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A Cross-Sectional Study to Analyze the Nurses Knowledge and Attitude Towards Application of Artificial Intelligence in Nursing Practice Among Critical Care Nurses in Tertiary Care Hospitalat Grh, Madurai

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ABSTRACT

A cross-sectional study was conducted to assess the knowledge and attitude towards application of Artificial Intelligence (AI) in nursing practice among critical care nurses at a tertiary care hospital in Madurai. The objectives were to assess knowledge, determine attitude, correlate knowledge with attitude, and to associate with their socio-demographic variables and the hypotheses was **H_1:**There is statistical significant correlation between the level of knowledge and attitude towards application of artificial intelligence in nursing practice **H_2:** There is statistically significant association between the level of knowledge and attitude regarding application of artificial intelligence in nursing practice with their selected demographic variables of critical care nurses A quantitative, descriptive non-experimental research design was adopted. A total of 50 critical care nurses were selected using non-probability consecutive sampling technique. Data were collected using a structured knowledge questionnaire and attitude scale.Findings revealed that 52% had average knowledge, 44% had good knowledge, and 4% had poor knowledge. Regarding attitude, 66% showed positive attitude, 22% neutral, 8% highly positive, and 4% negative attitude. There was a weak positive correlation between knowledge and attitude (r = 0.064). Significant association was found between gender and knowledge, and training and attitude.The study concludes that nurses have moderate knowledge but positive attitude towards AI. Structured training programs are essential to improve knowledge and effective utilization of AI in nursing practice.

Keywords: Artificial Intelligence, Nursing Practice, Knowledge, Attitude, Critical Care Nurses

INTRODUCTION

The healthcare sector is continuously evolving due to rapid advancements in science and digital technology. One of the most influential technological developments in recent years is Artificial Intelligence (AI). Artificial Intelligence refers to the capability of computer systems to imitate human intelligence by performing tasks such as learning, analyzing data, making predictions, and supporting

decision-making. In healthcare, Al has been increasingly applied to enhance accuracy, efficiency, and quality of patient care,

Nursing professionals play a crucial role in the delivery of healthcare services and are often the primary users of healthcare technologies. With the introduction of artificial intelligence into clinical settings, the scope of nursing practice is expanding beyond traditional roles. Al is now being used in areas such as patient monitoring systems, electronic health records, clinical decision support, medication management, risk prediction, and early warning systems. These technological applications have the potential to support nurses in providing safe, timely, and evidence-based care.

Critical care units represent highly specialized and demanding clinical environments where patients require constant observation, rapid interventions, and advanced life-support measures Critical care nurses are responsible for managing complex patient conditions and responding quickly to changes in patients' health status. Artificial intelligence-based technologies, such as intelligent monitoring devices and predictive algorithms, can assist nurses in identifying early signs of deterioration and prioritizing nursing interventions effectively.

Although artificial intelligence offers numerous benefits to nursing practice, its successful implementation depends largely on the knowledge and understanding of nurses who use these systems. Inadequate knowledge regarding Al concepts and applications may lead to improper utilization, reduced confidence, or resistance to technology. Therefore, it is essential to assess the

OBJECTIVES

- To assess the level of knowledge regarding AI in nursing practice
- To determine the level of attitude towards AI
- To correlate knowledge and attitude
- To associate knowledge and attitude with socio-demographic variables

HYPOTHESES

- **H_1:** There is statistically significant correlation between the level of knowledge and attitude towards application of artificial intelligence in nursing practice.
- **H_2:** There is statistically significant association between the level of knowledge and attitude regarding application of artificial intelligence in nursing practice with their selected demographic variables of critical care nurses.

METHODOLOGY

Research Approach: Quantitative,Design: Descriptive non-experimental:Government Rajaji Hospital (GRH), Madurai.Population: Critical care nurses.Sample Size: 50.Sampling Technique: Non-probability consecutive sampling.

TOOL

Section A: Demographic variables
Section B: Knowledge questionnaire (12 items)
Section C: Attitude scale (Likert scale)

SCORING

Knowledge:

Poor (0–4)
Average (5–8)
Good (9–12)

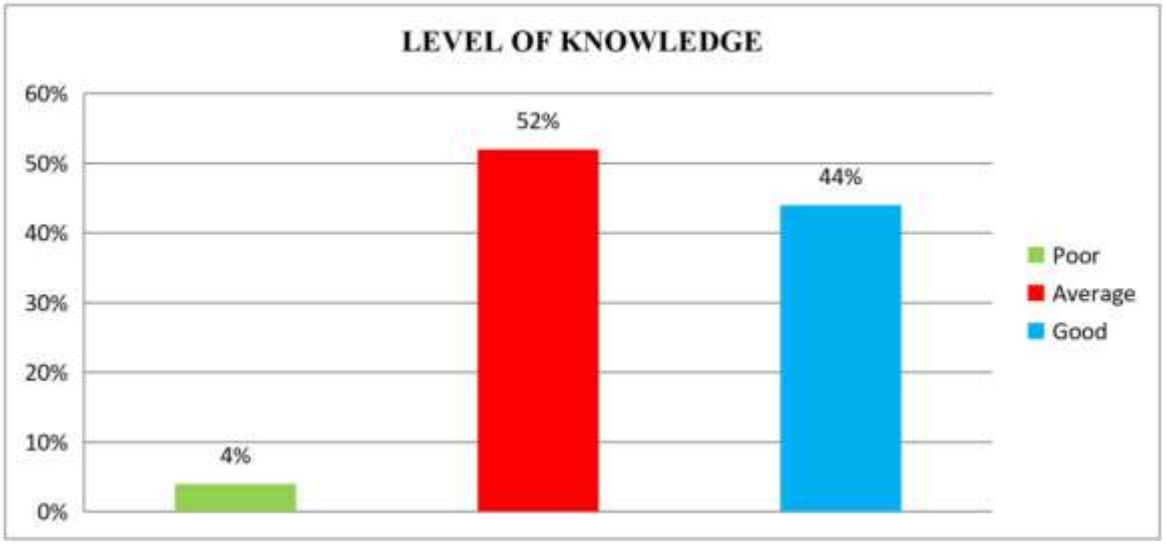
DATA ANALYSIS

TABLE- 1:Frequency and Percentage distribution of critical care nurses according to their socio demographic variables.

n = 50

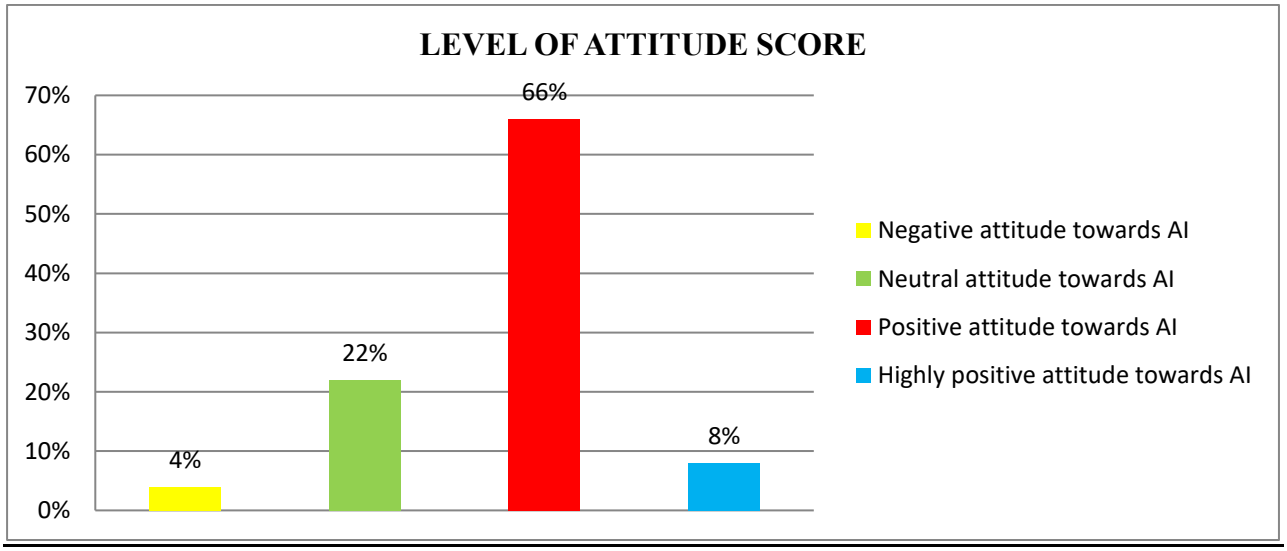
Demographic Variables	Frequency (N)	Percentage (%)
Age		
21-30 yrs	5	10
31-40 yrs	17	34
41-50 yrs	24	48
Above 50 yrs	4	8
Gender		
Male	3	6
Female	47	94
Educational Qualification		
GNM	25	50
B.Sc Nursing	15	30
M.Sc Nursing	9	18
Others	1	2
Years of clinical experience		
<1 yr	3	6
1-5 yrs	11	22
6-10 yrs	21	42
>10 yrs	15	30
Working area		
ICU	38	76
Medical Ward	-	0
Surgical Ward	-	0
Emergency	12	24
Others	-	0
Attended any training		
Yes	7	14
No	43	86

Figure1: Frequency and percentage ,mean and standard deviation distribution of level of knowledge towards application of artificial intelligence in nursing practice among critical care nurses



The above bar diagram reveals that majority of the subjects 26 (52%) were having average level of knowledge,22(44%) were having good knowledge and 2(4%) were having poor knowledge regarding application of artificial intelligence. The mean score with standard deviation of knowledge regarding application of artificial intelligence in nursing practice is 7.78 ±2.03.

Figure2: Distribution of participants according to their level of attitude regarding application of artificial intelligence in nursing practice among critical care nurses



The above bar diagram reveals that, majority of the subjects 33 (66%) were having positive attitude towards AI,11(22%) were having neutral attitude towards AI ,4(8%)were having highly positive attitude towards AI and 2(4%) were having negative attitude towards AI.The mean score with standard deviation of attitude regarding application of artificial intelligence in nursing practice is 39.96 ±7.24.

Table 2: Association between the level of knowledge towards application of artificial intelligence in nursing practice among critical care nurses with their selected socio-demographic variables
N=50

S. No	Socio-demographic variables	LEVEL OF KNOWLEDGE						Chi - square(χ^2)	Degree of freedom	'p' value
		Poor		Average		Good				
		f	%	f	%	F	%			
1	**Age**							11.163	6	0.083 NS
	21-30 yrs	1	20	3	60	1	20			
	31-40 yrs	0	0	8	47	9	53			
	41-50 yrs	0	0	14	58	10	42			
	Above 50 yrs	1	25	1	25	2	50			
2.	**Gender**							7.162	2	**0.027 S**
	male	1	33	1	33	1	34			
	female	1	2	25	53	21	45			
3	**Educational Qualification**							4.16	6	0.655 NS
	GNM	1	4	15	60	9	36			
	B.Sc Nursing	0	0	7	47	8	53			
	M.Sc Nursing	1	12	4	44	4	44			
	Others	0	0	0	0	1	100			
4.	**Years of clinical experience**							10.13	6	0.119 NS
	<1 yr	0	0	1	33	2	67			
	1-5 yrs	0	0	9	82	2	18			
	6-10 yrs	0	0	11	52	10	48			
	>10 yrs	0	0	7	50	7	50			
5.	**Working area**							1.271		0.995 NS
	ICU	1	3	19	50	18	47			
	Medical Ward	0	0	0	0	0	0			
	Surgical Ward	0	0	0	0	0	0			
	Emergency	1	8	7	58	4	34			
	Others	0	0	0	0	0	0			
6.	**Attended any training**							2.576	2	0.275 NS
	Yes	0	0	2	29	5	71			
	No	2	5	24	55	17	40			

***S – Significant *NS – Not significant**

The above table reveals that the association between the level of knowledge score and nurse's selected socio-demographic variables, there is significant association between the nurse's knowledge towards application of artificial intelligence in nursing practice and their selected socio-demographic variables.

Table 3: Association between the level of attitude towards application of artificial intelligence in nursing practice and their selected socio-demographic variables.

N=50

S.no	Socio-demographic variable	Attitude score				Frequency (N)	chi square (χ^2)	p value
		Negative	Neutral	Positive	Highly Positive			
1	**Age**							
	21-30 yrs	0	0	5	0	5	10.185	0.335 NS
	31-40 yrs	1	4	10	2	17		
	41-50 yrs	1	4	17	2	24		
	Above 50 yrs	0	3	1	0	4		
2	**Gender**						0.57	0.903
	Male	0	1	2	0	3		
	Female	2	10	31	4	47		
3	**Educational Qualification**							
	GNM	0	5	17	3	25	10.946	0.279 NS
	B.Sc Nursing	1	5	9	0	15		
	M.Sc Nursing	1	0	7	1	9		
	Others	0	1	0	0	1		
4	**Years of clinical experience**							
	<1 yr	0	1	2	0	3	6.356	0.703 NS
	1-5 yrs	1	2	8	0	11		
	6-10 yrs	0	3	15	3	21		
	>10 yrs	1	5	8	1	15		
5	**Working area**							
	ICU	1	7	26	4	38	3.067	0.995 NS
	Medical Ward	0	0	0	0	0		
	Surgical Ward	0	0	0	0	0		
	Emergency	1	4	7	0	12		
	Others	0	0	0	0	0		
6	**Attended any training**						**8.346**	**0.039 S**
	Yes	1	0	4	2	7		
	No	1	11	29	2	43		

***S – Significant** ***NS – Not significant**

The above table reveals that the association between the level of attitude score and nurse's selected socio-demographic variables, there is significant association between the nurse's attitude towards application of artificial intelligence in nursing practice and their selected socio-demographic variables.

FINDINGS

- Majority of the nurses 26 (52%) had average knowledge, 22 (44%) had good knowledge, and 2 (4%) had poor knowledge regarding AI in nursing practice
- Regarding attitude, 33 (66%) had positive attitude, 11 (22%) had neutral attitude, 4 (8%) had highly positive attitude, and 2 (4%) had negative attitude towards AI
- The mean knowledge score was 7.78 ± 2.03, and the mean attitude score was 39.96 ± 7.21
- A weak positive correlation was found between knowledge and attitude ($r = 0.064$, $p = 0.656$)
- There was a significant association between gender and knowledge, and training and attitude

DISCUSSION

The findings of the study indicate that most of the nurses had moderate knowledge and positive attitude towards artificial intelligence.The majority (52%) having average knowledge suggests that nurses are aware of AI but lack in-depth understanding, possibly due to limited exposure and training. This finding is supported by previous studies where healthcare professionals showed moderate knowledge levels.Regarding attitude, most nurses (66%) demonstrated a positive attitude, indicating acceptance and readiness to adopt AI technologies in clinical practice. This may be due to perceived benefits such as reduced workload and improved patient care.The study also revealed a weak positive correlation between knowledge and attitude, indicating that as knowledge improves, attitude also tends to improve slightly.The significant association between training and attitude highlights that education plays a crucial role in improving nurses' acceptance of AI. Similarly, demographic variables like gender also showed association with knowledge.

CONCLUSION

Critical care nurses have moderate knowledge regarding artificial intelligence.Majority of nurses have a positive attitude towards AI in nursing practice.There is a weak positive relationship between knowledge and attitude.Training significantly influences nurses' attitude towards AI.Thus, although nurses are willing to adopt AI, lack of adequate knowledge and training remains a barrier for effective implementation..

IMPLICATIONS

Nursing Practice: Nurses should be provided with practical exposure to AI tools**.**AI can improve clinical decision-making and patient monitoring**.**Helps in reducing workload and improving efficiency

Nursing Education:AI should be included in undergraduate and postgraduate curriculum.

Students should receive hands-on training in AI technologies.Regular workshops and seminars should be conducted

Nursing Administration: Hospitals should organize in-service education programs**.**Develop policies for AI integration**.**Provide adequate infrastructure and resources

Nursing Research: Conduct more studies on AI applications in nursing**.**Compare trained vs untrained nurses**.**Study impact of AI on patient outcomes.

RECOMMENDATIONS

- Similar studies can be conducted with larger sample size
- Awareness programs using innovative teaching methods should be implemented
- Regular training programs on AI should be organized
- Comparative studies between different hospital settings can be done
- Educational interventions should be developed to improve knowledge and skills

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