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Educational background and clinical nursing tasks performed by nurses in Indonesian hospitals☆

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Abstract
Objective: This study aimed to describe the differences in clinical task performance between nurses with a 3-year diploma, 4-year bachelor of nursing degree, and master/specialist nursing degree in Indonesian hospitals. The study employed a cross-sectional design.
Method: An online questionnaire was developed for this study and administered to 904 nurses but completed by only 410 nurses from 95 hospitals in 19 of the 34 provinces of Indonesia (55.9%). The questionnaire detailed 158 clinical tasks about patient education, collaboration, management of patient care, observation, and therapy.
Results: In general, master/specialist nurses performed more tasks in the patient care management category. Moreover, nurses with a 3-year diploma performed significantly more tasks than did those with a 4-year bachelor of nursing in all clinical tasks ($p < 0.05$), except in the patient care management category ($p = 0.68$).
Conclusion: Hospital management could play a role in strengthening the performance of patient care management of nurses with bachelor's degrees, which may have a positive impact on patient outcomes. Further study is needed to explore the non-clinical nursing tasks performed by those with different education levels, which may affect their performance of clinical tasks.

Introduction

Nursing education in Indonesia is changing. Initially, the entry-level education requirement for nurses was only a senior high school diploma, which focused on basic clinical skills. This increased in 1962 to the completion of a 3-year diploma program, which added more of an emphasis on clinical reasoning, and then, in 1985, to a 4-year bachelor of nursing, which added basic management skills.[1] In 2002, the bachelor's program was changed to the nurse professional program, which includes a 4-year bachelor of nursing education plus a 1-year full-time clinical placement program.[2] Advanced nursing education, that is, the master of nursing degree, began in 1999; the nurse specialist program began in 2003; and the doctor of nursing program, which started

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at the University of Indonesia, was initiated in 2008.[3] As the complexity of hospital care continues to increase, a more educated nurse workforce will be even more crucial in the future. The need for a highly educated nursing workforce is also evident in the positive patient perceptions of hospitals and care services with such a workforce, and institutions with more baccalaureate nurses have been found to have lower mortality rates.[4,5]

As the history of entry-level requirements for nursing practice has changed over time in Indonesia, the differences in clinical tasks between diploma-holding and bachelor nurses remain unclear. One study published in 2006 when the hospitals used the old system of nursing assignment stated that there were significant overlaps in the core tasks among nurses with senior high school, nursing diploma, and bachelor's degree backgrounds.[6] Furthermore, Indonesian hospitals have shifted team-based nursing care practices in response to changes in the acute healthcare setting.[7] There are five levels in the clinical nursing ladder according to the Ministry of Health decree number 40, the year 2017, which are the foundations for the distinction of clinical tasks.[8] Little is known about the real clinical tasks of nurses with different educational backgrounds in team-based nursing care delivery. Therefore, task analysis is needed to clarify the situation.

Task analysis is defined as the systematic collection of data on the observable behaviors of an employee.[9] It is a method of understanding the tasks or practices of human resources within the healthcare system,[10] and can be used to describe practice variations to improve clinicians' performance.[11] Task analysis can also help in identifying the gaps in performance between those with different educational backgrounds for further improvement.[12] This study aimed to analyze the frequency of various clinical tasks performed by nurses based on their level of education in Indonesian hospitals. This study is part of a larger project related to the development of standards of clinical competence for nurses.

Method

Study design and sample

A cross-sectional design was used. The study received approval from the Indonesian National Nurses' Association. The Internet link to the survey was sent to the regional leaders of this nurse association (i.e., the Sumatera, Borneo, Java, Bali, South-East Timor, and Maluku and Papua regions). The regional leaders sent the link to the provincial leaders, who in turn sent it to the hospital association leaders. Then, the hospital association leaders passed the link to nurses in each unit. The inclusion criteria for participants were being clinical staff nurses working in a hospital, directly caring for patients, having a minimum of one year of working experience, and not being in any managerial position.

Instrument

The data collection instrument was developed by the researchers based on a literature review. The educational background categories were based on the Nursing Act number 38, the year 2014. The categories of hospital units and hospital types were based on those used by the Ministry of Health. There are three types of general hospitals (A, B, and C) based on the number of beds, specialized interventions, and equipment, as well as various specialized hospitals for different diseases or population categories. The categories of clinical nursing tasks (therapy, observation, education, and collaboration) were developed based on Indonesian nursing intervention standards.[13,14] We also developed a new category called the ''management of patient care.'' This new category includes the clinical nursing tasks other than direct care, such as delegation, handover, and recording and reporting of the patient care procedures.

The core literature used for the task development were the standards of nursing competency developed by the Indonesian National Nurses Association,[15] the standards of nursing care in specialized hospitals developed by the Ministry of Health,[16] and various other studies. We included 158 tasks in total. The category with the most number of the tasks was therapy (57 tasks), followed by observation (37 tasks), management of patient care (23 tasks), collaboration (33 tasks), and education (8 tasks).

The 158 tasks were listed, and a 4-point Likert scale was used to describe the frequency that these tasks were performed by nurses. The specific answer choices were (0) never performed, (1) performed weekly or biweekly, (2) performed daily, and (3) performed during every shift. Furthermore, there were three open-ended questions to elicit participants' descriptions of highly important or frequent tasks not mentioned in the list. Six expert nurses validated the content of the instrument, and three nurses confirmed its face validity. Then, a pilot test was conducted with 55 nurses, of whom 28 completed the questionnaires. Revisions were made in the content and web design based on the results of this pilot test.

Data collection

Data collection was conducted from January to May 2018. The online survey was conducted using the medium of Survey Monkey. Information about the study was disseminated to clinical nurses through the Indonesian National Nurses Association structure (i.e., provincial, district, and hospital nurse association leaders). The nurses participated voluntarily, and the confidentiality of their data was maintained. We analyzed the data of only those with more than 95% complete responses. Data were analyzed using Survey Monkey and statistical software.

Data analysis

Descriptive statistics were generated for nurses' characteristics and the various task categories (Table 1). We calculated the means of participants' answers for each clinical task and task category. A two-way analysis of variance (ANOVA) was used to determine differences in nurses' characteristics according to their educational background (Table 2). A one-way ANOVA was conducted to determine the differences in the clinical task scale means according

Table 1 Characteristics of hospital nurses ($n = 410$).

Variable	Education background					
	Diploma III		Bachelor		Master/specialist	
	n	%	*n*	%	*n*	%
Gender						
Female	54	44.3	54	44.3	14	11.5
Male	135	46.9	133	46.2	20	6.9
Age (years)						
<30	75	64.7	41	35.0	1	0.9
31–40	75	41.0	95	51.9	13	7.1
41–50	26	30.6	42	49.4	17	20.0
>50	13	52.00	9	36.0	3	8.0
Work experience (years)						
<5	50	58.9	32	37.6	3	3.5
6–10	45	52.9	36	42.4	4	4.7
11–20	70	44.0	75	47.2	14	8.8
>20	24	29.6	44	54.3	13	16.0
Working shift						
One shift (morning only)	47	27.2	100	57.8	26	15.0
Two shift	10	45.5	10	45.5	2	9.1
Three shift	132	61.4	77	35.8	6	2.8
Hospital unit						
Inpatient ward	109	49.5	97	44.1	14	6.4
Outpatient clinic	13	46.4	12	42.9	3	7.9
Emergency	20	39.2	27	52.9	4	7.8
Intensive care	33	50.0	27	40.9	6	9.1
Operation theater	7	33.3	12	57.1	2	9.5
Other units	7	29.2	12	50.0	5	20.1

Table 2 Significance analysis between nurse characteristics and clinical task scale.

Nurse characteristics	*n*	Mean	*F*	*p*-Value*
Education				
Diploma III	189	1.99	4.392	0.013
Bachelor	187	1.83		
Master's/specialist	34	1.96		
Hospital unit				
Inpatient ward	220	1.95	16.193	0.000
Outpatient clinic	28	1.34		
Emergency	51	1.99		
Intensive care	66	2.17		
Operating theater	21	1.80		
Other units	24	1.51		
Working shift				
One shift (days only)	173	1.80	9.906	0.000
Two shift (rotation)	22	1.82		
Three shift (rotation)	215	2.02		
Working experience (years)				
<5	85	1.99	2.130	0.096
6–10	85	1.93		
11–20	159	1.93		
>20	81	1.80		

* Two-way ANOVA, 95% confidence level, significance $\alpha = 0.05$.

Table 3 Significance analysis of task scale between clinical task category and educational background.

Category of task	Educational background			*p*-Value**
	Diploma III	Bachelor	Master/specialist	
Education	1.72	1.56	1.77	0.008
Collaboration	1.91	1.73	1.74	0.008
Management	1.96	1.94	2.10	0.239
Observation	2.03	1.87	2.02	0.013
Therapy	1.98	1.80	1.95	0.004

** One-way ANOVA, 95% confidence level, significance $\alpha = 0.05$.

to the three educational backgrounds and five clinical task categories (Table 3).

Ethical consideration

The study protocol received ethical approval from the Faculty of Nursing, Universitas Indonesia, Jakarta (approval number: 48/UN2.F12.D/HKP.02.04/2018). Informed consent was obtained through electronic approval from every respondent.

Results

The online questionnaire was administered to 904 nurses, but only 410 provided complete responses (45.35%). The nurses came from 95 hospitals in 19 of the 34 provinces of Indonesia. There were two types of hospital: general (types A, B, and C) and specialized (e.g., mental health, cancer, and maternal and child). Nurses from type A hospitals responded the most, at 207 (50.5%), followed by type B hospitals, at 118 (28.8%); type C hospitals, at 53 (12.9%); and all specialized hospitals, at 32 (7.8%). Most respondents were female (289 [70.5%]) and aged 31–40 years (44.6%), had 11–20 years of work experience (38.8%), had a diploma III educational background (46.1%) and no doctoral nurse background, and worked in three shifts (52.4%). Table 1 summarizes the description of respondents' characteristics.

The mean clinical task frequency ranged considerably by task, from 0.3 to 2.84. Maintaining clients' privacy had the highest score (2.84 out of 3), indicating that this task is performed during every shift. Maintaining clients' confidential information, adhering to the five principles of administering medication, measuring vital signs, and verifying client identity are the next highest scoring tasks, at 2.80, 2.79, 2.77, and 2.73, respectively. Examples of the clinical tasks with low scores were performing hemodialysis (0.32), providing phototherapy treatment to newborns (0.48), and monitoring fetal heart rate (0.64). The standard deviations for task category scores ranged from 0.50 to 0.60. Table 2 shows the mean clinical task frequency scores according to nurse characteristics.

We found significant differences in mean clinical tasks scores according to nursing characteristics (education, hospital unit, and working shift; $p < 0.05$), except work experience ($p = 0.096$). Clinical task category scores in general significantly differed by education background, except for the management of patient care category ($p = 0.24$). However, post hoc analysis showed that master/specialist nurses had higher scores in the management of patient care category than did a diploma and bachelor nurses. Post hoc analysis for education, collaboration, observation, and therapy revealed that diploma nurses scored higher than did bachelor nurses ($p < 0.05$).

Discussion

A two-way ANOVA (Table 2) showed that there were significant differences in mean clinical task scores among the three categories of educational background ($p = 0.013$). Post hoc analysis showed that the significant difference was mostly between the nurses with a nursing diploma and a bachelor of nursing degree – specifically, diploma holders performed more clinical tasks than did nurses with a bachelor's degree ($p = 0.011$). This finding is similar to that of a study reporting that non-degree or diploma graduates rated their competence and clinical task completion higher than did their degree or bachelor counterparts.[17–19] In the typical Indonesian hospital setting, bachelor and master/specialist nurses tend to perform clinical tasks less frequently, but this is because they tend to have other non-clinical responsibilities. Most clinical nurses with other non-clinical tasks also tend to work the morning shift. We found that 26 (76.47%) master/specialist nurses and 100 (53.34%) bachelor nurses worked only the morning shift, while 132 diploma nurses (69.98%) worked in three-shift rotations. The nurses who worked in three shifts performed clinical tasks more frequently than did nurses in other types of shifts, and this was confirmed via a two-way ANOVA ($p = 0.000$). This finding is similar to what Al-Kandari and Thomas found in 2009 – they reported that nurses with a bachelor of nursing degree were responsible for only 21% of the non-nursing task workload, which left several important nursing tasks undone.[17] However, Bekker et al., in 2015, found that a bachelor of a nursing degree had no significant correlation with non-nursing tasks.[20] The differences in clinical task scores by educational background may also be due to the differences to task perceptions.[21]

Investigation of the details of the task category revealed significant differences by educational background in patient education ($p = 0.048$), collaboration ($p = 0.007$), observation ($p = 0.019$), and therapy ($p = 0.003$). However, surprisingly, the management of the patient care category score did not differ between nurses with diplomas and those with a bachelor's degree ($p = 0.272$). There were seven clinical tasks in the management of patient care category that bachelor

nurses rated higher than diploma nurses, but no statistical difference in tasks such as advocating for clients' right or needs, supervising care performed by other nurses, and orienting new nurses. This was similar to the finding of a study in Indonesia more than ten years ago, which found fewer distinctions in job functions in a workforce consisting of two education levels.[6] However, a different finding was obtained by Spetz and Bates, who found that a baccalaureate education is associated with a higher likelihood of engaging in an advanced practice but a lower likelihood of being in a managerial position.[22] Furthermore, experienced nurses tend to be rated significantly higher in their cognitive non-technical skills than do novice nurses, indicating their better performance.[14] Another study found that safety and risk management confidence in clinical tasks among bachelor students was higher than that of diploma students.[23] In another category of clinical task, enrolled nurses performed better on direct care, registered nurses spent more time on indirect care, and nurse specialists spent more time on professional communication.[24] Notably, the lower frequency of clinical tasks does not necessarily mean a low nursing workload.[25] Particularly, professional nurses who perform many non-nursing tasks could be leaving several important nursing tasks undone.[21] Therefore, further study is needed to investigate the workload, task allocation, and perception of the bachelor of nurses besides the clinical tasks in Indonesian hospitals.

The significant difference in clinical task scores was also found among hospital units ($p = 0.000$). Intensive care unit nurses engaged in clinical tasks more frequently than did nurses in other units. This is perhaps because patients in intensive care units need more care than do patients in other units. The level of clinical tasks is largely dependent on patient acuity and dependency.[26] Furthermore, years of experience have positive correlations with expertise.[18] Therefore, nurses with a higher level of experience tend to conduct less routine or easy clinical tasks and perform more tasks related to the management and collaboration of patient care. Notably, however, we found that task frequency did not significantly differ by work experience ($p = 0.096$). In many hospitals in Indonesia, first line managers give similar jobs to nurses with different levels of education,[27] which may have led to this finding. Potentially, the implementation of the Ministry of Health's new guidelines on the development of the clinical nursing professional career[8] may influence clinical task assignment in the future.

Limitations of the study were identified. First, the study used snowball sampling through the Indonesia National Nurses Association regional and provincial authorities; the sample would have been more representative if we had used a systematic representative sampling procedure. Second, nurses in Java responded more than did those outside Java, potentially due to cultural or social factors, or even variations in internet connection. The overrepresentation of nurses from Java can limit generalization of the findings. Third, to optimize the completion rate, we designed the instrument to assess only the frequency of clinical tasks, omitting the importance of these tasks. Finally, the working assignments of bachelor nurses were not captured in the survey, which might have led to lower clinical task scores.

The conclusion of the study. The frequency of clinical task performance of 3-year diploma nurses was higher than was that of nurses with a bachelor of nursing or a master's degree. Moreover, nurses in the intensive care unit most frequently performed clinical tasks. Surprisingly, tasks related to collaboration and management of patient care are currently not being performed much by nurses with a bachelor of nursing degree. Nurses with greater knowledge and analytic thinking skills should engage more in collaboration and direct management of patient care to ensure better clinical outcomes. The nurse managers should consider reviewing the task assignment of nurses in the clinical units. This finding can guide the evaluation of the bachelor of the nursing curriculum as well as hospital management, thereby facilitating proper assignment of tasks to diploma and bachelor nurses. Moreover, the findings could be used to develop standards for nursing competency to improve the distinction between diploma and bachelor nurses by providing more concrete descriptions of their tasks. Further studies are needed to investigate the job assignment and role of nurses in hospitals with different educational backgrounds.

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Conflict of interests

The authors declare no conflict of interest.

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