SHORT COMMUNICATION

Nursing student's awareness, intention and perception towards the utilization of artificial intelligence (AI) in nursing practice

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Abstract

The cross-sectional, analytical study was conducted in nursing institutes of Khyber-Pakhtunkhwa and Islamabad, Pakistan, from December 2023 to March 2024 to evaluate undergraduate nursing students' awareness, intention and perception related to the integration of artificial intelligence in nursing practice. Of the 168 nursing students, awareness regarding AI was poor in 100 (59.1%) cases, intention was positive towards AI in 96 (56.9%) cases, and the perception of AI was poor in 88 (52.6%) cases. The intention to adopt artificial intelligence was positive. Nursing institutions should foster an environment friendly and supportive atmosphere of artificial intelligence to enhanced the students' perception.

Keywords: Artificial intelligence, Nursing practice, Undergraduate education.

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Introduction

Nursing is an art as well as a science, for science requires observation and experimentation that are applied inside nursing institutes as theories, evidence-based perception, and disease processes.[1] The ability to comprehend patients, communicate with them, and show love and compassion to those who are ill is a talent and a practice that is essential to being a nurse.[2] Artificial intelligence (AI) has the potential to completely change the nursing profession, and is already drastically changing healthcare. Research has demonstrated that AI is already having an impact on nursing practice, such as clinical care, nursing duties, and the interaction between nurses and patients.[3,4]

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Over the past 10 years, there has been a surge in the study and development of AI-based healthcare technologies, demonstrating the technology's great potential to raise the standard of nursing care.[5] Since its beginning, very little research has been done to apply AI in real-world settings beyond the proof-of-concept studies or laboratory tests, and even less has been done to assess how AI affects clinical outcomes.[6] AI must be included into the nursing sciences and the overall healthcare environment, particularly in nursing care, to satisfy the growing expectations related to nursing care. A detailed grasp of the attitudes and actions of nurses as end users towards the current and upcoming AI applications is necessary for the successful integration of AI into clinical practice. Furthermore, as nurses use technology and have direct interaction with patients, evaluating their present level of AI understanding is crucial to determining future training needs.[3]

The application of AI in Pakistan's healthcare system has been progressing steadily. In 2022, a draft policy pertaining to AI was released, demonstrating the government's determination to integrate AI into Pakistan's technological environment.[7] There are surprisingly few studies conducted in Pakistan on AI in healthcare despite the field's rapid expansion worldwide. The current study was planned to fill the gap in literature by determining the level of awareness and perception of AI among nursing students, and their intention towards the latter's utilization in professional settings.

Methods and Results

The cross-sectional, analytical study was conducted in nursing institutes of Khyber-Pukhtankhwa and Islamabad, Pakistan, from December 2023 to March 2024after approval from an ethical review committee of institute of nursing sciences Khyber Medical university. The sample was raised using stratified sampling technique. Those included were undergraduate nursing students enrolled in 4-year Bachelor of Science (BS) in Nursing programme at institutions registered with the Pakistan Nursing Council, while sample size was calculated using Raosoft sample size calculator[8] by using 95% confidence level and 5% margin of error. Students who were absent or not willing to participate were excluded. After taking written

Table-1: Demographic characteristics of the participants.

Characteristics	Frequency	Percentages
Gender		
Male	164	97.6%
Female	4	2.4%
Age		
Below 25 years	164	97.6%
26 to 35 years	4	2.4%
Marital status		
Single	147	87.5%
Married	21	12.5%
Semester		
1st	9	5.4%
2nd	52	31%
3rd	4	2.4%
4th	45	26.8%
6th	38	22.6%
8th	20	11.9%
School status		
Private	168	100%
Public	0	0%
	Good	**Poor**
Awareness	66 (40.1%)	100 (59.1%)
Intention	96 (56.9%)	72 (43.1%)
Perception	80 (47.4%)	88 (52.6%)

informed consent from the participants, their awareness, intention and practice related to was assessed using a valid and reliable questionnaire.[9] Data was analysed using SPSS 22. Independent t-tests and analysis of variance (ANNOVA) were used as appropriate, while linear regression was used to evaluate the association of demographic variables with attitudes, perceptions and practice related to AI. P<0.05 was considered significant.

Of the 168 subjects, 164(97.6%) were males, 164(97.6%) were aged <25 years, 147(87.5%) were single, 52(31%) were in the second semester of their 8-semester programme, and all 168(100%) belonged to private-sector institutions Awareness regarding AI was poor in 100 (59.1%) cases, intention was positive towards AI in (56.9%) cases, and the perception of AI was poor in (52.6%) cases (Table 1).

Gender, age and semester were significantly associated with awareness level (p<0.05), while there was no significant difference with respect to marital status (p>0.05). Intention and perception were significantly associated with gender, age, marital status and semester (p<0.05) (Table 2).

Discussion

The current study revealed that 100(59.1%) students had poor awareness of AI, with a majority incorrectly understanding its definition and common languages. This lack of awareness may be due to nursing informatics not being part of the curriculum, or not being adopted by most institutes and hospitals. Studies in Egypt and Saudi Arabia showed that 14.3% respondents were unaware of AI and feared that it would replace workers. Technicians work without face-to-face contact were the most impacted by AI applications.[9, 10]

The current study found that students generally had a positive intention (56.9%) towards AI, with 39.3% agreeing on its usefulness, diagnostic capability,

Table-2: Stratification of study variables with the level of awareness, intention and perception.

Categories	Awareness				Intention				Perception			
	Mean	SD	F	P-value	Mean	SD	F	P-value	Mean	SD	F	P-value
Gender												
Male	1.58	0.21	8.226	0.005	3.09	0.75	8.470	0.004	3.03	0.85	11.026	0.001
Female	2.00	0.00			4.16	0.00			3.20	0.00		
Age												
Below 25 years	1.60	0.22	8.913	0.003	3.12	0.77	8.934	0.003	3.02	0.85	10.316	0.002
26 to 35 years	1.50	0.00			3.00	0.00			3.60	0.00		
Marital status												
Single	1.61	0.22	0.617	0.433	3.17	0.69	25.507	0.000	3.04	0.88	6.672	0.011
Married	1.46	0.19			2.75	1.10			3.04	0.53		
Semester												
1st	1.52	0.26	4.433	0.001	3.53	0.35	5.248	0.000	3.20	0.30	16.224	0.000
2nd	1.63	0.22			3.24	0.73			3.07	0.75		
3rd	1.50	0.00			3.16	0.00			4.00	0.00		
4th	1.63	0.19			3.03	0.57			2.64	1.06		
6th	1.47	0.23			2.90	1.05			3.25	0.55		
8th	1.70	0.19			3.23	0.66			3.20	0.88		

SD: Standard deviation.

reliability, and stress reduction. However, 35.7% disagreed that AI could replace their jobs. The study also found that AI's efficacy in real-life work and mobile applications remained high, but human interaction with patients has remained crucial. The study found that the idea that AI could speed up healthcare processes and deliver high-quality data in real time was the most acceptable. This finding was consistent with previous studies done in India and Egypt.[10,11]

The current study found that 52.6% nursing students had a poor and 47.4% had a good intention to utilise AI in healthcare, with a mean score of 3.04±0.84. Studies in Saudi Arabia also showed a moderate perception of AI usage.[9, 10]

The current study has limitations owing to its cross-sectional design, which may have limited the generalisability of its findings.

Conclusion

The nursing students' awareness regarding AI was poor, while their intention to use it in clinical practice was moderate. The findings have practical importance for Pakistani nursing education. It is recommended that nursing institutes with the help of universities should arrange workshops and training programmes for nursing students and nurses to utilise AI in nursing practice.

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AUTHOR'S CONTRIBUTION:
SS: Concept and design.
NS: Supervision and review.
SK: Statistical analysis and data collection.
AS: Validation and drafting.
AS & HH: Data collection.