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Strengthening the Nutritional Services in Hospitals in Saudi Arabia would Improve Health Outcomes

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Abstract

Appropriate nutrition is associated with good health as it impacts medication efficacy. Medically tailored meals significantly resulted in better chronic disease control, fewer complications, and increased life expectancy along with huge annual healthcare cost reduction. A thrust is required in this area in the Kingdom of Saudi Arabia (KSA) to develop effective health, nutritional communication and modify the existing services for better health outcomes. Advanced nutritional services are mandatory in all hospitals in Japan which is known globally for having healthy dietary habits and a strong longevity index. Many developed countries too have prioritized this need. Therefore, this narrative review, inclusive of relevant studies from scientific sites and the author's perceptions aims to address the present scenario in KSA; lacunae; challenges being faced; suggestive model and implications for the future. Adopting a nutritional services upgradation program would reduce the burden of illnesses, convalescence period, reduce health costs, and increase productivity. The possible strategies discussed, and recommendations laid out would help in advocating a model that can be implemented through governmental policies, health awareness programs, effective training and implementation programs, in line with the 2030 vision of KSA.

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Keywords
Hospitalization;
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Length of Stay;
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Abbreviations

LOS	Length of Stay
MNA	Mini Nutritional Assessment
NCP	Nutrition Care Process
NST	Nutritional Support Team

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Introduction

Illnesses whether acute or chronic have undesirable adverse effects on human metabolism, leading to appetite fluctuations and progressive decline in the patient's nutritional status. This, in turn, is linked to increased mortality, deterioration in metabolic functions, increased length of stay (LOS) at the hospital, and huge health care expenses.

A holistic strategy introduced early in hospitalized patients combined with individualized nutritional support and continued throughout the patient's hospital stay, would go a far way in achieving recovery and improved health outcomes.[1,2] It has been noted that around 50% of the patient's admitted to hospitals consume lesser than the prescribed diet resulting in not meeting the needed protein and energy requirements. This entails the nutritionist to add proper supplements to the food served and monitor the prevalence of malnutrition in hospitalized patients.[3]

Although the awareness towards nutritional care and nutritional support teams (NST's) has increased globally, it has not been prioritized on a strong footing due to the small number of scientific and evidence-based studies. It is more so in KSA where studies are only recently on the rise. Researchers pointed out the need for a higher level of nutritional knowledge in KSA, to effectively improve patients' health and positively impact public health. Incorporation of nutritional knowledge along with physician's support would show benefits to patient's health conditions.[4]

Challenges comprise the increasing burden of chronic diseases, the high cost of hospital services, concerns about the quality and safety of care, inequitable access, a poorly implemented electronic health system (eHealth), and often a poor collaboration between the health providers and the patient. Thorough changes in nutritional services are required to be implemented in KSA to arrest the deteriorating health pattern. Implementing a nutrition care process (NCP) in KSA hospitals should be given priority, calling for effective educational training and policy reforms in hospital management.[5] The inclusion of tastier and healthy meals is also required, to increase the level of satisfaction of the patient. Food and nutrition services are decisive in judging the time and quality of hospital health recovery. Efficient services and teamwork from related departments would also help reduce food wastage and contribute to hospital savings. This was found to be largely missing in certain hospitals of the kingdom.[6] International food safety standards such as Hazard Analysis and Critical Control Points (HACCP) and ISO22000 have been implemented to improve food safety standards in the kingdom. The Ministry of Health needs to develop, standardize, and include food safety and hygiene policies rigorously for hospitals. Regular assessments of food safety operations and management need to be in place to ensure the implementation of the policies adopted[7] Research at hospitals in Denmark have found that around 22% of the patients are nutritionally at-risk, and that only 25% of these patients are adequately compensated for protein and energy. Nutritional care was wanted due to the lack of implemented protocols.[8] Another study quoted 32% of hospitalized patients to be malnourished, with 23% eating less than 25% of the provided food.[9] This sets the ground for a compromised immune system, slower wound healing, and muscle wasting, leading to higher mortality rates with increased LOS, and treatment costs. Utilizing validated screening methods was associated with better nutritional care and decreased malnutrition prevalence rates in these patients.[10]

Malnutrition therefore remains a serious public health issue affecting almost 30–50% of the inpatients. Personalized nutritional care for inpatients has been found to reduce short-term mortality and hospital stay significantly. Nutritional intervention following the guidelines laid down by the European Society for Clinical Nutrition and Metabolism (ESPEN) and the American Society for Parenteral and Enteral Nutrition (ASPEN), using nutritional support is a must in these countries for all hospitalized patients.[11]

Japan's policy "to leave no one behind" offers excellent food services at hospital for patients in collaboration with the entire team of doctors, nurses, hospital staff, pharmacists, food preparation staff and purchase department staff etc. The country stands as a champion for health and well-being for all ages .Long-term governmental efforts in Japan have led schools, companies, and hospitals to offer healthy balanced food along with dietary guidance by nutritional specialists .Documentation of the nutritional care being provided in Japan , right from patient screening and assessment, to discharge is done for a better understanding of treatment plans.[12]

This review therefore aims to narrate and deliver an overview of the scenario globally, the challenges being faced, and the implementation required , with special reference to KSA.

Materials and Methods

Relevant studies from scientific sites form the structure of this narrative review. Information from abstracts in English was collected for manuscripts written in other languages such as Japanese. The results obtained from the PUBMED database, BioMed Central, Directory of Open Access Journals (DOAJ), and JURN, were used to interpret and review the knowledge of the current situation of nutritional services at hospitals globally, with a special focus on KSA (Table 1). The sources of all articles are credible and reliable as they are written by experts in the field and published in reputed journals. The search strings used were nutritional services at hospitals, in KSA, malnutrition in hospitalized patients, nutritional assessment, and nutritional support team. The date ranges from years 2000-2025 elicited approximately 89% of the references of which 60% of the references are between the years 2010 to 2025. A few old references amounting to 11 % of the total references have also been included as they help us holistically understand the subject and its concepts and clearly define the subject matter. This review is a knowledge synthesis summarizing and interpreting diverse studies, on this topic. It aims to address —a] the present scenario; b] Lacunae; c] challenges being faced; d] suggestive model and implications for the future, thereby making it more flexible, and practical.

Table 1: Chart depicting the process of including articles in the review

Identification	Articles identified using search terms (n=102)
	Duplicate articles not pertinent --Removed(n=11)
Screening	Abstracts reviewed (n=91)
	Articles without English abstracts removed (n=4)
	Articles for detailed review (n=87)
Eligibility	Articles without reference of hospital, public health, and medical field -Rejected (n=2)
	Articles related to hospitals, public health, and medical field -Retained (n=85)
Included	Articles with inconsistencies removed (n=4)
	Articles included in the narrative review (n=81)

Background Depicting the Current Situation in KSA

It is observed globally that despite food being a basic need for the well-being of humans, nutritional care is not given its due priority. In KSA, there is an upsurge in lifestyle diseases, with a huge number (3.8 million) of people in the age group 20 to 79 years being diabetic. Obesity and hypertension too are rising, requiring the need to remobilize governmental policies. Fast foods and ill health are taking their toll in KSA, filling hospitals to their full capacity and this seems the appropriate time for the implementation of a nutritional program. The increase in the number of hospitals in KSA reflects the increasing population as well as increasing illnesses. The convalescence period is needlessly long. The hospital and the patient face economic burdens besides the overstretched time spent along with undue anguish and suffering.[13] KSA needs to implement guidelines and regulatory protocols at the national level for non-critically ill patients, which would include a complete nutritional evaluation, delivery route and checking, along with the requirements.[14]

Moreover, limited research concerning the implementation of NSTs, or their outcomes are available, making the issue challenging based on its complexity. Therefore, protocols for nutritional support systems should be accompanied by professionals undergoing training in the field.[15] (Table2)

The meager data available shows that in most cases, only anthropometric data was used as a measure to calculate the nutritional needs of a patient, with only a few referrals to dietitians. Input from physicians and their knowledge of nutrition seems to be wanting. The curriculum needed for nutritional services at hospitals should be made mandatory in medical schools.[16-18] Budget savings by health organizations seem to be responsible for the decreasing number of existing NST's in the kingdom. Most hospitals are

devoid of an interdisciplinary team working towards the patient's recovery. An effective NST is very much required at hospitals in KSA to achieve the government's 2030 vision.[19]

Table 2: Nutritional interventions and their outcomes

Relevant studies citing nutritional interventions (with references)
Overall efficacy of NSTs[31,61]
Decreased complications and reduced mortality[27,51,64]
Decreased hospital length of stay[10,11,26,38]
Healthy food procurement and impact[25,35]
Cost savings[33,50,51,52]
Positive impact of personalized nutritional care[50, 53]
Optimizing health records for nutrition care[5,20,75]
Exploring the practice of nutritional support during hospitalization across physicians, dietitians, and pharmacists[4,5,15]
Nutritional competence of physicians in hospitals[16,17, 18]
Food services in hospitals[6,7]
Status of nutritional implementation[61,76,75,78]
Knowledge of food safety among hospital staff and implementation[7,60,61]

Implementations Required

A call for action—Inclusion of rigorous screening, improved food service, NSTs, and trainings

Screenings

Nutritional interventions should focus on screenings which depict meeting metabolic demands, minimize catabolic effects, and enhance nutritional needs. The patient's electronic health record (EHR) could be systematically collected electronically and stored in a digital format.[20] An ongoing assessment of protein needs, caloric requirements, and patient reactions, along with nutritional laboratory values could add to positive outcomes, as has been observed in neurotrauma patients utilizing this strategy.[21] Incorporating as many of the above measures would help improve the quality of nutrition services in hospitals by positively impacting the overall quality and efficacy of health treatments.[22]

Screening of maximum prevalent chronic diseases in a region needs to be done by the population health management (PHM) department and compared with results from greater KSA and the world, as has been done in the Qassim region, The main challenges identified in this study were the lack of appropriate PHM policies and guidelines, unsuccessful and late technical support, along with an opposition to switch to the new methods. Nevertheless, implementation was successful with effective communication and promotions.[23]

Improved Food Services

A proper association of food with certain ailments is well known.[24] Nutritional service is an allied health service at hospitals committed to making hospital food nutritional and palatable, and to improve the convalescence period of the patient. The improper functioning of such a major service is hence bound to be detrimental to the country's economy and the health of its citizens. The most important thing is to establish a culture of nutritional awareness in all areas of clinical practice. NCP is a multi-disciplinary responsibility requiring integration of the workforce of the entire hospital. There needs to be an acceptance of responsibility for nutritional care by all healthcare professionals at hospitals. Lifestyle recommendations along with good nutrition can lead patients on the road to quick health recovery.Procurement of food materials with regular evaluations is a must. The World Health Organization has directed the implementation of policies for procurement and supply of healthy food in all community settings.[25]

Nutritional Support Teams

Studies have found an association between the LOS in hospitals and the nutritional status.[26] An Indian

study on cancer patients showed that malnutrition corrections decrease LOS and lower hospital readmission rates.[27] A large European survey covering 3071 hospitals wherein the team of doctors, nurses, and dietitians were a part of the NST showed an eighty-eight percent reduction in complications and ninety-eight percent cost savings since their formation.[28] Preoperative immune nutrition has also been found to help reduce post-operative morbidity as well as hospital costs.[29] The ineffective implementation of NST's in most places is mainly attributed to a paucity of funds, and insufficient collaboration from the administration as well as the physician.[30] The absence of nutritional service records at hospitals, makes it difficult to evaluate the current scenario. Existing nutrition support teams (NST's) should document patient outcomes and cost-effectiveness. They should extend their roles and increase broadcasting information in support of their continued benefits, to remain viable.[31] A mobile NST model can function to showcase an integrated approach for improving management, utilization, and the quality of specialized nutritional therapy.[32] Since 1970 NST's have been growing and evolving rapidly. While most hospitals do not have an NST in place, it has been shown to be an excellent support to the existing health services of hospitals by specialized personnel. This system could continue to evolve, progress, and make effective contributions to economically feasible healthcare programs existing today.[33] Greater participations by the nutrition support system is suggested, instead of being relegated to only healthy food preparations and clerical tasks. While initiatives on quality improvement do work effectively, practitioners can look at the practical experiences of NST's elsewhere too to establish their own.[34]A provision should be made available for overseeing and continuously monitoring all stages of nutritional care, right from catering to hospital implementation. This would improve the quality and ensure that safety standards are met.[35] Representation of a Nutritional support team (NST) depicting its working is shown in Table 3

Table3: Working of nutritional support teams

The team	• Doctors, nurses, physical therapists, speech and occupational therapists • Dentists, dental hygienists • Dietitians, teaching staff, research team. • Medical technologists • Pharmacists • Technicians • Clerical staff
Interactions and interventions	• Collaboration with specialists; Nutritional assessments, Screening; Nutritional intervention
Continuous monitoring	• Collaboration with food service departments • Regular evaluations • Implementation
Customized Nutrient Support	ADMISSION TO DISCHARGE
Effectiveness	• Favourable positive outcomes • Cost benefits to patients, hospitals and the government. • Favourable positive outcomes • Cost benefits to patients, hospitals and the government.

Nutritional Training

Interestingly, about 59.5% of physicians who were only engaged in clinical practice exhibited a significantly better perception of the contribution of nutrition and dietitians in assessment and intervention, as compared to those in academia. Insufficient training in the role of nutrition and a lack of real-world experience could explain the findings.[36] Japan has progressed rapidly in the form of NST for proper nutritional management. Individual

patient dietary issues were solved with professional nutritional training and reliable clinical staff from hospitals.[37] Though in most hospitals nutritional care is limited to Inpatient departments(IPD), these services should be extended to outpatient department (OPD) too, and beyond the IPD duration.[38]

The various procedures of tests along with the hospital environment may have adverse effects on a patient's dietary intake. Here nurses play a key role in understanding a patient's nutritional needs and status.[39] Nurses should possess knowledge of nutritional care, and a favourable attitude towards hospitalized patients, accompanied by good practices.[40]

Trainings to all staff involved in food handling, right from the food service providers looking into medical food expiry, to the kitchen staff has been found to result in cost effectiveness. Here the dietitian has an additional role of tailoring the food sent to the patient according to his needs and accordingly serve the required portions. In one study the cost savings through this model amounted to $57,142 per annum apart from improved health outcomes.[41] Moreover hospital accreditation should also include nutritional trainings and services, irrespective of the level of education, or experience of the employee.[42]

Improvising Hospital Food Purchases

While nutritional labeling shows mixed and limited records of success, interventions targeting the market environment though rare, are found to be more effective and also intrusive.[43] Most hospitals providing food to children indicate the need to improve the lack of furnishing nutritional information and incorporating healthy choices.[44] Audits on expired nutritional and related pharmaceutical products would cut down wastage, lower costs, and also ensure better health and safety of the patient. Proper labelling, storage, and documentation of products purchased at hospitals should therefore be done.[45]

Enhancing Cost Benefits to Patients, Hospitals, and The Government

If applied early, the benefits of nutritional services can help reduce complications, LOS, reduce mortality, and cut costs.[46] A study encompassing results from 19 hospitals found that hospital stays reduced from around 14.4 days to 12.2 days, with better nutritional care.[47] Improved nutritional services could reduce requirements as well as wait for hospital beds and help us save many precious lives.[48] Benefits have been observed across all regions and patient groups in the United States implementing this therapeutic nutritional service.[49] In Japan, NST performance in sepsis patients has proven effective with decreasing LOS and huge cost benefits, amounting to 120,000,000 yen (US$1,000,000) annually.[50] It has been observed that malnutrition in a hospital setup burdens the system economically triggering a greater scale of complications post-surgery, increasing mortality rates, and also resulting in increased LOS at hospitals. It has been observed that complications arising during post-surgical interventions could be handled by adopting immunomodulatory nutrition in preoperative patients by trained professionals. This not only serves as prophylactic but also reduces the cost incurred by 2.24 times. Therapeutic nutrition is therefore a sound investment providing good economic returns and sustainability to the institution.[51] A retrospective study in which pre- and post-NST were followed up for a year, showed considerable improvement in terms of health as well as cost savings.[52]

A Comparative Insight

The Japanese law of Shokuiku, meaning diet (Shoku), and education (iku), includes adapting diverse healthy food from different cultures, and harmoniously incorporating the locally grown products. It encompasses long-term sustainability while taking into consideration present-day requirements as well as future needs.[53] Even a nutritionally robust country like Japan is set to improve safety regulations on unhealthy foods by implementing national monitoring systems and putting restrictions on marketing, sales, and accessibility of foods and beverages that are unhealthy.[54] The current food system in KSA requires education training and committed programs in research, at education and health institutions, to be effective.[55]

Japan initiated the NST model with an integrated team comprising doctors, nursing staff, pharmacists, dietitians, medical technology staff, social workers, and the nutrition team. Additionally, immune nutrition is provided to pre-operative patients at hospitals and a weekly malnutrition report from

each ward is collected to make countermeasures. Laboratory tests along with the physician's advice are taken to raise the quality of life of the patient by providing quality nutritional services. A special recommendation for including laboratory staff in NST too has been made by the National Institute for Health and Clinical Excellence (NICE).[56]

The nutritional services upgrade program has already been implemented in developed countries like Japan with remarkable success. In Japan, the life expectancy is nearly eighty and the people are productive for almost their entire life span. In KSA, even though 70% of the population comprises the youth, the productivity rate is far too low due to falling health standards.

Research studies on doctors in Arab countries, including Kuwait, KSA, Qatar, and Azerbaijan report that over half (50–60%) of family physicians possess inadequate or poor levels of nutritional knowledge. It has been suggested that while developing continuing Medical Education (CME) activities for family physicians, a need to focus on nutritional courses should be made mandatory and these courses should be more accessible and affordable.[57]

Though a few hospitals in the UAE are well advanced, yet the magnitude of health issues like childhood obesity, and other lifestyle diseases make it a challenging task. There is a pressing need to assess the nutritional behaviours of the population, to aid in policy decision-making and implement effective health strategies.[58]

An interdisciplinary approach to translating medical breakthroughs to patients, appears essential with enhanced nutritional services being encouraged at all hospitals and health institutions.[59] Middle East has developed a feed M.E group which is a step by step simple process for implementation of Nutrition Care.[60] The development of a food composition database representing the local Saudi population is required to accurately analyze dietary components which would contribute towards the implementation of nutritional policies by the Saudi government.[61]

A Scotland hospital developed an audit tool with the participation of all clinical sections to ensure the efficiency of nutritional care in all units.[62] It has been observed that less priority is given to nutritional issues in aged patients, which is exacerbated due to insufficient nursing care and ineffective strategies employed. Furthermore, geriatric patients due to insufficient intake exhibit less physical activity, which when combined with poor nutrition poses a higher risk of developing health problems. Malnutrition among this group of hospitalized population ranges from around 12% to 50% and among the hospitalized ones from 23% to 60%. This results in increased hospital stays and enormous costs for the health services of the country. In recent times age longevity has increased, exacerbating this problem in elderly patients.[63] Prevalence of malnutrition was found highly prevalent among the elderly hospitalized patients and was directly associated with the increased LOS and mortality in KSA.[64]

Geriatric population being more vulnerable to acute illnesses as well as malnutrition need to be specially taken care of when admitted to hospitals. Appropriate nutritional intervention at the hospital would ensure a smooth shift from the hospital to home care.[65]

This could be remedied by providing nutrient-dense meals according to the condition of the elderly patient.[66] In the USA, the Older Americans Act Nutrition Program (OAANP) has been incorporated to not only re-integrate them into the community but also provide opportunities to try out recent nutritional programs and examine their sustainability within the community.[67] Mini Nutritional Assessment (MNA) is a quick noninvasive and inexpensive validated nutritional service tool for adults at risk of being malnourished. As malnutrition shows strong associations with decreased cognitive functions and eating problems, the detection of this risk through MNA would be of great assistance.[68,69] Other problems of increased incidences like gestational diabetes, cancers, and cardiovascular diseases globally demonstrate the requirement for nutritional strategies to be put into practice.

France and Brazil continually enhance their health systems to offer valuable services to their citizens.[70] Wherever implemented, advancement in nutritional support in Japan has led to effective nutritional care for patients.[71]

The need for upgrading the existing nutritional services at hospitals with the help of an organized

nutrition support team was realized by nutritional managers in the USA as early as 1977.[72] It was further felt that this required the integration of staff from different health disciplines with nutritional care being considered a multidisciplinary responsibility of all health care professionals. Nutritional excellence with professional abilities since then was well recognized and given due priority.[73] Also, one of the responsible factors for inadequacy of the dietetic staff towards nutritional care comprised of limited technical support from hospitals.[74]

Actions Being Taken in KSA

The Kingdom's Health Sector Transformation Program 2030 intends to be an all-inclusive, operative, and unified health system concerning individual health, inclusive of e-health services and digital solutions.[75] Currently, the Central Board for Accreditation of Healthcare Institutions (CBAHI) is the official agency in KSA that sets national standards for all facilities and grants accreditation through the National Hospital Accreditation Program (NHP). It demonstrates the growing recognition and participation of all hospitals, whether private or governmental, in the accreditation program.[76] Findings revealed that accredited hospitals exhibited improved patient outcomes. Yet challenges remain, with a lot to be done.[77] Variability in the quality of healthcare services across different regions of KSA is a matter of concern. The fact that healthcare is a complex industry that is rapidly evolving, poses many challenges for the accreditation process in maintaining the survey's integrity. Ultimately, it will benefit patients, healthcare providers, and the nation, positioning KSA as a leader in delivering world-class healthcare services.[78]

It will take a strong commitment, flexibility, and teamwork from everyone in the society to realize these goal .Improving health systems through an organized nutrition support service is direly required globally and more so in KSA which is fast moving towards modernization and implementing recent techniques applicable in the developed world.

Outcomes So Far

The role of private sector investment should be enhanced, to meet the needs of every member of society. The top 3 hospitals in KSA namely, King Faisal Specialist Hospital Riyadh, MOH-King Saud Medical City, Riyadh, and Dr. Soliman Fakeeh Hospital, Jeddah, have started implementing the modern practices according to the strategies developed for vision 2030.[79] As observed, nutritional care is very important to realize this transformation and should be given its due priority.[80]

Suggested Roadmap for KSA

It aims to remove barriers, using evidence-based practices and following the therapeutic principles of transformation, including the widespread use of EHRs, telemedicine, and using cutting-edge medical technology. (Table4)

Table 4: Actions to be implemented for better nutritional services at hospitals in Saudi Arabia.

Actions to be implemented (with references)
Need for nutritional curriculum based on hospital needs in medical schools.[16,17,18]
Dieticians should receive training in Nutritional Care Process[37,41]
Physician training on Nutritional Care Process4,[15,17,67]
Early initiation of nutritional support[46,56]
Nutritional screening practices to be religiously followed[20,21, 23]
Nutritional assessment practices (Anthropometric data, Albumin levels, Calorific assessment) to be done in all wards at all levels[22]
NCP implementation to be monitored[24, 25]
Audits on expired nutritional products in hospitals. Proper storage conditions and documentation to be followed[41, 45]
Attend to patient satisfaction[3,9, 12, 44,.66]

A nutritional service up gradation program with the sole objective of making the 2030 vision achievable should be introduced fo--

1. Reducing the convalescence period and as such the huge economic loss to the exchequer.
2. Increasing life expectancy through lesser length of hospital stays
3. Increasing work productivity ---which would reduce the unproductive man hours and thereby enhance GDP.
4. Appropriate hospital accreditations
5. Improved menu--- Hospital services should incorporate a broader menu with fresh local produce, tasty dishes, and better food presentation, with detailed ingredient inclusion to improve satisfaction among the patients.
6. Alternate plan: Confirm varied nutrition options available to the patient even during food service off-hours.
7. Expert advice: Consult a dietitian for patients with poor appetites, specific nutritional needs, or other risk factors.
8. Include supplements: Patients struggling with solid food intake or having allergies or dislike for a certain type of food could be given supplements in the form of liquids etc.
9. Nutrition education for hospital staff viz; physicians, nurses, and paramedical staff should be included.
10. Future research should also focus on reducing the risk of malnutrition in hospitalized patients.
11. An integrated method employing competent NST's at all stages after hospitalization is very much needed.[61]

As a part of vision 2030, Tokyo based Medident has made a pact with Saudi Arabia institutions to link Japan's medical digital transformation strategy on September 2024.This deal is inclusive of areas of AI diagnostics, medical device development and platforms for healthcare education[81] Overcoming the challenges and improving the present set up by taking cue from countries which have advanced in this field would help achieve the health transformation vision of 2030 .Global strategies addressing specific needs in KSA and pilot testing of the entire process in major hospitals would do the trick.

Conclusion

A lot is being done in the health sector in KSA towards achieving the health transformation goal of vision 2030. Nevertheless, inclusions of appropriate nutritional services in hospitals are deemed essential, which would add strength to the positive outcomes. An interdisciplinary approach, along with enhanced nutritional services employed in certain developed countries, should be encouraged at all hospitals and health institutions in the kingdom. This would ultimately contribute towards the implementation of nutritional policies by the government, and lead towards a healthier and prosperous KSA.

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This research did not involve human participants, animal subjects, or any material that requires ethical approval.

Informed Consent Statement

This study did not involve human participants, and therefore, informed consent was not required.

Clinical Trial Registration

This research does not involve any clinical trials.

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Author Contributions

The sole author was responsible for the conceptualization, methodology, data collection, analysis, writing, and final approval of the manuscript.

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