Original Article

Knowledge and Attitudes towards Early Warning Score among Registered Nurses in Detecting Deteriorating Haemodialysis Patients

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ABSTRACT

OBJECTIVE: To identify the level of knowledge and attitudes towards Early Warning Scores (EWS) in detecting deteriorating haemodialysis patients among Registered Nurses (RNs) in private hospitals.
METHODOLOGY: A quantitative design using a cross-sectional study was conducted. The respondents were 157 registered nurses working at haemodialysis services centres from five selected KPJ Group of Hospitals and were utilizing EWS. The sample size was calculated using a published formula based on 260 haemodialysis registered nurses. The data was collected using a self-administered questionnaire. Descriptive analysis was used for all variables collected. Statistical analysis was performed using the Social Packages for the Social Sciences (SPSS) software version 20.
RESULTS: The findings showed that there is a significant relationship (95% significance level) between the level of knowledge (median value of 33.0 and standard deviation of 1.28) and the attitudes (median value of 33.0 and standard deviation of 7.11) from the constructs.
CONCLUSION: Knowledge of EWS is vital for these nurses to recognize subtle changes that indicate any early deterioration in patients' conditions and their attitudes in perceiving the importance of offering positive haemodialysis services to their patients. The findings also suggest that the education level of RNs and years of experience in matters of positive haemodialysis services also provide an intuitive understanding of the best way to employ EWS.

KEYWORDS: knowledge, attitude, early warning score, registered nurses, haemodialysis services, haemodialysis patients

INTRODUCTION

Patients on haemodialysis treatment are growing in numbers during today's complex healthcare environment. An Early Warning Score (EWS) is used at the hospitals[5] to detect any pattern of deterioration in patients during haemodialysis. EWS is a vital sign chart, and scoring that can identify abrupt or drastic patient changes so that suitable medical care can be immediately served.

According to De Meester K 2013[4], if the seriously ill patient is deteriorating and not identified in the early stage, the patient's condition may get worse. It may lead to adverse outcomes such as unexpected admission into intensive care units (ICU) for close monitoring, cardiac arrest and even death. Accurate tracking, recording and reviewing of vital signs are essential to patient care, and this is an example of a routine nursing procedure undertaken by nurses. Although patient observation is known as a routine nursing procedure, in nursing clinical practice, vital signs are considered the most common indication nurses use when they find something is not right in a patient's condition.

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Nurses play a crucial role in the use of EWS for haemodialysis services in hospitals. Georgaka D 2012[6] mentioned that in the uncertain conditions of patients during haemodialysis, nurses are required to be alert and prepared for any emergency action or response at all times. Failure to be quick in providing appropriate treatment for deteriorating patients can lead to severe complications or even death. Using EWS requires specific knowledge and skills among the nurses Langkjaer CS et al. 2021[8]. In Malaysia, nurses who work in haemodialysis services must possess a license and be registered legally to handle EWS. Other than that, the attitudes of these registered nurses are also crucial in ensuring haemodialysis services are provided positively. Private hospitals in Malaysia were selected for this study because the researcher is working at a private hospital, and therefore, it is relevant to the research topic.

The main goal of this study is to identify and assess the level of knowledge and attitudes of registered nurses in detecting deterioration among patients in haemodialysis services at KPJ Group of Hospitals.

METHODOLOGY

Study Design

The study was carried out using a quantitative approach, and a cross-sectional study was utilized.

Population and Sample

The respondents were 157 registered nurses working at haemodialysis services centres from five selected

KPJ Group of Hospitals and were utilizing EWS. The sample size was calculated using a published formula based on 260 haemodialysis registered nurses. Thus, if 50% of the population used EWS, with the margin error being 5% and the confidence level at 95%, the result indicated the sample size was 157. The sampling technique was probability sampling, where the average values for 260 registered nurses were narrowed down into a smaller sample.

Instrument

Self-report or self-administered with closed and open-ended questionnaires was used in this study. The questionnaire consisted of two parts. Part A involved seven demographic questions on gender, age, working area, years of service, years of experience, current position and level of education. Part B of the questionnaire consisted of 10 items to test the knowledge of the registered nurses on EWS. It also included 19 items to assess the attitudes of these nurses towards EWS. Likert scale was used to display strongly disagree, disagree, neutral, agree and strongly agree.

The reliability of this study was ensured by performing the Cronbach Test. 10% of the survey during the pilot study were randomly surveyed again after two weeks in two different departments, which had been excluded from this study. To determine the validity of the survey, four experts who were nurse educators, a haemodialysis unit manager, a nurse manager and an infection control nurse from the private hospitals were consulted.

Data Analysis

Descriptive analysis was used for all variables collected. Statistical analysis was performed using the Social Packages for the Social Sciences (SPSS) software version 20. The framework was developed according to the specific objectives of the study. A correlation coefficient test was used to estimate the closeness association of the two variables to determine the connection between the level of knowledge and attitudes. A p-value of <0.05 was considered a significant level finding.

Ethical Statement

The Research Management Centre approved permission to conduct the study, Kumpulan Perubatan Johor University College (KPJUC), Malaysia, and ethical approval was given before the data collection was conducted.

RESULTS

The results of the descriptive analysis are related to several characteristics extracted from the respondents, as shown in **Table I**. The characteristics of the respondents explored in this study include those related to race, level of education, years of working experience and speciality.

The years of working experience are organized into less than one year, 1-3 years, 3-5 years, 5-10 years, 10-15 years and over 15 years. The highest percentage (n=48, 30.6%) is 5-10 years, and the lowest (n=5, 3.2%) is less than one year. Most respondents are Malays (n=113, 72%) and the least are Indians (n=9, 5.7%). Regarding education level, the highest percentage is Post Basic (n=69, 43.9%) and only 1 (0.6%) respondent has a nursing certificate. The second highest is Diploma (n=60, 38.2%). Most of the respondents attended Post Basic Renal Nursing (n=77, 49%), 52 respondents (33.1%) have not attended Post Basic Renal training, and only one respondent is doing Post Basic Renal Nursing (0.6%).

Table I: Demographic Data of Respondents

Characteristics	f(n)	%
Race		
Chinese	10	6.4
Malay	113	72.0
Indian	9	5.7
For others, please specify	25	15.9
Education		
Certificate	1	0.6
Diploma	60	38.2
Degree	20	12.7
Master	2	1.3
Post Basic, please specify	69	43.9
For others, please specify	1	0.6
Years of working experience		
Less than 1 year	5	3.2
1-3 years	21	13.4
3-5 years	12	7.6
5-10 years	48	30.6
10-15 years	42	26.8
More than 15 years	29	18.5
Specialty		
Post Basic in Renal Nursing	77	49.0
Not attended Renal Post Basic	52	33.1
Currently, while doing Post Basic Renal Nursing	1	0.6

Most respondents scored high in knowledge questions (n=131, 83.4%), and 26 respondents (16.6%) stated they did not understand the EWS chart well, as shown in **Table II;** this has shown that most of the respondents are knowledgeable about EWS when handling haemodialysis patients.

Table II: Knowledge Data of Respondents

Characteristics	f(n)	%
Do you understand about the EWS chart?		
Yes	131	83.4%
No	26	16.6%

For attitudes items, the researcher used the mean score as a reference, where respondents with scores of less than the mean score were categorized as poor, and those above the mean score were categorized as

good. The frequency of respondents who had scored above the mean was 131. On the other hand, respondents who had scored a lower score than the mean were 26 registered nurses. Based on the results, more than half of the respondents (73%) achieved more than the mean score of 0.73% with a standard deviation of 0.45, which indicates a good attitude towards EWS, as shown in **Table III**.

Table III: Attitudes Data of Respondents

Characteristics	f(n)	%
Attitude level		
Mean		0.73
Standard deviation		0.45

DISCUSSION

EWS is among the suitable systems for identifying and giving responses within the shortest time possible[7]. The EWS chart has several advantages in monitoring potential deterioration during haemodialysis treatment. Its advantages are its simplicity and standardized usage, meaning healthcare professionals can quickly adopt it. However, EWS has its limitations too. According to studies by the Royal College of Physicians[9], the EWS chart is not a preventive measure or tool. It is not suitable for addressing all types of patients. Nevertheless, it is one of the essential tools in providing haemodialysis services. Patients identified through an EWS chart can be appropriately assessed for further assessment.

A similar study conducted at a teaching hospital in Malaysia supports the idea that EWS has improved the quality of nursing services for haemodialysis patients at the hospital. According to Anati L 2021[1], there is an association between the area of practice and the attitudes and practices of the nurses in assessing patients. It is significant among registered nurses, as knowledge and attitudes are interconnected.

The data analysis shows that registered nurses who work at haemodialysis services at KPJ Group of Hospitals are well-informed about EWS. Most respondents are conversant with EWS and have gone for specific training, proving that knowledge about EWS is essential for nurses in detecting deterioration among haemodialysis patients. One of the questions in the survey, "*How much do you understand about the EWS chart?*" has been responded to positively by all the respondents, which further determines the understanding and level of knowledge of the registered nurses towards EWS; this can be seen in our data, where 131 out of 157 registered nurses have agreed that they know the usage of EWS. Based on the results, the nurses have acknowledged that EWS is essential for detecting all possible changes in patient's conditions, including those requiring urgent intervention. Therefore, it can be seen that with sufficient knowledge, registered nurses can effectively employ EWS in the provision of haemodialysis services.

The findings have also illustrated that attitudes affect how these nurses treat their patients. In a study, most nurses perceived themselves to have a good attitude towards EWS[1].

Attitude is essential in providing care towards patients, especially for the nurses. Another study at a private hospital in Singapore found that a positive attitude is a strong impetus for recommending and implementing EWS at the hospitals Xiong Y 2022[10]. Haemodialysis is a procedure that removes waste and extra fluid from the blood of individuals suffering from renal failure. Patients are subject to problems such as hypotension and hypertension during the procedure. As a result, registered nurses may encounter several challenges while dealing with such patients. One apparent difficulty is time limits. Haemodialysis is a time-consuming operation that might last for many hours. Nurses must watch numerous patients at the same time. They may also need to attend to other patients with varying health issues, making giving each patient appropriate care complex. With a positive attitude, the nurses can ensure that patients receive the highest level of positive care during haemodialysis procedures. In addition, with appropriate monitoring strategies and systematic delegation of tasks, the nurses are guaranteed to display positive attitudes when dealing with haemodialysis patients.

The findings have shown that private hospitals should offer their registered nurses more training on the relevance of EWS so that their knowledge will constantly be updated. Nurses and medical practitioners who are well-informed of EWS should be employed more. In addition, incentives like promotions should also be considered as motivations for registered nurses to upgrade their knowledge of EWS and enhance their positive attitudes when attending to their patients. Handling EWS involves teamwork; therefore, the nurses should work together to detect the deterioration of patients during haemodialysis.

CONCLUSION

This study has two apparent limitations. Firstly, the sample size is a limitation where it was difficult to gather the names of the registered nurses at the private hospitals. There were too many of them, and to get those who were suitable and willing to become respondents amidst their heavy workload was quite a challenge. Secondly, obtaining approval from the Chief Nursing Officers of the selected private hospitals was also tricky. They were generally occupied with internal and external meetings, amongst other work commitments as the top management. It was a struggle to get even one approval because time was tight. The study shows that a significant portion of registered nurses in haemodialysis services at KPJ Group of Hospitals possess a relatively strong understanding of EWS, proving that the nurses know how to fully utilize EWS to detect deteriorating

patients. The number of years of experience handling such patients has resulted in positive attitudes among registered nurses. Overall, the knowledge and attitudes of the registered nurses while using EWS in detecting deteriorating patients in haemodialysis services at KPJ Group of Hospitals are directly linked and related to one another.

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AUTHOR CONTRIBUTION

Munianday N: Article writing, data collection, analysis and research development.
Ahmad AB: Conceived the presented idea, oversaw the article writing, data collection, analysis, and research development, verified the analytical methods, supervised the findings of this research, and final approved the version to be published.
Yusof P: Conceived the presented idea, oversaw the article writing, data collection, analysis, and research development, verified the analytical methods, supervised the findings of this research, and final approved the version to be published.

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