Integration of Medical Services in Health Care Centers from the Perspective of Nursing, Pharmacy, and Laboratory Staff at Riyadh Region: Theoretical Study

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Abstract

The Kingdom of Saudi Arabia has achieved great progress in the health care system, whether in hospitals or in health centers, by increasing spending on health care, improving the health care infrastructure, and improving its quality. Health care centers are considered comprehensive health centers that provide medical services in the field of nursing, pharmacy, laboratory tests, physical therapy, etc. Therefore, this study aimed to provide a theoretical framework about the various medical services in health care centers from the point of view of nursing, pharmacy and laboratory workers in the Riyadh region. The study showed that there is integration in the medical services provided in health care centers in the Riyadh region, but they need further development and providing them with modern laboratory equipment to reduce the number of patients visiting hospitals, in addition to providing them with specialized medical personnel from all medical specialties and nursing in hospitals or health care centers.

Keywords: Animation, Michel Ocelot, Orientalism, Kirikou and the Sorceress.

Saudi Arabia is one of the largest countries in the Middle East, with a population of more than 34 million people. The healthcare system in Saudi Arabia has undergone significant improvements over the years, with the government's significant investments in healthcare infrastructure, resulting in increased access to healthcare services across the country. Saudi Arabia has a well-established healthcare system that provides all citizens and residents with free healthcare services. The government is responsible for providing healthcare services and is the primary funder of the healthcare system (Alhazmi, 2021).

The Ministry of Health (MOH) is responsible for regulating the healthcare system and providing healthcare services across the country.

The healthcare system in healthcare centers consists of primary, secondary, and tertiary healthcare services. Primary healthcare services are provided through primary healthcare centers (PHCs), which provide basic healthcare services, including preventive care, health education, and screening services. Secondary healthcare services are provided through hospitals and specialty centers, which provide more advanced healthcare services, including diagnostic services, surgical procedures, and emergency care. Tertiary healthcare services are provided through specialized hospitals, which provide specialized healthcare services, including transplant services and cancer treatment (Al Khashan, et al, 2021).

Medical services in health care centers have developed enormously over the last two decades, as evidenced by the availability of health facilities throughout all parts of the vast Kingdom. The Saudi Ministry of Health (MOH) provides over 60% of these services while the rest are shared among other government agencies and the private sector. A series of development plans in Saudi Arabia have established the infra-structure for the expansion of curative services all over the country. Rapid development in medical education and the training of future Saudi health manpower have also taken place (World Health Organization, 2021).

The government has introduced several programs and initiatives to improve the quality of care, including the National Accreditation Program for Healthcare Organizations (NAHCO) and the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) (Al Khashan, 2021). The Ministry of Health has implemented several initiatives aimed at improving the quality of healthcare services such as the National Accreditation Program for Health Facilities (NAP). The NAP assesses and accredits healthcare facilities based on several criteria, including patient safety, infection control, and quality of care. As of 2021, more than 50% of healthcare facilities in the country have been accredited (Ministry of Health, 2021). The Ministry of Health (MOH) has also implemented various initiatives, such as the National Transformation Program (NTP) and Vision 2030, aimed at improving the quality and efficiency of healthcare services in the country (Alhazmi, 2021).

2. Background and Rationale

As of 2021, the Kingdom of Saudi Arabia has made significant national policy alterations in search for a path that brings its healthcare system closer to the principles of primary health care, by nurturing strong collaborations across all levels of healthcare, a process that is underway under what the Government of Saudi Arabia has termed ‘Healthcare Transformation’. This prominent reform in healthcare policy is a

state of mind in the Saudi healthcare leadership, aiming to see the Saudi healthcare model gradually shift from a curative orientation to strong principles of preventive care, wellbeing and quality support of persons suffering from chronic diseases (Alatawi, 2022). This reform of the Saudi healthcare model, under what is now known as the 'Saudi National Transformation Program 2020', envisions a national healthcare system public health and healthcare that functions primarily based upon strong principles of primary health care and preventive health measures (Abdul, 2019).

The Kingdom of Saudi Arabia is experiencing a growing burden of biopsychosocial and mental health- related disorders, including non-communicable diseases (Almalki, 2021). These NCDs are consuming a great proportion of Saudi's national health budget, posing a major socio-economic and public health problem. The Saudi Government has made significant alterations to national healthcare policy, each time bringing the Saudi healthcare vision closer to the principles of primary healthcare. This transition is particularly focused on enhancing the integration of healthcare services at peripheral health facilities, including primary care centers. Several provinces in Saudi Arabia have implemented pilot projects to integrate medical laboratories with primary healthcare centers, and preliminary findings appear to be promising (Al Khashan, et al, 2021). Integrating medical laboratories within primary healthcare centers aims to enhance NCD care within the primary healthcare centers, particularly by strengthening the essential steps in risk computation and delivering cohesive, guideline-based NCD care across both NCD prevalence and risk strata.

However, to the best of the researchers' knowledge, no systematic study has been conducted to evaluate the integration of medical laboratory services in health care centers in the Riyadh region. Therefore, this study aimed to identify the level of integration of medical services in health care centers from the perspective of nursing, pharmacy, and laboratory workers in Riyadh region.

The issue of the quality of medical and health services which provided to beneficiaries. A number of studies have been reviewed, as the study of (Hanan AL-Ahmadi, 2015) which showed substantial variation in the quality of Saudi primary care services. In order to improve quality, there is a need to improve the management and organization of primary care services. Professional development strategies are also needed to improve the knowledge and skills of staff. A study by (Aljuaid, 2022) showed more need for further improvement in the quality of healthcare in hospitals in KSA,, and there are Many of the problems identified in this review could be addressed by establishing an independent body in KSA, which could monitor healthcare services and push for improvements in efficiency and quality of care. A study by (Hassan, 2018), aimed to identify the extent of the contribution of the computerized health informatics system to Enhancing the quality of health informatics service for a group of hospitals operating in the city of Mosul, Iraq. The results showed that there is a relationship between the computerized health informatics system and the quality of health informatics services, and that it contributes. The Study of (Abdul Rahim, 2019) aimed at identifying the effect of training on improving the quality of medical services

in Saudi Arabia's hospital-king Abedellah as an example. The findings proved that improvement and up-dating in the activities of training are not considered. The due medical specializations are not available. The quality of training will be positively reflected on the quality of the medical services provided by the hospital.

A study by (Mushabab Al Asmri, 2020) found a number of key areas for improvement in the primary health care system: These areas include the scope, structure, infrastructure, financing, increased demand, increased costs and workforce capacity. Other critical challenges include inequitable access to health services, quality and safety of services, the growing burden of chronic diseases, lack of an effective information system, management and leadership issues, and gaps in the referral system, and also showed the Saudi Arabian health care system needs comprehensive reform with a focus on primary health care.

1.2 Importance and Functions of Laboratories

Health Care System of the Kingdom of Saudi Arabia is a tiered health care system with primary, secondary, and tertiary health care facilities (Aljarboa, et al, 2022). Primary health care is the cornerstone of the Saudi health care system, currently, the Ministry of Health (MOH) in Saudi Arabia is the primary provider of medical services (Almalawi, et al, 2022).

The service provided by MOH is free for Saudi citizens. This involves about 98% of all health expenses, though the private sector covers the remaining 2% of expenses. Riyadh connected the medical laboratories of the primary health care centers to the referral hospitals, Saudi Red Crescent Authority, and the MOH central laboratories via a unified electronic system. In addition, the system is linked to the Pharmaceutical Tracking System, the stock and property system, and the Ministry of Interior's electronic services system for fatal accidents, since laboratory examination is the cornerstone of any medical diagnosis, the number of laboratory tests. Performed globally is gradually increasing. The healthcare community is moving from the "small-foundation drug-based medical model to the large-foundation test-based medical model (Aljarboa, 2022).

The great majority of diagnostic decisions up to 70% rely on laboratory investigation data. Clinical examinations and medical history carry the rest of the percentage of medical decisions. In developing the process of basic healthcare in Southern Hemisphere countries, we find that the availability of laboratory facilities, the rationality in identification of laboratory requirements, and supervisory skills on diagnostic processes and clinical reporting at primary healthcare centers are still poorly addressed compared with developed healthcare systems (Abu-Zaid, et al, 2019).

The Kingdom of Saudi Arabia has a vast variety of health care workers, including physicians, nurses, pharmacists, psychologists, dentists, speech therapists, laboratory technologists, respiratory therapists, dieticians, physical therapists, and radiologists. One of the main challenges that the kingdom faces is a high turnover of health care

providers, which could lead to instability in some health care institutions. This situation results from a shortage of local or Saudi national health care workers and a high dependence on expatriates recruited from other countries. To overcome this, the MOH is trying to increase the Saudi national health workforce by educating and training more Saudi health care staff in various fields, both locally and through government-funded scholarships for overseas study (Alkharji, 2022).

In the community setting, pharmacists take on the traditional roles of dispensing and counselling. There are 3 classes of medications: over-the-counter (those that can be accessed without a prescription, which are within patients' reach), behind-the-counter (those dispensed by a pharmacist without a prescription, which are not within patients' reach), and prescription (those that require a prescription). It is against the law for pharmacists to diagnose a patient's disease or to dispense medications without prescription. Unfortunately, many pharmacists continue to dispense medications for chronic diseases, oral contraceptives, and antibiotics without prescript. The MOH, the sole regulating body for community pharmacies, attributes the lack of enforcement to an insufficient number of inspectors (Alkhudair, et al, 2021). This situation is concerning, given local research showing that community pharmacists in the Kingdom of Saudi Arabia lack adequate training and clinical skills to diagnose and/or prescribe. The only situation where phar- macists strictly adhere to the law relates to controlled/narcotic substances, because of serious legal consequences (Alomari, et al, 2024).

Health care centers pharmacy practice in Saudi Arabia is considered one of the best and most advanced practices in the region. Most Saudi pharmacists end up practising in hospital settings, rather than retail pharmacies, because of higher wages and better job satisfaction. Residency training is not a requirement to practice as a staff pharmacist. Candidates are hired on the basis of experience. However, most specialized clinical positions require some form of higher postgraduate training. The role of hospital staff pharmacists includes but is not limited to medication verification and dispensing, management of medication storage and supplies, provision of drug information to other health care providers, and training of residents and students. Some par- ticipate in other specialized areas, such as sterile preparation of medications or chemotherapy and parenteral nutrition. In addition, pharmacists are involved in the identification and reporting of adverse drug events (ADEs) or pharmacovigilance. Most hospitals have an ADE reporting program, a medication error reporting program, and a multidisciplinary medication safety committee (Alcantara, et al, 2022).

Clinical laboratories are accredited according to the guidelines of different countries or areas. The integration and sharing of medical laboratory services may also contribute to reforms in the field of laboratory improvement and operation; more and more clinical laboratories are now globally pursuing various colleges to gain more profits by improving the quality and accuracy of their results. The absence of a clear, supportive policy and environment around the performance of clinical and diagnostic services by clinical laboratories governs primary health care centers. Improvement

includes improved infrastructure facilities, recruitment and training of skilled personnel, and regulatory compliance, maximum share of global expertise and advanced technology for smooth operation of tests with the collection of the entire set up of the health care center allowing a functional, competitive private laboratory to conduct the tests efficiently, safely, and in a real-time manner. Integration of services provides guidance and solutions toward the development of an effective health care integrated system to deliver the highest standards of health care to people throughout the world (Aljarboa, et al, 2022).

Medical laboratories are an integral part of the health care system and provide essential services for ensuring quality, safety and effective healthcare. The facilities provide a diverse range of clinical and diagnostic services, which contribute to the operation of different healthcare settings. Additionally, allowing mutual communication and collaboration with strongly vertically and horizontally integrated laboratories benefits patients and healthcare stakeholders at all levels. Integration is needed for many reasons, including optimizing resources and technology, meeting patients' clinical requirements effectively and at the national level, meeting the national accreditation standards of laboratory and health care facilities and ensuring post-analytic and pre-analytic management of Total Testing process. Furthermore, with effective two-way communication of the information of testing different parameters for patients including treatment, preventive measures or investigation, may save time of treatment and cost and hardship of patient also secures patients and their data by human resources or different means of technology (Tashkandi, et al, 2018).

Research on healthcare systems shows that the clinician and medical staff heavily depend on the results obtained from the laboratory. The primary healthcare centers (PHCs) with integrated medical laboratories (MLs) can provide not only diagnostic and therapeutic services but also much-needed services like health education, rehabilitation, preventive and promotive healthcare, community diagnostic services, community-based rehabilitation, and emergency care. It has been proposed that PHCs should act as first-contact service communities to provide care, increase the emphasis on women and childcare, meet basic care needs for acute medical conditions, and integrate with ML services to meet the essential requirements of comprehensive health needs (Tashkandi, et al, 2018).

Hence, proper integration of MLs with PHCs is needed to improve healthcare outcome since a healthcare decision is significantly dependent on the information delivered by MLs. The laboratory integration with PHCs will decrease the turnaround time so leading to better patient management and satisfaction. Additionally, integration leads to availability of laboratory services at the grass-root level with comparatively more trained staff, which directly impacts healthcare betterment. The primary healthcare system believes more in preventive healthcare services, so it can also play a significant role in prevention and control of communicable diseases. Further, it will reduce the out-of-pocket expenditure on health and well-being (Aljarboa, et al, 2022).

2.2 Technological Integration

Various research articles and policy frameworks have mentioned the importance of integrated PHCs, but there is a need to conduct a situation analysis of the exact integration level in Saudi Arabia. In the year 2013, the Primary Health Care Corporation in Qatar inaugurated and implemented the Laboratory Information System in all its medical centers. LISSY studies demonstrate the world-wide use of a laboratory module of a Hospital Information System being used in primary healthcare. Some of the standalone application software and web technology-based application software are discussed for their usability and practicability. Software using different technologies like Java, Core Java and JSP with Oracle as a backend were successfully used in a rural primary health care center. Similarly, PHP, XAMPP based software was found to be very user friendly. However, in the present study, there was no separate way for data entry for primary healthcare laboratory investigations. This issue can be addressed by adding a separate column for "primary health care" clinical laboratory investigations performed on the day in the central database and the central laboratory. This will help the medical officer in charge; PHC physicians and health administration monitor the primary healthcare laboratory performance specifically. These limitations can be efficiently addressed if a common platform consisting of laboratory module, blood bank modules and medical and billing record modules of primary healthcare is made available. This will help PHC, Regional Health Administration, State health Administration, and National Health systems (Unger B. Discontinuity, 2018).

Primary Healthcare Centers (PHCs) are the initial contact point between the patients and the healthcare facility, they are also considered as the first level of patient contact with the health system. Laboratory requisitions received from PHCs account for 68–73.1% of the overall test requests received at patient care points. Most of the time, the results play a crucial role in patient diagnosis and treatment plan.

Information about the various tests available at the laboratory, test costs, availability of the tests at the time of specimen collection, and time taken to report play a significant role in the decision plan of the patient and treating clinician. The availability, handling, analyzing, and reporting of laboratory investigations of clinical importance is a crucial part of overall healthcare delivery (Tashkandi, et al, 2018).

Blood sample collection for investigation following the standard and aseptic protocol at the PHC level is the responsibility of the staff nurse. After sample collection, transportation, handling, and reporting require the support of the laboratory technician and other paramedical staff. For quality assurance, the laboratory technician is responsible for registrations in the logbook, labeling the specimen, shifting to concerned instruments, liquating if any, and for their disposal. Traceability and documentation of each patient specimen and quality assurance are the responsibilities of the laboratory technician. In developing countries, including India, the patients visiting the PHC are presented with the option of either collecting the blood samples at the PHC or developing nontechnical skill for blood sample collection at their home and then reporting to the primary healthcare center with the sample, which can then be transported to the laboratory for further processing (Almalki & Alzahrani, 2021).

3.2 Administrative Integration

Adequate prevalence of diabetes and other associated morbidities place a substantial burden on secondary/tertiary care facilities, whereas these issues could be 'dealt more effectively at primary healthcare level'. In today's resource-constraints environments, strong compulsion on maintaining substantial linkages between PHC and various management levels, as well as patient management programs need development of available services. Consistency (rapid, easily accessible laboratory services credible to patients, community physicians, and existing healthcare system), affordability, competence, and constantly updated patient records should consolidate the appealing spectrum of services, as recommended in literature. Minimization of primary diagnostic errors by availability of all diagnostic essentials from single doors has also emerged as an important manifestation in several recommendations. Here is talking about the experiments describing introduction of new services such as Point of Care diagnostics, internet-based tele pathology and quick turnaround reporting etc. This art of patient management as per clinical guidelines & local concordance is a vital compulsion in progressive countries where tax-based maximum share captive to healthcare facility (Aljuaid, 2016).

Physician participants revealed an encouraging view on the importance of laboratory tests in local healthcare facilities, agreeing that fundamental tests – complete blood count, biochemistry, microbiology tests, and viral studies, such as hepatitis panel – should be reported in their facilities at a minimum. Some standing histopathology services for minor surgical interventions, such as preoperative FNAC of the breast lump, should also be presented in PHC-3. Echoing previous findings, the participants of our study also stressed the importance of utilizing basic lab facilities to decrease the need for patient referrals to tertiary care centers. Importantly, consolidation of the framework for better community interaction with centrally promoting patient health through service provisioning at PHC level (Tashkandi, et al, 2018).

AS adapted from WHO recommendations, has received support in a recent publication7. Primary Health Care centers (PHC) provide the first level of health care services required by the community, i.e. promotive, preventive, and curative. The roles of PHCs have changed over time reflecting the increasing burden of non-communicable diseases NCDS (diabetes, hypertension, arthritis, heart disease, liver, kidney, and digestive disorders). Promoting healthy lifestyles, avoiding harmful habits and self-management are now main elements of PHC activity. Diagnosis is based on patient history, physical examination, and the use of basic laboratory tests. The timely availability of laboratory results with strict compliance to evidence- based clinical algorithms remains the first choice to cure, provide better service, and with minimum cost (Aljarboa, et al, 2022).

Conclusion:

One of the important national programs for training Saudi lab technicians is being implemented by the ministry of health and is valid for two and half years. The "Specialized Health Training Program" is under the supervision of health affairs at the Riyadh region. This article elaborates on the knowledge, attitude, and practice of primary healthcare doctors in relation to utilizing investigations in the Eastern Province of the kingdom of Saudi Arabia. Utilization of laboratory tests in Saudi Arabia is high, in general, especially the private clinics. Also, frequent use of laboratory services has been reported in poor communities. The high use does not necessarily result in better healthcare quality or outcomes.

Lab techs are responsible for performing and analyzing tests to provide patients and their primary care physician with information on their health status. This role has become increasingly important considering the current COVID-19 pandemic, in addition to their routine responsibilities. In 1992, a non- medical program was initiated in the Kingdom of Saudi Arabia, and at present most medical laboratories are staffed by non-Saudi nationals, indicating low participation of Saudi citizens in this line of work. According to a local study, Saudi laboratories are faced with many challenges such as the lack of laboratories at primary care centers (PCCs), as most laboratories are at the hospitals. The Kingdom's Vision 2030 emphasizes the importance of human resources and technological power (predictive medicine, bots, telemedicine (national transformation program 2020).

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