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RELATIONSHIP BETWEEN THE COMPONENTS OF HEAD NURSES MANAGEMENT CAPACITY AND INFLUENCING FACTORS: A CASE STUDY IN VIETNAM

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Abstract:
The study is based on Chase 1994's approach to management capacity of head nurses and uses linear regression analysis to determine the relationship between the components of head nurses' management capacity with other influencing factors. The results show that factors such as age, seniority of management, degrees, seniority of work, and management degrees explain 39.1% of the change in professional capacity and 56% of the change in professional competence explaining 52% of the change in thinking ability, explaining 33% of the change in leadership skills and explaining 34% of the change in management skills of financial management. The relationship between management seniority and professional skills is statistically significant and negatively correlated. The relationship between qualifications, working seniority and human resource management skills is statistically significant and positively correlated. The relationship between qualifications, management degrees and thinking skills of head nurses is statistically significant and positively correlated. In addition, the research results also show that the relationship between the influencing factors and the components of the management capacity of head nurses is not statistically significant.
Keywords: Management capacity, head nurses, influencing factors.

1. Introduction

The management capacity of head nurses plays a very important role in health care activities at the hospital. They are the ones who manage human resources, medical equipment, finance, and information to ensure the delivery of quality health care services in the hospital (Decampli, P. et al. 2010). Head nurses are the people who connect the organization's orientation, goals, and tasks with the person providing daily care for the patient. They are responsible for patient care activities in the ward during the 24 hours (Buechlein-Telutki, MS). et al 1993). As the leader of department, head nurses are a central element in the interactions between patients, nurses, doctors, technicians, other staff members, and hospital directors. At the same time, they need to know how to link their department's activities with the rest of their units so that activities can be productive and efficient (Freed, PE, Dawson, S. 2011). Head nurses' responsibilities include managing and delivering patient care, developing human resources, managing human and financial resources, implementing regulations and professional standards, and fostering caregiving practices, interdisciplinary relationships, and strategic planning. To fulfill their

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responsibilities, head nurses must have professional, human resource management, leadership and financial capabilities.

In Vietnam, hospitals in general and public hospitals in particular are facing urgent requirements to improve the quality of medical service delivery in order to attract and create trust for patients. Improving the quality of medical care is inevitable, in which the quality of human resources is a decisive factor. Before those requirements, from a nursing management perspective, head nurses must have the necessary management skills to meet all three groups of requirements. Aware of that, over the years, our state in general and hospitals in particular have been interested in improving the management capacity of head nurses. The Ministry of Health has issued Decision No. 1895/1997/BYT-QD, dated September 19, 1997 specifying the functions and duties of head nurses at hospitals and medical facilities and Circular No. 07/2011/ TT-BYT of the Ministry of Health dated January 26, 2011 on guiding nursing work on patient care in hospitals. Hospitals and medical facilities have also paid attention to ensuring the quantity and improving the management quality of head nurses at their facilities. The head nurses themselves, besides studying, training, and striving to accumulate the necessary skills and knowledge to perform the functions and duties of head nurses as prescribed, they also always pay attention to improving sense of responsibility at work to fulfill their roles and tasks. However, in practice in hospitals, the management capacity of head nurses still have many limitations. Therefore, this study focuses on clarifying the relationship between the components of the management capacity of head nurses and the influencing factors, thereby asking the managers of the hospital as well as the state to have policies in place. It is also an effective solution to improve the management capacity of the nursing staff.

2. Literature review

Management capacity is assessed based on the ability to apply knowledge, understanding and skills on management activities: including knowledge and understanding of management skills and contents. Proficiently implementing management processes and attitudes before assigned work in the spirit of responsibility, solidarity, self-discipline, sacrifice for the groups.

Right from the middle of the 20th century, Kazt (1955) researched and proposed a general management competency framework. According to this author, the management competency framework includes: Technical skills, human skills, and theoretical skills. Kazt has shown that these skills vary with management responsibilities. At the lower level, technical skills are absolutely essential for management jobs. As managers move deeper into management positions, the need for technical skills decreases. On the other hand, at the highest level theoretical skills are crucial to their success in their positions. Interpersonal skills are important for all levels of management.

Duffield's study (1989) was one of the earliest studies aimed at identifying the key competencies required by head nurses. This study presents 168 evaluation criteria collected from available sources to submit to an expert panel for review. The panel consists of 5 experts from different fields in the health industry. The panel of experts recognized that ensuring quality patient care, setting goals for the unit, maintaining a favorable working environment, maximizing human resources, providing a forum for information communication and budget control are the top competencies for head nurses. This study needs further studies to determine how the competencies identified above represent the function of head nurses.

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For the approach of Kazt (1955), the management capacity of head nurses includes management knowledge, management skills and management attitudes. This is a general capacity review for all managers, and does not reflect the characteristics of nursing and nursing management activities.

Beuchlin - Telutki et al (1993) define six important roles for the head nurse in their qualitative study. These roles include planning, staffing and operations, human resource development and management, professional development, and patient services. Each role is then more defined. A standard performance evaluation tool was then proposed using three standard performance levels: above standard with consistently high quality performance, meeting standard with solid consistent performance, and below standard with inadequate quality performance. This study demonstrated the need to clearly define roles and support colleagues, once job roles were well defined as they are today.

Chase (2010) based on Katz's research, using necessary management skills, created a tool (a questionnaire for head nurses) that helps head nurses to determine the importance of effective competencies for a head nurse. Chase discovered that some skills might not fall within the range of Katz's 3 basic skills. Therefore, she added two more groups of competencies: leadership capacity and financial management capacity.

Sanders, Davidson and Price (1996) report a study identifying key factors in the role of a head nurse. Using the Likert model questionnaire, 74 chief nurses from 5 major hospitals were asked which factors in their profession were rated most important. This study outlines four main factors, in order of the most important being management ability, professional qualification, educational ability and research ability. These factors were identified as the most important in integrating a training program. In addition, the author also suggests integrating the above-mentioned key elements into the activities of guiding and supporting colleagues.

Dach - Zahavy and Dagan (2002) present a qualitative study that observed 48 head nurses and documented their work to identify key elements required for the head nurse role. Accordingly, professional ability, coordination ability, operational functions of the unit, ability to manage staff and human resources, and the ability to improve service quality are the main abilities that head nurses often have to perform. The authors also point out that further studies are needed to determine the effectiveness of head nurses in care practices and employee satisfaction; through which to evaluate the effectiveness of the activities that head nurses perform.

For the approach of the American Organization for Nursing Administration (AONE), the nursing manager's capacity includes 5 groups of factors which are; communication and relationship building, healthcare knowledge, leadership, professional qualifications and entrepreneurial capabilities. In studies around the world, this approach is often applied to the study of senior nursing managers such as nursing directors, hospital chief nurses.

The approach of the American Nursing Association (ANA), the capacity of head nurses includes two groups of factors: Competence in management practice and requirements for professional nursing and management practice. According to this approach described above, ANA follows the nursing manager's decision-making and decision-making process which is also consistent with the management capacity of head nurses. This is an approach that separates activities according to the nursing process, although it also makes the assessment more nursing-specific, but in the context, the nursing process is understood differently in different countries,

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has not been widely applied in Vietnam, the application of this set of standards should only be applied when studying on a group of nurses with a high degree of homogeneity, such as at 1 hospital or hospitals of the same age, same specialization, same characteristics.

Chase (1994) based on Katz's research, using necessary management skills, created a tool (a questionnaire for head nurses) that helps head nurses to determine the importance of effective competencies for a head nurse. Chase discovered that some skills might not fall within the range of Katz's 3 basic skills. Therefore, she added two more groups of competencies: leadership capacity and financial management capacity. Therefore, the management capacity of head nurses includes five groups of factors: Group of technical skills; (2) Group of human skills; (3) Group of thinking skills; (4) Group of leadership skills; (5) Financial management skills. This is an approach that fully demonstrates the characteristics of the management activities of head nurses, and is also challenged when conducted on nursing groups of different specialties, therefore, in this study, the will apply this approach.

3. Research methodology

Research sample selection method

The selected hospitals include the general and specialized hospitals, large hospitals and small hospitals directly under the central government and located in Hanoi.

The deputy head nurses, head nurses and nurses are conveniently selected to find subjects who are willing to share information. At each hospital, the study will investigate the deputy head nurses, head nurses and choose to investigate the nurses in each unit of the head nurses managed by a convenient method. However, since the majority of nurses are female, the random selection of the nurse information survey also ensures the same sex ratio as the actual rate in the units.

Sample size

To determine the sample size, the study used suggestions from previous studies for each specific quantitative analysis method. The study uses two main methods of quantitative analysis, principal components analysis (PCA) and logistic regression analysis. Corresponding to each method, the specific sample size requirements are as follows:

For the requirement for principal component analysis (PCA), according to the study by Hair, Anderson, Tatham and Black (1998), the authors recommend a minimum sample size of five times the total number of observed variables. . When this sample size is reached, the new data are considered to be satisfactory for factor analysis. With the expected questionnaire consisting of 55 questions, the minimum sample size should reach 55 x 5 = 275 observations. However, because the study was carried out on 07 hospitals with quite different characteristics, it is necessary to conduct a broader investigation, in fact, it should be investigated on 550 subjects with at least 50 head nurses and 500 nurses.

For the requirements of the logistic regression model analysis method, according to the study of Tabachnick and Fidell, (1996), it is necessary to collect a minimum sample of 50 + 8m observations, where m is the number of independent variables in paradigm. With the expected number of factors of 5 groups, the minimum sample size to be achieved is 90 observations.

From the requirements of the number of observations above and based on the conditions of the study, the author needs to investigate 50 head nurses and 500 nurses at central hospitals

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in Hanoi. In fact, the study investigated 14 chief nursing officers, deputy chief nursing officers, 60 head nurses and 538 nurses.

Logit Model

The logit model is a regression model in which the dependent variable is a dummy (qualitative variable). In the econometric model, the dependent variables take on two values 0 and 1. Specifically in the thesis, the dependent variable will receive two values of 0 or 1, respectively, without falling or falling, not using the wrong drug or using the wrong drug, not satisfied or satisfied. The interest in whether or not this possibility occurs is expressed in terms of probability. We call P the probability of occurrence of the dependent variable (falling, using the wrong drug, ...) determined by the following formula:

$$P(Y = 1|X) = \frac{e^{\beta_0+\beta_1X_1+\beta_2X_2+\cdots+\beta_kX_k}}{1 + e^{\beta_0+\beta_1X_1+\beta_2X_2+\cdots+\beta_kX_k}}$$

In which:

P (Y = 1|X): The probability that the dependent variable is equal to once at the values of X X_1, X_2...X_k: The independent variables in the model

The effect of variable X_2 on P at the point is calculated as follows

$$\frac{\partial P}{\partial X_2} = \frac{e^{\beta_0+\beta_1X_1+\beta_2X_2+\cdots+\beta_kX_k}}{(1 + e^{\beta_0+\beta_1X_1+\beta_2X_2+\cdots+\beta_kX_k})^2}\beta_2 = P_0(1 - P_0)\beta_2$$

The logarithm regression equation

$$Ln\left[\frac{P(Y = 1)}{P(Y = 0)}\right] = B_0 + B_1 X_1 + B_2B_2 + \cdots + B_iX_i$$

$P(Y = 1) = P_0$: Probability of event occurring

$P(Y = 0) = 1 – P_0$ Probability of not happening

X_i are the independent variables. Ln is Log base e with e = 2.714 Factor of Odds

$$O_0 = \frac{P_0}{1 - P_0}$$

$$Odds = \frac{P_0}{1 - P_0} = \frac{P(\text{xác xuất xảy ra})}{P(\text{xác xuất không xảy ra})}$$

$$Ln(Odds) = B_0 + B_1 X_1 + B_2B_2 + \cdots + B_iX_i$$

From there we can explain. When other variables are unchanged, X_i changes by 1 unit, how many % will ln(odds) change.

After estimating the model, we have to perform some tests.

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- Wald test to test the fit of the variables in the model With a pair of hypotheses:

H_0: $B_i = 0$ (Variable does not fit the model) H_1: $B_i \neq 0$ (Variable fits the model)

If the p_value is small, the independent variable will affect the dependent variable, if the p_value is large, the independent variable will not affect the dependent variable much.

- Check the fit of the model (Omnibus test). If Sig < 0.05, the model shows that the correlation between the dependent variable and the independent variable in the model is statistically significant with a confidence interval of 95%.

- Test the explanatory level of the model (Model Summary). The coefficient of explanatory strength of the model R^2. That is, the model explains how much of the change in the dependent variable is explained by the independent variables in the model, the rest is due to other factors.

4. Results of analysis and discussion

The relationship between professional skills and influencing factors

Table 4.19: Relationship between professional skills and influencing factors

Features	Unnormalized coefficient		Normalizedcoefficient	t	P
	B	Standard error	Beta		
Age	0,00	0,022	0,000	0,000	1,000
Management seniority	-0,322	0,132	-0,338	-2,430	0,019
Academic qualifications	0,040	0,065	0,083	0,613	0,543
Years of working	-0,021	0,197	-0,031	-0,106	0,067
Management Degrees	-0,003	0,072	-0,005	-0,035	0,972
constant	5,045	0,760			
Modelsummary	R=0.625; R^2=0.391; Corrected R^2 = 0.4; F=1.4; p=0.024				

Source: Author's calculation using SPSS software

The above linear regression model determines the relationship between professional skills and influencing factors. Factors such as age, seniority of management, qualifications, seniority of work, and management degrees explain 39.1% of the change in professional capacity.

The relationship between seniority of management and professional skills is statistically significant and negatively correlated. The more senior the head nurses are in management, the lower their clinical practice ability because they do not often directly conduct procedures, they focus on management and administration.

The relationship between age, qualifications, seniority, management qualifications and professional skills is not statistically significant in the model.

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The relationship between human resource management skills and influencing factors

Table 4.20: Relationship between human resource management skills and influencing factors

Features	Unnormalized coefficient		Normalizedcoefficient	t	P
	B	Standard error	Beta		
Age	-0,021	0,026	-0,246	-0,793	0,086
Management seniority	-0,181	0,159	-0,166	-1,137	0,019
Academic qualifications	0,017	0,077	0,031	0,214	0,031
Years of working	0,175	0,237	0,226	0,740	0,043
Management Degrees	-0,016	0,087	-0,025	-0,180	0,858
constant	5,121	0,913			
Modelsummary	**R=0.75; R^2=0.56; R^2 correction = 0.55; F=0.5; p=0.041**				

Source: Author's calculation using SPSS software

The above linear regression model determines the relationship between human resource management skills and influencing factors. Factors such as age, seniority of management, qualifications, seniority of work, and management degrees explain 56% of the change in human resource management capacity.

The relationship between qualifications, working seniority and human resource management skills is statistically significant and positively correlated. The higher the degree of head nurses and the more seniority, the better the ability to manage human resources. This is consistent with reality.

The relationship between age, management seniority, management degree and human resource management skills is not statistically significant in the model.

The relationship betweenthinking skills and influencing factors

Table 4.21: Relationship between thinking skills and influencing factors

Features	Unnormalized coefficient		Normalizedcoefficient	t	P
	B	Standard error	Beta		
Age	-0,023	0,020	-0,342	-1,162	0,251
Management seniority	-0,149	0,124	-0,166	-1,200	0,056
Academic qualifications	0,042	0,060	0,094	0,698	0,028
Years of working	0,141	0,184	0,221	0,764	0,449
Management Degrees	0,068	0,068	0,134	1,007	0,031
constant	4,917	0,711			
Modelsummary	**R=0.72; R^2=0.52; Corrected R^2 = 0.51; F=1.5; p=0.019**				

Source: Author's calculation using SPSS software

The above linear regression model determines the relationship between thinking skills and influencing factors. Factors such as age, seniority of management, degrees, seniority of work, and management degrees explain 52% of the change in thinking capacity.

The relationship between qualifications, management degrees and thinking skills of

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head nurses is statistically significant and positively correlated. The head nurses have degrees, the higher the management degree, the better the intellectual ability.

The relationship between age, management seniority, working seniority and intellectual skills is not statistically significant in the model.

The relationship between leadership skills and influencing factors

Table 4.22: Relationship between leadership skills and influencing factors

Features	**Unnormalized coefficient**		**Normalizedcoefficient**	**t**	**P**
	B	Standard error	Beta		
Age	-0,037	0,023	-0,487	-1,607	0,064
Management seniority	-0,130	0,139	-0,133	-0,933	0,355
Academicqualifications	0,021	0,068	0,044	0,313	0,756
Years of working	0,271	0,208	0,389	1,303	0,199
Management Degrees	0,036	0,076	0,064	0,466	0,643
constant	5,582	0,80			
Modelsummary	R=0.57; R^2=0.33; R^2 correction = 0.31; F=0.95; p=0.469				

Source: Author's calculation using SPSS software

The above linear regression model determines the relationship between leadership skills and influencing factors. Factors such as age, seniority of management, qualifications, seniority of work, management qualifications explain 33% of the variation in leadership skills.The p value of each factor is greater than 0.05, showing that the relationship between the above factors and leadership skills is not statistically significant.

The relationship between financial management skills and influencing factors

Table 4.23: Relationship between financial management skills and influencing factors

Features	**Unnormalized coefficient**		**Normalizedcoefficient**	**t**	**P**
	B	Standard error	Beta		
Age	-0,030	0,032	-0,291	-0,949	0,347
Management seniority	-0,259	0,194	-0,193	-1,336	0,068
Academicqualifications	-0,005	0,095	-0,007	-0,052	0,959
Years of working	0,190	0,289	0,199	0,657	0,514
Management Degrees	0,027	0,106	0,036	0,257	0,798
constant	5,682	1,114			
Modelsummary	R=0.58; R^2=0.34; R^2 correction = 0.33; F=0.69; p=0.660				

The above linear regression model determines the relationship between financial management skills and influencing factors. Factors such as age, seniority of management, qualifications, seniority of work, management qualifications explain 34% of the variation in financial management skills.

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The p value of each factor is greater than 0.05, showing that the relationship between the above factors and leadership skills is not statistically significant.

4. Discussion

The relationship between management seniority and professional skills is statistically significant and negatively correlated (beta = -0.338, p = 0.019). Therefore, in addition to improving management capacity, head nurses still need to regularly update and practice expertise to participate in the process of building professional processes and supporting effects for management. Recommendations to management units: it is necessary to add regulations and hard requirements for head nurses on updating, supplementing and improving professional skills every year.

There is a relationship between qualifications (beta = 0.031, p = 0.031), working seniority (beta = 0.226, p = 0.043) and human resource management skills and is positively correlated. Therefore, when planning and appointing, it is necessary to have hard standards and give priority to these subjects.

There is an association between qualifications (beta = 0.094, p = 0.028), management degrees (beta = 0.134, p = 0.031) and thinking skills and is positively correlated. Therefore, management degrees and qualifications should be included as standards when planning and appointing. In addition to being fully trained and certified in management, head nurses need to have a certificate in pedagogy in clinical teaching and attend full training courses to ensure at least 48 hours of continuous classroom training for 2 consecutive years, long-term training courses such as specialized nursing at level 1, level 2, doctorate....

The leadership skills of head nurses are still lacking such as: Having good time management ability, Controlling the change process, Knowing how to organize the work of the departments reasonably, having skills in multi-care coordination branch. These are skills that require head nurses to have very basic training in management skills as well as long-term practical management experience. Hospital leaders and hospital chief nurses need to have a strategy to train and improve management skills for head nurses and regularly check and monitor for timely changes to limit errors.

There is a shortage of financial management skills of head nurses: Take appropriate measures to prevent and avoid unnecessary costs, take measures to control unit budgets and take appropriate measures to increase productivity. To limit the above deficiencies, head nurses need to develop a detailed budget plan, measure each stage in the practice process, and take measures to prevent and control possible risks, regularly inspect and supervise to draw lessons in time to increase labor efficiency.

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