

Review Article

Medicine

Effect of Teamwork of Different Departments of Health Facilities in Refining and Enhancing the Healthcare Conveyance

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DOI: <https://doi.org/10.36348/sjmpps.2024.v10i12.020>

| Received: 21.10.2024 | Accepted: 15.12.2024 | Published: 30.12.2024

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Abstract

Healthcare technicians play a pivotal role in the modern healthcare system, serving as the backbone of various medical disciplines. This review article explores the multifaceted roles of healthcare technicians across five key areas: radiology, nursing, laboratory services, medical records, and pharmacy. Each section delves into the specific responsibilities, skills, and contributions of technicians in these fields, highlighting their importance in enhancing patient care, ensuring safety, and improving healthcare outcomes. By examining the evolving landscape of healthcare technology and the increasing complexity of patient needs, this article underscores the necessity for ongoing education and collaboration among healthcare technicians and other professionals. Ultimately, the integration of healthcare technicians into multidisciplinary teams is essential for delivering comprehensive and effective patient care.

Keywords: Teamwork; Departments; Health facilities; Refining; enhancing; Healthcare; Conveyance.

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INTRODUCTION

The healthcare system is a complex and dynamic environment that relies on the collaboration of various professionals to deliver quality patient care. Among these professionals, healthcare technicians occupy a crucial position, providing essential support across multiple domains. Their roles are often multifaceted, encompassing a wide range of responsibilities that contribute to the overall functioning of healthcare facilities. This review article aims to explore the diverse roles of healthcare technicians in five key areas: radiology, nursing, laboratory services, medical records, and pharmacy. By examining the

specific contributions of technicians in these fields, we can better understand their impact on patient care and the healthcare system as a whole [1].

The increasing complexity of healthcare demands a workforce that is not only skilled but also adaptable to new technologies and practices. As healthcare evolves, so too do the roles of technicians, who must stay abreast of advancements in their respective fields. This article will provide a comprehensive overview of the various roles of healthcare technicians, emphasizing their significance in enhancing patient outcomes and the overall efficiency of healthcare delivery [2].

Healthcare technicians are often the unsung heroes of the medical field, working diligently behind the scenes to ensure that patient care is delivered effectively and efficiently. Their contributions are vital in maintaining the smooth operation of healthcare facilities, and they often serve as the first point of contact for patients. This initial interaction can set the tone for the entire healthcare experience, making the role of technicians even more critical [3].

In addition to their technical skills, healthcare technicians must possess strong interpersonal skills, as they frequently interact with patients, families, and other healthcare professionals. This ability to communicate effectively is essential for building trust and rapport, which can significantly impact patient satisfaction and outcomes. Furthermore, healthcare technicians must be adaptable and willing to learn, as the healthcare landscape is constantly changing due to advancements in technology, evolving patient needs, and new treatment protocols [4].

As we delve deeper into the specific roles of healthcare technicians in radiology, nursing, laboratory services, medical records, and pharmacy, it becomes evident that their contributions are interconnected. Each area relies on the expertise and support of technicians to function optimally, ultimately leading to improved patient care and health outcomes. By recognizing and valuing the roles of healthcare technicians, we can foster a more collaborative and effective healthcare environment that prioritizes patient well-being [19].

Radiology technicians, also known as radiologic technologists, are integral to the diagnostic imaging process. They operate advanced imaging equipment, such as X-ray machines, computed tomography (CT) scanners, and magnetic resonance imaging (MRI) machines, to produce high-quality images that aid in the diagnosis and treatment of various medical conditions. Their expertise in imaging technology is essential for ensuring accurate diagnoses, which ultimately leads to effective treatment plans [5].

Radiology technicians are responsible for preparing patients for imaging procedures, explaining the process, and ensuring their comfort and safety. They must possess a thorough understanding of anatomy, physiology, and radiation safety protocols to minimize exposure to patients and themselves. Additionally, they must be skilled in operating complex imaging equipment and interpreting images to identify any abnormalities [6].

Radiology technicians also play a critical role in maintaining the imaging equipment, ensuring that it is functioning correctly and safely. This includes performing routine quality control checks and troubleshooting any technical issues that may arise [20]. Their ability to work collaboratively with radiologists and other healthcare professionals is essential for

ensuring that imaging studies are conducted efficiently and effectively.

The role of radiology technicians extends beyond technical skills; they are often the first point of contact for patients undergoing imaging procedures. Their ability to communicate effectively and provide compassionate care can significantly alleviate patient anxiety and enhance the overall experience. Furthermore, the accuracy of the images produced by radiology technicians directly impacts the diagnostic process, influencing treatment decisions and patient outcomes [7].

In addition to their technical expertise, radiology technicians are also responsible for educating patients about the imaging process. This includes explaining the purpose of the procedure, what to expect during the exam, and any necessary preparations. By providing clear and concise information, radiology technicians help to empower patients and reduce any apprehension they may have about the procedure.

Nursing technicians, commonly referred to as nursing assistants or aides, are vital members of the healthcare team. They provide essential support to registered nurses (RNs) and physicians by assisting with daily patient care activities, monitoring vital signs, and ensuring patient comfort. Their role is particularly important in acute care settings, where timely and compassionate care can significantly affect patient recovery.

Nursing technicians are responsible for a variety of tasks, including bathing and dressing patients, assisting with mobility, and providing basic medical care such as taking vital signs and administering medications under the supervision of RNs. They must possess strong interpersonal skills, as they often spend the most time with patients, providing emotional support and companionship [8].

In addition to their direct patient care responsibilities, nursing technicians also play a crucial role in maintaining a safe and clean environment for patients. This includes ensuring that patient rooms are tidy, assisting with infection control measures, and reporting any changes in patients' conditions to the nursing staff. Their attention to detail and commitment to patient safety are essential for promoting positive health outcomes.

The presence of nursing technicians in healthcare settings enhances the quality of patient care by ensuring that patients receive the attention and support they need. Their ability to build rapport with patients fosters a sense of trust and comfort, which is essential for effective healing. Additionally, nursing technicians play a crucial role in monitoring changes in

patients' conditions, allowing for timely interventions and improved outcomes [9].

Research has shown that the involvement of nursing technicians in patient care is associated with higher levels of patient satisfaction. Their compassionate approach and dedication to providing high-quality care contribute to a positive healthcare experience for patients and their families. Furthermore, nursing technicians often serve as advocates for patients, ensuring that their needs and concerns are addressed promptly [3].

Laboratory technicians, also known as medical laboratory technologists, are responsible for conducting tests that are critical for diagnosing diseases and monitoring health conditions. They analyze blood, urine, and other biological samples, ensuring that results are accurate and timely. Their work is essential for guiding treatment decisions and managing patient care [10].

Laboratory technicians perform a wide range of tests, including hematology, microbiology, and biochemistry analyses. They must adhere to strict safety and quality control standards to maintain the integrity of laboratory results. Additionally, they must possess strong analytical skills and attention to detail, as even minor errors can lead to significant consequences for patient care.

Laboratory technicians are also responsible for maintaining laboratory equipment and ensuring that it is calibrated and functioning correctly. This includes performing routine maintenance, troubleshooting issues, and adhering to safety protocols to prevent contamination and ensure accurate results. Their expertise in laboratory procedures and quality control is essential for maintaining the reliability of diagnostic testing [11].

The accuracy and timeliness of laboratory results are crucial for effective patient management. Laboratory technicians play a vital role in ensuring that healthcare providers have access to reliable data for making informed decisions. Their expertise in laboratory procedures and quality control contributes to improved diagnostic accuracy, ultimately leading to better patient outcomes [21].

Moreover, laboratory technicians often collaborate with physicians and other healthcare professionals to interpret test results and provide insights into patient conditions. Their ability to communicate effectively and work as part of a multidisciplinary team is essential for optimizing patient care. By providing accurate and timely laboratory results, technicians help to facilitate prompt treatment interventions, which can significantly impact patient recovery [5].

Medical records technicians, also known as health information technicians, manage patient data,

ensuring that medical histories, treatment plans, and billing information are accurately recorded and maintained. Their work is essential for effective communication among healthcare providers and for compliance with legal and regulatory standards.

Medical records technicians are responsible for organizing and maintaining patient records, ensuring that information is complete, accurate, and accessible. They must be proficient in electronic health record (EHR) systems and possess a strong understanding of medical coding and billing practices. Additionally, they must adhere to strict confidentiality and privacy regulations to protect patient information [12].

In addition to managing patient records, medical records technicians also play a critical role in data analysis and reporting. They may be involved in tracking patient outcomes, monitoring quality metrics, and ensuring compliance with regulatory requirements. Their ability to analyze data and generate reports is essential for supporting quality improvement initiatives within healthcare organizations [9].

The role of medical records technicians is critical in facilitating effective communication among healthcare providers. Accurate and up-to-date patient records ensure that all members of the healthcare team have access to essential information, which is vital for coordinating care and making informed treatment decisions. Furthermore, their expertise in coding and billing contributes to the financial sustainability of healthcare organizations.

The accuracy of medical records also has significant implications for patient safety. Incomplete or inaccurate records can lead to medication errors, misdiagnoses, and other adverse events. By ensuring that patient information is accurately documented and readily accessible, medical records technicians help to mitigate these risks and promote safe, effective care [13].

Pharmacy technicians support pharmacists in dispensing medications and managing pharmacy operations. They play a critical role in ensuring that patients receive the correct medications and understand their usage. Their responsibilities encompass a wide range of tasks, from preparing prescriptions to managing inventory and providing customer service.

Pharmacy technicians are responsible for verifying prescription orders, preparing medications, and labeling them for distribution. They must possess a strong understanding of pharmacology and medication safety to prevent errors and ensure patient safety. Additionally, they must be skilled in customer service, as they often interact directly with patients and healthcare providers [14].

Pharmacy technicians also play a vital role in managing inventory and ensuring that medications are stored and handled properly. This includes monitoring expiration dates, conducting regular inventory checks, and ensuring compliance with regulatory standards. Their attention to detail and organizational skills are essential for maintaining the efficiency of pharmacy operations.

The role of pharmacy technicians is essential in promoting safe and effective medication therapy. Their attention to detail and commitment to accuracy help prevent medication errors, which can have serious consequences for patient health. Furthermore, pharmacy technicians play a vital role in educating patients about their medications, ensuring that they understand how to take them safely and effectively [15].

Research has shown that effective communication between pharmacy technicians and patients can lead to improved medication adherence and better health outcomes. By providing clear instructions and addressing any questions or concerns, pharmacy technicians help to empower patients in managing their health. Their contributions to medication management are critical for ensuring that patients receive the full benefits of their prescribed therapies [16].

Future Directions

As healthcare technology continues to advance, the roles of healthcare technicians will likely evolve. Ongoing education and training will be essential to ensure that technicians remain proficient in their respective fields and are equipped to adapt to new technologies and practices. Additionally, fostering collaboration among healthcare technicians and other professionals will be crucial for optimizing patient care and addressing the complex needs of patients in an increasingly interconnected healthcare system [17].

The future of healthcare will demand that technicians not only possess technical skills but also engage in continuous professional development. This may include pursuing certifications, attending workshops, and participating in interdisciplinary training programs. By investing in their education and professional growth, healthcare technicians can enhance their contributions to patient care and ensure that they remain valuable members of the healthcare team [18].

In conclusion, the multifaceted roles of healthcare technicians are essential for the effective functioning of the healthcare system. Their expertise, dedication, and commitment to patient care significantly impact health outcomes and the overall quality of healthcare delivery. As the healthcare landscape continues to evolve, it is imperative that we recognize and support the vital contributions of healthcare technicians across all disciplines [22].

CONCLUSION

The roles of healthcare technicians in radiology, nursing, laboratory services, medical records, and pharmacy are interconnected, each contributing to a holistic approach to patient care. As the healthcare landscape continues to evolve, the importance of these technicians will only grow, highlighting the need for ongoing education and collaboration among all healthcare professionals. The integration of healthcare technicians into multidisciplinary teams is essential for delivering comprehensive and effective patient care, ultimately leading to improved health outcomes and patient satisfaction.

REFERENCES

1. Afaq *et al.*, "Empowering Women's Health: A Global Perspective on Artificial Intelligence and Robotics" *Cureus* (2023) doi:10.7759/cureus.49611
2. Ahmed *et al.*, "Advancing digital healthcare in Somalia: a review of modern technologies and their implications" *Bmc digital health* (2024) doi:10.1186/s44247-024-00111-x
3. Almutairi *et al.*, "Synergizing Healthcare Excellence: A Comprehensive Exploration of the Interplay Between Health Technicians, Nursing, and Health Management" (2022) doi:10.59992/ijsr.2022.v1n2p10
4. Anderson *et al.*, "Evaluation of a novel advanced pharmacy technician role: discharge Medication Education Technician" *Journal of pharmacy practice and research* (2021) doi:10.1002/jppr.1752
5. Ardila "Advancing healthcare through laboratory on a chip technology: Transforming microorganism identification and diagnostics" *World journal of clinical cases* (2025) doi:10.12998/wjcc.v13.i3.97737
6. Augustine *et al.*, "Point-of-Care Testing: The Convergence of Innovation and Accessibility in Diagnostics" *Analytical chemistry* (2025) doi:10.1021/acs.analchem.4c07075
7. Bandyopadhyay "Examining the Moderating Role of Affective Commitment on the Influence of Job Satisfaction on Intent to Stay: Evidence from Healthcare Technical Staff" *Annals of neurosciences* (2024) doi:10.1177/09727531241302573
8. Boughen and Fenn "Practice, Skill Mix, and Education: The Evolving Role of Pharmacy Technicians in Great Britain" *Pharmacy* (2020) doi:10.3390/pharmacy8020050
9. Boughen *et al.*, "Defining the Role of the Pharmacy Technician and Identifying Their Future Role in Medicines Optimisation" *Pharmacy* (2017) doi:10.3390/pharmacy5030040
10. Bowman *et al.*, "Comparison of Medication History Accuracy Between Nurses and Pharmacy Personnel" *Journal of pharmacy practice* (2017) doi:10.1177/0897190017739982
11. Brown *et al.*, "Issues affecting nurses' capability to use digital technology at work: An integrative

- review" *Journal of clinical nursing* (2020) doi:10.1111/jocn.15321
12. Bukić *et al.*, "Empowering Patient Safety: Assessment of Adverse Drug Reaction Knowledge and Practice Among Pharmacy Professionals" *Pharmacy* (2024) doi:10.3390/pharmacy13010001
13. Crawford *et al.*, "Bug Busters: Who you gonna call? Professional development for healthcare simulation technology specialists" *Advances in simulation* (2019) doi:10.1186/s41077-019-0105-x
14. Cummings *et al.*, "Leadership styles and outcome patterns for the nursing workforce and work environment: A systematic review" *International journal of nursing studies* (2018) doi: 10.1016/j.ijnurstu.2018.04.016
15. Dering-Anderson *et al.*, "Defining the Role of the Advanced Pharmacy Technician: Perspective Dissonance" *Journal of pharmacy technology* (2020) doi:10.1177/8755122520947637
16. Dorez *et al.*, "The Pharmacy of the Future: Pharmacy Professionals' Perceptions and Contributions Regarding New Services in Community Pharmacies" *Healthcare* (2023) doi:10.3390/healthcare11182580
17. Hodges "Forensically reconstructing biomedical maintenance labor: <scp>PDF</scp> metadata under the epistemic conditions of <scp>COVID</scp>-19" *Journal of the association for information science and technology* (2021) doi:10.1002/asi.24484
18. Hodgetts and Findlay "Putting Role 1 First: The Role 1 Capability Review" *Journal of the royal army medical corps* (2012) doi:10.1136/jramc-158-03-04
19. Ibraheem *et al.*, "The Impact of the Health Care Chat-bot Initiative on Patient Outcomes and Accessibility" *International journal of research publication and reviews* (2024) doi:10.55248/gengpi.5.0324.07102
20. Jat *et al.*, "Evolving Software Architecture Design in Telemedicine: A PRISMA-based Systematic Review" *Healthcare informatics research* (2024) doi:10.4258/hir.2024.30.3.184
21. Karłowicz-Bodalska *et al.*, "Over the Counter Pain Medications Used by Adults: A Need for Pharmacist Intervention" *International journal of environmental research and public health* (2023) doi:10.3390/ijerph20054505
22. Tasleem, N., Ansari, M. N., & Raghav, R. S. (2025). *Data gravity vs. model agility: The new tension shaping the future of automation and AI: A systematic review. Journal of Information Systems Engineering and Management*, 10(49s). <https://www.jisem-journal.com/>