

The Role of Preventive Nursing and Nutrition in Combating Epidemic Diseases: Challenges and Future Directions

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Abstract

Epidemic diseases are a global health problem causing more suffering and loss of life. Many countries create various organizations focusing on oral health problems with funding to develop, implement, and evaluate public health strategies and preventive programs. The reality portrays that the problem has become paramount and cannot be tackled without preventive nursing and nutrition in this contemporary era. This paper investigates in detail the role of preventive nursing and nutrition in combating epidemic diseases. In addition, the challenges in fulfilling the necessity of preventive nursing and nutrition in epidemic diseases would be elaborated, and the future directions would also be examined for the perusal of the readers. After the research paper, findings and significant recommendations are also part of this research paper and are part of the current study.

The main purpose of this paper was to identify and provide significant contributions to the stakeholders of public health in conjunction with preventive nursing and nutritional strategies for planning the welfare of epidemic prevention research for several leaders or officers in society. As ongoing evaluation results of multinational epidemiological tasks and functioning in diabetes regulation, it will integrate collaborative, interdisciplinary, and comprehensive, person-centered care from specialized dietetics nurses. This work advocates a cross-cutting approach that aligns nursing practice with treatment and nutrition strategies to support treatment. It also encourages nursing leadership to strategically evaluate, design, and include nutrition and consumption methods for professional nursing roles. Clearly, these functions are collated for the symmetrical upskilling of dietetics and nursing employees. In conclusion, it is important for public health and professional organizations to embrace the prevention of ultimate health and well-being. Health care and behavioral, as well as their environmental risk factors, are the prevention and treatment goals for a range of major killers related to eating behavior and nutrition. In order to efficiently and consistently address prevention at all levels of service, it is important to clearly characterize particular applications for nursing practice or medical care.

Keywords: Preventive, Nursing Role, Public Health, Nutrition, Epidemic Diseases.

1. Introduction

Epidemic diseases, which involve sudden outbreaks that affect a large number of people, animals, plants, insects, or fungi, continue to be a serious threat in regions throughout the world. They can reduce the availability of food, harm local community development, disrupt trade, increase food prices, and thereby result in economic losses. The impact of epidemic diseases on global public health and economics has continued to garner increasing attention. However, the current coping strategies leave much to be desired in terms of prevention and control, necessitating interventional public health nursing, which should tackle the root of the problem via health prevention strategies before problems arise. Nutrition care and the use of nutrient-rich foods are some of the best preventive care pathways, while the critical role of public health nutrition workers related to preventive care has rarely been mentioned before. (Talisuna et al.2020)

Despite progress in many areas, gaps have continued to appear, necessitating the search for new solutions. This narrative review aims to evaluate the existing problems and progress in the related literature on preventive nursing and nutritional care. The first section examines challenges faced in response to global changes in epidemic diseases; then, a comprehensive theoretical framework for preventive nursing and nutrition toward

epidemic diseases is developed. Both providers must cooperate with one another due to the inability to tackle the burgeoning challenge on their own. The final section examines future directions for preventive nursing and nutrition science. Public health nurses can conduct an ever greater morbidity risk impact assessment and nurse review and provide additional services to ensure excellent nutrition throughout the life of the patient. (Helliwell et al.2023)

2. Understanding Epidemic Diseases

Epidemic diseases: Definition and characteristics. Epidemic diseases, which have been occurring since ancient times, differ from other diseases with respect to their emergence, spread, and termination in human populations due to the rapid or non-characteristic increase in cases. In general terms, 'endemic' denotes a disease that occurs continuously in a particular geographic area and among a specific group of people, whereas 'epidemic' is characterized by the widespread occurrence of a disease, such as occurring concurrently throughout an area, in excess of the normally expected frequency. (Khachfe et al.2020)

How do epidemic diseases occur? Diseases that occur in patterns other than those expected by public health experts can be summarized as follows: when they emerge from animals to humans; when they occur due to new variations of parasites that were previously determined and frequently occurred due to mutation or recombination; when they cause infection due to a temporary change in body resistance or a change in parasites; when they appear in an area with no prior history of the disease; or when they are re-emerging. One major zoonotic viral disease, Chikungunya, had not been reported in the world before 2005 and then began to spread in Asia, Africa, America, and Europe. An example of human infection due to pathogen mutation and recombination includes the H1N1 2009 pandemic. When disease patterns and the reasons underlying inconsistent frequency changes in disease sources are studied, important lessons can be learned from multiple perspectives, including preventive health efforts utilized from other historical pandemic samples. (Islam et al.2021)

2.1. Definition and Characteristics

Epidemic diseases are attributed not only to an older cause of death but also to catastrophe equivalents. The current definition of these diseases is infections that statistically lead to more cases in the region than expected or with implications. Those observed in regions other than the usual are pathologically similar to the diseases already known. In other definitions, this concept is defined based on cases predicted by clinicians rather than based on a projection model. The combination of epidemic shift, magnitude, and short time duration both geographically and temporally leads to a broader public health outbreak. It was observed that the definition used is difficult to detail and that a general approach will be more useful in practice. The latter is also emphasized as the basis of the term used until the present, besides overlapping cases in public health courses and in articles published before 1950. To date, it continues to be used in practice and has become accepted as another description of the term epidemic. (Piret and Boivin, 2021)

Known epidemics are also different from colds and influenza expected during certain seasons or seen at home. While their definitions differ, these are only classical expressions of epidemic diseases. To some extent, a little digression will not harm us. The expected diseases of these periods may be epidemic diseases depending on how they begin to spread or intensify and in what ways they can reach other countries other than those expected normally or usually. In particular, depending on the expected, the pandemics accessing other countries cover all countries as the expected range is much longer than the border even though it is local. Both are studied in this study. All are not defined from start to finish. In fact, it is known in general that the cause is infectious microorganisms; they can affect different people depending on how they are transmitted, and it is difficult to manage such responses. Some potential and certain reasons for this behavior are yet to be disclosed. To achieve these, new areas need to be resourced as well as already focused topics or factors. It is also aimed, by preventing the preparation of this article, to construct new strategies based on current literature when organizing the preventive efforts needed in preventive nursing and nutrition. (Shaw Stewart and Bach, 2022)

2.2. Historical Examples

While the recent pandemic is associated with an acute need to tackle these public health problems, historical pandemics and epidemic illnesses can be seen in different eras. Among them are the Bubonic plague pandemic, the influenza pandemic of 1918, the Spanish flu pandemic, the cholera pandemic, the Ebola pandemic, the Zika pandemic, and the regular occurrence of pandemic events of a new influenza virus that occurred globally. Such a pandemic is known as the swine flu pandemic caused by the H1N1 influenza virus. (Healing2024)

The characteristic of all pandemic events that have occurred is that they have the potential or real severe acute respiratory syndromes that can be a threat to the health of a population. There are several types of preventive measures that have been conducted and evaluated for their effectiveness in decreasing the spread of pandemic events. From the list below, we can have an overview of how new preventive measures are developed based on the epidemiology of the pandemic event. For the Bubonic plague pandemic, due to the lack of knowledge concerning what causes Bubonic plague, the only approach is preventive quarantine. For the regular visits to waves of pandemic influenza, new preventive measures such as antimicrobial prophylaxis, vaccination, and

non-vaccination immunization are developed and tested for their effectiveness in decreasing the viral population. (Lai et al.2020)

Mass culling of poultry, vaccination of poultry, use of new generation veterinary vaccines, bottleneck through long-lasting period vaccination, and depopulation to restrain avian adaptation are new non-pharmaceutical interventions used for pandemic influenza events. The reported evaluation indicated that they were important to decrease the spread of cases and to stop the generation of the pandemic influenza virus. Societal responses and dimensions of the problems of infectious illness are unmeasurable because they depend on local geography, population density, the cacophony of society from which they come, and prevailing morality and technology, as well as singular forms. Until the death of an individual from a pandemic event can be controlled or reduced, these efforts will continue to be evaluated and developed. Using present natural history data of pandemic events, preparedness with a set of interventions and dealing approaches must be virtually taken and aimed at well-cataloged forms of suffering and dying. As such, it must be intelligently incremental and adaptive. (Msami)

3. The Significance of Preventive Nursing and Nutrition

Preventive nursing and nutrition are integral components of caring for public health. Nursing professionals can teach communities effective strategies for preventing disease, establishing healthy behaviors, and providing direct care to prevent complications. Nutrition plays a direct role in immune function and resistance to disease. It is the first-line defense system of the body. Good nutrition helps the immune system function well and decreases the risk of diseases. Good nutrition, such as consuming food rich in vitamins and minerals, can help prevent illness. Moreover, early intervention and avoiding presenting symptoms or injuries can reduce a person's danger.

(Barrea et al.2021)Epidemics are frequent occurrences that inflict a variety of harm on people, the economy, and society. Disease severity and the time horizon until endemicity are unknown. The number of illnesses and their severity can be decreased by implementing preventive measures, increasing vaccine coverage, and administering preventive therapeutics. At an individual and community level, pandemics can be catastrophic. Preventive nursing against epidemic prevention and control can help promote public awareness of epidemic prevention and improve community integration. Increasing the community's capacity to resist infectious diseases and reintegrating the community increases public participation in epidemic prevention operated by nursing based on health education and counseling. Primary, secondary, and tertiary preventive care are all provided as an integrated service to ensure the physical and psychological health and safety of the affected population, constituting a proactive measure. Safe eating and living practices, personal hygiene, and environmental control can help reduce or prevent the spread of new infectious diseases, allowing infection to spread with less severity in the population and decreasing the incidence of the illness.

3.1. Preventive Nursing: Key Concepts and Practices

Preventive nursing is critical in the overall management of epidemic diseases. Another major importance of nursing is preventive care, where the goals of nursing are to decrease signs and symptoms of the disease as well as prevent further complications. In the practice of community health, nursing strives to prevent the occurrence of illness through health education, targeted screenings, and vaccination programs, which will reduce an individual's risk of contracting disease and help break the chain of the spread of infectious diseases. Prevention for community members regarding epidemic diseases can be achieved through the implementation of advocacy initiated through health education, as the next generation is the final destination of the epidemic disease. Remember, prevention is the most important lifestyle pattern that will save you time when volunteering throughout your lifetime to maintain health from chronic diseases. The target of nursing in the prevention of epidemic disease should be prevention, whether primary, secondary, or tertiary, indirectly protecting people from being affected by the epidemic disease. (Al-Dossary et al.2020)

Health education is an important aspect of preventive nursing that involves treatment for individuals or groups by nurses. The role of the nurse as a health educator is to intentionally prevent the entry of infectious disease agents into the body. The nurse's role as a health educator is to provide materials that help individuals develop a positive attitude toward health, reflecting a healthy lifestyle. In practicing preventive nursing among high-risk public members, patients infected with the same disease are also protected. If possible, this could be done at minimal cost of treatment and become more meaningful to society and the community. Hence, the care of preventive nursing among the public is important for education and health promotion, requiring clinical staff who manage high-risk patients to provide the same treatment when cases of an epidemic arise, and to address the stigma associated with patients who are carriers of potential sources of infection. Health professionals need to be trained in health prevention, and further education aims to facilitate the early detection of multiple infections, promote healthy living, support survivors, and educate on reproductive health to prevent childhood disabilities. Regular updates in training and education enhance staff knowledge for disease prevention and promotion programs in schools and communities. When healthcare professionals are regularly involved, especially in practice, their attitudes in the workplace foster constant learning through reflection. They observe the environment and support natural actions, regardless of the challenges in health departments, the elimination of communicable diseases, and the education of health practices. This will help us teach and restore the health of

individuals and promote nursing practice focused on preventing and controlling epidemics and the spread of infections in individuals and mass care. (Vaartio-Rajalin et al.2021)

3.2. Nutrition and Immunity

The link between nutrition and immune function is well established. Protein-calorie malnutrition leads to impaired immune function, which is manifested in increased susceptibility to infections. Adequate nutrition is especially important during epidemic diseases to prevent further negative impacts on health status. Nutrients involved in immune system performance are diverse. Nutrients play a decisive role in developing immune cells, ensuring optimal structure of the mucosal barrier, and secretion of cytokines. Among vitamins, A, C, D, and E, and among minerals, selenium and zinc are the ones that assure the most optimal immune function. (Humphries et al., 2021)

With regard to vitamins, vitamin A enhances natural barriers of the skin, respiratory system, and gastrointestinal system. Vitamin C deficiencies are associated with increased risk and severity of infections. Regular intake of vitamin C diminishes the duration of colds and protects against other respiratory viral infections. Vitamin D activates defensins and antimicrobial peptides among brushing factors in the respiratory system. Vitamin D also decreases cytokine production in macrophages, which is responsible for long cytokine storms during viral infections. Zinc influences multiple aspects of immune function. Zinc is also required for the replication of viruses. Studies have reported that deficiencies or insufficient levels of trace elements, including zinc, resulted in decreased immune function due, in part, to low production of antioxidant enzymes and the abundance of cytokine production. Lack of these enzymes would result in less protection against free radicals, which could lead to the loss of Th1 immune function and enhanced viral replication. Malnutrition refers either to undernutrition or overnutrition. For severe undernutrition, the immune system is clearly and considerably weakened along with the entire muscle mass reduction. (Carazo et al.2021)

Undernutrition affects height, weight, and other health-related indicators and is associated with a high risk of dying from an infectious disease. In this regard, undernutrition is enhanced by an infection and, in turn, increases the likelihood of becoming ill and experiencing severe symptoms. Healthy people can carry the virus without showing any symptoms. In the ongoing context of an endemic infectious disease and the massive outbreaks regarding influenza and coronavirus disease, this is a real concern. Research needs to generate stronger evidence in order to better predict and manage who is at the highest risk of becoming severely ill due to malnutrition during a large-scale outbreak. (Sinha et al.2023)

In conclusion, good nutrition improves individual resilience and reduces the occurrence of diseases across the population. A balanced diet remains essential for the overall maintenance and achievement of optimal health. The acute episodes of epidemic diseases, such as viral illnesses, can be tackled by good nutrition programs leading to a wide array of protective effects in the human body compared with the mono-alimentation used in ancient times. Each required nutritional aspect may be considered to exemplify possible health and resilience for the reduction of the infectious epidemic component. Otherwise, nutritional deficiencies can behave as potential risk factors for a high rate of viral mutations responsible for large-scale pandemics. Additionally, in a viral context, if we move towards minimizing communal bad nutrition, such campaigns could potentially reduce the worldwide pandemic risk, as evidence shows that such pandemics have been increasing over time. (Wallace, 2020)

4. Challenges in Implementing Preventive Strategies

Of course, effective prevention that is a step forward in health promotion can protect a person from any kind of disease on a large scale. Nurses play a major role in preventing the prevalence of diseases and promoting the future health of individuals by providing the right medicine at the exact dose and time. Although this advice is centuries old, it remains as valid today as ever. Providing basic nursing care is one of six important steps to guard against certain hospital-related health problems, for which practitioners need to revisit the simplest methods of healthcare delivery. (Mengistu et al.2021)

Despite the capacity of the public, through health messages disseminated by any means of information and communication, to become their shield against the pandemic, many people remain who cannot afford basic health care. Appropriate, timely, and adequate preventive healthcare and nutrition are not always part of the lives of everyone. In addition, there is a shortage of professionally trained healthcare workers in some cases. Infrastructure to provide professional healthcare is still lacking. Governments in both developed and underdeveloped nations around the globe have curtailed their budgets for preventive and nutrition services as well as supporting infrastructure. Political leaders at all levels of government are inept. Healing outcomes can also be influenced by such factors. (Hanson et al.2022)

Low-income nations invest only a small proportion of their gross domestic product in health care. Additionally, developing countries face a shortage of nursing personnel, with nurse-to-population ratios far lower than what is recommended. These and other related issues lead to disparities at various levels in access to preventive nursing and health and healthcare services, as well as malnutrition. Effective communication and core competencies in public health by nursing professionals are required to tailor interventions based on such disparities. It is time for

governments, leaders, and political parties to take corrective actions. Anticipatory advocacy is the most useful interventional strategy. (Castillo-Zunino et al.2021)

4.1. Resource Constraints

Efforts to provide healthcare and to effectively manage and prevent diseases in many areas of the country are constrained by limited financial resources. This limitation constrains the ability to provide sufficient health facilities and services to meet the basic health needs of the population. The rationale also includes a shortage of drugs and emergency vaccines. With such a constraint, the available health facilities are not optimal because of the lack of national energy providers and logistical capacity, which provides drugs, emergency vaccines, and medical supplies when needed. The limited availability of pharmaceuticals is related to limited drug manufacturers. The government uses its funds, and the scarcity of medications means the price is high, so the ability to access pharmaceuticals is also reduced. Constrained access to essential medical supplies contributes to increased morbidity and mortality from the Zika virus and dengue. (Lal et al.2022)

Additionally, Indonesia has constraints on human resources, as not all health personnel are well trained. This is important for the effectiveness and quality of health services in community health. The lack of healthcare professionals is the most significant issue, as they need to be trained to provide quality health services. These two obstacles show that in some areas, challenges in combating dengue fever through vector control are limited human and financial resources. In handling COVID-19, health agencies need to provide nutritious food for people because immunity decreases in those who suffer from malnutrition, which can expedite the transmission of COVID-19. Strategies, resources, and appropriate technology support planning and programs to improve community health. The hope for increasing community health through health prevention strategies should be included in annual work plans and budget planning, both through local government funds and from partners and the private sector. (Tosepu et al.2021)

4.2. Socioeconomic Factors

This subsection provides an overview of the sociodemographic processes that significantly shape the situation related to epidemic diseases. The implementation of possible solutions is then discussed. It is known that health is influenced by several socioeconomic factors, including income, race, occupation, education, and access to health services. There is evidence that all these factors can have significant long-lasting effects on health and healthcare practices, both for individuals and for entire social groups. When considering a patient, the health professional must, therefore, consider all these factors. Poverty is one of the most important factors that increase vulnerability to diseases. People with limited resources have difficulty accessing health services and paying for treatment; it is not uncommon for the poor to rely on self-medication as a cost-management strategy. On the other hand, public health strategies to counter epidemic diseases could respond to inequalities in health. (Quan et al.2021)

Preventative programs must engage each targeted community to determine the priorities and strengthen the population's perceptions of how to improve health and communicate the appropriate information. The cultural significance of health and how it can vary depending on the context should guide the analysis of the determinants that affect the health and well-being of the populations. The intervention model that concerns an approach involving local policies and educational activities in a multidisciplinary key supports both a socio-ecological approach and proposes new basic elements to involve local spaces and contexts. Social inequalities in health can be reduced, but their reduction requires immediate action in research and in regional, national, and global policies. The intervention has an obligation to move from the analysis of macro-determinants and from the assessment of the effects at the population level to invest in possible strategies to reduce and eliminate the determinants of social inequalities in health. Only in this way will it be possible to imagine new healthcare settings and care facilities that operate in the perspective of equitable access and sustainability. Therefore, only cross-sector collaboration will make it possible to tackle social determinants in the perspective of a real humanization of care services. (Carroll et al., 2020)

5. Innovative Approaches in Preventive Nursing and Nutrition

Innovative approaches in preventive nursing and nutrition. Health systems are increasingly exploring the use of digital health technologies to increase access to preventive nursing and nutrition, redefine innovative roles within patient-focused care, ensure that funding is used for interventions in which benefit can be proven, and drive reform for quality improvement in service delivery. Technology can help to streamline service delivery either in undertaking clinical work or in working with clients to improve health by accessing data, monitoring health indicators, and providing illness prevention advice. Telehealth has been embraced by health professionals, especially specialists who can provide secondary consultations to increase access to services that are not locally available. Telehealth services integrate healthcare delivery, health information, and monitoring.

(Solomon and Rudin, 2020)The use of mobile health applications can reinforce existing nursing clinical interventions and provide client education. Additionally, the integration of the collected client aggregate data can contribute towards epidemiological analysis regarding health risk and disease prevalence for local, national, and global populations. Data analytics is the examination of raw data with the purpose of drawing out actionable insights. When integrated with predictive analytics, it focuses on developing enhanced understandings,

identifying causes of preventative health risks, promoting advanced prevention strategies, and awareness of success rates. Additionally, a great challenge facing public health in the next century is getting varied communities to embrace and support needed disease prevention initiatives. (Kishore et al.2022)

Desirable, outcome-directed solutions require the active cooperation and participation of end-users and communities in planning, developing, and implementing responsive interventions. Successful local collaboration between nurse providers of services, end-users or consumers, and community programs, as well as community gatekeepers, has a proven track record. A successful example in rural Australia saw community partnerships established, involving aging, disability, and mental health services provision. Social workers provided local knowledge to assist in pilot site development focused on the specific needs of diverse individuals living on government income support, some with serious and complex health problems. The recommended approach to implementing programs that address health problems is to tailor the program strategy to the target population. Health educators should prioritize developing health education packages that speak to the key multiple determinants of the health status of the diverse focal communities. (Correll et al., 2023)

5.1. Technology Integration

Currently, modernizing preventive strategies is becoming a prime target response to the global burden of epidemic diseases, including COVID-19. The development of digital and technological resources is transforming healthcare strategies influenced by preventive nursing and nutrition. Advanced digital tools, including telemedicine, telehealth, mobile health applications, and smart technologies, are designed to facilitate remote patient monitoring, access to real-time health information, data analytics, cloud computing, homes with health objects, and accessibility of big data for healthcare professionals for building the optimal health policy and providing health information. These can help to address different health issues such as smoking, diabetes, nutrition behaviors, prevention and treatment of chronic pain, food safety management in the food sector, and risk communication for different areas in the field of food safety, supporting perioperative patients and patients after developing awareness and impact on lifestyle. Many researchers have underlined the role of telehealth, social networks, and electronic health records, and point out the potential to support chronic disease prevention strategies and make them more effective. (Daszak et al.2021)

In addition, wearable and shareable monitoring sensors and mobile health applications can help in many challenges by using big data in nursing science, especially in the eradication of infectious diseases and epidemics, including health applications in food safety and nutrition. It was also observed that linked or integrated electronic health records can be used to gain access to a large and sophisticated dataset. Social media plays a vital role in disseminating information on products that assist patients in becoming aware of the use of innovative technology.

(Mehrdad et al., 2021)Many businesses sell food recommendation products or devices to allow practitioners to purchase and use such products, thus considerably supporting and enhancing customer professional awareness. For recruiting users for clinical trials, social network services can also be used. However, institutions and countries are experiencing several barriers due to the rapid pace of technology adoption and the ever-changing use of specific tools. Therefore, these barriers must be removed to facilitate the efficient and effective application of such tools in clinical instances, even in those that combine nursing and nutrition prevention strategies. To address such challenges, nursing practitioners are encouraged to train in information and communication technologies, since the internet and new media are quickly changing the face of the profession and career field. Furthermore, the implementation of global partnerships and collaborations using such technologies is also desirable.

A prime example of technology integration and effective evidence-based practice in action is a collaborative model of medical education and care management. Over 60 local, national, and international programs are part of this initiative in order to address complex cases in a group-based learning model, including telepsychiatry, geriatrics, HIV, and other infectious diseases.

5.2. Community Engagement

The success of preventive and promotive efforts in nursing and nutrition is determined, in part, by community engagement. When individuals and communities are involved, the initiatives can be matched more closely to the needs and realities of local conditions and the local ethos. When health professionals, nutritionists, and other staff involved are known and trusted, people are more likely to make use of the services they are offering. Numerous community-based programs have demonstrated the positive impact of community involvement in many settings. Safe water programs, vegetable garden initiatives, and programs on domestic hygiene are some examples. Research worldwide emphasizes the importance of building rapport, trust, and commitment between recipients of services and service deliverers.

These principles apply in all spheres of health-related work. Often, it is not the particular service offered, the size of the budget, or the size of the issue. Rather, the strength of a program is related to shared perceptions by the distributors and recipients of the health facilitators involved, and the support otherwise involved. Community-based services that provide individuals with something they have to give to others involve some of the social counseling theories, and many are based on peer education models, a principle some 40 years old of

individuals exploiting their life experiences positively. Entertainers, problem drinkers, and even health visitors have all been used to educate others.

There are many organizations that can be involved in health visiting programs, from trade unions to social organizations. There is a potentially sympathetic audience for discussing the health message. The multidisciplinary team may not have the time to offer round-the-clock counseling; other agencies might do this. Community enterprises can be set up in areas of poverty where traditional sources of social support are eroded, as in some urban areas. Such enterprises are not about financial gain, but they can potentially help sort out joint problems within the community. Local talents and resources may be used to get health initiatives going. Artists and footballers seldom command high salaries when they live among the community, and these groups may be more willing to help the community into which they are born.

6. Case Studies and Success Stories in ksa

Several successful experiences of preventive nursing and nutrition in the Kingdom of Saudi Arabia (KSA) have played a significant and decisive role in stopping the spread of dangerous diseases, reducing the high rates of these diseases, and identifying and addressing the challenges that have led to such high levels of prevalence. These experiences have been instrumental in safeguarding public health and strengthening the overall healthcare system in the country. One notable initiative that exemplifies the commitment to preventive healthcare in KSA is the University Immunization Day for Students. The Student Services at the Imam Muhammad Ibn Saud Islamic University launched this voluntary immunization day at the Deanship Student Residence. The objective of this event was to prioritize the health and well-being of the students, recognizing their crucial role in the overall societal fabric. More than 100 students received the seasonal flu vaccine during this initiative. This proactive measure was implemented in response to the rapid spread of the seasonal flu among university students, who represent one of the largest segments of the population. In order to execute this campaign successfully, the university management proactively engaged with various agencies to secure an adequate supply of vaccines. Moreover, the deanship went a step further by allocating the upper floor of the main administration building specifically for the vaccination campaign. This demonstrates the high level of commitment of the university to ensure the safety and well-being of its students. In recognition of the importance of training and skill development in the field of nursing, the primary healthcare department of Jeddah Health Affairs honored outstanding students in nursing who demonstrated excellence in their training at health centers. A total of 17 exceptional students were selected from various nursing specialties, based on their exemplary performance and comprehensive knowledge in health services provided at health centers. These outstanding students were recognized and celebrated using creative and engaging methods, which further motivated them to strive for excellence. This commendable initiative is part of the broader efforts undertaken by the Director General of the Department of Health Affairs in Jeddah to elevate the quality of nursing services and enhance the role of nurses in providing comprehensive and continuous healthcare for clients. By providing high-quality training opportunities and recognizing exceptional achievements, the healthcare system in KSA aims to cultivate a talented and dedicated workforce that can effectively contribute to the well-being of the population. These successful experiences in preventive nursing and nutrition, as highlighted by the University Immunization Day for Students and the recognition of outstanding students in nursing, serve as shining examples of the commitment and dedication of healthcare professionals in KSA. Through their tireless efforts and innovative initiatives, they have not only contained the spread of dangerous diseases but have also paved the way for a healthier and safer future for all. By addressing the challenges head-on and continuously striving for excellence, KSA is setting new benchmarks in healthcare delivery and establishing itself as a role model for other nations to follow.

7. Future Directions and Research Priorities

Our population health management should always be based on sound research evidence and good practices. We should foster a multileveled health services support system, according to an estimate of population needs, while continuing to carry out research targeted to evaluate our current operations through key performance indicators. We should empower local healthcare organizations to get involved with other stakeholders that have an influence on health outcomes, such as healthy nutrition, water supply, housing, local safety, prevention of substance abuse, care of the elderly, adult learning, and many others. In collaboration with researchers and local public health providers, we need to develop new indicators related to public health, prevention, promotion, and health outcomes.

At the research level, the future direction of health prevention research should aim to refine and further evaluate our good practices, giving shape to new technology with better methods to treat people like customers, developing a culture of prevention by integrating current practices of wellness lifestyles. This journey often changes people's lives by showing them how and what each of them should eat within their genetic pathways and lifestyle habits. However, researching and attempting to intervene on a disease at the beginning, rather than during an epidemic, can bring strong and valuable information that represents the future of prevention. Future direction concerning research is about the integration of disciplines that were initially considered to be separate. Now, that has changed. What makes interdisciplinary fields so innovative? Increasingly, it is the recognition that

solutions arise from lauding the strengths of multiple perspectives. Collaboration at the intersections of fields can provide great opportunities for creativity, synergy, and innovation. Someone who has worked in different disciplines and has translated research across the disciplines has a unique ability to generate entirely new ways of thinking. The ability to think in new ways is the stuff of breakthroughs. So waking up those sectors of the very thin layer of health system control will make people happy; the situation will be much better for all of us. Inter-sectorial and multi-national governance, raising taxes for sugar-sweetened carbonated soft drinks, fines for the companies that produce them, but also some of this money has to be used for preventive education and sports. Aerobic activity, avoiding driving the car to work, and cycling are getting very popular these days. Policy research should focus on inappropriate, expensive, and unsatisfying interventions for prevention. Before we invest millions in prevention, we have to evaluate the population's need for such strategies in order not to be disappointed. Also, we need new policy research to demonstrate how to prevent diseases and not just treat them. There is a need to undertake more long-term prospective studies focusing on disease burden, allergies, infections, and not just treating unhealthy people. Research should also focus on health assessments, home care, nursing needs, health and nutrition communication, and easy ways to deliver simple health and nutrition messages. Research should also focus on training needs in health and nutrition. Special emphasis should be given to evaluating the needs for health and for nursing trainers at undergraduate and postgraduate levels. Training and promotion of health prevention should also be initiated by devising transversal school curricula for basic education, preschool teachers, and nursery staff. Research should extend to evaluate the culture of prevention and care for people from areas of social and cultural disadvantage, especially immigrants. Justice, equity, education, and behavioral change should be research that could lead to a change to a better lifestyle, nursing, and health prevention in future decades.

7.1. Policy Recommendations

1. New Zealand governments need to demonstrate leadership, commitment, and action in developing and considering public health-oriented policy to improve the nutrition, food, and health sectors. This policy work should be comprehensive and situated across government. It should identify evidence-based strategies to protect and enhance health and well-being.
2. Given incongruencies in existing regulatory regimes, comprehensive policy-level work is needed to assure an acceptable level of safety of food provision, health standards, health promotion, nursing regulatory mechanisms, and promote the design of health-based foods.
3. Ongoing and substantive investment in infrastructure and workforce development is needed to ensure effective public health nursing leadership, workforce development, and practice are able to respond to the challenging pandemic and subsequent environment to make the changes needed with food to promote health in Aotearoa New Zealand.
4. There is a need for policy development to assure nurses are retained in this critical role. This policy work could include the development of targeted policy to promote nutrition knowledge at the post-registration level of education of nurses responsible for public/population health education, promotion, and the prevention of ill health.
5. Development of policy promoting inter-sectoral collaboration between the education, agriculture, and health sectors of government for and enabled “whole-of-industry” promotion of nutrition (and health) for, and with, all New Zealanders. This policy framework could include guidelines on the adaptive management of this disease and its resultant malnutrition.
6. Governments' elected representatives could provide assurance by enacting legislation and providing policy funding to offer: a community participation vaccination/immunization/preventative medication budgeting system, a Māori/Indigenous food, health, and natural remedy decision-making fund, and poverty reduction, which fosters a requirement for active state-community partnership in food production to alleviate malnutrition and prevent disease.
7. Policy support for these suggestions includes government funding the use of science and evidence for decision-making about and tracking of illness prevalence, the origin/cause of disease and malnutrition in communities, and the subsequent experiences of care. With policy guidance, health/illness care researchers design, receive funding for, undertake, and disseminate research about the nutritional/disease mechanisms, while healers design, receive policy support for, and engage in research about the discovery, validation, and promotion of natural remedies.
8. Funding can be used to develop a policy framework for evaluating and monitoring these activities. These findings ought to be incorporated into a regular evaluative process enabling interim and final review of policy changes and application. The monitoring process should measure the correlations between economic and social well-being, applied health, and the communities' overall well-being or experience of good health.
9. Policy Frameworks: A setting around which policy can be made to mandate nursing practice based upon identified priorities and evidence in need of further research in a predominantly healthy rather than illness-focused paradigm for the community recovery from pandemic disease.
10. Here, a brief research agenda is presented, and consideration is given to the development of long public health policy that will inform the knowledge as praxis policy that promotes and validates the use of nutritional science and health education and their relationship with nursing in the treatment and prevention of pandemic disease. An examination of the potential limitations of the work is considered. PNH and health promotion are also considered against the backdrop of influence and the potential that country's enduring relationship with the well-being of its communities.

7.2. Emerging Technologies

The transformative role of technology in shaping the future of preventive nursing and nutrition lies in a variety of innovations, including big data, artificial intelligence, mobile applications, and wearable devices. Big data can facilitate disease surveillance and can help the public assess the cleanliness of restaurants via an inspection tool. The use of artificial intelligence in nursing can help nurses manage medications; the technology can equate new drugs to existing drugs in the patients' profiles and generate an alert to the provider if they should not be prescribed together. The field of preventive nutrition can adopt such strategies to create health assessments, monitor the health of individuals and communities, and generate new fields of personalized nutrition. Several startups are supporting this innovation, which develops educational games and a mobile-based program that helps users meet their health and wellness goals by playing a game on their mobile devices. There are also ethical considerations to weigh when integrating technology into any organization, particularly the healthcare system, which is notorious for being slow to adopt new technologies. Importantly, health professionals—including nurses, dietitians, and public health workers—lack training in what new technologies are available and in how to use them. Finally, as the nursing community braces for a tsunami of chronic illness, the integration of preventive services will be important to manage healthcare costs and improve health outcomes. Several examples show the use of technology in the public health sector. An electronic monitoring system monitors more than 40 billion data points annually to detect emerging threats.

8. Conclusion

In this paper, we have revealed evidence to underline the crucial role of nutrition and nursing intervention in epidemic control. Innovative and sustainable public health strategies are needed to address the systemic factors that increase susceptibility, morbidity, and mortality to epidemic disease. We have also discussed several challenges in operationalizing foundational strategies to reduce susceptibility and build health. There are information gaps regarding the most appropriate doses of nutritional supplements in malnourished populations or the appropriateness of wide-scale distributions to all. Nursing intervention in community programs requires multi-component analysis, alongside concurrent health care leadership, improvements in health, water, and sanitation interventions. Questions also remain about the ideal designs and sampling strategies for research and policy-making. These challenges will not be solved with single point solutions, but will be advanced by integrated, innovative, and interdisciplinary research and community collaboration.

The health sciences are pioneering new ways to forge a positive climate between disease control and prevention professionals when it comes to confluent clinical and public health recommendations. Finally, increased and sustained community engagement and leadership in research and programming drive the design and implementation of interventions that are practical and desired. Although further research and disease-responsive interventions show promise, the prevention of unnecessary malnutrition and improved nutrition for sustainable health, including the role of nursing in this effort, is difficult yet timely to expand into future scientific work. We must all be part of the solution.

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