

“Assessing the Role of Nursing in Implementing Laboratory Test Protocols and Communicating Result”

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Abstract:

This study examines the difficulties encountered by nurses in executing laboratory test methods and conveying results in healthcare environments. It delineates main impediments, such as the absence of standardized protocols, interdepartmental communication hurdles, excessive caseloads, technology difficulties, and patient-related concerns. These difficulties influence the precision and efficacy of laboratory testing, eventually impacting patient treatment. Data was gathered via surveys distributed to nurses, revealing a widespread agreement on the challenges faced in everyday practice. The research highlights the necessity for established procedures, improved communication techniques, effective time management, and advanced technical training for nurses.

Keywords: laboratory test protocols, patient care, healthcare settings, technological barriers, standardization, patient-related issues.

المستخلص:

تتناول هذه الدراسة الصعوبات التي تواجه الممرضات في تنفيذ طرق الاختبارات المعملية ونقل النتائج في بيئات الرعاية الصحية. وتحدد العوائق الرئيسية، مثل غياب البروتوكولات الموحدة، وعقبات الاتصال بين الأقسام، والأحمال المفرطة، وصعوبات التكنولوجيا، والمخاوف المتعلقة بالمريض. تؤثر هذه الصعوبات على دقة وفعالية الاختبارات المعملية، مما يؤثر في نهاية المطاف على علاج المريض. تم جمع البيانات من خلال استطلاعات الرأي التي تم توزيعها على الممرضات، وكشفت عن اتفاق واسع النطاق على التحديات التي تواجهها الممارسة اليومية. يسلط البحث الضوء على ضرورة الإجراءات المعمول بها، وتقنيات الاتصال المحسنة، وإدارة الوقت الفعالة، والتدريب الفني المتقدم للممرضات.

الكلمات الرئيسية: بروتوكولات الاختبارات المعملية، رعاية المرضى، بيئات الرعاية الصحية، الحواجز التكنولوجية، التوحيد القياسي، القضايا المتعلقة بالمريض.

Introduction:

Nursing is a dynamic and complex profession that is essential to the healthcare system. Nurses frequently occupy a pivotal role in patient care, acting as the principal liaison for patients and their families. Their duties encompass clinical examinations, pharmaceutical administration, treatment plan management, educational provision, and emotional support delivery. Nurses play a crucial role in healthcare teams by partnering with physicians, specialists, and other professionals to provide complete and coordinated patient treatment beyond bedside care. A distinctive strength of nursing is its comprehensive approach to patient care (Flaubert, et al.2021).

Nurses function as a crucial intermediary between patients and laboratory services, facilitating the seamless integration of diagnostic testing into clinical practice and ensuring that results are communicated promptly and properly to both patients and healthcare professionals. This integration necessitates a thorough comprehension of laboratory methods, robust communication skills, and strict adherence to established standards to minimize mistakes and enhance patient management.

The progress in equipment technology, automation, and personnel expertise has streamlined laboratory testing. Laboratory testing of analytics consists of three phases: preanalytical, analytical, and post-analytical. Preanalytical errors refer to the mistakes that arise from the moment a doctor orders a laboratory test until the sample is prepared for analysis. This phase of laboratory testing is the most susceptible to mistakes occurring throughout the testing procedure (Nordin, et al. 2024).

The preanalytical phase include individuals outside the laboratory; in hospitals and clinics, nursing staff are frequently tasked with the collection of blood samples from patients and their subsequent dispatch to the laboratory for analysis. The nursing staff should not possess expertise in the technical intricacies of laboratory analysis; nonetheless, familiarity with prevalent preanalytical factors is advantageous, since their understanding substantially influences the sample-collecting procedure and, therefore, the laboratory test outcomes (Lillo, et al.2012). The absence of comprehension about the blood collection method, inaccuracies in patient identification and preparation, flaws in the sample collection device/container, and mistakes in sample handling eventually undermine laboratory results. These inaccuracies can significantly compromise the reliability of test results and negatively impact patient treatment (Iqbal, et al.2023).

Nurses are often responsible for collecting specimens, ensuring accurate labeling, and maintaining the integrity of samples, which are foundational aspects of quality laboratory work. Beyond these procedural duties, their role extends to interpreting results within their scope, informing physicians, and educating patients about their health status based on the findings. This multifaceted involvement requires a robust system of training and procedural adherence to safeguard against diagnostic delays, errors, or miscommunication. Understanding how nurses manage these responsibilities and the challenges they face is critical for developing more efficient, patient-centered approaches in healthcare (Sareen, & Dutt, 2018). The insights gained from this research will not only highlight current practices but also propose strategies for reinforcing nursing roles in laboratory protocol implementation and result communication. By doing so, healthcare facilities can enhance accuracy, expedite decision-making, and ultimately improve patient care outcomes.

Problem Statement:

Nurses are essential in the healthcare system, especially in the proper execution of laboratory test protocols and the dissemination of data. Nonetheless, deficiencies in knowledge, training, and compliance with established procedures during the preanalytical phase of laboratory testing can result in mistakes in specimen collection, sample handling, and transmission of test results. These inaccuracies can undermine the precision of laboratory results, postpone patient diagnosis, and adversely affect treatment decisions. Despite the pivotal relevance of their position, research on how nurses navigate these obligations and the problems they face in laboratory test processes is scarce. Comprehending these problems is crucial for advancing nursing practices in this domain, guaranteeing constant adherence to procedures, and improving the precision of diagnostic tests. This study seeks to evaluate the role of nurses in executing laboratory test protocols and conveying findings, with the objective of identifying obstacles and suggesting ways to enhance nursing participation in the laboratory testing process, hence enhancing patient outcomes and care quality.

Study Objectives:

1. To determine the current practices followed by nurses for implementing laboratory test protocols in clinical settings.
2. To clarify the challenges nurses, face when implementing laboratory test protocols and communicating results.
3. To show how the training and education of nurses affect their ability to effectively manage laboratory test protocols.

Study Significance:

This study is significant for its potential to improve comprehension of the vital role nursing plays in executing laboratory test protocols and conveying results, which are crucial for precise diagnosis and successful patient care. This research evaluates the impact of nursing practices on these processes, identifying areas where nursing might be enhanced to improve clinical results.

Comprehending the obstacles nurses encounter and the elements influencing their capacity to efficiently administer laboratory test procedures and convey outcomes is essential for formulating focused methods to enhance practice. The insights derived from this study can guide the development of customized training programs, regulatory modifications, and support systems that strengthen the involvement of nurses in laboratory management. Furthermore, enhancing these behaviors might diminish diagnostic inaccuracies, eliminate communication failures, and guarantee prompt medical actions, eventually resulting in improved patient safety and satisfaction. The results of this study may facilitate a more efficient incorporation of laboratory procedures into nursing practices and promote a culture of ongoing enhancement and patient-centered care. This research is valuable for nursing professionals, healthcare administrators, legislators, and patients who benefit from efficient healthcare services.

Limitations of the study:

- **Sample Size and Generalizability:** The research may be constrained by the participant count, thereby impacting the generalizability of the results. A limited or localized sample may indicate that the findings may not comprehensively reflect the wider nursing practices across various healthcare environments or geographical regions.
- **Self-Reported Data:** The study may depend on self-reported data from nurses concerning their practices and experiences, thus introducing bias. Participants may inaccurately assess their compliance with protocols or efficacy in communicating, resulting in possible data errors.
- **Variability in Training and Protocols:** Healthcare facilities may exhibit differing standards for training and laboratory methods. This diversity complicates the capacity to derive consistent findings applicable across all contexts, as actions may vary according to institutional regulations or available resources.
- **Scope of Study:** The study will largely concentrate on descriptive analysis, perhaps restricting the capacity to demonstrate causal linkages. Although it can illuminate patterns and connections, it may not comprehensively elucidate why some techniques are more efficacious or the underlying reasons for issues encountered by nurses.
- **Access to Comprehensive Data:** The study may have challenges in obtaining comprehensive data on patient outcomes or institutional protocols due to privacy issues or administrative limitations, thereby limiting the depth of the analysis.

Definition of key terms:

- **Nursing:** is a healthcare profession focused on providing care to people, families, and communities to facilitate the attainment, maintenance, or restoration of optimal health and quality of life. It entails a combination of clinical proficiency, empathy, and comprehensive patient care, incorporating many tasks such as patient evaluation, treatment formulation, drug administration, progress monitoring, health education provision, and emotional support delivery. Nurses are essential in direct patient care and as members of a broader healthcare team, working with other medical professionals to guarantee thorough and successful treatment (Flaubert, et al. 2021).
- **Laboratory Test Protocols:** Established processes and criteria that healthcare professionals adhere to for the precise collection, handling, processing, and analysis of biological materials for diagnostic objectives.
- **Diagnostic Errors:** Mistakes or delays in identifying a medical issue, frequently resulting from communication failures, procedural inaccuracies, or noncompliance with established guidelines.
- **Clinical Practice:** The routine actions performed by healthcare practitioners in medical environments, including patient evaluation, treatment, and management in accordance with established standards.
- **Training and Education:** The structured and unstructured programs, courses, and professional development initiatives that nurses engage in to acquire the requisite skills and knowledge for successful duty performance.
- **Healthcare Protocols:** Defined protocols or rules employed to govern certain healthcare processes and guarantee consistent, high-quality patient care.
- **Specimen Collection:** The procedure of acquiring samples (e.g., blood, urine, or tissue) from patients for laboratory analysis, assuring appropriate methodology and management to preserve sample integrity (Corcoran, 2018).

Literature Review:

✦ The current practices followed by nurses for implementing laboratory test protocols in clinical settings:

1. Adherence to Standard Operating Procedures (SOPs):

Nurses in clinical environments must adhere rigorously to Standard Operating Procedures (SOPs) for laboratory testing processes. These protocols guarantee that tests are performed in a uniform, methodical, and secure way, encompassing detailed rules for patient preparation, sample collection, and management. Nurses get acquainted with these practices during their training and continuous professional growth.

Sample Collection: Nurses are tasked with collecting diverse biological samples, including blood, urine, sputum, or tissue. They must guarantee that the collection procedures are exact, which may involve selecting the appropriate location for blood draws, meticulously handling specimens to avert contamination, and ensuring they are appropriately labeled with the patient's information to prevent errors (Corcoran, 2018).

Accurate Labeling and Handling: Proper labeling is crucial to guarantee that specimens arrive at the laboratory with the right identity. Nurses confirm patient identification (including name, date of birth, and hospital number) prior to sample collection. They also guarantee that specimens are maintained at the correct temperature and dispatched to the laboratory promptly to avert any deterioration that may compromise the results (Dunn, 2015).

Infection Control Measures: Infection control is an essential component of laboratory testing. Nurses adhere to stringent hygiene measures, including personal protective equipment (PPE) including gloves, masks, and gowns during sample collection. They guarantee adequate hand and surface sanitization, together with the appropriate disposal of contaminated materials, to minimize the risk of infection transmission (Forney).

2. Preparation of the Patient:

Nurses play a vital role in preparing patients for laboratory testing, which is essential for guaranteeing the accuracy and success of test findings.

Pre-Test Education: Nurses provide patients with information on the laboratory tests they are scheduled to receive. This entails elucidating the test's purpose, its need, and the possible outcomes. Patient education alleviates fear and fosters compliance during the procedure. Nurses may offer verbal guidance or written documentation, particularly for procedures necessitating certain preparations,

such as fasting or discontinuing certain drugs (Pouresmail, et al.2023).

Patient Preparation Protocols: Specific tests need certain patient preparation, such as fasting for blood tests or abstaining from certain drugs that may compromise the findings. Nurses verify that patients adhere to these standards and validate any specific instructions prior to the test's execution. Patients may need to discontinue anticoagulant drugs prior to getting a coagulation profile test.

Addressing Patient Anxiety: Numerous patients experience apprehension regarding laboratory tests, particularly those that include invasive procedures such as blood draws. Nurses are educated to offer emotional support, providing confidence and elucidating the procedure in a soothing manner. They address any inquiries patients may have, facilitating a greater sense of ease and involvement in the process.

Pre-Test Condition Monitoring: Prior to administering tests, nurses assess patients for factors that may affect findings, including vital signs (e.g., blood pressure, pulse, temperature), hydration status, and any pre-existing medical problems that might modify test outcomes. This guarantees that test outcomes remain unaffected by variables such as fever, dehydration, or unstable medical conditions (Toney-Butler, & Unison-Pace, 2018).

3. Ensuring Accurate Test Implementation:

Nurses are essential in guaranteeing the precise and consistent execution of laboratory testing.

Correct Test Selection: Nurses collaborate with physicians to guarantee that appropriate laboratory tests are requested according to the patient's condition, symptoms, and medical history. They may assist with validating test orders, ensuring that tests are suitable for the patient's clinical state, and verifying that the relevant specimens are obtained. A nurse may confirm that the correct sample type (e.g., blood, urine, or sputum) is dispatched to the laboratory for the designated test.

Communication with Laboratory Staff: Nurses improve communication between the clinical team and laboratory personnel. Nurses rapidly inform laboratory professionals of any difficulties with the specimen, such as insufficient sample volume or the necessity for recollection, to ensure swift resolution. They facilitate the scheduling of tests to guarantee that findings are accessible when required for clinical decision-making (O'Daniel, & Rosenstein, 2008).

4. Managing Laboratory Test Documentation:

Precise documentation is a fundamental duty of nurses, especially in monitoring and recording laboratory test outcomes.

Recording and Tracking Results: Nurses meticulously record laboratory test orders, specimen collections, and test results in the patient's medical records, guaranteeing precise data entry into Electronic Health Records (EHRs). This enables other healthcare professionals to immediately access and analyze test data, facilitating clinical decision-making and treatment planning (Ondogan, et al.2023).

Follow-Up on Results: Nurses are accountable for monitoring the outcomes after the completion of examinations. Nurses ensure that crucial or abnormal results are quickly relayed to the relevant healthcare providers. This may need informing physicians, specialists, or other members of the healthcare team to facilitate prompt treatments depending on the findings.

Collaboration with Other Healthcare Providers: Nurses frequently act as intermediaries between the laboratory and the broader healthcare team. They guarantee that results are precisely conveyed, understood, and implemented, working in conjunction with physicians and other professionals to modify treatment plans as necessary depending on test outcomes (Rosen, et al.2018).

5. Post-Test Procedures:

Upon the completion of laboratory testing, nurses maintain a crucial role in patient care and safety.

Patient Monitoring and Care: Following certain tests, particularly those involving invasive procedures (e.g., blood draws or biopsies), nurses observe patients for any bad responses or consequences. This may involve monitoring vital signs, assessing for indications of hemorrhage or infection, and assuring the patient's comfort throughout recovery following the surgery.

Post-Test Instructions: Based on the test conducted, nurses may furnish post-test care directives, including guidance on pain management, puncture site care, or adherence to particular protocols for further testing or treatment. For instance, if a patient has had blood extraction for a lipid profile, the nurse may advise the patient to refrain from vigorous exercise for the remainder of the day.

6. Communication of Test Results:

Clear communication of test results is essential for ensuring that both patients and healthcare providers comprehend the implications of the findings.

Interdisciplinary Communication: Nurses play a crucial role in conveying laboratory data to physicians, specialists, and other members of the healthcare team. They may immediately communicate key results to ensure prompt action is made. For instance, if a laboratory test reveals a life-threatening disease, a nurse would promptly inform the physician or clinician (Thompson, et al.2018).

Patient Communication: Nurses convey test results to patients, particularly when the results are crucial or atypical. They elucidate the implications of the results in layman's words, address patient inquiries, and assist in coordinating any necessary follow-up therapy. Nurses are crucial in ensuring that patients comprehend their condition and the subsequent necessary actions, which may involve more testing, alterations in medication, or follow-up consultations (Sibiya, 2018).

7. Quality Control and Assurance:

Nurses contribute to guaranteeing the utmost quality and precision of laboratory tests and procedures.

Timeliness of Results: Nurses guarantee the completion of laboratory tests within the designated timeframe and facilitate the rapid communication of test findings to the healthcare team. Delays in test findings may adversely impact patient care; thus, nurses proactively monitor pending test orders (Fischer, et al.2013).

Preventing Errors: Nurses mitigate mistakes by meticulously verifying orders and specimens prior to dispatching them to the laboratory. They monitor for inconsistencies in test results and assist in identifying potential sources of mistake, such as mislabeled

specimens or incorrect test handling, which can adversely affect patient care.

8. Utilization of Technology:

The incorporation of technology in the execution of laboratory tests has gained significance in clinical environments.

Electronic Health Records (EHR): Nurses utilize Electronic Health Records (EHR) systems to document, monitor, and disseminate laboratory test findings across the healthcare team. EHR systems facilitate the efficient retrieval of findings, enhancing accessibility for healthcare providers to interpret and respond promptly (Ehrenstein, et al.2019).

Laboratory Information Systems (LIS): Nurses engage with Laboratory Information Systems (LIS) to guarantee the precise entry and updating of laboratory test orders and findings. These systems offer a consolidated platform for monitoring all laboratory tests, including status updates, and enable nurses to promptly obtain data upon availability (Edayan, et al.2024).

9. Continual Education and Training:

Nurses must remain current with the newest advancements in laboratory testing methodologies, technologies, and best practices.

Ongoing Professional Development: Nurses engage in continuous professional development through frequent training and educational programs to enhance their expertise in laboratory protocols, including new technology, techniques, and recommendations. This guarantees that nurses are equipped to execute laboratory test methods proficiently and adjust to modifications in healthcare practices (Mlambo, et al.2021).

Competency Assessments: Nurses undergo frequent competency assessments in laboratory testing methods to verify their proficiency in sample collection, test interpretation, and result communication. Continuous evaluations facilitate the identification of improvement areas and enhance the provision of superior care.

10. Collaborative Practice:

Nurses collaborate within a broader healthcare team to ensure the efficient implementation of laboratory test procedures and the appropriate communication of results.

Teamwork: Nurses collaborate closely with laboratory technicians, physicians, and other healthcare professionals to guarantee the accurate execution of laboratory tests. They cooperate to address any concerns pertaining to test execution, specimen management, or result analysis (Rosen, et al.2018).

Problem-Solving: Nurses engage in multidisciplinary team meetings to examine laboratory test findings and discuss any inconsistencies or concerns. This partnership enhances overall patient care and guarantees the appropriate utilization of laboratory tests in clinical decision-making.

✦ The challenges nurses, face when implementing laboratory test protocols and communicating results:

1. Lack of Standardization in Protocols:

A primary difficulty for nurses is the absence of defined practices across various healthcare environments. Although some institutions have implemented laboratory test procedures, they may not be uniformly used across different departments, nor may there be consistency throughout hospitals, clinics, and laboratories.

Inconsistency in Protocols: Various institutions may implement disparate processes for sample collection, handling, storage, and transportation, resulting in potential confusion and mistakes. This discrepancy heightens the probability of errors, including mislabeled specimens or erroneous patient identification, which can directly affect patient treatment (Litchfield, et al.2015).

Outdated Protocols: Certain protocols may not be revised according to the newest research or technology progress, perhaps leading to the utilization of antiquated procedures that may lack the accuracy or efficiency of contemporary alternatives.

2. Communication Barriers:

Effective communication is crucial in the laboratory testing process; nevertheless, nurses frequently encounter obstacles that impede clear and timely communication.

Communication Gaps Between Departments: Nurses serve as the conduit among patients, physicians, and laboratory technicians, and inadequate communication among these entities can result in delays or misunderstanding of data. If the laboratory fails to effectively explain the date of test result availability, the nurse may be ill-prepared to swiftly convey the information to the physician (Norouzinia, et al.2016).

Failure to Escalate Critical Results: While nurses are tasked with communicating laboratory results, they may struggle to successfully escalate urgent or critical findings owing to excessive workloads or hierarchical communication barriers. In certain instances, vital results may not be conveyed to the appropriate healthcare clinician promptly, perhaps postponing essential measures (Norouzinia, et al.2016).

Patient Communication Issues: Nurses frequently must convey test results to patients in a straightforward and comprehensible way. Explaining intricate medical information to patients with differing degrees of health literacy can be challenging. Patient misunderstanding may result in worry, non-adherence to follow-up advice, or inadequate comprehension of their health situation.

3. Workload and Time Constraints:

Nurses often operate under stringent schedules, which might hinder the implementation of test methods and the efficient communication of results.

Heavy Caseloads: Nurses frequently manage several patients concurrently, resulting in insufficient time for comprehensive sample collection, patient preparation, or post-test observation. When nurses have excessive workloads, they may expedite processes, therefore heightening the likelihood of mistakes in test administration, patient education, or paperwork.

Delayed Test Results: Time limitations may affect the prompt dissemination of test outcomes. Nurses may have difficulties in rapidly examining and following up on laboratory data, particularly when results are delayed or when efficient monitoring mechanisms are lacking. This delay may impede the healthcare team from responding to critical findings promptly (Mrazek, et al.2020)

Inadequate Time for Patient Education: Communicating the importance of test findings to patients requires time; nevertheless, due to time constraints, nurses may be unable to provide appropriate time to guarantee that patients comprehensively grasp their results and the ramifications for their treatment.

4. Technological Obstacles:

Nurses frequently encounter issues associated with Laboratory Information Systems (LIS) and Electronic Health Records (EHR) due to the growing dependence on technology in healthcare.

System Downtime or Errors: The EHR and LIS systems utilized for documenting, tracking, and sharing test findings may encounter technological difficulties, including system outages, malfunctions, or inaccuracies in data entry. This may result in delays in obtaining findings, missing records, or potential misunderstanding of data. Nurses may encounter difficulties in navigating intricate or new systems, perhaps resulting in documentation mistakes (Tsai, et al.2020).

Incompatibility Between Systems: Occasionally, disparate systems employed by different departments (e.g., laboratory, radiology, or outpatient care) may lack full integration, resulting in inefficient transmission of test data. Nurses might need to manually monitor findings or communicate over phone or fax, resulting in possible delays and inaccuracies.

Inadequate Training on New Technologies: With the introduction of new technology and software, nurses may not consistently receive sufficient training for optimal utilization. The absence of training may lead to challenges in data entry or retrieval, thereby hindering the execution of laboratory protocols and the dissemination of test findings (Mohammadnejad, et al.2023).

5. Patient-Related Challenges:

Nurses may encounter many problems associated with patients that might affect the precision of laboratory testing and the transmission of results.

Patient Non-Compliance: Certain patients may inadequately adhere to pre-test directives (e.g., fasting for blood tests), resulting in erroneous or incorrect outcomes. Nurses are required to remind patients of these directions and occasionally assist them in adhering to them; nevertheless, this can be a difficulty, especially with patients who are apprehensive, forgetful, or resistant to cooperation (Chittenden, 2022).

Challenges in Patient Identification: It is imperative that laboratory test samples are accurately labeled with the patient's information. In bustling hospital environments, individuals may possess identical names or be misdiagnosed, resulting in possible mix-ups. Nurses must adhere to correct identification processes; yet, errors may still occur owing to the rapid speed of the workplace.

Anxiety and Communication Obstacles with Patients: Patients having laboratory tests may experience anxiety or fear, hindering nurses' ability to convey the procedure or interpret the results appropriately. Moreover, patients may possess a limited comprehension of medical language, complicating nurses' efforts to elucidate results clearly without inducing confusion or anxiety.

6. Workforce Shortages and Staffing Issues:

The persistent problem of nurse shortages in several healthcare environments might intensify difficulties in executing laboratory test regimens and conveying outcomes.

Inadequate Staffing Levels: Insufficient personnel may result in nurses being allocated more patients than they can competently oversee, causing fatigue and a decline in care quality. The scarcity of nurses leads to an increased workload, perhaps resulting in the hasty or negligent execution of critical activities associated with laboratory test protocol compliance and result transmission.

Inexperienced Nurses: Occasionally, novice or unseasoned nurses may lack familiarity with comprehensive laboratory test protocols, potentially resulting in mistakes or omissions during the execution of test procedures. Moreover, they may necessitate increased effort and oversight when managing laboratory data, perhaps inducing additional stress for more seasoned personnel (Mrazek, et al.2020).

7. Legal and Ethical Considerations:

Nurses must address legal and ethical dilemmas while executing laboratory test methods and conveying results.

Confidentiality Concerns: Nurses are obligated to uphold stringent patient confidentiality regarding laboratory test results since these constitute a component of a patient's medical records. Disseminating results without appropriate approval or revealing them to inappropriate parties may result in legal complications and violations of patient trust (Tariq, & Hackert, 2018).

Informed Consent: Securing informed consent for laboratory testing is a fundamental aspect of nursing practice. In high-pressure circumstances or crises, nurses may find it challenging to thoroughly communicate the consequences of tests and results to patients, thereby raising ethical problems with the patient's autonomy and right to comprehend their treatment.

Previous Studies:

According to (Hakami, et al.2022) This study elucidates the specific functions of nursing and phlebotomy, as well as the significance of appropriate communication between these two professions. Each topic is presented; yet, the significant interrelatedness between them may result in some ambiguity. Nursing involves independent and cooperative care for individuals of all ages, families, groups, and communities, whether ill or well, across many environments. Nursing include assessment, diagnosis, outcome identification, planning, implementation, and evaluation. Registered and enrolled nurses, along with other workers, operate in diverse private and public environments across the health and community sectors. Phlebotomy is a component of blood sample collection for laboratory testing, which is utilized for diagnosis, outcome identification, planning, and evaluation. The connection between nursing and laboratory services might vary from a trivial one-page request form and a singular patient therapy to the intricate management of chronic illness patients

necessitating years of testing and treatment. In contemporary healthcare systems, it is prevalent for patients to transition between community and hospital care, often changing settings while remaining under the same treatment regimen. In these situations, it can be rather challenging for the nurse to ensure the tests are conducted and to monitor the findings. This is especially crucial for high-priority diagnostics with a limited treatment pathway. An example relatable to nearly every nurse is the urgent necessity to administer a level 1 platelet transfusion for a patient experiencing life-threatening hemorrhage or to verify service for a patient who has awaited a blood sugar test for six hours.

In the study (Alsharyah, et al.2023) Efficient monitoring of important laboratory values is crucial for facilitating prompt intervention and achieving optimal patient outcomes in healthcare environments. This research examines essential ways for nurses and laboratory technicians to collaborate in the identification, communication, and response of crucial values. Clear communication methods, prioritization of patient care, meticulous documentation, and ongoing quality enhancement are underscored. Extensive training and educational programs provide healthcare personnel with the expertise and competencies required to adeptly manage crucial circumstances. By adopting these tactics and cultivating a culture of safety and excellence, healthcare institutions may augment patient safety and boost clinical results.

According to Clavijo et al. (2020) The prompt sharing of essential test results is crucial yet burdensome. Objective: To evaluate the effect of a novel technology on the reporting process of important laboratory findings at our 480-bed, adult and pediatric, tertiary-care, medical school-affiliated health facility located in the southeastern United States. Methods: We modified the procedure for reporting critical values from telephone-only to include both telephone and a secure messaging application. The implementation was facilitated by physician order entry, an online on-call roster for availability, and assistance from the C-suite. findings: Prior to our process modifications, over 95% of the important laboratory findings were reported in under 30 minutes. The application decreased the duration required for reporting findings. This technique has obviated the necessity for pathology residents and attending physicians to participate in reporting. Discussion: Secure messaging has enhanced the reporting of crucial laboratory data, increasing efficiency and ensuring a trustworthy record of the procedure. This approach complies with or surpasses the criteria set by the accrediting authorities. The strategy is appropriate for mobilizing quick reaction teams in the event of hypercritical values.

Methodology:

1. Study Design:

The research utilizes a descriptive methodology to clarify the role of nursing in executing laboratory test regimens and conveying outcomes. This design effectively emphasizes the current procedures, issues, and their effects on patient care in healthcare institutions. The descriptive technique enables a comprehensive analysis of the existing tactics employed by nurses, highlighting both strengths and opportunities for enhancement in laboratory management and result communication. The descriptive analytical technique denotes a scientific strategy for precisely identifying the subject of investigation, and presenting results in a systematic, interpretable fashion (Doyle, et al., 2020).

2. Research Method:

Research techniques are systematic procedures employed to gather, analyze, and interpret data, so providing an organized way to address research inquiries or assessing hypotheses. This study employs a quantitative approach framework to assess the influence of nursing practices on the execution of laboratory tests and communication. Quantitative research approaches guarantee that data collection and analysis are performed systematically, reliably, and validly (Gupta, & Gupta, 2022).

3. Study Population:

The research population comprises nursing professionals engaged in managing laboratory test methods and conveying findings within healthcare institutions. The target group is selected based on their direct involvement in laboratory work and patient interactions. A sample size of around 100 registered nurses employed in hospital environments, clinics, or specialized care units. The selected group facilitates the collection of pertinent data and the formulation of generalizable insights concerning nursing practices.

4. Data Collection:

Data collection is the methodical process of acquiring information to answer research inquiries, assess hypotheses, and analyze results. Precise data collection is essential for guaranteeing the reliability and validity of study outcomes (Taherdoost, 2021). This research will utilize both primary and secondary data-gathering techniques:

4.1 Secondary Sources:

Secondary data provides a basis for comprehending the current body of knowledge and enhancing the research questions. It also facilitates the identification of relevant approaches and contextualizes primary data analysis. The research will utilize secondary sources including published publications, books, and previous studies pertinent to nursing practices in laboratory protocol administration and result communication (Ajayi, 2017).

4.2 Primary Sources:

Primary data gathering yields firsthand knowledge directly pertinent to the study's topic. This project will collect primary data via structured surveys administered to nurses. The survey will encompass inquiries evaluating training, existing practices, perceived obstacles, and solutions pertinent to the execution and communication of laboratory test protocols. The survey style guarantees thorough data gathering for a rigorous analysis.

5. Data Analysis:

"Data analysis" is the methodical and structured procedure of assessing, refining, altering, and interpreting obtained data to draw conclusions, resolve research questions, or test hypotheses. Currently, researchers utilize several statistical and computational methods to examine the collected data.

The statistical analysis of the questionnaire responses was conducted using SPSS.

6. Ethical Considerations:

Ethical norms will be maintained throughout the investigation. Participation will be optional, and informed permission will be secured from all participants. Confidentiality and anonymity of data will be preserved to safeguard participants' identity. Approval from pertinent institutional review boards will be obtained before initiating data collection.

Results:

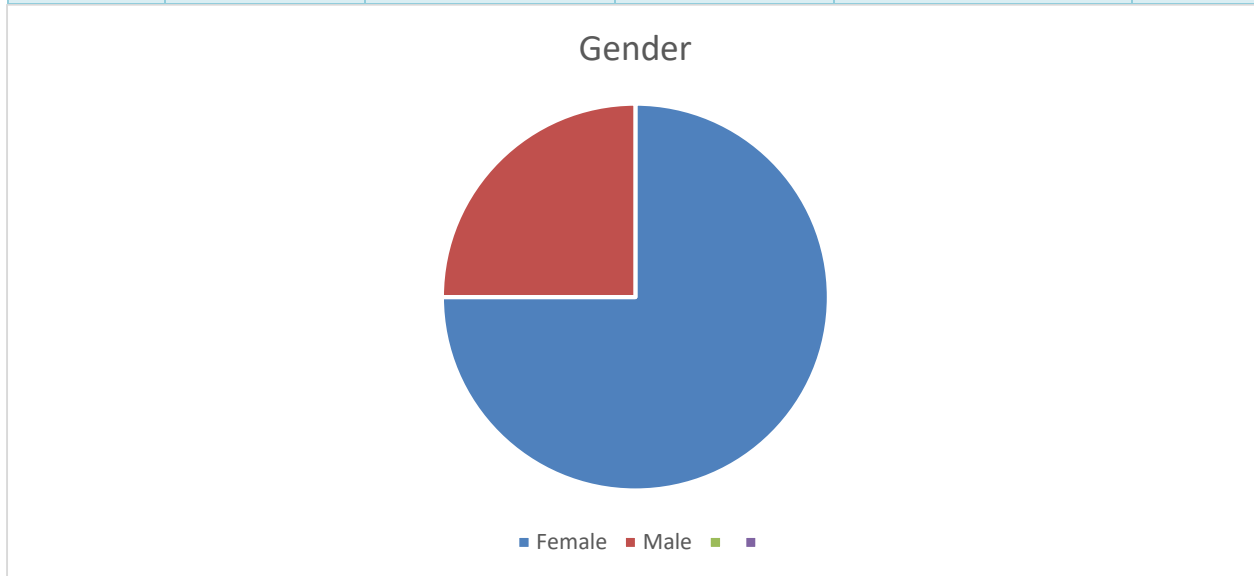
1. Demographic Questions:

1.1 Gender:

The following table on the gender distribution of the study sample reveals that females represent 75%, and males comprise 25%.

Table 1: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	75	75.0	75.0	75.0
	Male	25	25.0	25.0	100.0
	Total	100	100.0	100.0	

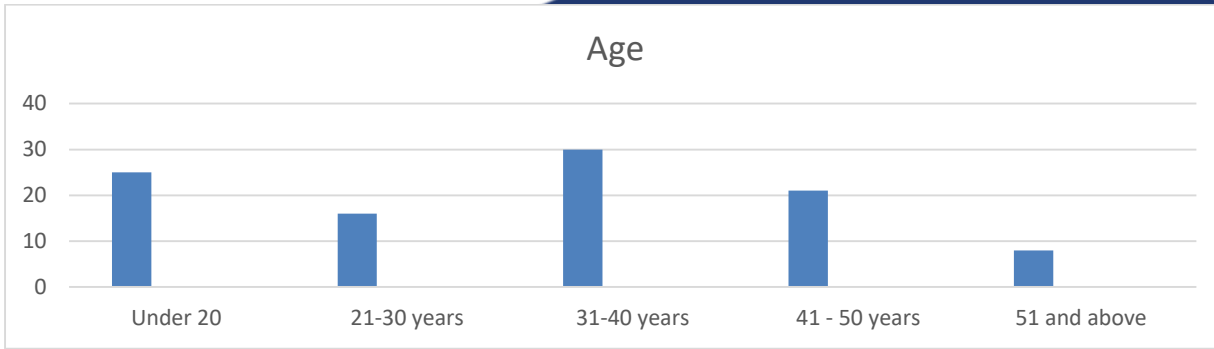


1.2 Age:

The subsequent table illustrates the age distribution of the study sample, revealing that the highest percentage, 30%, corresponds to the (31-40 years) age group, followed by 25% for those (under 20 years), 21% for the (41-50 years) group, 16% for the (21-30 years) group, and 8% for individuals aged (51 and above).

Table 2:Age

		Age		
		Frequency	Percent	Valid Percent
Valid	Under 20	25	25	25
	21-30 years	16	16	16
	31 - 40 years	30	30	30
	41 - 50 years	21	21	21
	51 and above	8	8	8
	Total	100	100.0	100.0



1.3 Current Workplace Setting:

The table showing the distribution of the study sample by Current Workplace Setting reveals that Hospital (Inpatient care) represent 25% of the total, followed by Outpatient clinic at 30%, Community health center at 20%, Long-term care facility at 15%, and Private practice at 10%. The cumulative percentage ensures full representation, totaling 100%.

Table 3

Current Workplace Setting					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hospital (Inpatient care)	25	25	25	25
	Outpatient clinic	30	30	30	55
	Community health center	20	20	20	75
	Long-term care facility	15	15	15	90
	Private practice	10	10	10	100
	Total	100	100.0	100.0	

1. The current practices followed by nurses for implementing laboratory test protocols in clinical settings:

- ✓ Statement "Nurses collaborate with physicians to ensure that appropriate laboratory tests are requested, and they communicate with laboratory staff to resolve any issues related to specimen quality or test scheduling." came in the first place with an arithmetic mean of 4.22 and a standard deviation of .675. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Nurses are responsible for collecting biological samples such as blood, urine, and tissue, ensuring proper handling and labeling to prevent contamination and errors" came in the second order, with a mean of 4.21 and a standard deviation of .832. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Nurses adhere rigorously to Standard Operating Procedures (SOPs) for laboratory testing processes, ensuring uniformity and security in test procedures, including patient preparation, sample collection, and management" mean of 4.15 and a standard deviation of .687. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Nurses play a vital role in preparing patients for laboratory tests by providing pre-test education, confirming patient adherence to preparation protocols, and addressing patient anxiety" in the fourth rank came with an arithmetic mean of 3.89 and a standard deviation of .751. Therefore, the direction of the responses of the study sample is neutral.

The results indicated that the greatest consensus was on the statement "Nurses collaborate with physicians to ensure appropriate laboratory tests are requested," with a mean of 4.22 and a standard deviation of 0.675. The statement "Nurses are responsible for collecting biological samples" had a mean score of 4.21 and a standard deviation of 0.832. The third statement, "Nurses adhere to Standard Operating Procedures (SOPs) for laboratory testing," yielded a mean of 4.15 and a standard deviation of 0.687. The assertion "Nurses play a vital role in preparing patients for laboratory tests" received a ranking of fourth, with a mean of 3.89 and a standard deviation of 0.751, signifying a neutral reaction.

Table 4 Descriptive Statistics of The current practices followed by nurses for implementing laboratory test protocols in clinical settings

Descriptive Statistics				
	Mean	Std. Deviation	p-value	arrangement
Nurses adhere rigorously to Standard Operating Procedures (SOPs) for laboratory testing processes, ensuring uniformity and security in test procedures, including patient preparation, sample collection, and management.	4.15	.687	0.001	3
Nurses are responsible for collecting biological samples such as blood, urine, and tissue, ensuring proper handling and labeling to prevent contamination and errors.	4.21	.832	0.320	2
Nurses play a vital role in preparing patients for laboratory tests by providing pre-test education, confirming patient adherence to preparation protocols, and addressing patient anxiety.	3.89	.751	0.121	4
Nurses collaborate with physicians to ensure that appropriate laboratory tests are requested, and they communicate with laboratory staff to resolve any issues related to specimen quality or test scheduling.	4.22	.675	0.603	1
The current practices followed by nurses for implementing laboratory test protocols in clinical settings	4.0680	.36979		

2. The challenges nurses, face when implementing laboratory test protocols and communicating results:

- ✓ Statement "Technological challenges, including system downtimes and incompatibility between healthcare information systems, can delay the delivery and documentation of test results, leading to potential inaccuracies in patient care." came in the first place with an arithmetic mean of 4.24 and a standard deviation of .712. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Heavy caseloads and time constraints frequently hinder nurses from providing adequate patient education and ensuring timely dissemination of laboratory results." came in the second place with an arithmetic mean of 4.12 and a standard deviation of .844. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "The lack of standardization in laboratory test protocols across various healthcare settings leads to inconsistencies, increasing the potential for errors such as mislabeled specimens or incorrect patient identification" came in the third order, with a mean of 4.09 and a standard deviation of .911. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Nurses face significant communication barriers when coordinating between departments, which can result in delays or miscommunication of critical test results." came in the fourth order, with an arithmetic mean of 3.95 and a standard deviation of .880. Therefore, the direction of the responses of the study sample is Agree.

The statement "Technological challenges, including system downtimes and incompatibility between healthcare information systems, can delay the delivery and documentation of test results, leading to potential inaccuracies in patient care," ranked first with a mean of 4.24 and a standard deviation of 0.712, indicating agreement. "Heavy caseloads and time constraints frequently hinder nurses from providing adequate patient education and ensuring timely dissemination of laboratory results" ranked second with a mean of 4.12 and a standard deviation of 0.844. "The lack of standardization in laboratory test protocols leads to inconsistencies, increasing potential errors" ranked third with a mean of 4.09 and a standard deviation of 0.911. "Nurses face significant communication barriers when coordinating between departments" ranked fourth with a mean of 3.95 and a standard deviation of 0.880, all indicating agreement.

Table 5 Descriptive Statistics of The challenges nurses, face when implementing laboratory test protocols and communicating results

Descriptive Statistics				
	Mean	Std. Deviation	p-value	arrangement
The lack of standardization in laboratory test protocols across various healthcare settings leads to inconsistencies, increasing the potential for errors such as mislabeled specimens or incorrect patient identification.	4.09	.911	0.000	3
Nurses face significant communication barriers when coordinating between departments, which can result in delays or miscommunication of critical test results.	3.95	.880	0.292	4
Heavy caseloads and time constraints frequently hinder nurses from providing adequate patient education and ensuring timely dissemination of laboratory results.	4.12	.844	0.009	2
Technological challenges, including system downtimes and incompatibility between healthcare information systems, can delay the delivery and documentation of test results, leading to potential inaccuracies in patient care.	4.24	.712	0.000	1
The challenges nurses, face when implementing laboratory test protocols and communicating results	4.0575	.51720		

Recommendations:

- 1. Develop and Implement Standardized Protocols:** Implement uniform, current standard operating procedures throughout all healthcare departments and locations. Guarantee the periodic revision of procedures in accordance with contemporary research and technological breakthroughs.
- 2. Enhance Communication Channels:** Establish effective communication methods that enable prompt and clear interactions among nurses, lab technicians, and physicians. Establish systematic mechanisms for the timely escalation of crucial laboratory results to relevant healthcare practitioners. Facilitate training for nurses on the appropriate communication of intricate medical information to patients, emphasizing the enhancement of health literacy.
- 3. Increase Staffing and Optimize Workloads:** Promote appropriate nurse staffing to decrease caseloads and ensure ample time for each phase of the laboratory testing procedure. Employ workflow optimization measures that reduce the duration allocated to non-clinical chores, enabling nurses to concentrate on patient care and testing protocols.
- 4. Invest in Training and Professional Development:** Provide ongoing educational sessions for nurses regarding optimal laboratory test techniques, patient preparation, and result communication. Deliver specialized training on the utilization of digital technologies and electronic health record (EHR) systems for effective result reporting and communication.
- 5. Improve Patient Communication and Education Tools:** Create accessible instructional materials and tools to assist nurses in elucidating laboratory tests and findings to patients. Develop techniques for individualized patient education to improve understanding and compliance with follow-up care.
- 6. Adopt Advanced Technology Solutions:** Implement automated methods to monitor laboratory test progress and alert nurses when results are available. Employ decision-support technologies that assist nurses in interpreting and conveying test results with greater accuracy and efficacy.
- 7. Strengthen Collaboration and Interdisciplinary Coordination:** Promote a collaborative culture that facilitates regular multidisciplinary meetings to optimize procedures and address difficulties in laboratory test implementation and communication. Involve nurses in the formulation and evaluation of laboratory protocols to utilize their direct experience and perspectives.
- 8. Address Time Constraints with Flexible Scheduling:** Create adaptable staffing frameworks that can respond to peak demand periods, enabling nurses to optimize their time management while maintaining quality patient care. Implement task-sharing among the healthcare team to allocate duties and alleviate time constraints on nurses.
- 9. Enhance Support for Emotional Well-Being:** Offer tools and support mechanisms to assist nurses in managing stress and workload difficulties, hence enhancing attention and precision in adhering to procedures and conveying outcomes.

Conclusion:

The study indicates that nurses encounter several difficulties in executing laboratory test methods and conveying results. The primary obstacles consist of uneven protocols, communication deficiencies, excessive workloads, and technical challenges. These issues impede the efficient conduct of laboratory testing and may jeopardize patient care. Resolving these difficulties via established protocols, improved inter-departmental communication, and technology advancements can reduce mistakes and elevate the quality of treatment delivered. Future research must concentrate on formulating solutions to surmount these problems and enhance the training and support for nurses in this vital domain.

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