



A DESCRIPTIVE STUDY TO ASSESS THE KNOWLEDGE, ATTITUDE, AND PERCEPTION OF STAFF NURSES REGARDING THE MODIFIED EARLY WARNING SIGN (MEWS)

Mizrab Chaudhary

Assistant Professor, RN, BSN, MSN (Medical Surgical Nursing), College of Nursing, CMC & Hospital, Ludhiana-141008, India

Sangeeta Nichols

Associate Professor, RN, Post Basic BSN, MSN (Community Health Nursing), College of Nursing, CMC & Hospital, Ludhiana-141008, India

ABSTRACT The Modified Early Warning Sign (MEWS) is a standardized bedside tool used for the early identification of clinical deterioration and timely intervention, thereby improving patient safety. This descriptive study was conducted to assess the knowledge, attitude, and perception of Staff Nurses regarding MEWS and to determine their association with selected demographic and professional variables. A total of 254 registered Staff Nurses from Christian Medical College Hospital, Ludhiana, Punjab, were recruited using convenience sampling. Data were collected through a validated structured electronic questionnaire comprising demographic and professional characteristics and 10 items each on knowledge, attitude, and perception regarding MEWS. Descriptive and inferential statistics, including Welch's t-test, one-way ANOVA, Chi-square test, Fisher's exact test, and Monte Carlo p-values, were used for data analysis, with statistical significance set at $p < 0.05$. The mean knowledge, attitude, and perception scores were 8.11 ± 1.52 , 6.47 ± 2.11 , and 7.67 ± 2.13 , respectively, with an overall mean KAP score of 22.26 ± 4.79 . Adequate knowledge was observed among 68.1% of nurses, 59.4% demonstrated good perception, while 42.9% exhibited a neutral attitude toward MEWS. Significant associations were found between selected demographic and professional variables and the knowledge, attitude, and perception domains, particularly age, gender, training institute, years of experience, and previous in-service education. The findings indicate that Staff Nurses possessed adequate knowledge and favourable perception regarding MEWS; however, improvement is needed in attitude-related domains to strengthen confidence and consistency in its clinical application. Regular competency-based educational programmes and reinforcement of MEWS protocols are recommended to enhance its effective utilization and promote early recognition of patient deterioration.

KEYWORDS : Modified Early Warning Sign (MEWS), Nurses, Knowledge, Attitude, Perception, Patient safety.

INTRODUCTION

Early recognition of clinical deterioration is a fundamental component of safe and effective patient care. Delays in identifying physiological deterioration can result in adverse outcomes, including cardiac arrest, unplanned intensive care unit (ICU) admissions, prolonged hospital stay, and increased mortality. The Modified Early Warning Sign (MEWS) is a standardized bedside assessment tool that enables healthcare professionals to detect early signs of patient deterioration using routinely monitored physiological parameters, thereby facilitating timely intervention and improving patient outcomes.

Staff Nurses are at the forefront of patient monitoring and play a crucial role in the successful implementation of MEWS. Their ability to accurately assess vital signs, calculate MEWS scores, interpret patient conditions, and promptly escalate care is essential for preventing clinical deterioration. Consequently, nurses' knowledge, attitude, and perception regarding MEWS have a direct influence on its effective utilization in clinical practice.

Need of the Study

Early recognition of clinical deterioration is a fundamental component of safe and effective patient care. Delays in identifying physiological deterioration often result in adverse outcomes such as cardiac arrest, unplanned intensive care unit (ICU) admissions, prolonged hospital stay, and increased mortality. To address this challenge, Early Warning Sign (EWS) systems, particularly the Modified Early Warning Sign (MEWS), have been developed as standardized bedside tools to assist healthcare professionals in detecting early signs of patient deterioration.

Kyriacos et al. (2011), in a comprehensive review of early warning scoring systems, found that nurses are central to the successful application of MEWS because they are responsible for assessing vital signs, calculating scores, and initiating escalation of care. The review highlighted that inadequate knowledge, insufficient training, and inconsistency in interpreting MEWS scores remain major barriers to effective utilization. The authors recommended regular educational programs to improve nurses' competence and confidence in using early warning systems. [1]

Ludikuize et al. (2012) investigated the measurement of vital signs and the implementation of MEWS in hospital wards. Their findings indicated that although nurses routinely recorded physiological parameters, incomplete assessment and inaccurate interpretation of abnormal findings often delayed recognition of patient deterioration. The study further demonstrated that adherence to MEWS protocols improved significantly after structured educational interventions,

emphasizing the importance of continuous professional training. [2]

Massey et al. (2017) highlighted that educational interventions significantly improved nurses' knowledge, confidence, and compliance with early warning scoring systems. The authors emphasized that regular competency-based training and reinforcement are essential to ensure accurate assessment and timely escalation of deteriorating patients. [3]

Jensen et al. (2018) reported that nurses generally expressed positive attitudes toward MEWS, recognizing its usefulness in supporting clinical judgment and facilitating communication among multidisciplinary healthcare teams. Nevertheless, the study identified several challenges, including increased workload, limited practical training, uncertainty regarding escalation protocols, and varying levels of confidence in interpreting scores. These factors influenced nurses' perceptions and affected consistent utilization of the tool in clinical practice. [4]

Based on the available evidence, it is evident that nurses' knowledge, attitude, and perception directly influence the successful implementation of the Modified Early Warning Sign. Identifying existing knowledge deficits and understanding nurses' perceptions will help design targeted educational programs, strengthen clinical competencies, and promote effective utilization of MEWS in hospital settings. Therefore, the present pre-experimental study is undertaken to assess the knowledge, attitude, and perception of nurses regarding the Modified Early Warning Sign (MEWS), with the ultimate goal of enhancing patient safety through early recognition and timely management of clinical deterioration.

Research Problem

"A Descriptive Study to Assess the Knowledge, Attitude, and Perception of Staff Nurses Regarding the Modified Early Warning Sign (MEWS)"

Aim of the Study

To assess the knowledge, attitude, and perception of Staff Nurses regarding the Modified Early Warning Sign (MEWS).

Research Objectives

1. To assess the level of knowledge of Staff Nurses regarding the Modified Early Warning Sign (MEWS).
2. To assess the attitude of Staff Nurses towards the Modified Early Warning Sign (MEWS).
3. To assess the perception of Staff Nurses regarding the Modified Early Warning Sign (MEWS).

4. To determine the association between the knowledge, attitude, and perception of Staff Nurses regarding MEWS and selected demographic and professional variables.

RESEARCH METHODOLOGY

Design

A Descriptive study was conducted to assess Staff Nurses' knowledge, attitude, and perception regarding the Modified Early Warning Sign (MEWS).

Setting and participants

The study was conducted at Christian Medical College Hospital, Ludhiana, Punjab, India, a tertiary care teaching hospital. A total of 254 registered Staff Nurses were recruited using convenience sampling. Staff Nurses who provided informed consent and were available during the data collection period were included. Student nurses, nursing interns, Staff Nurses working in peripheral areas, and those on leave were excluded.

Data collection

Data were collected using a structured questionnaire comprising four sections: demographic and professional characteristics, knowledge (10 items), attitude (10 items), and perception (10 items) regarding MEWS. Each domain had a maximum score of 10, with higher scores indicating better knowledge, a more positive attitude, and a more favourable perception. Content validity was established by an expert panel, and internal consistency was assessed using KR-20 for the knowledge questionnaire and Cronbach's alpha for the attitude and perception questionnaires.

Following institutional ethical approval and administrative permission, eligible participants completed the questionnaire electronically using Google Forms after providing informed consent. Participation was voluntary, and confidentiality and anonymity were maintained throughout the study.

19 Plan for Data Analysis

The collected data were coded, entered into google sheet. The following statistical methods were used:

Descriptive Statistics

- Frequency
- Percentage
- Mean
- Standard deviation

These statistics were used to describe demographic variables and assess the knowledge, attitude, and perception of Staff Nurses regarding MEWS.

Inferential Statistics

- Welch t-test was used for variables with two categories.
- One-way ANOVA was used for variables with more than two categories.
- Associations between categorical knowledge, attitude, and perception (KAP) levels and selected demographic and professional variables were assessed using the Chi-square test.
- Fisher's exact test or Monte Carlo p-value was used when expected cell counts were small.
- For the variable working area, categories with small sample sizes were combined into "Other specialized areas" for inferential analysis to improve statistical stability.
- A p-value of < 0.05 was considered statistically significant.

Data Analysis

A total of 254 Staff Nurses were included in the analysis. The reconstructed item scoring matched the Google Form total score for 254/254 responses. Values are presented as n (%) unless otherwise specified.

Table 1. Participant demographic and professional characteristics.

Characteristic	Category	n (%)
Age	21-30	76 (29.9)
	31-40	73 (28.7)
	41-50	66 (26.0)
	>50	39 (15.4)
Gender	Female	213 (83.9)
	Male	41 (16.1)
Professional qualification	GNM	180 (70.9)

Training institute	BSc Nursing	47 (18.5)
	Post Basic Nursing	27 (10.6)
	CMC & Hospital	162 (63.8)
Years of experience	Other Institution	92 (36.2)
	<1	30 (11.8)
	1-5	58 (22.8)
	6-10	21 (8.3)
	>10	145 (57.1)
Working area	Medical/Surgical ward	177 (69.7)
	ICU	59 (23.2)
	CTVS	10 (3.9)
	Recovery Room	7 (2.8)
	SHDU	1 (0.4)
Previous in-service education attended on MEWS	Yes	197 (77.6)
	No	57 (22.4)

Table 2. Summary of knowledge, attitude, perception and overall KAP scores.

Domain	Maximum score	Mean $\pm$ SD	Median (Q1 -Q3)	Minimum -Maximum
Knowledge	10	8.11 $\pm$ 1.52	8 (7-9)	1-10
Attitude	10	6.47 $\pm$ 2.11	6 (5-9)	2-10
Perception	10	7.67 $\pm$ 2.13	8 (6-10)	1-10
Overall KAP	30	22.26 $\pm$ 4.79	23 (19-26)	8-30

Table 3. Distribution of knowledge, attitude and perception levels.

Domain	Level	n (%)
Knowledge	Adequate knowledge	173 (68.1)
	Moderate knowledge	75 (29.5)
	Inadequate knowledge	6 (2.4)
Attitude	Positive attitude	92 (36.2)
	Neutral attitude	109 (42.9)
	Negative attitude	53 (20.9)
Perception	Good perception	151 (59.4)
	Moderate perception	81 (31.9)
	Poor perception	22 (8.7)

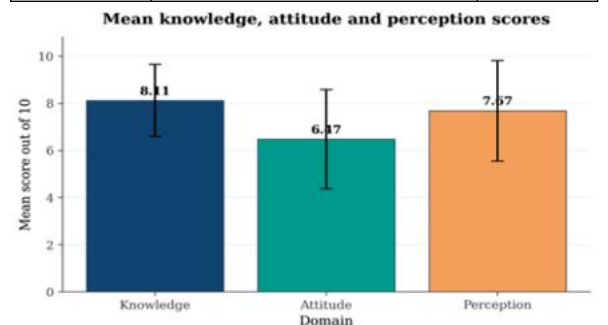


Figure 1. Mean knowledge, attitude and perception scores with standard deviation.

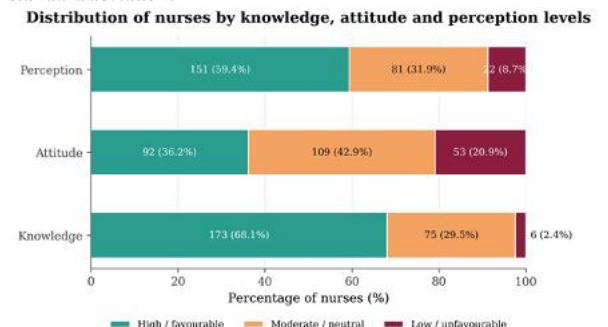


Figure 2. Distribution of Staff Nurses by knowledge, attitude and perception levels..

Table 5. Comparison of mean KAP scores by selected demographic and professional variables.

Variable	Outcome	Test	Statistic	p-value	Inference
Age	Knowledge	One-way ANOVA	4.723	0.003	Significant
Age	Attitude	One-way ANOVA	6.881	<0.001	Significant

Age	Perception	One-way ANOVA	5.324	0.001	Significant
Age	Overall KAP	One-way ANOVA	8.154	<0.001	Significant
Gender	Knowledge	Welch t-test	1.826	0.074	Not significant
Gender	Attitude	Welch t-test	5.327	<0.001	Significant
Gender	Perception	Welch t-test	2.610	0.012	Significant
Gender	Overall KAP	Welch t-test	3.958	<0.001	Significant
Professional qualification	Knowledge	One-way ANOVA	0.313	0.731	Not significant
Professional qualification	Attitude	One-way ANOVA	1.143	0.321	Not significant
Professional qualification	Perception	One-way ANOVA	0.532	0.588	Not significant
Professional qualification	Overall KAP	One-way ANOVA	0.917	0.401	Not significant
Training institute	Knowledge	Welch t-test	1.041	0.299	Not significant
Training institute	Attitude	Welch t-test	2.788	0.006	Significant
Training institute	Perception	Welch t-test	3.205	0.002	Significant
Training institute	Overall KAP	Welch t-test	2.934	0.004	Significant
Years of experience	Knowledge	One-way ANOVA	3.171	0.025	Significant
Years of experience	Attitude	One-way ANOVA	2.118	0.098	Not significant
Years of experience	Perception	One-way ANOVA	5.297	0.001	Significant
Years of experience	Overall KAP	One-way ANOVA	4.676	0.003	Significant
Working area	Knowledge	One-way ANOVA	0.660	0.518	Not significant
Working area	Attitude	One-way ANOVA	3.313	0.038	Significant
Working area	Perception	One-way ANOVA	2.676	0.071	Not significant
Working area	Overall KAP	One-way ANOVA	3.105	0.047	Significant
Previous in-service education attended on MEWS	Knowledge	Welch t-test	0.148	0.882	Not significant
Previous in-service education attended on MEWS	Attitude	Welch t-test	0.995	0.322	Not significant
Previous in-service education attended on MEWS	Perception	Welch t-test	2.082	0.040	Significant
Previous in-service education attended on MEWS	Overall KAP	Welch t-test	1.345	0.182	Not significant

Table 6. Association between selected variables and KAP levels.

Variable	Outcome level	Test	p-value	Inference
Age	Knowledge	Chi-square test with Monte Carlo p-value	0.038	Significant
Age	Attitude	Chi-square test	0.003	Significant
Age	Perception	Chi-square test with Monte Carlo p-value	0.029	Significant
Gender	Knowledge	Chi-square test with Monte Carlo p-value	0.432	Not significant
Gender	Attitude	Chi-square test	<0.001	Significant
Gender	Perception	Chi-square test with Monte Carlo p-value	0.117	Not significant
Professional qualification	Knowledge	Chi-square test with Monte Carlo p-value	0.562	Not significant
Professional qualification	Attitude	Chi-square test	0.024	Significant
Professional qualification	Perception	Chi-square test with Monte Carlo p-value	0.858	Not significant

Training institute	Knowledge	Chi-square test with Monte Carlo p-value	0.513	Not significant
Training institute	Attitude	Chi-square test	0.023	Significant
Training institute	Perception	Chi-square test	0.001	Significant
Years of experience	Knowledge	Chi-square test with Monte Carlo p-value	0.188	Not significant
Years of experience	Attitude	Chi-square test with Monte Carlo p-value	0.094	Not significant
Years of experience	Perception	Chi-square test with Monte Carlo p-value	0.030	Significant
Working area	Knowledge	Chi-square test with Monte Carlo p-value	0.646	Not significant
Working area	Attitude	Chi-square test with Monte Carlo p-value	0.434	Not significant
Working area	Perception	Chi-square test with Monte Carlo p-value	0.723	Not significant
Previous in-service education attended on MEWS	Knowledge	Chi-square test with Monte Carlo p-value	1.000	Not significant
Previous in-service education attended on MEWS	Attitude	Chi-square test	0.513	Not significant
Previous in-service education attended on MEWS	Perception	Chi-square test with Monte Carlo p-value	0.043	Significant

The study included 254 staff nurses. Most participants were female (213 (83.9%)), had GNM qualification (180 (70.9%)), were trained at CMC & Hospital (162 (63.8%)), and had more than 10 years of experience (145 (57.1)).

The mean knowledge, attitude and perception scores were 8.11 ± 1.52 , 6.47 ± 2.11 , and 7.67 ± 2.13 , respectively. The mean overall KAP score was 22.26 ± 4.79 out of 30.

Adequate knowledge was observed in 173 Staff Nurses (68.1%). The predominant attitude level was neutral attitude, observed in 109 Staff Nurses (42.9%), while good perception was observed in 151 Staff Nurses (59.4%).

Item-wise results showed generally high correct/appropriate response rates; however, comparatively lower responses were observed for selected items related to illness-severity interpretation, time required for escalation communication, reliance on MEWS by less experienced Staff Nurses, fear of criticism during escalation, and first response to sudden increase in heart rate.

Significant mean score differences were observed for age across all score domains, gender for attitude, perception and overall KAP, training institute for attitude, perception and overall KAP, years of experience for knowledge, perception and overall KAP, and previous MEWS in-service education for perception score only. Professional qualification and working area did not show significant differences in mean score comparisons.

Categorical level analysis showed significant associations of age with knowledge, attitude and perception levels; gender with attitude level; professional qualification with attitude level; training institute with attitude and perception levels; years of experience with perception level; and previous MEWS in-service education with perception level. Overall, the results suggest favourable knowledge and perception regarding MEWS but a need to strengthen attitude-related domains, escalation confidence and structured application of MEWS in bedside decision-making.

REFERENCES

- Kyriacos, U., Jelsma, J., James, M., & Jordan, S. (2011). Early warning scoring systems versus standard observations charts for wards in South Africa: A cluster randomized controlled trial. *Trials*, 12, 18.
- Ludikhuijze, J., Smorenburg, S. M., de Rooij, S. E., & de Jonge, E. (2012). Identification of deteriorating patients on general wards: measurement of vital parameters and potential effectiveness of the Modified Early Warning Sign. *Journal of Critical Care*, 27(4), 424.e7–424.e13.
- Massey, D., Chaboyer, W., & Anderson, V. (2017). What factors influence ward nurses' recognition of and response to patient deterioration? An integrative review. *Journal of Clinical Nursing*, 26(23–24), 4186–4201.
- Jensen, J. K., Skår, R., & Tveit, B. (2018). Hospital nurses' professional accountability while using Early Warning Sign systems: A qualitative study. *Journal of Clinical Nursing*, 28(1–2), 169–178.