds with more than four types of specialists) serves secondary and tertiary care for a larger district. However, researchers only used Types A, B, and C hospitals for classification of the samples in each island. Type D hospitals were excluded because this hospital is in a transition mode to become a Type C hospital (National Research Council, 2013). In this stage, the number of hospitals of each type was identified.
3. We divided each type of hospital in each island with an equivalent ratio of 60:1 to get the required number of hospitals in each island, and this resulted in 10 hospitals in Java island, 6 hospitals in Sumatera, 3 hospitals in Sulawesi, 3 hospitals in Kalimantan, and 2 hospitals in Papua. Hospitals in each island were selected using simple random sampling using a lottery method. In this stage, simple random sampling was done repeatedly because there were several hospitals that did not give study permissions because they needed a memorandum of understanding between their institutions and the researcher's institution prior to data collection. In addition, we received no response from two hospitals that had been contacted by email and phone call in Papua. Thus, hospitals in Papua island were not included.
4. Once the hospitals had been selected, the researcher recruited all FLNMs from 16 public hospitals by using cluster sampling that consisted of 314 head nurses/ward-head nurses/nursing unit managers. Prior to data collection, each participant was asked to sign a consent form and return the completed questionnaires at the same time (10–15 minutes) or within 1 week.

Ethical Consideration

This study was ethically approved by the Medical and Health Research Ethics Committee of the Faculty of Medicine Gadjah Mada University in May 17, 2017, with No. KE/FK/0565/EC/2017. Written informed consent was obtained from all of the participants. The hospitals' names in this study were not published for the privacy of each hospital.

Data Analysis

The level of managerial competence was created on the basis of the total scale score. The higher the total score, the better the managerial competence of FLNMs. It could also be further broken down into each dimension of managerial competence. Data were analyzed using the SPSS statistical package version 22 and performed as follows: (a) the descriptive statistics were used to describe the demographic data and (b) principal component analysis (PCA) with varimax rotation was employed to identify latent components in survey items and help to strip away unnecessary components of the data by assessing interitem correlations and variances (Lever, Krzywinski, & Altman, 2017; McCoach, Gable, & Madura, 2013), and varimax rotation was used as we assumed that the factors in the analysis are uncorrelated (Corner, 2009). Items were evaluated in relation to their associations with a component. Items with weak associations were considered for deletion from the scale. Decisions were based on (a) retaining components with eigenvalues greater than 1 and (b) retaining items having

associations ⩾ 0.4 (DeVellis, 1991). Factor loading was classified based on their magnitude: (a) greater than > .30 (minimum consideration level, (b) > .40 (more important), and (c) > .50 (practically significant; Hair, Black, Babin, Anderson, & Tatham, 1998). To calculate the internal consistency reliabilities, Cronbach's α was used.

Results

The results of the psychometric properties of the I-FLNMMCS were reported in two major sections: the results related to validity and results related to reliability.

Participants' Characteristics

From 314 distributed questionnaires, 300 questionnaires were returned (95%). The majority of participants in this study were in the age range of 41–50 years (51%), female (80.3%), had a bachelor nursing background (67%), and had attended managerial training (93%) with one or more trainings. Most of them had been working as a nurse before becoming an FLNM in an average of 23.11 years, and the average of length of work as an FLNM in their current workplace was 4.13 years (see Table 2).

Validity of the I-FLNMMCS

Prior to analyses, we conducted assumption testing for exploratory factor analysis, for the following: (i) Normality: skewness and kurtosis were normally distributed because the values of skewness were in the range of -1 to $+1$. (ii) Factorability: (a) The Kaiser–Meyer–Olkin test showed that the matrix sampling was .918, which indicated that the factor analysis was appropriate for these data. The Bartlett's test of sphericity matrix was highly significant ($p < .001$); (b) Pearson correlation coefficient among 52 variables ranged from .35 to .698; (c) results of item correlation analysis showed that there was one item (Item 5—.295) with low corrected item-total correlation ($< .30$; Cristobal et al., 2007). It was deleted and reanalyzed again, and the results of corrected item-total correlation ranged from .321 to .687 with overall Cronbach's α .955. (iii) Sample size: 300 subjects, ideal for exploratory factor analysis. In summary, all assumptions had been tested with acceptable results for exploratory factor analysis with the final 51 items of the scale.

The first order of principal component-exploratory factor analysis with 51 items showed communalities, all items were above .50, which was acceptable. Using Kaiser's criterion (⩾1), analysis suggested 11 components were derived from data, which accounted for

Table 2. Characteristics of FLNMs in Indonesia ($N = 300$).

Characteristics of respondents	f	%
Age		
26–30	8	2.7
31–40	63	21
41–50	153	51
51–60	76	25.3
Total	300	100
Mean ± SD	45.47 ± 7.11	
Gender		
Male	59	19.7
Female	241	80.3
Total	300	100
Education		
Diploma III nursing	68	22.7
Diploma IV nursing	22	7.3
Bachelor nursing	201	67
Master nursing	9	3
Total	300	100
Managerial training		
Yes	279	93
No	21	7
Total	300	100
Number of training		
One training (PNPM/ward management)	111	37
Two trainings (PNPM + ward management)	93	32
More than two trainings	75	23
Total	279	100
Total experience of working as a nurse before becoming an FLNM (year)		
<5	5	1.6
6–10	18	6
11–20	83	27.6
21–30	145	48.4
31–40	49	16.4
Total	300	100
Mean ± SD	23.11 ± 7.891	
Length of work in current workplace as an FLNM (year)		
1–2 years	33	11
3–4 years	143	47.6
5–6 years	64	21.3
7 years or more	60	20
Total	300	100
Mean ± SD	4.13 ± 1.98	

Note. SD = standard deviation; FLNM = first-line nurse manager; PNPM = professional nursing practice model.

65.95% of total variance. But, the scree plot showed two inflection points at Components 3 and 7. Both Kaiser's criterion and scree plot yielded a different number of components. Thus, we compared the two competing models between three-factor model and seven-factor model. Based on theoretical judgment in nursing management, the three-factor model did not seem to be conceptually understood, and therefore we chose the seven-factor model with a factor loading of .40.

To clear and clean the items, if there was an item that existed in two components, we chose to place the item within the highest factor loading. However, we also judged the item based on the meaning of its content, seeing similarities and differences according to theory and literature review. To label the dimensions, content analysis was employed, and we discussed among researchers and analyzed each item based on the literature review (see Table 3).

Reliability

Construct reliability was employed in this study. A good reliability is considered if the score is .7 or higher (Hair, Black, & Babin, 2014). High construct reliability means that internal consistency exists. Table 4 shows that there were seven dimensions with higher construct validity, as the final dimensions of I-FLNMMCS.

For Component 1 (leadership), Cronbach's α was .90 with 14 items (31, 20, 21, 23, 12, 24, 34, 18, 51, 30, 15, 14, 22, and 13). Reliability score Cronbach's α for Component 2 (Facilitating spiritual nursing care) was .88 with seven items (48, 50, 47, 49, 46, 52, and 19), Cronbach's α for Component 3 (self-management) was .79 with six items (43, 45, 36, 44, 41, and 42), Cronbach's α for Component 4 (staffing and professional development) was .84 with four items (10, 8, 9, and 11), Cronbach's α for Component 5 (utilizing informatics) was .84 with four items (39, 38, 40, and 37), Cronbach's α for Component 6 (financial management) was .77 with four items (27, 28, 26, and 32), and Cronbach's α for Component 7 (applying quality care improvement) was .71 with four items (1, 2, 3, and 4). There were 43 items that remained in the seven dimensions.

Discussion

This study aimed to develop a scale with sound psychometric properties to measure managerial competence of FLNMs in Indonesia. To enhance the validity of the study, content validity was done to ensure the congruence between the target of the research and data collection tool (Burns & Grove, 2005). The content validity of I-FLNMMCS was applied based on the literature review, interview, and judgments of four experts, which resulted in 62 items of FLNMs' managerial competence.

A CVI on relevancy of dimensions of I-FLNMMCS indicated a high degree of agreement among experts, with I-CVI ranging from 0.81 to 1 in each item and S-CVI/Ave = 0.976 and S-CVI/UA = 0.859, which is considered acceptable validity index (Davis, 1992). To enhance the validity of the study, face validity was also done with 7 FLNMs and 1 middle-line nurse manager, and followed by pilot testing with 17 FLNMs to assure the scale was good enough for further examination.

PCA was used to explain the maximum portion of variance in the original variable and drive the minimum number of its components. The assumptions of normality, factorability, and sample size had been tested prior to data analysis, which showed acceptable assumptions for factor analysis. From the results of PCA, based on our judgment with Kaiser's criterion and scree plot, seven components were extracted with a total percentage of variance explained of 51.37%. Although the majority suggest that 60% to 90% of the variance should be accounted for (Hair et al., 2014), some indicate as little as 50% of the variance explained is acceptable (Beavers et al., 2013).

To estimate the reliabilities of total scale and each dimension, Cronbach's α was used. The overall Cronbach's α of the I-FLNMMCS was .95 with seven dimensions ranging from .71 to .90, which can be concluded that the items in each dimension are adequate samples of content representing each dimension on the basis of domain-sampling model (Nunnally, 1978). The seven dimensions' names were applied based on the literature review consisting of 43 items, which makes conceptual sense.

Leadership component appears as the first dimension of FLNM's managerial competence that was perceived as the abilities of a manager to execute a leadership function regardless of one's specific job title (Shirey & Fisher, 2008). It is important to appreciate that leadership is different from management function. Leadership focuses on effectiveness (doing the right thing) and on what needs to be done and why. Conversely, management focuses on efficiency (how can we do this better and faster?) and on understanding processes with more of an emphasis on the status quo and bottom-line results (Shirey & Fisher, 2008). The items in this dimension captured leadership competence: being a facilitator of nursing staff with other health professions, supporting shared decision-making, delegating effectively, being flexible, advocating staff assertively, displaying trust and respect, demonstrating ethical principles in practice, being a role model, fostering inter-professional

Table 3. Component Names, Item Stems, and Factor Loadings From Varimax Rotated Component Matrix (N = 300).

Item number	Item statements	Factor loading
Component 1: Leadership		
31	Facilitating nursing staff in collaboration with other health professions in practice, especially with medical doctors in providing patient-centered care	.755
20	Shared decision-making by involving staff in the process of change	.689
21	Effectively assigning task responsibility and authority to subordinates	.666
23	Establishing mutual trust and respect by dealing with others in a fair manner	.664
12	Arranging schedules and supporting flexible self-scheduling for staff	.638
24	Advocating for staffs in assertive and confident manner	.603
34	Giving safe and proper legal and ethical care	.548
18	Becoming role model of professional and visioning behavior	.540
51	Leading and inviting staff to pray before working in the unit	.531
30	Collaborating and communicating with other health professions in interdisciplinary team	.529
15	Providing positive feedback and reinforcement for improvement of staff performance	.507
14	Identifying strengths of staff and capitalize on those strengths	.505
22	Dealing with anger, criticism, and frustration in a constructive manner	.460
13	Evaluating nurses staff performance based on standard and key performance indicators	.412
	Eigenvalue = 32.534	
	Percentage of variance explained = 16.592	
Component 2: Facilitating spiritual nursing care		
48	Relieving staff spiritual distress	.764
50	Reviewing and identifying the influence of cultural beliefs, values, and spiritual on nursing care	.752
47	Explaining and demonstrating spiritual care practice to staff and patients	.702
49	Referring effectively and articulately to other spiritual nursing care based on the situation and preference of staff and patient	.583
46	Paying attention to the spiritual needs of staff	.513
52	Facilitating staff to provide spiritual nursing care to patient and families and respect their diversities and differences	.448
19	Coaching or mentoring staff in developing problem-solving skills	.424
	Eigenvalue = 3.561	
	Percentage of variance explained = 6.982	
Component 3: Self-management		
43	Getting involved in professional associations and professional development programs	.712
45	Engaging in self-evaluation program in the hospital	.633
36	Getting involved in developing a policy brief and advocacy to policy makers	.633
44	Achieving certification in an appropriate field/specialty	.598
41	Managing self through continuing education and participating in nursing management research/training/course	.423
42	Engaging in regular supervision or consulting with superordinates	.419
	Eigenvalue = 2.000	
	Percentage of variance explained = 3.921	
Component 4: Staffing and professional development		
10	Managing the number and qualification of nurse staff based on the standard of hospital	.745
8	Determining and evaluating staffing needs	.688
9	Setting up learning opportunities, trainings, continuing education and others related to nurse staff development	.680
11	Identifying and matching nurse staff competence with patient acuity	.469
	Eigenvalue = 1.919	
	Percentage of variance explained = 3.756	

Table 3. Continued.

Item number	Item statements	Factor loading
Component 5: Utilizing informatics		
39	Utilizing technology to manage patients	.769
38	Integrating technology into nursing documentation	.759
40	Evaluating the effect of Information Technology on patient care and delivery system	.703
37	Using information system to support nursing practice	.610
	Eigenvalue = 1.798	
	Percentage of variance explained = 3.525	
Component 6: Financial management		
27	Actively participating in arranging a practical annual budget for the unit that includes volume, revenue, personnel, supplies, and capital equipment	.817
28	Communicating fiscal management expectations and outcomes to staff and other stakeholders	.772
26	Implementing cost benefit analysis approach in financial plan in the unit	.719
32	Coordinating with supervisor among departments	.493
	Eigenvalue = 1.664	
	Percentage of variance explained = 3.262	
Component 7: Applying quality care improvement		
3	Continually understanding and measuring quality of care in terms of structure, process, and outcome	.683
4	Using evidence-based practice in nursing care	.660
2	Analyzing the workflow of unit and identifying errors, causes, and its effects in nursing service	.567
1	Actively participating in setting nursing practice standards or guidelines for nursing care in unit	.533
	Eigenvalue = 1.421	
	Percentage of variance explained = 2.785	

Table 4. Summary of Final Dimension of I-FLNMMCS (43 Items).

Final dimension	Cronbach's α
1. Leadership	.90
2. Facilitating spiritual nursing care	.88
3. Self-management	.79
4. Staffing and professional development	.84
5. Utilizing informatics	.84
6. Financial management	.77
7. Applying quality care improvement	.71
Overall I-FLNMMCS	.95

Note. I-FLNMMCS = Indonesian First-Line Nurse Managers' Managerial Competence Scale.

collaboration, giving rewards to staff, managing conflict, knowing the strengths of staff, evaluating staff, and seeking to inspire, influence and develop others. These are supported in previous research (Manning, 2016).

Facilitating spiritual nursing care dimension tends to be the new dimension of managerial competence of FLNMs identified in this study. Although spirituality is a difficult concept to define, the items in this dimension captured two aspects of the role of FLNMs to pay intention to not only spiritual needs of nursing staff but also spiritual needs of patients, relieve their spiritual distress, enhance problem-solving skills, and explain and demonstrate spiritual nursing care practice to staff and patients. This dimension is consistent with other studies where spiritual care was found to improve spiritual well-being, performance, and integrity as well as the quality of their spiritual life (Zehtab & Adib-Hajbaghery, 2014). The role of nurse managers in facilitating spiritual care will help staff nurses to meet patients' needs in this area. We know that spiritual and religious beliefs vary among people (Sartori, 2010), but this study defines spiritual as based on religious beliefs. Although some individuals may be nonreligious, in Indonesia, each individual is suggested to have their own religion based on their belief. This is stated in the first principle of *Pancasila* as the official, foundational philosophical theory of the Indonesian state (Josh, 2017).

Self-management dimension captured the competence of FLNMs for self-evaluation, awareness, and being engaged in professional development, being involved in developing policy briefs, and being engaged in regular

consultation with their supervisor. This dimension remains important, as previous studies stated that nurse managers need to understand and manage themselves before trying to manage others (R. O. Sherman, 2015). However, self-management is sometimes described as emotional intelligence. It is the ability to understand and control what we feel and the way we act. Nurse managers who develop this dimension know how they should communicate and act and are aware when things are going wrong (R. O. Sherman, 2015).

The staffing and professional development dimension indicates that FLNMs should be able to manage the number and qualification of nursing staff based on the standard of the hospital, determine and evaluate their needs, match staff competency with patient acuity, and set up continuing educational and professional development. These items in this dimension remain important, as literature continues to validate that nurse staffing impacts patient outcomes in critical ways. There is a strong correlation between nurse staffing and professional development in relation to patient outcomes, job dissatisfaction, burnout, and nurse retention (Knudson, 2013; Twigg, Duffield, Bremner, Rapley, & Finn, 2012).

Utilizing informatics dimension tends to capture two aspects of competence: (a) competence relating to the use of information technology in patient care delivery and (b) competence relating to the integration of technology in nursing documentation. It is in line with the literature's emphasis that informatics is utilized to facilitate patient-centered care (Snyder et al., 2011) and increase patient safety (Darvish, Bahramnezhad, Keyhanian, & Navidhamidi, 2014). However, only urban Types A and B hospitals in Indonesia today have addressed electronic health record for nursing documentation. The hospitals in rural areas have not yet applied the electronic nursing record. Computers in rural hospitals are only used to integrate the patient's information, especially for laboratory results and are not for integrated documentation. However, this dimension remains important to link the gap between nurse and physician relationships and to avoid redundant, unnecessary, or tedious everyday steps for patients.

The results of this study also revealed that financial management is an important role for FLNMs. Nurse managers must be familiar with the budgeting process. When budgets are thoughtfully prepared, organizations are more effective and efficient at providing services (Finkler & McHugh, 2008). The items in this dimension were consistent with a previous study that stated the budget process is ongoing, dynamic, and provides feedback. When nurse managers begin to prepare a budget, they collect data, plan activities, implement the plan, and evaluate the outcomes (Rundio, 2012). Cost–benefit analysis was also emphasized in financial planning in

this study. Although public hospitals as the setting in this study are considered nonprofit organizations, they use earnings to provide raises for staff, construct new buildings, or buy new equipment (Waxman, 2008). However, the items in this dimension also captured that FLNMs did not directly make financial decision for their units; they were just able to communicate the plan and were involved in managing and arranging the budget as well as coordinating with supervisors among departments.

The dimension of applying quality improvement processes indicated that increasing quality of care by understanding and measuring care quality in terms of structure, process, and outcomes; analyzing workflow in the unit; and identifying its errors and causes are critical competence of nurse managers. Applying a patient-centered professional practice model is an additional critical competence for increasing care quality. This supports previous studies that indicate ensuring safe and quality care for patients in hospitals is an important part of a nurse manager's role (Kakyo & Xiao, 2017). The use of evidence-based practice standards to direct care and participation of nurse managers in setting nursing practice guidelines are both critical in this dimension.

Limitations

Limitations of the study included the research settings did not cover all regions in Indonesia particularly the east region of Indonesia (Papua island) even though a large sample size was obtained. Future studies are recommended to increase the sample representation as well as the sample size for further testing the psychometric properties of I-FLNMMCS. Wide use of I-FLNMMCS or replication of the study in additional settings would offer a greater variety of managerial environments for instrument testing.

Conclusion

This study developed a practical, 43-item instrument-I-FLNMMCS to evaluate the managerial competence of Indonesian FLNMs (see Online Appendix). The I-FLNMMCS demonstrated strong evidence of content validity, internal consistency reliability, and construct validity. Top nurse managers, nurse executives, and hospital managers can use the I-FLNMMCS for assessing managerial competence of Indonesian FLNMs. The scale can also be used as a vehicle for feedback as a basis for FLNMs to improve their competence levels. Development programs targeting deficits uncovered in assessments based on the I-FLNMMCS can be used to enhance the overall competence of FLNMs within an organization in a systematic way. In addition, this

competence assessment model can be integrated into human resource management system in public hospitals in Indonesia.

Authors' Contribution

J. G. designed the study, searched the literature, collected and analyzed the data, and prepared the article. Y. A., M. L. F., and A. M. M. were the advisors in this study. All authors approved the final version for submission.

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Supplemental Material

Supplemental material for this article is available online.

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