

# Critical Thinking Skills among Nurses at a Private Hospital in Penang: A Quantitative Study

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## ABSTRACT

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*Nurses face a great challenge in making significant and crucial decisions that will impact the outcome of patients' overall health status. Therefore, critical thinking skills are crucial for nurses to make the sound clinical decisions to assure the provision of high-quality nursing care. Thus, this study is aimed to provide the current evidence of the critical thinking level of registered nurses and identify the factors that affect critical thinking skills among the nurses. The quantitative study design with a cross-sectional survey was implemented in this study. Registered nurses from various clinical backgrounds at a private hospital in Penang were selected by using the stratified random sampling (N=169). Watson-Glaser Critical Thinking Appraisal (WGCTA) questionnaire was adopted to measure the critical thinking abilities among the participants. An average level of critical thinking skills was found in this study. The senior nurses scored lower on the critical thinking scale compared to the junior nurses. Besides, there is a relationship between the nurses' educational level and critical thinking abilities. This study concludes that there is a difference in critical thinking abilities among the nurses. Therefore, future research is suggested to further investigate this issue as this skill of thinking leaves a profound impact on the patients' outcome.*

## 1. INTRODUCTION

Nurses are facing challenges in their profession on a daily basis, especially when it comes to making a significant and crucial decision that will impact the outcome of a patient's overall health status (Shoulders, Follett, & Eason, 2014). Decision-making in nursing practices is becoming more complex and is further complicated by the aging community and the

emergence of new complex diseases (Azizi-Fini, Hajibagheri & Adib-Hajbaghery, 2015). For nurses to make a sound clinical decision, one must possess good critical thinking skills. Critical thinking plays an important role in making these decisions that gives a direct impact on a patient's outcome. This skill of thinking employs analysis, evaluation, selection, and utilization that lead to the best possible decisions (Heidari & Ebrahimi, 2016). Critical thinking skills seem to be an essential and integral component for a quality nursing care (LaMartina & Ward-Smith, 2014). However, there is no internationally agreed consensus on the definition of critical thinking (Shoulders et al., 2014; Gezer, Yildirim & Özyayın, 2017).

Critical thinking skills is an integral component in nursing practice that influences a nurse's clinical judgment and reasoning which affects the quality of the nursing care (Kaddoura, Dyke & Yang, 2016; Gezer et al., 2017). Nurses act upon their own judgment and reasoning thus make their decisions based on the interpretation of available data. Many of the tasks performed by the nurses require insights and not just to carry out blindly. In case of an emergency event, nurses are the first ones that attend to the patient, providing resuscitative measures to stabilize the patient's condition. Parker (2014) remarked that the safety of a patient is potentially influenced by the critical thinking skills ability of the nurse caring for them. A quick and appropriate decision-making is needed to ensure the patient is safe (Lee, Khatijah, Pathmawathi, Bachmann & Ong, 2017).

Despite its importance in nursing practice, it is noted that some nurses still do not demonstrate critical thinking skills in clinical practice. A study done by Gezer et al. (2017) discovered that the mean score of critical thinking disposition of nurses was comparatively low. This shows that the nurses' attitude and perception towards the implementation of critical thinking skills is poor, even though multiple scholars emphasize its importance. Similarly, Günaydın, and Barlas (2015) reported that the majority of nursing students' critical thinking abilities are low. Kaddoura et al. (2016) stressed the importance of nurses utilizing critical thinking skills in their nursing practice. Nurses with low critical thinking abilities will demonstrate poor clinical judgment and decision-making skills.

This study aims to determine the existing critical thinking skills level of registered nurses and to identify the factors that affect critical thinking among these nurses. These factors may potentially impact their nursing practices and patients' outcome. Through this study, significant factors that affect nurses' critical thinking abilities are examined. The result of this study may become a valuable feedback to nurses regarding their current critical thinking level and factors that may enhance their critical thinking abilities. By knowing the factors that affect one's critical thinking abilities, the nurses can take appropriate measures to foster them (Aliyu, Mathew, Shinaba, Oyewole & Olusanya, 2014). The critical thinking skills of a nurse can significantly impact the clinical outcome of the patients. Thus, enhancing one's critical thinking ability may lead to a more quality nursing practice.

## **2. METHOD**

### ***2.1 Population and Sampling***

This study employed a quantitative approach to meet the study objectives. The application of cross-sectional study framework has allowed the single collection of data which started from November 2018 till end of February 2019. The data were collected from a private hospital in Penang that provides multidisciplinary medical and surgical services as well as rehabilitative, health education, and health screening services. The participants of this study were chosen from the targeted population who are registered nurses working in selected critical care units

(emergency, intensive care, and cardiac unit), specialized unit (operating theatre, pediatric ward, and hemodialysis unit), and general units (three medical-surgical wards). The total count of this population are approximately 304 nurses. These clinical area variations were chosen as they are always staffed by nurses from different years of working experiences and educational level. The sample size was determined by Krejcie and Morgan (1970) formula that brought up to the adequate size of the sample with 169 registered nurses. The probability sampling with a stratified random approach was employed to explore the critical thinking level among registered nurses in the selected clinical area to allow an equal number of samples from different subgroups. This improves the representativeness of the results by reducing bias in samplings. This study is ethically approved by the respected institution and possible conflict of interest are excluded.

## ***2.2 Research Instrument***

This study employed a structured self-administered questionnaire, comprising of two parts. The first part are the demographic characteristics which includes gender, the current area of practice, years of working experience, and the highest level of education. This study adopted the established Watson-Glaser Critical Thinking Appraisal (WGCTA) questionnaire for the second part. It consists of 40 items that measures critical thinking abilities and are divided into five sections; assessment of inferences, recognition of assumptions, deductive reasoning, logical interpretation, and argument evaluation. The reliability of the WGCTA has been established through test-retest reliability of 0.89 and Cronbach's alpha of 0.81 (Watson & Glaser, 2014). The pilot study was conducted using the original English version of WGCTA and the Cronbach's alpha of 0.79 was found. The score retrieved from the WGCTA was then interpreted using the scale interpretation with five distinct categories; well above average, above average, average, below average, and well below average.

## ***2.3 Statistical Analysis***

The data was analysed using the IBM Statistical Software version 22. The nurses' characteristics and critical thinking skills scale were sorted and presented using descriptive statistics. The normality of data distribution was assessed using the Skewness and Kurtosis measure and supported by the histogram. The normal distribution of the data was found and a p-value of <0.05 was determined for the inferential analysis. Therefore, the one-way ANOVA was employed for the analysis of the difference and Pearson correlation to establish the relationship between the demographic variables and the critical thinking abilities.

## **3. DATA ANALYSIS AND RESULTS**

Table 1 illustrates the participants' characteristics including gender, the current area of practice, years of working experience, and the highest education level in nursing (N=169). Majority of the participants for this study were female (85.8%). A similar proportion of participants from the various current clinical areas of practice were found. With regards to the years of working experience, the analysis was done by using the Benner stage interpretation of expertise. Thus, this study involves the majority of expert nurses (38.5%) and the least novice nurses (7.1%). This study had recruited nurses with different levels of nursing education. Nurses with diploma qualification as the highest group (69.2%) followed by the group who are Post Basic Certificate / Advanced Diploma qualified nurses (24.3%) and bachelor graduated nurses (6.5%).

Table 1. Demographic Characteristics

		Frequency (n)	Percentage (%)
Gender	Female	145	85.8
	Male	24	14.2
Area of practice	Critical units	56	33.2
	Specialised Units	67	39.6
	General Medical-Surgical Units	46	27.2
Years of experience	Below 6 months (Novice)	12	7.1
	6 months - 1 year (Advanced Beginner)	15	8.9
	1 year - 3 years (Competent)	51	30.2
	3 years to 5 years (Proficient)	26	15.4
	5 years and above (Expert)	65	38.5
Level of Education	Diploma	117	69.2
	Post Basic Certificate / Advanced Diploma	41	24.3
	Bachelor's Degree	11	6.5

Note: N = 169.

The critical thinking skills among the nurses were measured using the Watson-Glaser Critical Thinking Appraisal (WGCTA) tool and the level of critical thinking is divided into five categories (Watson & Glaser, 2012). Most of the participants (85.8%) scored "Average" while the remaining 24 participants (14.2%) scored "Above Average" and "Below Average". None of the participants scored "Well Above Average" or "Well Below Average" (refer Table 2).

Table 2. Level of Critical Thinking

WGCTA Scoring	n	%
Well Above Average	0	0
Above Average	5	3.0
Average	145	85.8
Below Average	19	11.2
Well Below Average	0	0

Note: N = 169.

The one-way ANOVA test was employed to determine the significant difference between the critical thinking skills with the years of working experience and the nursing educational level. The analysis indicates that the Novice nurses scored highest in the WGCTA with a mean score of 49.02 (SD = 8.06). Meanwhile, the Expert nurses scored the least mean score with M = 43.8 (SD = 11.81). Besides, nurses with a bachelor's degree qualification scored highest in the WGCTA with a mean of 52.41 (SD = 13.53). However, these study findings were found to be not significant ( $p > .05$ ) (refer Table 3).

Table 3. Critical Thinking Score across Years of Experience and Educational Level

		Mean (M)	±SD
Years of Experience	Novice	49.02	8.063
	Advanced Beginner	47.84	10.862
	Competent	44.52	11.115
	Proficient	48.19	14.120
	Expert	43.80	11.812
Education Level	Diploma	44.80	10.213
	Post Basic Certificate / Advanced Diploma	45.34	14.661
	Bachelor's Degree	52.41	13.531

Note:  $p > .05$ .

To establish the relationship between the critical thinking skills and the years of working experience and the educational level, the bivariate Pearson correlational analysis was performed. Table 4 shows the relationship between the variables. An insignificant negative relationship was found between the years of working experience and the WGCTA score ( $r = -0.105$ ,  $p > .05$ ). Besides, the level of education in nursing was found to have a weak positive relationship with the WGCTA score ( $r = 0.126$ ). However, the relationship between these variables is not significant ( $p > .05$ ).

Table 4. Pearson Correlational Analysis: Critical Thinking Score, Years of Experience and Educational Level

	<i>r</i>	p-value
Years of Experience	-.0105	0.174
Education Level	0.126	0.103

Note:  $p > .05$ .

#### 4. DISCUSSION AND CONCLUSION

This study aims to explore the critical thinking level of registered nurses and demographic factors that affects their critical thinking abilities. By utilizing the Watson-Glaser Critical Thinking Appraisal (WGCTA) tool in this study, the average level of critical thinking skills was found among the nurses who were part in this study. Only five of the participants scored the Above Average level at and the rest of the 19 participants scored at a Below Average level. Previous studies had reported similar findings in registered nurses' critical thinking level. Lee and Pak (2014) reported that the average critical thinking score for registered nurses in their study is only at an average level. The reason behind this finding was not explicitly explained. Similarly, Mahmoud and Mohamed (2017) reported in their study that the majority of the participants showed an average result in their critical thinking disposition. It is stated that nurses that had participated in the study were all working in a hospital where the routine task has reduced their practice in thinking critically. Perhaps this reason can be applied to explain the findings of the current study. On contrary, other studies have provided different findings. Ludin (2018) reported that critical care nurses in his study have an overall good critical thinking disposition and good clinical decision-making skills. He further explained that nurses in the critical care environment tend to be exposed to new clinical situations, therefore, enhancing their critical thinking and clinical decision-making skills (Ludin, 2018). However, Gezer et al. (2017) filed a contradicting report whereby intensive care nurses in their study are found to have low critical thinking disposition and skills. The reason for this finding, however, was not stated in the report.

Nurses are expected to gain more knowledge and clinical competency as they advanced through their clinical experience as suggested by Benner's Theory "From Novice to Expert". Lee and Pak (2014) reported that their findings were consistent with Benner's theory. They found out that years of working experience plays a significant role in nurses' critical thinking skills. The findings from their study showed that nurses with clinical experience of more than five years have a higher critical thinking disposition compared to junior nurses. Likewise, Ludin (2018) also reported that nurses with more clinical experience have higher critical thinking and clinical decision-making skills. However, it is noted that the findings in this study are inconsistent with Benner's theory. The findings revealed that participants in the Expert category obtained the lowest mean score in critical thinking while Novice participants score is the highest. A study done by Stinson (2017) reported that years of working experience does not influence a nurse's critical thinking abilities as there are no significant

differences in means score of clinical decision-making skills between the 5 categories. Likewise, Gloudemans, Schalk, and Reynaert (2013) also reported that there are no significant differences in the critical thinking abilities of nurses with different years of working experience. Wu, Yang, Liu, and Ye (2016) also reported similar findings in their study. They reported that the clinical experience of nurses has a positive effect on their clinical decision-making skills only at the 25th percentile while insignificant to the others. They further elaborated that nurses in the Expert category may not be skilful in critical thinking skills as they rely on past experiences rather than clinical knowledge. Benner (1982) remarked that expert nurses rely more on their intuitive judgment rather than critical thinking skills during clinical decision-making. Junior nurses who recently graduated from college tend to apply theory into practice, hence a higher use of critical thinking skills (Stinson, 2017). This type of intuitive decision-making is based on the nurse applying experience when encountering a similar situation (Wu et al., 2016; Stinson, 2017). This perhaps may be the reason why Expert nurses in this study scored lower in their WGCTA as they rely more on intuition rather than clinical data.

Colln-Applying and Giuliano (2017) remarked that the foundation of better development of critical thinking skills among registered nurses is higher education. Once a nurse has gained more knowledge, the nurse will spontaneously have more dispositions towards thinking critically. Likewise, Gloudemans et al. (2013) also stated that nurses with higher educational levels in nursing should perform better in critical thinking. In this study, it is noted that nurses with higher educational levels in nursing performed better in the WGCTA. The WGCTA means core for nurses with bachelor's degrees is noted to be higher at 52.41 as compared to others. It is also noted that nurses with the only diplomas scored a lower mean score of 44.80 when as compared to nurses with an advanced diploma or a post-basic certificate at 45.34. The findings of this study are consistent with the findings of other studies. Wu et al. (2016) reported that nurses with higher educational levels significantly scored higher in their clinical decision-making skills. Nurses that furthered their education have positively impacted their skills in making clinical decisions. Identically, a study carried out by Lee and Pak (2014) yields similar results. They reported that nurses with a master's degree have higher critical thinking abilities, followed by nurses with a bachelor's degree, and then nurses with a diploma. Ludin (2018) also reported similar results where nurses with bachelor's degrees have higher clinical decision-making skills than nurses with diplomas. A study done by Yurdanur (2016) reported that there is a significantly higher level of critical thinking disposition for nurses with a postgraduate intensive care certificate as compared with nurses without the certificate. Nurses having their knowledge and skills advanced in their specific area of care heighten their critical thinking abilities. On the other hand, Mahmoud and Mohamed (2017) reported contradicting findings. Their study found out that there is no significant relationship between the nurses' educational level and their critical thinking disposition. This finding is supported by the findings of Gezer et al. (2017) where they found out that the educational level of nurses does not significantly affect their critical thinking skills and disposition. The reason for this finding was not provided. Although the findings of this study present a positive relationship between the educational level of nurses and their critical thinking skills, the relationship is found to be not significant ( $p > .05$ ).

Critical thinking has a profound impact on nursing practice. It influences a nurse's ability to perform clinical assessments to carry out with appropriate interventions, especially during emergencies. As nurses are those to be with patients most of the time, therefore their decision in applying appropriate interventions is vital in influencing the patient's outcomes. Patient's outcome is perhaps a significant indicator reflecting on the quality of the nursing care. The ability to make sound judgment and clinical decisions portrays a capable nurse. This image is

not only crucial in the eyes of the public but also among other healthcare professionals, as it will challenge the typical stereotype of nurses being only an assistant to doctors. Future research is suggested based on this study interest as critical thinking skills have a profound impact on nursing practice. A qualitative approach may allow further exploration and explanation of the nature of critical thinking abilities and its affecting factors among nurses.

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## REFERENCES

- Aliyu, U., Mathew, O. K., Shinaba, S. T., Oyewole, W. R., & Olusanya, M. O. (2014). Promoting professional nursing practice through critical thinking and attitudinal change. *Journal of Nursing and Health Science*, 3(5), 12-15. <https://doi.org/10.9790/1959-03521215>.
- Azizi-Fini, I., Hajibagheri, A., & Adib-Hajbagheri, M. (2015). Critical Thinking Skills in Nursing Students: a Comparison Between Freshmen and Senior Students. *Nursing and Midwifery Studies*, 4(1), 1-5.
- Benner, P. (1982). From Novice to Expert. *The American Journal of Nursing*, 82(3), 402-407.
- Colln-Applying, C. V., & Giuliano, D. (2017). A concept analysis of critical thinking: A guide for nurse educators. *Nurse Education Today*, 106-109. <https://doi.org/10.1016/j.nedt.2016.11.007>.
- Gezer, N., Yildirim, B., & Özyayın, E. (2017). Factors in the critical thinking disposition and skills of intensive care nurses. *Journal of Nursing and Care*, 6(2), 1-5.
- Gludemans, H. A., Schalk, R. M., & Reynaert, W. (2013). The relationship between critical thinking skills and self-efficacy beliefs in mental health nurses. *Nurse Education Today*, 275–280. <https://doi.org/10.1016/j.nedt.2012.05.006>.
- Günaydın, N., & Barlas, G. Ü. (2015). The factors affecting critical thinking and empathic disposition of nursing students. *Middle Black Sea Journal of Health Science*, 1(3), 1-8. <https://doi.org/10.19127/mbsjohs.27159>.
- Heidari, M., & Ebrahimi, P. (2016). Examining the relationship between critical-thinking skills and decision-making ability of emergency medicine students. *Indian journal of critical care medicine: peer-reviewed, official publication of Indian Society of Critical Care Medicine*, 20(10), 581–586. <https://doi.org/10.4103/0972-5229.192045>.
- Kaddoura, M. A., Dyke, O. V., & Yang, Q. (2016). Correlation between critical thinking skills and National Council Licensure Examination for Registered Nurses success in accelerated bachelor nursing students. *Teaching and Learning in Nursing*, 1-5. <https://doi.org/10.1016/j.teln.2016.08.004>.
- Krejcie, R., & Morgan, D. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 38(1), 607-610.
- LaMartina, K., & Ward-Smith, P. (2014). Developing critical thinking skills in undergraduate nursing students: The potential for strategic management simulations. *Journal of Nursing Education and Practice*, 4(9), 155-162. <https://doi.org/10.5430/jnep.v4n9p155>.
- Lee, D. S., Khatijah, L. A., Pathmawathi, S., Bachmann, R. T., & Ong, S. L. (2017). An integrated review of the correlation between critical thinking ability and clinical decision-making in nursing. *Journal of Clinical Nursing*, 26(23-24), 4065-4079. <https://doi.org/10.1111/jocn.13901>.
- Lee, J. Y., & Pak, S. Y. (2014). Relationship between the Practice Environment of Nursing and Critical Thinking Disposition of Nurses in Local General Hospitals. *Journal of*

- Korean Academy of Nursing Administration*, 20(2), 145-153.  
<https://doi.org/10.11111/jkana.2014.20.2.145>.
- Ludin, S. M. (2018). Does good critical thinking equal effective decision-making among critical care nurses? A cross-sectional survey. *Intensive and Critical Care Nursing*, 1-10. <https://doi.org/10.1016/j.iccn.2017.06.002>.
- Mahmoud, A. S., & Mohamed, H. A. (2017). Critical Thinking Disposition among Nurses Working in Public Hospitals at Port-Said Governorate. *International Journal of Nursing Sciences*, 4, 128-134. <https://doi.org/10.1016/j.ijnss.2017.02.006>.
- Parker, C. G. (2014). Decision-making models used by medical-surgical nurses to activate rapid response teams. *MEDSURG Nursing*, 23(3), 159-164.
- Shoulders, B., Follett, C., & Eason, J. (2014). Enhancing critical thinking in clinical practice: implications for critical and acute care nurses. *Dimensions of Critical Care Nursing*, 33(4), 207–214. <https://doi.org/10.1097/DCC.0000000000000053>.
- Stinson, K. J. (2017). Benner’s framework and clinical decision-making in the critical care environment. *Nursing Science Quarterly*, 30(1), 52–57. <https://doi.org/10.1177/0894318416680536>.
- Watson, G. and Glaser, E.M. (2014). *Watson-Glaser II Critical Thinking Appraisal*. San Antonio, TX: Pearson Education.
- Wu, M., Yang, J., Liu, L., & Ye, B. (2016). An investigation of factors influencing nurses’ clinical decision-making skills. *Western Journal of Nursing Research*, 1-18. <https://doi.org/10.1177/0193945916633458>.
- Yurdanur, D. (2016). Critical thinking competence and dispositions among critical care nurses: A descriptive study. *International Journal of Caring Sciences*, 9(2), 489-495. [https://www.researchgate.net/publication/311972091\\_Critical\\_Thinking\\_Competence\\_and\\_Dispositions\\_among\\_Critical\\_Care\\_Nurses\\_A\\_Descriptive\\_Study](https://www.researchgate.net/publication/311972091_Critical_Thinking_Competence_and_Dispositions_among_Critical_Care_Nurses_A_Descriptive_Study).