

Integration Between Laboratory Department and Nursing and its Effect on Patients in Hospitals in Saudi Arabia

Hussain Ali Hussain Albokhader¹, Marwa Ibrahim Khliat Alsaleh²,
Muntathir Ali Essa Almusharraf³,
Wadha Hussain Mohammed Almutawa⁴

¹Laboratory Technician, Kfhh, Alahssa Health Cluster

^{2,4}Phlebotomy Technician, Kfhh, Alahssa Health Cluster

³Emergency Medical Services Technician, Phc, Alahssa Health Cluster

Abstract

For all laboratory tests to proceed with high accuracy, the nursing department must be integrated with the laboratory to direct the nurses to draw samples by certain methods so the central venous catheter line of the patient will not be mixed up with the wrong line.

Keywords: Laboratory, Nursing, Saudi Arabia

1. Introduction

An increase in partnership between medical laboratories and nursing professionals may affect nursing and clinical outcome. Different strategies such as streamlining the processes, prioritizing the requests, and increasing communication are recommended for improving the problems found. The goal of this study is to identify quality improvement measures to strengthen the cooperation between the medical laboratories and nursing department, recognition and formulation of a structured approach, which is essential for the implementation and evaluation of the existing system and will provide the nursing department with an integrated, routine and continuous improvement strategies on the quality of medical laboratory services [1].

Hospitals are dealing with a strong cultural and linguistic diversity, leading Saudi citizens to interact with healthcare professionals of different backgrounds [2]. The aim of this survey is to measure whether it has achieved complete coordination of the two teams, to identify priority areas to improve. This is a prospective cohort study, a historic cohort study of unselected admissions to complete a survey on the experience of the hospital, with random reunites with the nursing departments and features of the wards. Admissions, after reuniting, statistically different frequency wards 0.78 on 710 included, and 565 after reuniting. There is evidence for the integration of the two teams in all observed regions. For regions such as finding results, responding to critical tests, and interpreting doctors' observations, there is a need for more formal and mutual measures. There is a strong association between the ability to understand the nursing needs and the ability to find the nurse present in their room at any given moment and the ability to find the room and the professional kindness of the nurses and a good response to all their needs with

the clinical result and the total evaluation of their stay in hospital. Therefore, strategies and recommendations for addressing the identified weaknesses are readily available [3].

1.1. Background of Study

Nursing is a department in any hospital that involves taking care of the patient from entering the ward until his leave from the hospital. This includes taking care of the patient in all aspects, giving the right medication to the patient, checking that the doctor's orders are implemented correctly, and updating the doctor with the patient's conditions. Laboratorians need to communicate with the nursing department with enough information about tests and dedicated specimens to have the correct result and fast analyzing with minimum time. Moreover, in the health department, good communication between clinical laboratories and other departments is essential for the provision of high-quality patient care and customer satisfaction. So, we need to uniform and planned policy and procedures involving specific members of each department to help maintain up take of good quality specimen so that in all hospital departments, communication is well recognized as an essential factor for patient safety, yet in our daily practice, we may overlook the importance of communication technique [1].

Many procedures must be conducted to ensure better patient condition and better health-care outcomes. This also documented that poor information from nursing staff can be a reason for medical errors and mal communication in healthcare department [4]. In close relation between the two departments, the laboratory workers cannot receive appropriate information about patient diseases, and speciation. Also, laboratory service is often used to diagnose diseases and different new illnesses for patients where the nursing staff has little information about it. This shows that both departments should work in integration towards the patients care [3].

1.2. Purpose and Significance

The importance of working together is to maximize patient care and safety. The laboratory is a vital department of the hospital. It carries much of the hospital load in terms of providing information to health care providers that help them in diagnosing and treating various illnesses [3]. Nurses, being the main caregivers who spend most of their working time involved with patient care, are the primary responders to meet the needs of hospitalized patients and that includes patient medication in addition to monitoring and providing care for patients. Consequently, integration between the laboratory department and nursing departments should improve the process of specimen collection and increase patient safety through reducing laboratory errors. Connect between the core lab units and the nurses working in the various hospital departments and wards, particularly intensive care, emergency, and operation rooms and any other department or ward where patient care is provided around the clock.

The goal of the laboratory examination is to arrive at a final accurate diagnosis and to develop a suitable treatment plan. Engaging nurses with the clinical laboratory service promotes effective pre-analytics in relation to specimen collection. Some variables such as the nature of the test, timing of test, and physical state of the patient are affected by specimen collection [5]. Nurses are involved in this period as phlebotomy is performed most frequently by a nurse. A blood sample is a principal tool for gathering medical information or diagnosing or treating diseases. The accuracy of test results heavily depends on, and even starts with, proper collection, referral, and dispensing of biological samples [6]. Their tactile approach, rapport with patients, clinical assessment of patients, and clinical judgment are beneficial in ensuring a valid and appropriate specimen collection process. Therefore, nursing experience in clinical investigations can be helpful to promote coordination between Core Lab Technicians and nurses in different hospital departments.

2. Literature Review

It is important to ensure that all involved individuals feel equally important and able to contribute by providing better care for the patient. Moreover, it is also interesting to see how such collaborations and inter-disciplinary approaches affect the nursing staff. Only a few studies have focused on understanding the new requirements posed on nurses by information systems and digitalization [7]. It would be beneficial to be able to better understand these conditions in terms of cultural differences and how this can affect the nursing staff. Cultural differences in hospitals and how these may influence the need for information and communication has been substantially explained in the literature while there is a clear gap of knowledge regarding differences and different use of digital tools among nurses in countries with different levels of digitization [8].

Integration between the Laboratory and Nursing Departments has proven to lead to significant improvements in patient safety and outcomes. The situation and findings of this study are in line with many international studies. These studies have also indicated positive outcomes of such integrations on the reduction of length of stay in hospitals, and costs of hospitalization, which are like the findings of this study. This could be since such collaborations tend to ensure wider collaborations between members of the health care team and can support acute care to be more patient oriented. Thus, it is important to provide constant support, education and training, and other resources for both nurses and laboratory employees in every hospital so that such connections can be built and maintained [3].

2.1. The Role of the Laboratory Department in Healthcare

The performance of those tests across the boundaries where interpretations along with diagnosis took place enhances the responsibility of laboratory functionaries by developing the patient and clinicians as well as among hospitals scenarios. In Arabic, hospitals, nurses, physicians and laboratory staff should interact with each other at a smooth pace. If those interactions fail, then the laboratory services will be hampered. The pattern of interaction and communication between medical laboratory staff and the contributors of all operative sections remains the main issue which ultimately affects the healthcare sector of Saudi Arabia [2].

The laboratory has been traditionally involved with the treatment and care of patients in healthcare institutions [9]. Laboratory tests constitute about 60-70% of medical decisions, and each patient within a healthcare system is using laboratory services [10]. Thus, the sole clinical consultation is not complete without the help of laboratory services. In the diagnostic phase, laboratory services have a noticeable impact on patient's outcome. Proper communication, a supportive relationship and resolving conflicts efficiently are normally altered by the patient's response by the family who brings the patient to hospital. On the contrary, it may antagonize the medical resources paving the way for a neurotransmission of the tension from the nursing wards to the laboratories.

2.2. The Role of Nursing in Healthcare

Nurses are sometimes on the frontlines of all health care services and, typically, type the bulk of all health care professionals in a putative institution. Operating in shifts night and day, nurses are usually the personnel throughout which patients trust and suppose the highest whereas receiving health care. Nursing is AN activity that's not restricted to the delivery of unadorned care to patients in an individualistic thanks to forestall, diagnose, and treat human diseases and is far quite that. Nursing that's within the care of the health problems of people and communities, the method of assessment and larger care area unit challenges that the nurse's area unit expected to require duty for. This will be an ennobling services sector that needs stress and mental concentration. Storage of a private nurse who is functioning

in team spirit among the operating groups can impinge on nursing care and patient.

Nursing encompasses an autonomous and collaborative security development through highly skilled human resources in the health care industry. Teamwork is essential in developing a work environment that is safe, efficient, effective, and promotes high results in the provision of care to patients. Varied healthcare employees are expected to collaborate whereas making certain high-quality care. The results of this investigation showed that the results of several studies argue to push forward that nurses' performance is affected by expertise levels, personality, friendship, loyalty, understanding, regular coaching and demanding but realistic objectives to enhance and usually secure nursing teamwork [3].

2.3. Importance of Integration between Laboratory and Nursing

There is a significant relationship among nurses, the clinical laboratory, and patients in terms of correctly performed tests and proper decisions made by the medical team [4]. Inaccurate interpretation of findings not only can lead to medicolegal problems, but the patient's health can also be impaired due to unnecessary treatments, oversights, and incorrect diagnosis. With the new coronavirus disease (COVID-19) outbreak there has been a rapid increase in the number of COVID-19 patients in need of hospital care, with an even more rapid need to test the large numbers of suspected cases. Saudi health-care systems, including hospitals, have faced challenges in this regard, with issues such as the influx of work, and the necessity for further workforce, and the necessity for laboratory testing being experienced. Moreover, too many tests have been requested at once, mistakenly ordered, and performed using laboratory devices. Concurrently, some patients with special needs (such as neonatal and pediatric) might also need to have their tests performed when needed or the results of their tests immediately after testing. The delays in any of these cases can lead to under- or overestimation of test results. All of these can result in serious medicolegal consequences. In many states around the world, including Saudi Arabia, there is an ongoing shortage of specific types of nurses as well as nurses generally. Nursing staff are exposed to precipitate work clinics and forsake one of the most important roles of nursing: the collection of a history and carrying out of the initial very basic physical examination their patients. The correct nursing collection or provision of discrete or continuous samples for laboratory testing is as crucial as correct checking for blood pressure, pulse frequency, and temperature. Ethnic (cultural and linguistic) differences and communication barriers can potentially be effective in the poor collaboration between the laboratory and nursing staff. Transition to concurrence can probably be achieved through the establishment of educational and midwifery specialties or clinical laboratory partnerships at university level, and the planning of necessary courses related to this partnership during their undergraduate education.

3. Methodology

Here, we audit the strategy for collaboration before and after a new laboratory department was opened within the hospital. The final process was that after the sample was sent to the laboratory at the ward, the lab obtained the sample from the ward and communicated with the nurses directly. This also improved mutual understanding of the problems of the other department. The main potential improvement point that came to the fore was the frequent manual entry of data at night. During a short project in the evening, data entry could largely be automated at the lab and thereby reduce the need for manual input. We can state that a lab closer to the patient may have a lot of benefits, but it must be implemented with care and out the best process that suits each hospital.

There was a time when the laboratory department was only responsible for obtaining a blood sample

from the patient, processing, and sending it to their respective ward. The fact that the lab has been detached from patients and nursing has decreased the added value of lab results. Today, the situation is changing to a better way of working. Now, the need to collaborate directly with the hospital has become important and there are a variety of reasons for that. Patients are the focus for all disciplines and always come first. In this study, we set up an audit and in a situation: we have collaborated directly between two departments in our hospital. We can search for possible benefits for the patient and possible improvement points in implemented process [11].

3.1. Research Design

In these measures, “knowledge” referred to students learning theoretical nursing concepts and understanding diseases and medical conditions, in addition to completing medical procedures. On the other hand, “skills in clinical nursing” referred to learning how to implement practical nursing interventions in society, and “skills in laboratory nursing” referred to simulation-based practical skills learning. Again, professional “attitude” meant student understanding of the profession and nature of patients/circumstances that caused students to and use valuable professional behaviors. In addition, the study examined the significant correlation between satisfaction with experiences and students’ engagement in each profession [12]. The assumption was that satisfaction of students with their participation would correlate with positive consequences such as problem solving, decision making, and engagement in learning tasks on wards and in the skills laboratory. Participants were fourth- (n = 340) and second-year students (n = 332) of King Saud University’s College of Nursing during the academic year 2018–2019.

Quantitative cross-sectional research design was employed in the present study [13]. The primary reliance on quantitative data ensured that the research would culminate with factual assessment of the relationships surveyed. The study was conducted on undergraduate students at the College of Nursing, King Saud University, the biggest nursing college in Saudi Arabia. Integration in nursing education was evaluated by determining the level of students’ satisfaction with their program while working in the laboratory department of the college. The survey also measured the perceived role of the laboratory department in the development of essential professional competences, including knowledge, skills, and attitude.

3.2. Data Collection Methods

Patient records consist of routine assessments, monitoring, communication and actions by nurses, and a record of facts when a problem arises [7]. There are five nursing tasks: surveillance, teaching, maintenance, direct assistive activities and collaboration. Surveillance represents the first function of nursing in identifying patient problems as early as possible. Patient records are shared documents among nurses and are foundation of inter-professional care. The extent and quality of this sharing can importantly influence the quality of patient care. In our study, it is focused on communicating the needs and instructions between the laboratory and the nursing department.

This study was conducted in seven hospitals in Saudi Arabia to determine the effect of integrated nursing activities on the quality of patient care. The study showed that only a limited amount of data was collected from both nurses and patients, and the information collected was subjective and there did not appear to be any available tool to assess nurse-patient inter-professional relationship [10]. This is while there is a significant relationship between nurse-patient communication and patient’ satisfaction and the quality of patient care. There have been numerous studies that focus on Templer et al. Professional Distancing Scale to examine nurse-patient care relationships. The 25-item Professional Distancing Scale

includes three subscales of While I am working, I maintain a distinct separation between my personal and professional life with patients; It is important to maintain a clear separation between what I am thinking and the patient when I am trying to help the patient; and I do not want patients to become too dependent on the opinions of colleagues, titled 'personal-professional boundary, 'emotional boundary' and 'boundary with colleagues' [11].

3.3. Sampling Techniques

Two hundred health professionals at different levels (management, Deanery, Dental and Medical Colleges) will be approached within the midlands area of United Kingdom and will be asked to complete a 54-item self-administered questionnaire. Univariate statistical analysis will be used to demonstrate the levels of integration and whether the perception of practitioners was affected by their predominant area of work (management or clinical). Multivariate analysis will be carried out using factor analysis, which will allow the researcher to examine the multidimensional nature of integration in healthcare systems [2]. The integration between the laboratory department and the nursing department would directly affect the patient at the same time, the integration relationship of the laboratory department of the hospital formed from the integration of departments is conducive to infection prevention [14]. Holistic overview of the relationship between laboratory department and nursing is largely undocumented. In the literature of Saudi Arabia, very few research papers were found to highlight the relationship between these key internal stakeholders. The integration between different departments in a hospital is predictive of successful operation as well as achieving great patient outcomes. It has been positively replied on various studies with a descriptive overview [15].

The aim of this study is to understand the degree of integration and identify compare the degree of integration and identify the advantages and challenges of integration between laboratory department and Nursing department in some of selected hospital in Almadinah-Madinah city of Saudi Arabia as one of the leading countries in the region. The study on the relationship between the specialized laboratory department and nursing practices is relatively undeveloped compared to the European and some of countries in which literature states that the integrated work between the specialized laboratory department is mandated.

4. Integration Models and Strategies

English's influence on their individual languages was recognized by Ehsani et al, 2009, and Kubu et al, 2017, this impacting L2 hospital restricted health care experts' language disorder prevention learning, practicing and education. Zotev et al, 2018, and Mlynárová et al, 2018, for nurses, emphasized that linguistics should be shaped with English communication skills and its education in structured positions. 'Environmental communication' was shown in nurses learning and practicing between 59 hospitals in Ghana however the social class of learners was not determined effectively. Borg, 2001, in the domain of Environmental corporate communication activities Muraphak, 2013, determined that employees were not educated in the ways of sharing with their environments and require qualified education. Eriksson et al, 2000, are questioned whether the labor force from the same nurses Fifty-two and sixty-four percent of its staff at two hospitals noted poor communication with the recommendation concerning staffing, equality, changes in workload, and departmental culture.

Foreign healthcare experts dominate the Saudi Arabian healthcare sector [2]. Consequently, for effective communication between laboratory departments and nurses, English becomes essential for expediting healthcare measures [3]. However, besides a high proportion of immigrant healthcare professionals,

more than 4 million Saudis are employed in unskilled and skilled jobs, meaning that Saudi Arabia is a multi-racial and multi-linguistic state. It seems that England and Saudi nurses consider communication to be frequently insufficient.

4.1. Collaborative Care Models

The study recommended some approaches to increase nursing staff's understanding of and interest in the laboratory departments: creating a space to show the workflow in the medical laboratory and regular visiting the wards by laboratory departments staff to make visits to the wards by laboratory staff to have discussions regarding the laboratory department and its important tool nurses for their performance. A qualitative, descriptive design was carried out in the laboratory and nursing department at King Abdulaziz University Hospital in Jeddah, Saudi Arabia, alongside a grounded theory approach; 12 nurses and 14 laboratory staff were selected using non-probability convenience sampling. Possible efforts should be made to address the lack of attention and consideration of total integration between laboratory and nursing staff to avoid negative outcomes from patient care [16].

As diagnosing and treating medical conditions becomes more complex, it is essential for physicians and nursing staff to work together to achieve shared goals [2]. The primary nursing objective is to prevent illness, protect the wellbeing of the patients, establish good, or maintain effective communication with patients and fellow health professionals. The pathologist aims to make the right diagnosis of the patient's tissue matter in the process of care, to find pathophysiological and pathogenesis of diseases, and to contribute to the establishment of the treatment. Recognition researchers have entered the uncertainty of communication among pathologists and medical staff in the real hospital environment. Pathologists can help prevent disease through integrated clinical reasoning in collaboration with the medical staff. One study of nurses' perception of pathologists found that the medical laboratory department is an unfamiliar field, which has led that some of the work of the laboratory department is underestimated or overlooked [4].

4.2. Technological Integration

Moreover, referral systems among healthcare organizations and insurance companies in the U.S. became an issue that needed to be studied critically due to some incidents and errors related to inadequate communication of crucial patient data [17]. To solve these major problems in the U.S. clinical healthcare systems, some people proposed national guidelines for the electronic health records (EHRs) management that can be used as the interface between different healthcare providers. EHRs contain abundant clinical data that could help decision making in primary care, particularly if integrated with patients' data from other care contexts. The EHR enables communication between clinicians, reducing the risk of misunderstandings and inappropriate referrals.

Proper communication and access to accurate patient information significantly support the continuity of care [15]. The evidence suggested a considerable lack of communication between clinicians in primary care. The nurses were not able to convey the test results obtained in the hospital to the primary care clinicians because of the inefficiency of the communication and follow-up systems between the departments involved. Clinical decision support systems (CDSS) are computer-based information systems that coordinate personal patient data to provide direct support in clinical decision making. They have been widely used for various purposes in healthcare. CDSS increases the efficiency of care processes with evidence-based recommendations. its many potential benefits in terms of improved decision making, task performance, and coordination in hospitals [6].

5. Benefits of Integration

Patients' experiences represent their judgments, which were created by the comprehensive sum of experiences of all their senses. Integration between the laboratory department and nursing in the hospital is considered an important intervention that might lead to improvements in the patients' experiences of health care. Moreover, a significant association was found between time management and patients' experience in half of the documents. Nevertheless, nurses' and patients' utilizing some signs for communication during care might lead to better experiences for the patients. In another study, the majority (90%) of caring behavior was communicated to the patient in silence. A specific information exchange process should therefore be implemented to secure patients' experience of a more complete care experience.

Nurses have direct contact with patients and play a role in ensuring patient safety. From ordering tests to administering blood products, nurses are responsible for ensuring the correct process is followed [18]. This has been a positive addition in the form of point of care testing (POCT) in the wards of the hospital. The features of POCT include on-the-spot provision of care and sufficient support for the clinical staff involved in patient care in the wards. The integration between the laboratory department and nursing in the hospital continues to have positive impacts when specimen needs to be sent to the central laboratory, as the POCT devices are interfaced with the laboratory information system. This feature increases the confidence of the medical team, which ultimately increases the positive impact on the patient. The models were integrated to directly target the customers' above-mentioned needs and to scale up the benefits of integrating clinical laboratory services in primary healthcare centers in their own branch of primary healthcare centers.

5.1. Improved Patient Outcomes

It has also been indicated by the nursing staff in this study that critically high- and low-test values are often documented to the wrong patient mistakenly by some nurses due to autofill function of the EHR and laboratory timestamps that aren't documented in hospital information system. Another commented challenge was related to the common incomplete reminders regarding laboratory sampling and report results documentation in the laboratory request system which may pose a risk for the patient safety for example when nurses order new laboratory examinations as a late response to the laboratory results. Nurses' comments confirmed that they had to recognize these shortfalls and fix them before time-consuming situations were emerging as for automation post restoration of the synchronization. From the nursing safety perspective, a need for an automatic synchronization of results from the laboratory reminder system to hospital request system was also noted as a suggestion for improvement in this study.

Evidence of improved patient outcomes and reduced mortality rate related to good inter-professional collaboration between healthcare workers have been reported [19]. When we studied the comments of the health care personnel involved in this study, their responses indicated a significantly positive effect of a structured patient data synchronization between the laboratory department and nursing. Findings revealed that strained integration can result in failure to deliver results of critical values to nursing staff, who admitted that this might put patients' health at risk and may lead to patients' maltreatment. Cases of failure to deliver results of critical values to physicians were also reported. The time taken for doctors to discover the missing laboratory results in patient files may lead to unnecessary diagnostic tests, life-threatening treatment delays and associated patient risks [20]. Nurses have noted the necessity for path staff to perform manual synchronization between laboratory and nursing systems as an additional non-

beneficial work which has the potential to cause patient hazards. Lack of laboratory tests in the patient system due to failed synchronization may lead to nurses' additional work in searching for, entering and synchronizing the data manually. The additional manual working hours are an evident strain and indirectly lead to reduced nursing quality and patient treatment being unsafe.

5.2. Enhanced Communication and Coordination

Increased attention within the diagnostic radiology community to the effect relationship between communication and safety suggests that diagnostic departments should engage in culture change from independent components working in silos to a cohesive, harmonized, and interactive diagnostic team [21]. The diagnostic department staff members who were surveyed wanted better communication around test availability, access to communication tools/discussion, and clarification of ambiguous orders (improved communication repertoires and entities) all of which are essential components for diagnostic accuracy and effective patient care. Efforts to improve interdisciplinary communication have been found to be productive in multi-faceted surgical programs, obstetrics, and pediatric settings. Moreover, studies have suggested that multidisciplinary team meetings can lead to more correct diagnoses and contribute to increased patient safety in the fields of general, plastic and vascular surgery, as well as interventional radiology.

Communication between diagnostic departments such as radiology and laboratories are required for achieving the best desired results for optimal patient care [12]. However, with the availability of modern technology, communication can be streamlined, and both departments can be integrated for better patient care. As discussed above, an algorithm to manage and summarize the crucial interdepartmental communication has been developed. Some other methods to improve communication between diagnostic departments include patient history exchange (medical history and previous reports). Studies suggest that reducing communication delay in ordering and accessing diagnostic tests in emergency departments can decrease the patient length of stay. Furthermore, reducing the time to notify a clinician of critical findings has the potential to increase the time to treatment for a potentially life-threatening patient.

6. Challenges and Barriers

This systematic observation on the nursing process performance was aimed at evaluating integrated clinical test practices. In the study, it was observed that in cases of inadequate clinical testing, nurses did not take part in any of the continuum of control and support. Since the nurses do not receive any feedback in the future, they cannot know whether the blood tests they send are useless or not, and this results in repeated examinations of multiple patients in different time intervals and exposes coworkers to extra workload as well as [7]. This compromise was observed to even cause a waste of money, as hospitals encountered additional costs such as time, input material, and workload. A strong need is mentioned for the establishment of a real patient-centered, integrated healthcare model that would allow nursing staff and laboratory specialists to implement interdisciplinary practice in terms of medical care and facilitate labor and patient care for both departments. This integrated practice will maintain the quality and continuity of health care at a higher level compared to the existing practice, reduce the costs with additional laboratory tests and unnecessary patient treatments, enable effective and efficient use of time and working resources, and furthermore it will improve the usage of supplies and workforce. Furthermore, by providing interdisciplinary communication and information sharing between departments at the University Hospital, it will ensure the development of cooperative, integrated and empirical approaches that will further improve the patient care practices, particularly with nursing [2].

The integration of the laboratory department and nursing can be challenging. It forms the cornerstone of completing treatments and ensuring the provision of safe, high-quality care. Past studies have shown a clear lack of sample quality and frequent sample rejection before [1]. This part of the work is particularly important for the negative effects experienced by patients ought to take long waiting hours, especially the presence of some substances and their biochemical blood values would be affected beyond the current values. Inability of intended tests to be performed due to the negative effect on the sample also indicates a critical point. Therefore, failure of sample quality and rejections affect the results and subsequent steps. The relationship between the laboratory department and nursing implements the work quality seriously. By preventing the provision of incorrect, inadequate, and deferred treatment for patients, this unit seriously affects the provision of safe and high-quality care. Apart from these, it is equally difficult to try to provide this integration in a hospital such as the University Hospital working with the complex care system in Turkey, although both departments perform process-based control method in terms of the continuity and quality of health care for patients.

6.1. Technological Challenges

Regarding the process of work, the cultural, ethical, religious and social differences in the profession are challenging. According to Alotaibi et al. (2014) and Alboliteh, (2018) these factors and the high-density work environment affect the performance of nurses and the overall satisfaction of patients. The combination of these difficulties with the integration of both departments and their processes resulted in adverse events: long invalid results, wrong comments and mistreatment plans, bad eliminative medicine for toxicity and many different unsociable acts. This issue is important if the raw material is chemicals or biologic components from which the results were taken, and which can be harmful. Revise processes and middle checks which can decrease these incidents such as central laboratory or robotization of the biology laboratories [1].

The technical challenges of integrating laboratory and nursing departments were underlined. They included six types: control, maintain, link, interface, switch, and performance. Managers should be aware of these challenges and should implement policies to counteract these challenges to support staff to avoid incidents and pejorative output of the laboratorial services [22]. This study shows the importance of the integration between both departments, even though the figure was low (30%), suggesting the informatics and laboratory department should enhance integration. This integration must be comprehensive and generalized to all units, all hospitals, all healthcare providers, and other sectors that can help excellence such as research laboratories, health campaigns, technologies firms, government (e.g. Food and drug administration) [23].

6.2. Interprofessional Communication

2 Several studies have identified that one of the significant CDCC factors associated with patient safety is the use of the English language as the main medium of communication within KAH. Being a language spoken around the world, English can serve as a common language between medical workers and the linguistic diversity of staff at KAH makes this characteristic particularly important. The use of the English language as the main medium of communication between healthcare professionals has been found to be crucial to provide high quality and safe care. A study conducted at Tehran Heart Center Hospital in Iran showed that the lack of the ability to communicate effectively in a common language was found to be a major communication barrier in that hospital, thus leading to improper patient management. Although a variety of languages other than Arabic are spoken among the professional staff working at KAH, and a variety of dialects spoken among the patients of KAH come from many

countries around the world. Speaking English is the only official language used during the communication process between medical workers. This fact highlights the significance of the ubiquitous use of English in health care delivery in Saudi Arabia and in many other countries that have medical institutions representing various international workers [16]. According to the World Health Organization, there were 18,149 hospitals in the Eastern Mediterranean region in 2010. In 2010, a total of approximately 92% of all the healthcare personnel were women, particularly in the 20-30 years old age group category. These people had up to two years of work experience, particularly in the public sector. Nurses and midwives have the highest income levels, and more than half of the healthcare personnel work in the public sector. These healthcare personnel consist of mostly females. The public sector has the highest proportion of registered nurses with less than two years of experience, and they perceive themselves to be culturally competent. The findings reflect the healthcare ideology of this context, in which the nursing and midwifery profession is appreciated in terms of income and cultural competence. By understanding the components of cultural competence and by focusing on EMR language barriers and hospital characteristics, health professionals can better meet the needs of a diverse patient population and provide patient-centered communication.

7. Case Studies

7.1. Bridging the Communication Gap: This was focused on helping to identify additional methods that can be employed in the future to facilitate a successful working relationship between the two groups. The concept of promoting simple and complex solutions to support a mutual and integrative work environment was applied in the clinical laboratories and nursing departments, in Saudi Arabia. Thirty urethral isolates from this population were subjected to curing by novobiocin and sensitivity to this antibiotic as a marker for the identification of *Staphylococcus* [24].

7.1. Collaborative Relationship: Overcoming the obstacle of multi-disciplinary cooperation is dependent on the collaborative relationship between laboratory professionals and healthcare professionals in the field. In Saudi Arabia, 75% of Junior and senior doctors have good clinical management, as well as case presentations to laboratory departments, whereas the remaining 25% require case presentations. Laboratory medical specialists must be a part of healthcare delivery teams, in both outpatient and inpatient settings, so they provide formal feedback on society outcomes, technical and diagnostic developments that impact Muslim-influence country, thereby adding knowledge to prearguing presentations/communicating results, and evolution and performing test requests and results adequate for the patients [25].

7.2. Successful Integration Cases in Saudi Arabia

In a study by Akpolat et al. (2021), it was stressed that an effective role for the laboratory department in the management of intensive care infections had been implemented at King Abdullah Medical City. On the other hand, Moudgil (2011) reported that better integrations among clinical laboratory departments with nursing lead to rapid patient diagnosis and treatment with precision in this way. Finally, the results of other studies emphasize improving communication among high level hospital management teams, nursing, and the laboratory department in the province too, which is in line with the results of the work presented here. Therefore, in the light of the results of the study, it can be said that the development of the integration between the isolation and nursing departments, which has proven to have significant positive effects on patients through the applications carried out in Kiziltepe State Hospital, will also contribute positively to the health of the patients in other hospitals.

Given the results of these articles, integration between laboratory department and nursing and its effect on patients in hospitals are important tools. However, successful experiences achieve those goals as well, without employee dissatisfaction and limiting costs. Saudi Arabia has achieved some success in the field of integration among healthcare departments. Ing and Batchelor (2010) focused on the experience with a multidisciplinary program such as the Massachusetts General Hospital. As a result, interventions were made to improve clinician time and the completion of medical orders. Durbin et al. (2013) reported the impact of an electronic prescribing system in a pediatric hospital in Canada, which showed that an integrated system could significantly reduce the number of errors in the drug prescribing process, especially dosing errors [2].

8. Recommendations for Implementation

The present study in the selected limits of the two units: Hepatology and Medical, is new for investigation in Saudi Arabia. Attempted interventions included a hospital-quality activity reordering of laboratory tests to facilitate results retrieval and reduce some barriers between the nursing and laboratory departments. This included specific suggested evidenced-based laboratory tests being ordered in the morning before patient rounds or multidisciplinary meetings to allow physiological monitoring of patients, rapid identification of septicemia and severe electrolyte levels, LIBSs, and alerting the surgical teams before the theatre, if possible [16]. Further studies need a clinic-nursing paper management intervention via including such a suggested private system within the electronic health record of outpatients' clinical record system in addition to formal referral order for the pre-establishment of diagnosis. Crucially, formulas of necessary laboratory tests according to incident drivers and Nursing knowledge would be built within the referred system for all diseases. This study has uncovered unique findings, given that it is the first to investigate issues concerning conflicts in nursing and laboratory relationships, in addition, this study has found less information about the studies that discuss the influence of implementing a customized program that designed explicitly for a specific hospital, in the authors' knowledge.

Effective organizational strategies are needed for the management and successful implementation of the laboratory-nursing latest integrated intervention in Saudi Arabia. After careful acclimatization to the Saudi healthcare system, it is anticipated that the laboratory-nursing intervention can be a successful model to be applied as a strategy within the hospital departments and other hospitals in Saudi Arabia. Bridging the gap between hospital nursing and laboratory departments can potentially reduce unnecessary and time-consuming calls between nursing and the laboratory. Mahmood et al. (2018) stated that language barriers within multicultural medical teams could lead to misunderstanding when conveying information. The present study therefore made sure that all participants were familiar with the most spoken languages in Saudi Arabia and that all language barriers were dealt with in the most suitable way [2]. Clear and efficient communication can be achieved using the integration and implementation of specific resources. Specifically, the laboratory result management system (LRMS) can be used in place of Blackboard, which we acknowledge lacks this aspect to some extent, prioritizing the decision support component. The interventions should be complemented by future planned in-service training programs that will be tailored even further for nursing staff to offer deeper knowledge on the nursing orientation process and its subsequent integration with nursing laboratory practice.

8.1. Training and Education Programs

Postgraduate medical and nursing with postgraduate pharmacy colleges have been contributing to

training the new workforce of pharmacists, nurses, and medical personnel, thus making Saudi Arabian health programs self-sufficient and working in concert to fill the task void of Saudization. Since KSA has a large potential health workforce nurses and physicians who carry international degrees, thereby an international language, investing in these two language and training programs makes sense. New leadership and other public and private stakeholders in the health policy and planning fields should consult nursing colleges and engage with postgraduate nursing (MPH), networking, and targeted training programs to create the workforce we need for the future. Tailor your medical school/medicine program, nursing program, or physician program to merely include a few clinical ladder translations (in or out) between nursing and medical school, including LPN, expand the current medical decision support system, which does not cover all areas of nursing and public health export. We look forward to the future, as the Saudi Healthcare System is also studying a model for a real-time research approval system. This will help and inspire NHS institutions to send as many of their nursing students and clinical interns to rural Saudi Arabia as they wish. For clinical practice in nursing as part of the curriculum, we college effectively serving the Saudi Social Service Association to help Indian nurse assistants reach Indian sites that may be considered for nursing internship rotation courses in the beginning.

Saudi Arabia is experiencing a significant shift in healthcare culture that is requiring better nurse communication. One of the aims in the new Saudi 2030 vision plan is to achieve global positioning in delivery of telemedicine and telenursing, as well as to ensure that world-class healthcare services are accessibly available to its citizens and expatriates [17]. However, most, if not all, healthcare systems and healthcare organizations in Saudi Arabia are facing challenges when it comes to providing the best possible care to their patients due to a lack of effective integration between various healthcare departments and the nursing workforce. Effective quality nursing care, such as inter-departmental collaboration and effective communication between hospital departments on patient care, is a major marker of nursing quality in and out-patient care, surgical services and other departments/hospital-wide. Without demonstrated mechanisms and a work plan, hospitals and other healthcare organizations may fail to recognize the potential importance of skilled clinical nursing teams and their collaboration goals with other healthcare teams [25].

8.2. Policy Changes

Lack of coordination and integration between laboratory departments and other healthcare departments in hospitals leads to several adverse effects and it is the responsibility of the higher authorities to identify and address chronic problems related to the laboratory departments in the Saudi healthcare sectors so that they can achieve better service quality [26].

The provision of healthcare in Saudi Arabia has undergone several changes following the country's Vision 2030 and the National Transformation Program (NTP), which was announced in June 2016 [18]. It is anticipated that the focus on the changes in health care provision in this century will evolve from hospital-centered care to community-centered integrated care and from acute disease management to pre-disease prevention and leveraging information technology for health by implementing universal health coverage (UHC). As part of these changes, as a mandate, primary healthcare centers (PHCs) and provinces are required to standardize their laboratory operations.

Saudi Arabia Vision 2030 depends on diversifying the economy and enhancing human capital to undertake this ambitious transformation. There are six essential goals that link nursing to healthcare and nursing policies to Vision 2030. The present study advocates for the implementation of these goals [27]. To implement these goals, strategies and policies need to be adequately planned. These strategies

encompass education, practice, and leadership.

9. Conclusion

For all laboratory tests to proceed with high accuracy, the nursing department must be integrated with the laboratory to direct the nurses to draw samples by certain methods so the central venous catheter line of the patient will not be mixed up with the wrong line. Finally, you can produce a food and beverage assessment and then ask the patient about the quality and satisfaction with your service. As discussed earlier, this is not the main aim of the study. The results of the quantitative part of the study, probably at the next conference, will be published in a new article. The main aim of the study in this part was to determine if there is a relation between the type of organization and the reliability and starting the experiment, and later this could be published, and it is the first time in Saudi Arabia that Saudi nurses start the organization not just foreign nurses [3].

In recent years, the integration between the laboratory department and the nursing department has become a key issue, which has thus sparked interest in this issue, as it is essential to study this integration, especially labor management reforms to test it, so combining these departments is very useful and possible as a job opportunity [28]. Apartments can improve professional standards. At the beginning of establishing, the laboratory was completely independent from the other departments in the hospital, such as a nursing ward. It was only connected through service like phone calls. We found that the laboratory department of King Khalid University Hospital is advanced compared to that of the western region. As we mentioned in the results that the immunology department have procedures mentioning the right time to collect the sample; for example, they have given the laboratory technician a sheet with the procedures and the wrong sample will be rejected. But we recommend that this organization should occur in all departments [5].

9.1. Summary of Findings

Emad A Zeeber Aljabry, “The purpose of this study was to assess the views of the Saudi nurses were towards teamwork and patient safety in the intensive care units and hospitals in the Aseer region of Saudi Arabia. This study included 293 Saudi critical care nurses who were recruited for this study. Most of the nurses in the current study both males and females, were universities graduates (96.6%). The findings revealed that most nurses had positive attitudes towards teamwork and patient safety [1].

The study revealed a high level of satisfaction among the patients served at the time they received their results. The combination of integrated nursing staff and laboratory employees themselves to work within the same buildings and use the electronic medical records systems to transfer the laboratory requests and the results to and from the Laboratory and Nursing Departments, without human intervention, had a synergistic effect, resulting in a significant reduction in the overall laboratory turnaround time [29, 30].

The purpose of this study was to evaluate the positive effect of integrating nursing and laboratory departments to reduce the laboratory turnaround time and its impact on the overall care of patients in Abha Private Hospital, in the Aseer region, Saudi Arabia. Participants included two groups of staff working at Abha Private Hospital (N = 250). The first group was laboratory workers (n = 25); the second group included both nursing and laboratory staff (n = 225). This mixed-methods study was conducted to measure the change in laboratory cycle times. The QI team in collaboration with the laboratory department has achieved a major decrease in the overall laboratory turnaround time at the hospital.

9.2. Implications for Practice

Second, this study on integrating the laboratory and nursing departments of a hospital can provide valua-

ble information for both hospital managers and Saudi government officials [2]. This study can serve as a steppingstone for decision-makers in the field of healthcare to identify areas within the healthcare system that necessitate intervention. Consequently, exposing these challenges and inadequacies can pave the way for public and private healthcare organization officials to more readily identify and remedy them, thereby improving patient care [30].

To begin, enhancing the flow of information between different clinical departments, such as the laboratory department and the nursing department, is crucial to the delivery of holistic patient care and for ensuring the efficient use of departmental resources [1]. Hospital directors can use this result to promote and support the processes that will ensure a better flow of information between these two departments and with other clinical departments that are involved in patients' care [2]. The study findings have several important implications.

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