Advances in Bioresearch
Adv. Biores., Vol 15 (3) May 2024: 17-21

Print ISSN 0976-4585; Online ISSN 2277-1573
Journal's URL:http://www.soeagra.com/abr.html
CODEN: ABRDC3
DOI: 10.15515/abr.0976-4585.15.3.1721

Advances in Bioresearch

ORIGINAL ARTICLE

Evaluation of Healthcare workers Practices in Pathology test ordering and Interpretation

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ABSTRACT

The accurate and timely interpretation of pathology tests is essential for guiding clinical decision-making and ensuring patient care quality. This study investigates the practices of healthcare workers (HCWs) in pathology test ordering and interpretation at Shree Krishna Medical College, Muzaffarpur, Bihar, an area with unique healthcare challenges due to its socio-economic and geographic characteristics. The study aims to identify strengths, potential gaps, and areas for improvement in these practices, contributing to the enhancement of diagnostic accuracy and healthcare delivery in resource-limited settings. A cross-sectional study was conducted with 150 HCWs, including physicians, nurses, and laboratory technicians, selected through stratified random sampling to ensure diverse representation. Data collection was facilitated via comprehensive questionnaires, focus group discussions, and in-depth interviews, focusing on criteria for test ordering, adherence to clinical guidelines, interpretation accuracy, and training needs. Statistical analysis encompassed descriptive and inferential statistics, with thematic content analysis for qualitative data. Ethical considerations were upheld with IRB approval and informed consent from all participants. The majority of HCWs relied on clinical symptoms (93.3%) for ordering tests, with variable adherence to protocols or guidelines (73.3%). Familiarity with clinical guidelines varied, with 60% somewhat familiar and 20% not familiar. Self-reported accuracy in test interpretation was high, though 13.3% acknowledged occasional inaccuracies. Significant challenges included resource limitations (66.7%), insufficient training (56.7%), and time constraints (60%). Training needs were identified in guidelines for test ordering (86.7%), test interpretation skills (80%), and cost-effective testing strategies (73.3%). The study highlights a patient-centered approach in test ordering but indicates a need for enhanced guideline adherence and training in test interpretation. Addressing identified challenges and training needs through targeted interventions could significantly improve diagnostic practices, supporting a more efficient, accurate, and patient-centered healthcare delivery in Muzaffarpur and similar settings.

Keywords: *Pathology tests, Healthcare workers, Diagnostic accuracy, Clinical guidelines, Training needs, Resource-limited settings.*

Received 14.12.2023 Revised 20.01.2024 Accepted 05.03.2024

How to cite this article:
Sadaf, Sushant K S, Mahima S, Tauseef K. Evaluation of Healthcare workers Practices in Pathology test ordering and Interpretation. Adv. Biores. Vol 15 [3] May 2024. 17-21

INTRODUCTION

The precise and timely interpretation of pathology tests is a cornerstone of modern medical diagnostics, guiding clinicians in making informed decisions about patient care. As healthcare systems worldwide grapple with the challenges of ensuring diagnostic accuracy, the role of healthcare workers in the process of pathology test ordering and interpretation becomes increasingly significant. This study, set against the backdrop of Shree Krishna Medical College in Muzaffarpur, Bihar, seeks to delve into the practices of healthcare workers concerning pathology test ordering and interpretation, a critical yet underexplored aspect of healthcare delivery in the region.[1-4]

The landscape of healthcare in Bihar, with its unique socio-economic and geographic characteristics, presents both challenges and opportunities for the medical community. Amidst resource constraints and varying levels of healthcare access, the efficiency and effectiveness of diagnostic processes are paramount. The practices adopted by healthcare workers in pathology test ordering and interpretation

are pivotal in this context, influencing not only patient outcomes but also the broader spectrum of healthcare resource allocation and utilization.[5,6]

This research aims to evaluate these practices systematically, identifying existing strengths, potential gaps, and areas for improvement. By focusing on Shree Krishna Medical College as a microcosm of the healthcare setting in Bihar, this study provides insights that are both locally relevant and potentially generalizable to similar contexts. It addresses critical questions regarding the criteria used for test ordering, the adherence to clinical guidelines, the interpretation accuracy of test results, and the training and support available to healthcare workers in this domain.

The findings of this study are expected to contribute significantly to the existing body of knowledge on pathology test utilization and interpretation in resource-limited settings. Furthermore, by highlighting the specific challenges and opportunities faced by healthcare workers in Muzaffarpur, Bihar, it paves the way for targeted interventions aimed at enhancing the quality of diagnostic practices. Ultimately, this research endeavors to inform policy and practice, promoting a more efficient, accurate, and patient-centered approach to pathology diagnostics in the region.

MATERIAL AND METHODS

Study Setting and Design: This cross-sectional study was conducted at Shree Krishna Medical College, situated in Uma Nagar, Rasulpur Saidpur Bazid, Muzaffarpur, Bihar. The institution plays a crucial role in healthcare delivery and medical education in the region, providing a pertinent setting for examining the practices of healthcare workers (HCWs) in pathology test ordering and interpretation.

Study Participants: The study targeted healthcare workers involved in the ordering and interpretation of pathology tests, including physicians, nurses, and laboratory technicians. Based on a preliminary assessment of the hospital's staff structure and the estimated variability in test ordering practices, a sample size of 150 participants was determined to achieve a 95% confidence level and a 5% margin of error in estimating practice patterns. Participants were selected using a stratified random sampling technique to ensure broad representation across various departments and expertise levels.

Data Collection Instruments and Techniques: Data collection was facilitated through a comprehensive questionnaire, developed to capture detailed practices related to pathology test ordering and interpretation. The questionnaire encompassed demographic details, criteria for test ordering, adherence to clinical guidelines, interpretation accuracy, and training needs. Complementary to the questionnaire, focus group discussions and in-depth interviews provided qualitative insights into HCWs' experiences and practices.

Training and Pilot Testing: The research team received training on the study protocol, ethical considerations, and data collection tools. A pilot test with 15 participants (10% of the main study sample size) was conducted to refine the questionnaire and interview guides based on feedback, ensuring the reliability and validity of the instruments.

Data Analysis: Quantitative data from questionnaires were analyzed using statistical software for descriptive and inferential statistics. Central tendency and dispersion metrics summarized demographic and closed-ended question responses. Chi-square tests and logistic regression analyses explored associations between demographic factors and practice patterns. Qualitative data underwent thematic content analysis, identifying key themes and patterns in HCWs' test ordering and interpretation practices.

Ethical Considerations: Ethical approval was secured from Shree Krishna Medical College's Institutional Review Board (IRB). Informed consent was obtained from all participants, guaranteeing confidentiality and the option to withdraw at any stage without penalty.

RESULTS

Table 1 delineates the demographic profile of the 150 healthcare workers who participated in the study, showcasing a balanced gender distribution with 60% male and 40% female participants. The professional roles of the participants were evenly divided among physicians, nurses, and laboratory technicians, each constituting one-third of the total sample. This diversity in roles is critical for a comprehensive understanding of the practices across different facets of healthcare delivery. Furthermore, the experience levels of the participants varied, with 40% having less than 5 years of experience, 30% having between 5 and 10 years, and another 30% boasting more than 10 years, indicating a good mix of fresh perspectives and seasoned expertise in the study.

Table 2 reveals the criteria healthcare workers utilize when ordering pathology tests, highlighting a strong reliance on clinical symptoms (93.3%) as the primary determinant. This suggests a patient-centered approach to diagnostics. Adherence to protocols or guidelines was also significant (73.3%), though less uniformly applied, reflecting perhaps variability in access to or familiarity with such

guidelines. Interestingly, patient requests and cost considerations influenced test ordering for 26.7% and 63.3% of respondents, respectively, indicating the multifaceted considerations healthcare workers balance in clinical decision-making.

Table 1: Demographic Characteristics of Participants

Characteristic	Total Participants (n=150)	Percentage (%)
Gender		
Male	90	60
Female	60	40
Professional Role		
Physicians	50	33.3
Nurses	50	33.3
Laboratory Technicians	50	33.3
Years of Experience		
< 5 years	60	40
5-10 years	45	30
> 10 years	45	30

Table 2: Criteria Used for Ordering Pathology Tests

Criteria	Respondents (n=150)	Percentage (%)
Clinical symptoms	140	93.3
Protocol/guideline adherence	110	73.3
Patient request	40	26.7
Cost considerations	95	63.3

The data in Table 3 illustrates the varying degrees of familiarity among healthcare workers with clinical guidelines pertinent to pathology test ordering. While only 20% of participants reported being very familiar with these guidelines, the majority (60%) were somewhat familiar, and 20% were not familiar at all. This distribution underscores the need for enhanced accessibility to and training on clinical guidelines to ensure that healthcare decisions are informed by the best available evidence and practices.

Table 3: Familiarity with Clinical Guidelines

Response	Respondents (n=150)	Percentage (%)
Very familiar	30	20
Somewhat familiar	90	60
Not familiar	30	20

Table 4 assesses the self-reported accuracy in interpreting pathology test results among healthcare workers. A third of respondents (33.3%) felt confident in their always accurate interpretation, while a majority (53.3%) considered their interpretations mostly accurate. The acknowledgment of occasional inaccuracies by 13.3% of the participants highlights the complexities and challenges inherent in test interpretation, emphasizing the importance of ongoing education and support systems to minimize errors and improve patient outcomes.

Table 4: Accuracy in Test Interpretation

Accuracy Level	Respondents (n=150)	Percentage (%)
Always accurate	50	33.3
Mostly accurate	80	53.3
Occasionally inaccurate	20	13.3

According to Table 5, the majority of healthcare workers face significant challenges in the ordering and interpretation of pathology tests. Resource limitations (66.7%), insufficient training (56.7%), and time constraints (60%) were identified as the most common obstacles, alongside inadequate access to guidelines (46.7%). These findings point to systemic issues that impact the efficiency and accuracy of diagnostic processes, suggesting areas for targeted intervention and support.

Table 5: Perceived Challenges in Test Ordering and Interpretation

Challenge	Respondents (n=150)	Percentage (%)
Lack of resources	100	66.7
Insufficient training	85	56.7
Time constraints	90	60.0
Inadequate access to guidelines	70	46.7

Table 6 highlights the specific areas where healthcare workers feel additional training could enhance their competency in pathology test ordering and interpretation. The greatest demand was for training on guidelines for test ordering (86.7%), followed closely by test interpretation skills (80%), cost-effective testing strategies (73.3%), and communication with patients (66.7%). This feedback underscores the healthcare workers' recognition of the gaps in their knowledge and skills, and their eagerness for professional development opportunities that can directly improve patient care quality.

Table 6: Training Needs and Preferences

Training Topic	Respondents Interested (n=150)	Percentage (%)
Test interpretation skills	120	80.0
Guidelines on test ordering	130	86.7
Cost-effective testing	110	73.3
Communication with patients	100	66.7

DISCUSSION

The findings from our cross-sectional study provide a compelling insight into the current practices, challenges, and training needs of healthcare workers (HCWs) in pathology test ordering and interpretation at Shree Krishna Medical College. These insights are not only pivotal for the local healthcare system but also resonate with broader themes in global healthcare delivery, particularly in resource-limited settings.

The reliance on clinical symptoms for ordering pathology tests, as indicated by 93.3% of the respondents, underscores a patient-centric approach in the diagnostic process. However, the variability in adherence to protocols or guidelines, reported by 73.3% of participants, points to potential gaps in standardized care delivery. This variability may stem from the dual challenges of accessibility to and familiarity with current clinical guidelines, a concern echoed by the 40% of HCWs who were not very familiar with these guidelines. Enhancing guideline dissemination and education could bridge this gap, fostering more uniformity in test ordering practices.[6-9]

The self-assessed accuracy in test interpretation reveals a confidence in diagnostic capabilities among HCWs, with 33.3% reporting always accurate interpretations. However, the acknowledgment of occasional inaccuracies by 13.3% of respondents highlights an area for improvement. These inaccuracies can have significant implications for patient care, potentially leading to misdiagnoses or unnecessary interventions. Strengthening diagnostic accuracy through continuous education and support systems is thus imperative for improving patient outcomes.[8-11]

The challenges identified in this study, particularly the lack of resources, insufficient training, and time constraints, are reflective of broader systemic issues in healthcare delivery in resource-constrained settings. The finding that 66.7% of HCWs experience resource limitations underscores the critical need for strategic investments in healthcare infrastructure and resources. Additionally, the demand for more training, especially on guidelines for test ordering (86.7%) and test interpretation skills (80%), signals a clear direction for capacity building among HCWs. Addressing these challenges through targeted interventions could significantly enhance the quality and efficiency of healthcare delivery.[10-12]

The expressed need for training across various domains highlights a proactive stance among HCWs towards improving their professional competencies. The high interest in guidelines on test ordering and test interpretation skills suggests a recognition of these areas as pivotal to enhancing diagnostic practices. Implementing structured training programs, potentially leveraging digital platforms for wider accessibility, could fulfill these training needs effectively. Moreover, fostering a culture of continuous professional development among HCWs could ensure that the healthcare workforce remains adept at meeting the evolving demands of healthcare delivery. [8-11]

LIMITATIONS

The study acknowledges potential limitations, such as response bias and the challenge of generalizing findings beyond this specific setting. These were addressed by employing a mixed-methods approach and a carefully calculated sample size, enhancing the study's robustness and applicability.

CONCLUSION

This study sheds light on the complexities and nuances of pathology test ordering and interpretation practices among healthcare workers at Shree Krishna Medical College. By identifying specific areas of strength, potential gaps, and avenues for improvement, the findings offer a roadmap for enhancing diagnostic accuracy and efficiency. Moving forward, it is crucial for healthcare institutions, policymakers, and stakeholders to collaboratively address the highlighted challenges and training needs. Implementing targeted interventions that focus on standardization of practices, resource allocation, and capacity building will be key in promoting a more efficient, accurate, and patient-centered approach to pathology diagnostics in Muzaffarpur and similar settings.

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