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ORIGINAL

Analysis of improving diagnostic accuracy and confidentiality for patients via imparting knowledge of critical thinking

Análisis de la mejora de la precisión diagnóstica y la confidencialidad para los pacientes mediante la transmisión de conocimientos de pensamiento crítico

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ABSTRACT

Healthcare practitioners must carefully consider patient data and draw reliable conclusions as part of the diagnostic procedure. Additionally, it is essential for moral and legal reasons to safeguard patient anonymity. This aims to improve patient care and healthcare outcomes by examining how critical thinking can improve diagnostic accuracy and confidentiality. The descriptive quantitative approach was adopted in this pilot investigation. Fifty instructors from a local hospital in an informal sample. The data was gathered by online surveys that were pre- and post-administered by the lead investigator. Quick post-classroom survey responses revealed gains in all measures of perceived capacity for imparting critical thinking. All response rates increased between the pre-and post-training surveys, with the ranking of the capacity to impart critical thinking being the only question where ratings increased. Staff involved in nursing advancement should be able to conduct a self-assessment of their proficiency in this area. When gaps in knowledge are exposed, remediation through teaching is warranted.

Keywords: Nursing; Critical Thinking; Diagnosis; Patient Safety; Healthcare.

RESUMEN

Los profesionales sanitarios deben considerar cuidadosamente los datos de los pacientes y extraer conclusiones fiables como parte del procedimiento diagnóstico. Además, por motivos morales y legales, es esencial salvaguardar el anonimato del paciente. El objetivo es mejorar la atención al paciente y los resultados de la asistencia sanitaria examinando cómo el pensamiento crítico puede mejorar la precisión diagnóstica y la confidencialidad. En esta investigación piloto se adoptó el enfoque cuantitativo descriptivo. Cincuenta instructores de un hospital local en una muestra informal. Los datos se recopilaron mediante encuestas en línea administradas antes y después por el investigador principal. Las respuestas rápidas de la encuesta post-clase revelaron ganancias en todas las medidas de capacidad percibida para impartir pensamiento crítico. Todos los índices de respuesta aumentaron entre las encuestas previas y posteriores a la formación, siendo la

clasificación de la capacidad para impartir pensamiento crítico la única pregunta en la que aumentaron las valoraciones. El personal implicado en la promoción de la enfermería debería poder realizar una autoevaluación de su competencia en este ámbito. Cuando se descubren lagunas en los conocimientos, está justificada la remediación a través de la enseñanza.

Palabras clave: Enfermería; Pensamiento Crítico; Diagnóstico; Seguridad del Paciente; Asistencia Sanitaria.

INTRODUCTION

The fundamental element of efficient medical care is accurate diagnosis. A mistaken diagnosis can result in ineffective care, postponed actions, or even serious implications for the patient's life. Professionals in the medical field might improve their diagnostic abilities by encouraging critical thinking. They are prompted to challenge presumptions, assess the evidence, and weigh alternative options through critical thinking. These abilities allow medical practitioners to consider every single situation with a thorough and analytical perspective, lowering the possibility of mistakes and increasing diagnostic precision.[1] In both inpatient and outpatient settings, there is a greater need for nurses who possess critical thinking abilities. The Organisation for Nursing Professional Development's criteria state that an essential skill in the career progression of a nursing professional development expert is the encouragement of innovative thinking. It is crucial to evaluate and enhance a teacher's capacity to impart intellectual stimulation.[2]

Defining critical thinking as deliberate, self-regulatory judgment, led to a statement on critical thinking in treatment, based on a panel of researchers. Along with capacities to evaluate, apply standards, consider biases, gather information, logically reason, foresee, and modify knowledge, They discovered that essential nursing academics also display the following characteristics: confidence, dependent on context point of view, creativity, flexibility, fascination, emotional integrity, instinctively, intellectual curiosity, commitment, and thought, critical thinking involved nurses considering concepts, tenets, conclusions, convictions, and behaviours in the overall framework of their nursing practice.[3]

An essential component of oral health care practice is patient confidentiality. To protect patient information's confidentiality, critical thinking is essential. Healthcare personnel learn to think critically, which helps them to understand the ethical issues regarding patient privacy. They get the ability to evaluate safeguards for patient data critically, spot flaws, and put in place the necessary precautions. Additionally, critical thinking enables healthcare personnel to comprehend the potential repercussions of patient confidentiality violations, inspiring them to keep high standards in the management and storage of information.[4]

Analytical thinking is crucial in today's age of developing technology when navigating the complexity of modern healthcare systems. Healthcare practitioners can critically assess the dependability and precision of diagnostic instruments, digital medical records, and platforms for telemedicine by encouraging critical thinking. Utilizing the technology to assist in diagnosis, they recognize potential biases, comprehend limitations, and derive to wise judgments. The fusion of critical thinking and technology improves diagnostic precision and guarantees the safe handling of patient data in digital settings.[5] To provide exact information and important findings to healthcare providers and other co-workers, the nurse essential to think logically. Safe patient care depends heavily on the nurse's capacity to prioritize, spot tiny modifications to assessment results, and take the appropriate action. As a result, critical thinking skills such as connecting and ranking material based on personal levels of understanding and identifying patterns in the responses of patients are required of nurses.[6]

The relationships between the diagnostic procedures used by 188 pre-service science educators, their diagnostic comportments, and the accuracy of diagnosis assessed using the video-based evaluation tool DiKoBi evaluated.[7] The outcomes of route evaluations using Rasch metrics presented how closely Pedagogical Content Knowledge (PCK) and Pedagogical Knowledge (PK) related to pre-service instructors' analytical performances. Moreover, the PCK of biology teachers was favourably correlated with diagnostic precision. The results confirm earlier findings highlighting the significance of PCK, revealing its significance in the framework of specialised assessment as well. Due to the bigger impact sizes of PCK compared to PK.

Discovered heterogeneity, and a meta-regression analysis is conducted.[8] The entire collected accuracy and specificity for lung auscultation across 36 investigations are 39 % and 91 %, respectively. In recognition of exhausted heart failure, pneumonia, and obstructive lung disorders, auscultation's Likelihood Ratios (LRs) and Area Under the Curve (AUC) are poor, but their precision is good. In trauma patients, unconventional breathing patterns are extremely specific for (hemato) pneumothorax. The results are constrained by substantial heterogeneity. Due to its low sensitivity in a variety of clinical scenarios and patient types, lung auscultation has little diagnostic usefulness.

Advance thinking's potential to prevent excessive diagnosis, comprehension problems caused by conventional diagnostic measurements, and the possibility that an individual diagnosis can potentially made up of several

phenotypes in the masterclass.[9] eight wards for surgery and medicine at an Italian university hospital between August 2018 and February 2020.[10] Four wards used Primary Nursing, whereas the other four used Team Nursing (the control group). Utilized the D-Catch tool, the accuracy of nursing documentation was assessed. 130 nursing records were chosen at random from the eight wards for every category and period (pre-test, post-test, and follow-up). Overall, 730 nursing documents were assessed.

Clozapine patients are questioned about urinary tract infections, the majority of Clozapine-Induced Gastrointestinal Hypomotility (CIGH) instances can remain undetected.[11] Only 28 % of those using a substance in this group self-reported constipation, however, stool migration analysis revealed that 73 % of them had CIGH. A constipation question had an accuracy of 18 % for identifying CIGH, which is appalling for a diagnostic investigation and inferior to a coin toss. The clinical practise of provided preventive laxatives when started, clozapine is supported by the new findings regarding the challenge in diagnosing CIGH as well as by the body of evidence already available indicating its significant incidence and dangers.

CAM-ICU showed higher diagnostic test accuracy when testing the diagnostic performance of delirium assessment instruments in diagnosing delirium in critically sick patients.[12] As a standard reference, the Diagnostic and Statistical Manual of Mental Disorders was used to compare the accuracy of CAM-ICU. According to the findings, CAM-ICU was the best instrument for assessing delirium and exhibited improved diagnostic test accuracy. However, because of the meta-analysis's between-study heterogeneity, the results should be regarded cautiously. To, coordinate and organise subject adjustments, a brand-new Knowledge-routed Deep Q-network (KR-DQN) has been established. The result network combined a knowledge-routed graph divided for choosing the topic with an informal alteration extended for preserved linkages among diverse symptoms and distinctive illness mixes. Research demonstrated that KR-DS greater and outperformed modern methods (by a factor of more than nine percent in diagnostic accuracy) in a public medical discourse dataset.

An approach to other medical applications, the results imply that it is more effective in managing diabetes.[13] The ontology-based model's efficacy in predicting disease, diagnosing diabetes, and proposed treatment for diabetic patients is 95 %, 98 %, and 85 %, respectively. One substance utilized as a biomarker, C-Reactive Protein (CRP), Neutrophil to Lymphocyte Ratio (NLCR), and lactate were the three chosen biomarkers, while NLCR, Procalcitonin (PCT), and lactate were the four chosen biomarkers in the other.[14] These composite biomarkers were created through the discriminant analysis procedure. The characteristics of AUC with the detector was used to assessed the diagnostic abilities of the entire set of indicators and the individual indicators.

The parameters that influence the implementation of a machine learning sepsis early warning system (Sepsis Watch) in clinical workflows.[15] Three main topics emerged from semistructured interviews with 15 emergency department doctors and rapid response team nurses: workforce considerations, Sepsis Watch process implementation, and perceived utility and trust. Participants' trust was impacted by their lack of experience with machine learning models, but its deployment was made easier by the user-friendly tablet application and effective communication techniques. Knowledge gaps and information flow were among the obstacles.

Conduct a comprehensive analysis of the current diagnostic practices in healthcare settings to identify the key areas where diagnostic accuracy can be improved.

METHOD

A quantified descriptive research approach was adopted for this pilot study. A connection to the survey asking about the participant's opinion of their capacity to teach the concepts mentioned in the analytical thinking was included in a letter of inquiry that was emailed to the participant. The investigation's respondents are fifty educators chosen at randomly. 22 of the Participants utilised a role in classes for nursing specialists, but it was not their major responsibility at the hospital. 28 of the participants worked as full-time nurse consultant educators. The stablished evaluation of the hospital granted consent. A gift from the hospital's foundation helped to pay for that.

12 questions on a Question about demographics, a Likert scale with five points, and two questions with several choices come up in the survey that the researcher created. The lead investigator used electronic pre-analyse and post-analyse to gather the data. All 50 individuals performed the pre-analysis and were subsequently invited to the training.

That consisted of interactive practical instruction within educational settings as well as pre-classroom materials from Teaching Nurses: A Visit for Dramatic Improvement. Considering comparable to a Nurse: A Comprehensive Approach to Practitioner Preparation. Directly following the live instruction and again after each participant used the new information they had learned while instructing a session (within six months of the classroom training), a post-analysis was done. All 50 participants completed the post-analysis right away.

Thirty participants had finished the 6-month post-analysis and employed the clinical reasoning and critical thinking principles at that point. From a new graduate perspective, workplace gatherings, supervisor seminars, new graduate classroom instruction, and yearly learning in-services, these 30 individuals put what they had learned into practice. Due to their failure to put the taught concepts into practice within that time framework,

the last ten contestants were dismissed. From the 6-month post-analysis, and the other ten did not finish the 6-month post-analysis.

RESULTS

Participants in the research ranged widely in age, nurse practitioner experience, and academic experience in Table 1. The subjects were all women. Participant characteristics are available. The participants comprised a total of twenty distinct specialty certifications, including RN-BC in nursing proficient growth, RNC in maternity or newborn critical care, and Qualified Emergency Nurse.

The findings from the survey's means of the first five questions were compared across time (questions 1–5). There was a development from the pre-analysis to the post-analysis, but there was hardly any difference between the two post-analyses. Here are similarities between the pre-analysis and the post-analysis.

Table 1. Participants Data

Category		n	%
Gender	Female	50	100 %
Age group (years)	31-40	16	32 %
	41-50	13	26 %
	51-60	12	24 %
	61 or Older	9	18 %
Highest level of education completed	ADS	9	18 %
	Bachelors (non nursing)	10	20 %
	BSN	15	30 %
	MSN or MS in Nursing	16	32 %
Number of years as a nurse	0-3	0	0 %
	4-8	12	24 %
	9-13	12	24 %
	14-18	10	20 %
	19-23	5	10 %
	24-28	2	4 %
	29 or More	9	18 %
Primary nursing role	Clinical nurse	19	38 %
	Clinical educator	16	32 %
	Coordinator/specialty nurse	15	30 %
Number of years in the primary nursing role	0-3	16	32 %
	4-8	12	24 %
	9-13	13	26 %
	14-18	0	0 %
	19 More	9	18 %

Q1: how confident are you that you can teach innovative thinking throughout your staff's initial education/ orientation?

Q2: How well-versed in the ideas of introspective analysis and purposeful thinking are you?

Q3: Rate your capacity to encourage and educate introspection or intentional thinking?

Q4: How well-versed in the notions, concepts, presumptions, findings, opinions, and behaviors associated with logical thinking were yourself.

Q5: Which expert do you consider you are at using the fundamental elements of instructional analytical thinking?

Solutions: The first question assured a mean of 4,8 in the second post-analysis, up 40 % from a mean of 6,0 somewhat confident in the pre-analysis. In the second, an increase of 38,6 % from a mean of 4,43 slightly familiar in the pre-analysis to 8,0. The third was a 31,4 % increase from a mean of 1,73 expanded beginning in the pre-analysis to 3,3 qualified in the subsequent post-analysis. The fourth questions explains 31,4 % difference

was seen, going from a mean of 6,77 slightly familiar in the pre-analysis to a mean of 6,7, familiar in the second post-analysis. The fifth is increased by 37,3 % from the pre-analysis mean of 1,93 advanced beginner to the post-analysis average of 5,68 adept.

Three more questions were asked in the survey. The average response to the sixth question, where did you believe that the healthcare staff you train collectively has as their intellectual stage? moved from a pre-analysis score of 4,86 to a post-analysis score of 4,85, both of which are within the competent category. This mean climbed to 5,8, "Proficient," for the 6-month post-analysis after the instructors had used the learning principles.

The following query focused on the educators' top choice for instructing nursing personnel in critical thinking. The pre-analysis highest level of response was Investigations, instances, an interactive presentation (game), and cooperative learning exercises. Case study/scenarios and practical reasoning emerging case studies and quick-thinking exercises received the most responses in the immediate post-analysis. Rapid reasoning activities and other case examples that are developing clinically were the most often cited responses on the 6-month post-analysis.

The last question, which had many choices, asked about the alleged challenges in teaching critical thinking. The two most common responses on the pre-analysis were different levels of student's critical thinking ability and a lack of expertise on how to teach it (29/50 selected for each) shown in figure 1. Different levels of students' capacity for critical thought were the most often mentioned response on both the immediate post-analysis (29/50 selected) and the 6-month post-analysis (21/50 picked) shown in figure 2. In the immediate and six-month post-analysis, just one respondent chose a lack of experience in teaching logical thought.

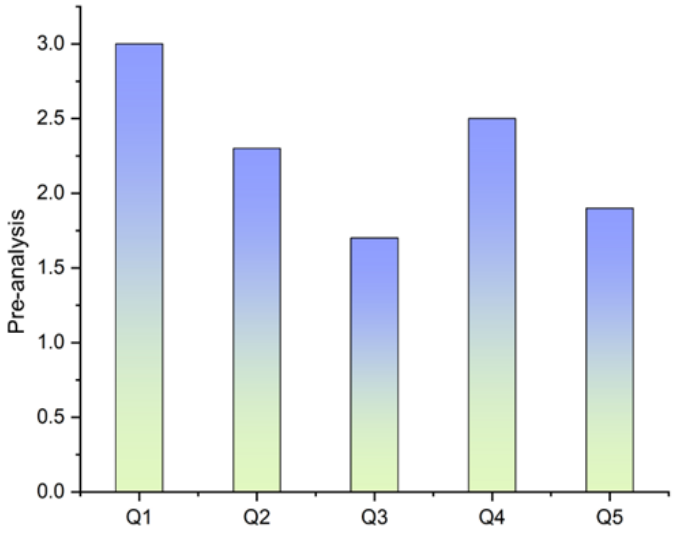

Figure 1. Pre-Analysis

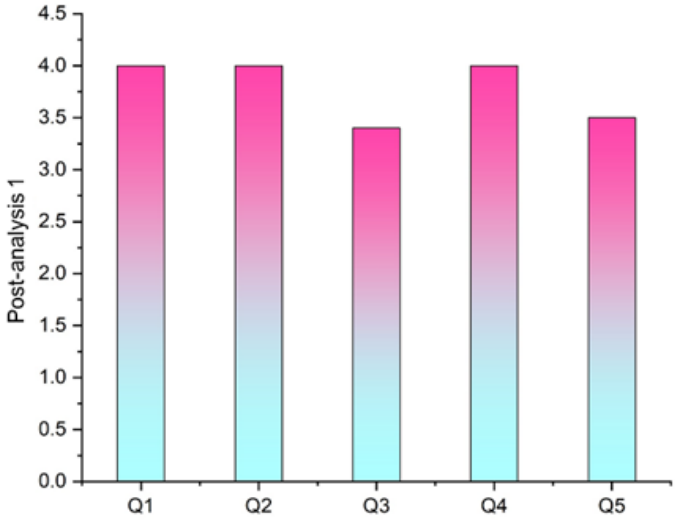

Figure 2. Post-Analysis 1

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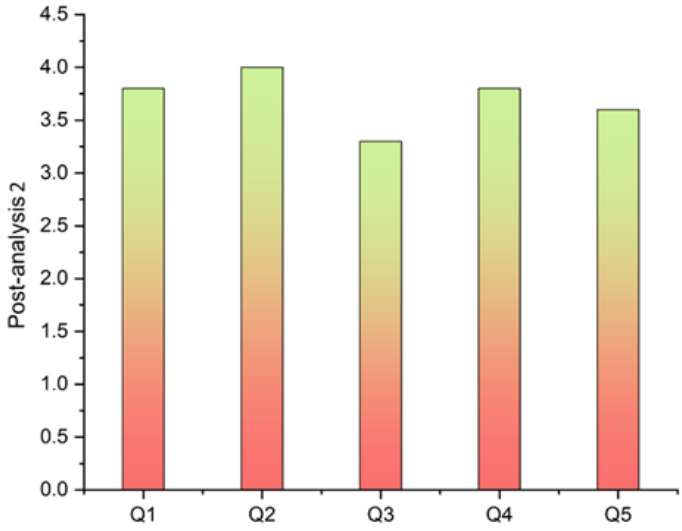

Figure 3. Post-Analysis 2

The limited sample size at an individual communal hospital shown in Figure 3, the lack of racial and ethnic assortment, and the absence of an approved questionnaire tool were limitations. The tiny sample size precluded a meaningful statistical examination of the data. However, the range of estimated years of teaching experience was quite wide. The introduction of an interactive lab, which became accessible to the educators three months following the training event, was one of the variables. The educators utilized a simulation centre for their developing clinical reasoning scenarios at the 6-month post-analysis, even though simulation was not selected as the preferred teaching method.

CONCLUSION

Being able to teach critical thinking and support others in doing the same is a requirement for instructors in nursing and nursing professional development professionals. The option for self-evaluation of this skill set should be provided to nursing professional development professionals so that precautions can be taken to assure proficiency in this area. If inadequacies are found, instruction needs to be given. Investigation or process improvements in particular patient-related circumstances that demand analytical thinking, like forming a team to react quickly or gauging the number of being observed assessments for peer review situations, would be involved in additional research into the efficacy of allowing instructors to teach analytical skills. The additional inquiry can look at other teaching requirements outside critical thinking and make sure that instructors are knowledgeable and confident in a wider choice of subjects to improve the success of hospital-based educators in their work. Use of technological resources, keeping people proficient in low-volume abilities, and developing scenario-based teaching are all possible fields.

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CONFLICTS OF INTEREST

None.

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