

## Strengthening primary care infrastructure to expand access to preventative public health services

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### Abstract

The focus of this paper was to advocate for enhancement of the primary care system in order to increase the uptake of preventive public health services, with a special emphasis on underserved communities and marginalized people, including the LGBTQ+ community. The goals of this study were; to assess the contribution of primary care in the accessibility of preventive measures, the barriers to primary care access, a dive into case studies and provide policy and practice focused recommendations. The method was based on a literature review conducted across the period of 2014-2024; and sourced from materials covered in more than 4 authoritative databases such as PubMed, Google Scholar, JSTOR, The Lancet, and institutional repositories regarding the subject of this integration of primary care and public health. The research emphasized how much resources had to be invested to develop appropriate infrastructure were suggested to be made to provide a preventive health outcome through better access to essential services like screenings and vaccinations. However, these populations also faced numerous challenges faced by all the other communities such resource reduction, poor training, stigma and discriminatory policies. The paper called for enhanced investment in primary care facilities, especially by promoting telehealth and community awareness programs in poorer neighborhoods. As the research showed, improving primary care infrastructure not only increases the availability of preventive health services but also decreases the lifetime costs of accessing healthcare services and advances healthcare egalitarianism within populations.

**Keywords:** Primary care; Public health; Health equity; Health access

### 1. Introduction

The primary healthcare service has been by default, a part of the healthcare system. It has enabled people to seek care while at the same time playing an active role in the health system by managing acute and chronic health issues (Hughes et al., 2022). As noted by Selman and Siddique (2022) however, within the last few decades, the importance of primary care in dealing with the frequency of illness, and the healing of disease has increased more than before.

Numerous studies have confirmed the importance of such preventive services as screenings, health counseling, or vaccination in the improvement of life expectancy as well as in lessening the implications of chronic illnesses (Advantage Care, 2018; WHO, 2019). Nonetheless, even though preventive measures are effective and have been acknowledged medically, the utilization of them is much more uncertain, and as it often is, the most disadvantaged communities are the most affected. Such communities often struggle with access to primary care services which results in worsening health and increased health inequalities.

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Their potential to utilize the full spectrum of preventative services is diminished, Habib et al. postulate, because areas lacking sanatoria or even primary care institutions in the form of family practices are often unsupported and poorly declined (Habib et al., 2023; Stange et al., 2023). Most of the time clinics lack an appropriate amount of health care givers, sufficient budget or simply do not respond to their purpose fully. To add to all of this, there is a considerable population, especially in these regions who belongs to lower socioeconomic sections or is from the disadvantageous society, has practical barriers such as transport facilities, no health insurance or disagreeable working hours of clinics (Kumar, 2016).

According to News-Medical (2022), this void in primary care in these areas understandably exacerbates health inequities in these populations because left untreated, preventable conditions only get worse. Especially any racial and ethnic minorities or LGBTQ+ individuals require adding additional mental layers to the stressor when it is time to look for the care they need (Lucas et al., 2023). Such communities generally do not approach the medical services due to having faced discrimination or cultural differences.

Heredia et al., (2021) argued that “LGBTQ patients face numerous barriers in accessing quality health care services. Transgender and gender nonbinary (TGNB) people are likely to avoid medical settings due to fear of discrimination or past experiences of maltreatment in medical settings.” For LGBTQ+ individuals, for instance it can be quite difficult to locate a competent and sensitive provider. Addressing these issues is crucial for improving the accessibility of health care and making sure that those who require the preventive health services the most receive them.

Even with these difficulties, there are cases of primary care systems showing positive results in the increasing reach of the preventative services (Avwioroko, et al., 2024). These community-based models in some scenarios have been notably helpful in addressing the logistical and systemic challenges. Such models are usually focused on the patient by providing healthcare in conjunction with social care and using communication technologies to deliver healthcare to more patients electively (Li, 2023). These cases present how the primary care structure may further change to advance broader health within neglected populations. Figure 1 shows the various ways of strengthening primary healthcare.



**Figure 1** Strengthening Primary Healthcare (Kumar, 2016)

Investing in primary care infrastructure has more positive impacts than the mere improvement of accessibility to preventative care (Neves et al., 2023). Depressingly, many of the people who do not have a primary care source turn to emergency rooms and specialty services which strains the capacity of these facilities (Wang et al., 2023). Advancing primary care infrastructure would enable the healthcare systems to shift towards a centric approach that is both cost effective but also addresses the fundamental issues of health care, in this case primary.

Losada (2022) has written that healthcare systems are not only designed in such a way as to allow them to provide services, but also contribute to health inequities and access to primary care services and other pertinent healthcare services. These groups remain disadvantaged, and it is multidisciplinary interventions that need to be taken (CAMP, 2024). For instance, enhancing the community clinic budget, increasing the number of pharmacologists, or training the staff to deliver fitting services would address the barriers that most encounter in trying to obtain preventative services. That is why it is critical to learn how to effectively build primary care settings or networks to alleviate health inequities.

It is not only relevant to prevent illness by reaching out to people, but also important to prevent illness from the community level (Wang et al., 2023). It would not only enhance individual health, but also aid in the growth of primary care frameworks leading to healthy communities free from avoidable diseases hence the improvement of public health in the long run.

The need to reinforce primary care to enhance preventative services does not solely focus on the individual; it also has wider implications for society (Neves et al, 2023, Avwioroko, and Ibegbulam, 2024). Primary care that is well developed can also work to stop the escalation of transmissible diseases, lessen the number of chronic illness cases, and improve the health habits of people within societies. All these advantages would perhaps lead to a better life, cost less in terms of health expenditure, and would allow equitable distribution of health (Avwioroko, 2023a).

It is not just the policy shift that is required to increase provision of primary care level preventive services but also the revision of the mode of primary health care provision. Primary Care is perceived to have inherent gaps and bottlenecks which when addressed present a unique chance to re-configure the health system and in the process provide equitable care to all, reducing the burden of inequality and enhancing the overall well-being of the country.

### *Research Objectives*

The specific objectives of the paper are to

- evaluate the role of primary care infrastructure in expanding access to preventative health services in underserved communities.
- identify barriers to accessing preventative health services in primary care for underserved communities and LGBTQ+ individuals.
- explore case studies of primary care systems that enhanced access to preventative services.
- provide recommendations for strengthening the primary care infrastructure to improve access to preventative public health services.

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## **2. Primary Care Infrastructure: Concept and Component**

The primary care infrastructure consists of the key systems, resources and facilities that enable the provision of primary care (News – Mediacal, 2022, Avwioroko, 2023b). These services, usually the entry level in the hierarchy of health services, include the prevention, treatment of general illnesses, management of chronic diseases as well as referral for specialized care if need arises. Saffer et al., (2021) explained that,

“From the Alma-Ata declaration of 1978, on which most of the principles underpinning primary healthcare rests, to the Astana Declaration of 2018, unanimously endorsed by all WHO Member states, significant emphasis is placed on the importance of primary healthcare. In both declarations, primary healthcare is an essential component of promoting health and health outcomes and is seen as a foundation of an effective and responsive healthcare system.”

A strong primary care system is essential for support and enabling people and communities to have access to wide-ranging, easily available, and uninterrupted care (Stange et al., 2023). It is particularly important for improving health outcomes, reducing health care expenses, and bridging health access gaps in vulnerable populations.

Selman and Siddique (2023) elaborated on components of primary care infrastructure that are complex in nature and interact to effect care. One pivotal component is healthcare settings in terms of clinics, health centers, and medical offices that must be strategically positioned to cater for various populations. These facilities must also have the relevant medical apparatus and technology such as diagnostic equipment and Electronic Medical Records (EMRs) needed for thorough diagnosis, managing treatment and patients.

The other important component is the human resource which constitutes several healthcare providers including primary patient care physicians, nurse practitioners, physician assistants, and even other auxiliary staff such as nurses

and medical assist divers (WHO, 2019). This derives from the fact that healthcare is labor intensive and thus there must be sufficient and qualified manpower to provide the services. Continuous education makes it possible for the caregivers to practice what is current in medicine thereby improving care.

Infrastructural development is not only about the facilities, workforces and patients, those structures are interlinked information systems which (Wang et al., 2023) defined as Health Information Systems. EHR systems, telemedicine, and data analytics in the health setting have been crucial as they facilitate information flow among providers, care collaboration, and measurement of patient health. Such systems enable fast information exchange, minimize the chance of medical error and improve patient care among those that are out of sight and even in the less privileged regions.

Furthermore, financial sustainability is of paramount importance, with health financing systems such as insurance schemes or government programs ensuring that the primary care sector is both affordable and accessible (Hughes et al., 2023). Payment systems such as value-based care can focus and promote coordinated and preventative care which are more cost effective in the long run. Primarily effective financing's aim is to avail primary care services to all individuals irrespective of their social standing.

Moreover, primary care is also dependent on care coordination and integration whereby it is said to be holistic in nature; this includes managing referrals to specialists, ensuring smooth follow-up when the patient moves across the different levels of care, and ensuring that care is continuous and well-integrated. However, policies and governance structures are also needed to ensure that quality is observed in the provision of care, how resources can be distributed, and how services can be offered in an equitable manner. Together, these elements provide essential components of a well-organized primary care system which can enhance the health and well-being of different segments of the population.

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### **3. The Role of Primary Care in Enhancing Health Outcomes in Underserved Communities**

The provision of primary care helps improve health outcomes in underserved communities where there is always a shortage of health care resources, and these areas include rural regions (RHI Hub, 2024). This can be considered progress as due to various barriers including low income, distance from clinics, and lack of health workers, many primary populations do not access preventive health care services. Emphasis on primary health care services aims to address these obstacles through prevention measures, early intervention to treat medically manageable diseases, and control of these diseases to avert future health crises and costly care solutions that ill people might require (Li, 2023; Saloner et al., 2019).

One of the most serious challenges faced by primary health care is access, especially in low resource areas. Li (2023) argues that this challenge can be mitigated by providing basic services that include immunizations, disease screening, and patient education to reduce the cases of preventable diseases including diabetes and heart diseases in the first place. The timely identification of the disease is particularly targeted at preventing the disease from escalating and with limited availability of health care in most communities, this is an absolute necessity.

Caring for chronic and complex health conditions is recognized yet another area where primary care could add value. Diabetic, hypertensive, and asthmatic conditions are often prevalent within the underserved population (RHI Hub, 2024). Due to their pre-established relationship with a primary care provider, patients can adhere to treatment regimens, engage in action plans, and follow up receiving regular checkups which will ultimately lead to effective management of the condition, resulting in a better quality of life with less co-morbidities in the years to come.

Besides, primary care practitioners serve as the patients' hub of health seeking needs and assistance and allowing for portfolio expansion (Fouler et al., 2020). They enable that patients reach out to specialists or mental services as well as other important community services particularly in poorer areas where resources are limited. This also helps patients link basic primary health with complementary services such as specialized services or social services as coordination has been done.

Cost is yet another significant consideration where primary health care stands out as it minimizes the cost of accessing other healthcare units. With sliding scale fees available in many primary medical facilities and its association with public health programs such as Medicaid for low-income patients as well, health services have become more affordable for most lower-level income patients (Gizaw et al., 2022). Therefore, people in targeted and marginalized society will be able to access necessary medical services without being overburdened financially.

Likewise, primary care fosters trust and continuity, which results in chair visits that are early but necessary (Selman & Siddique, 2022). This alludes to the fact that through having regular contact with a primary care provider, there is a

clearer understanding of the patient's and therefore health care is tailored better. This relationship can also help to counteract patients' skepticism towards the healthcare system and subsequently, lead to them being more willing to seek care hence improving their health status.

It is therefore evident that when performed through community healthcare structures, primary care is effective in improving health outcomes among populations experiencing disadvantages and deprivation. Through the provision of health screening, chronic care management, service integration, and improving the affordability of provision, it acts as a leveler in terms of unequal access to health care and reduces health inequities.

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#### **4. Primary Care Infrastructure and Access to Preventative Public Health Services**

The importance of primary care infrastructure cannot be overstated; it allows populations to utilize more preventative measures which ultimately promote their health in the long run and saves healthcare systems a lot of expenses (Advantage Care, 2018). If there is a proper primary health care system, people should be provided with regular checkups, immunizations, and relevant health education services designed to avert the development of chronic diseases. This lessens the possibility of incurring more costly attending to an emergency or hospitalization in the future.

Equally important in primary health care is the emphasis on prevention (Coleman et al., 2021). For instance, primary care providers automatically conduct screening for patients who may have or be at risk of developing cancer, diabetes and hypertension disorders, which are known chronic diseases. This is important for the disadvantaged populations as they may not have access to specialists. Primary care is the best practice for preventable health care to ensure that many people receive timely and necessary attention.

As reported in CAMP (2024), another aspect that is provided via primary health care is vaccination programs such as immunizations against a range of diseases. It is important to note that immunizations against the flu, other childhood diseases, and COVID-19 for example, assist in the reduction of preventable diseases. Vaccination campaigns in general, but especially in primary care centers in rural or poor areas, are the most suitable preventative measure for many patients and the community from outbreaks.

In addition, primary care providers also have an impact on providing health education. Primary care, especially healthcare practice, helps the communities by helping their patients understand dietary changes; doing more exercise, cessation of smoking and improvement of mental health (Hostetter et al., 2020). Such education makes people able to change their lifestyle to a better one which in turn prevents most chronic diseases which would have caused a detrimental impact on health and increase the cost of healthcare.

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#### **5. Health Disparities and Inequities in Primary Care Access**

Access to primary care services such as health equity undermines many communities and afflict them with diseases and unnecessary expenditures (Inspira Health, 2024). It is these groups that most often include low income, racial and ethnic minorities, rural residents, and uninsured people. However, lacking appropriate primary prevention further exacerbates the situation, as they are expected to suffer from more chronic diseases, more preventable ailments, and worse health as compared to the privileged groups (Habib et al., 2023).

Things that most carefully promoted these disparities have been the prices of care (Hughes et al., 2022). Many of the deprived members of society are uninsured or must continue facing high-out-of-pocket payments which force them not to seek primary care on a regular basis. Generally, such patients do not or defer managing their health problems until aggressive therapy is required, and then they end up using more resources and suffering more adverse consequences in the future.

Inspira Health (2024) opined that due to geographical factors, a person is also less likely to be suitably provided with primary health care. In this case, the people who live in the rural fringe where usually there is not much access to the providers' office or a doctor have to move to far-off places in search of medical treatment; and even if such services are available, either the number of personnel is very limited, or the number of resources for such services is too few to be able to utilize such services routinely (Inspira Health, 2024).

Social and ethnic factors such as language different from the mainstream population also prevent and disable a good number of populations from seeking primary care services such as nursing (Habib et al., 2023). People from other ethnic backgrounds more so immigrants and non-English speaking populations have communication difficulties with health

care providers. When patients notice that there is not great likelihood of being able to clearly convey the important aspects of their health to a health care professional, they fail to seek medical assistance or refuse treatment which places their well-being at risk.

Another factor in care inequity is the absence of health literacy (CAMP, 2024). 'so, what, why me?' We have all witnessed these questions millions of times, such statements raise alarm because they promote a particular set of values which affects public health outcomes.

Nonetheless, the availability of healthcare facilities has been and still is a global problem due to cultural, structural or financial limitations. For example, in South Africa, health care use is influenced by cultural and socio-economic considerations (Habib et al., 2023). This sense of trust, from birth's style, enables patients to go to such systems/facilities where health care personnel, and amenities are available without fear and suspicion of their weak state.

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## 6. LGBTQ+ Health and Access to Primary Care Services

Getting primary healthcare services is still a major concern for several LGBTQ+ individuals who experience discrimination, stigmatization and misunderstanding in the healthcare system (Heredia et al., 2021). Such barriers result in care being delayed or even avoided, the progression of health problems that require early preventative measures and dealing with several health issues that can be addressed when their conditions are at an early stage. Marginalization experienced in these healthcare environments where LGBTQ+ individuals reporting that they are treated poorly or have their sexuality cancelled out makes them apprehensive about seeking care and thus delays care or even care that is necessary (Lucas et al., 2023)

Furness et al., (2020) on the other hand showed that one more critical barrier for their healthcare access is the lack of provision of culturally competent care. It's hard for some healthcare providers to even begin to meet the needs of LGBTQ+ patients due to lack of sufficient training, especially around sexual and gender identity. This leads to not only sub-standard care but also wrong treatments and bad health outcomes. Moreover, mental health stuff is a big concern because LGBTQ+ people also report higher incidences of illness including depression and anxiety as well as suicidal thoughts often due to stigma from the society. This complication can result in patients failing to report their psychological issues to primary healthcare providers, which may lead to insufficient solutions.



**Figure 2** An inclusive health care (Source : Inspira Health, 2024)

Access to healthcare is exacerbated by the issue of being able to access health insurance, especially for transgender individuals as represented in figure 2 (Lucas et al. 2023). Many insurance policies, however, are void of certain gender affirming treatment or mental health coverage forcing the individuals to go outside the network for necessary treatment or in some cases receive none.

The relationship that can be developed in the future between LGBTQ+ patients and healthcare providers is the central aspect when it comes to several outcomes as well as access to services. Providers need importantly to enhance trust by providing an inviting friendly ambience, enhancing cultural competence and care that is all embracing. Also necessary is enhancing the primary care services to cater for those who face LGBTQ+ health needs including highly essential

mental health services and insurance to help tackle the existing health inequalities amongst the society and LGBTQ+ populations. The impact of primary care infrastructure on preventive health outcomes is tabulated in table 1.

**Table 1** Impact of Primary Care Infrastructure on Preventative Health Outcomes (Source: Author. 2024).

Studies	Impact
CAMP (2024)	Management of chronic diseases.
Faster Capital (2024)	Health care affordability, cost effectiveness and long-term saving.
Hostetter et al. (2020)	Facilitation of regular vaccinations and screening.
Inspiration Health (2024)	Increased awareness on preventative care and health education.
Farizani (2023)	Increased access to preventative care in underserved communities.
Furness et al. (2020)	Enhanced health care equity.
Rosano (2018)	Social support and collaborative healthcare workforce.

The data sets indicate that the establishment of a strong primary care facilities improves health prevention strategies by increasing access to medicine as well as the necessary services like screening and vaccination. It also highlights the pivotal role of a trained multi-disciplinary team of health care practitioners in the rendering of complete preventive services. The learnt knowledge does however note that primary care systems oriented towards the social aspects of health and the active participation in the community lead to a better health status. Therefore, strengthening the base of the primary care system increases the access to, and the delivery of, preventive health measures and saves costs in the future health systems as chronic illnesses are prevented and not allowed to develop or worsen.

## 7. Barriers to Accessing Preventative Health Services in Primary Care

Barriers to accessing preventative health services in primary health care are regarded as serious impediments likely to stop a good number of people from availing of the necessary services for maintenance of health and prevention of disease. Such barriers are likely to be relatively more pronounced owing to individual variables, communal variables as well as structural variables. A few of the specific barriers to the availability of preventative care are discussed. Healthcare services, especially preventive care, are often viewed as too expensive by many individuals (Faster Capital, 2024). These barriers arise from a combination of factors such as having no insurance, being underinsured, and high out-of-pocket costs. Due to these challenges, many people do not get vaccinated or go for regular check-ups and screenings. Due to the lack of insurance, even the cost of basic preventive services appears too high. This perception causes people to delay or even avoid seeking care altogether.

Quite a few people, especially in low-income groups and disempowered segments of the population, lack health insurance or have insurance that provides inadequate cover for preventive care services (Wang et al., 2023). There are also examples of such insurance that may not provide cover for certain screenings or vaccinations while having high co-pays and deductibles. Without comprehensive insurance, the cost is a significant problem for people, so they avoid undertaking preventive services.

Primary care health facilities are sparse and poorly distributed among the population and especially to those residing within the rural or underserved parts of urbanized areas (Endalamaw et al., 2023). As a result of the scarcity of clinics and health care providers in these areas, people are required to travel for a long distance to access health care, which is tiring and expensive. Most of the time, the failure to travel due to lack of transport further makes accessing preventive services difficult, and consequently missed appointments and a care delay occur.

Some individuals may be disadvantaged in seeking preventive care services owing to severe cultural differences as well as language barriers. Foreign born or non-English speaking people may be at a loss when attempting to explain their problems to the healthcare provider (Rosano, 2018). This level of barrier can lead to different levels of patients not understanding the problem, not getting the correct diagnosis, or not seeking any help due to the fear of being discriminated against or not being comprehended.

Another major barrier that affects accessibility to preventive services is low health literacy (Endalamaw et al., 2023). There are people who may not appreciate the need for routine members, immunization, or health checkup services in

their lives, and are unaware of where and how to obtain such services. Due to lack of knowledge on preventive health care methods, people may fail to take essential preventive health measures or seek preventive healthcare until the situation is critical or a health problem arises.

Certain communities in the general population like sexual minorities, racially and ethnically marginalized communities, and people with mental health problems opt out of preventive care based on encountered stigma or anticipatory discrimination within the healthcare sector (Lucas et al., 2023). When people perceive that they are being evaluated and mistreated by the providers of health services in the areas of their need, they are more likely not to try to seek care or opt for delays in key health examinations or consultations.

A shortage of primary care providers, especially in high-need areas, implies that there are long waiting periods to get an appointment with a provider or sometimes, appointment with a provider is hardly available. This shortage creates barriers for individuals to seek routine checkups or screening tests that may lead to progressive diagnosis of possible health concerns and missed chances of interventions.

Most individuals, especially those from low income or very stressful circumstances, do not practice healthy preventive measures as they tend to focus on immediate actions (Faster Capital, 2024). An instance is when people are juggling multiple jobs or taking care of their families or experiencing other life stressors, such people are most likely to find it challenging to be seen for preventive care appointments. In these situations, work and domestic responsibilities assume greater importance. As such, services for preventive health care are most of the time deferred or overlooked.

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## **8. Case Studies and Model of Primary Care Utilization for Public Health Access**

### **8.1. California's Use of Primary Care for Preventative Public Health**

Throughout the years, California has successfully combined primary health care with preventive health services directed through Community Health Centers. These facilities are important in increasing the population's access and use of cost-effective primary and preventive services, particularly to the immigrated and rural poor populations. The implementation of CHCs, specializing in health promotion and maintenance such as health education, health evaluation, and the management of risk factors, assists in reducing the burden of diseases such as hypertension and diabetes on patients.

Expansion of Medicaid under the Affordable Care Act (ACA) in the state of California was significant in relation to improving the utilization of primary care services. More insured people translated to increased commitment in use of preventive measures such as the flu or HPV vaccines and cancer preventative screenings thus assisting in the reduction of health inequities faced by minorities in the state.

In California, this was facilitated by integrating primary care into the public health system at the state level. Encouraging prevention of chronic disease, including obesity, smoking and cardiovascular disease, the 'Let's Get Healthy California' program integrates primary care in its approach to the public health sectors, where it assigns education, surveillance, and some early remedies to the disease to primary care providers.

What stands out as another strength in the model of California is community outreach. Health centers help in raising awareness on the significance of health literacy, preventative measures and healthy choices by working with the local institutions. It makes it easy for the residents, especially those residing in rural settings, on how primary care services are accessed for their health needs.

But there are more challenges. In as much as these initiatives have witnessed some measure of success, some rural regions are still struggling with issues of health care accessibility due to workforce availability and even socio-economic standing. What is more, mental health services remain scarce with lots of Californians not having the necessary attention they require even though they have primary care. In addition to this, while California has made improvements with regards to healthcare inclusion, all populations including the vulnerable segments of society, the LGBTQ+ for instance, still need to be able to achieve culturally sensitive health care on a regular basis.

### **8.2. Collaboration Between Primary Care and Public Health in Saudi Arabia**

Saudi Arabia appears to be heading in the right direction in its efforts to integrate primary health care (PHC) with non-communicable disease (NCD) related public health objectives through national health reforms. The government, in its



strategy, has made PHC the core component of healthcare delivery to concentrate on preventive, early and chronic care which is also in line with the broader public health goals.

Of good note and outcome is the area where collars are successfully joined, and that is in the provision of preventative services. Essential maternal/neonatal health services, vaccination, and health screenings for the general population are practices provided by over forty-five Primary healthcare centers (PHCCs) across the Country prescribing patients for these practices which are essential for public health. These procedures are of significant relevance in rural areas where PHCCs are active in enhancing healthcare access and decreasing the illness burden.

Furthermore, data obtained from PHCCs made it possible for the country's decision-makers to make sound decisions based on facts. These data assist in formulating policies and instituting resource synergies that will complement primary care with the tenets of public health.

Finally, the other aspect of HPIS that has worked effectively is the training and integration of the workforce. Professionals have been trained in such a way that they are capable of meeting individual health demands and concurrently addressing the public health concerns of health education and disease prevention.

Unfortunately, there are known shortcomings, especially in quantitative indicators on service provision and workforce distribution. There are still areas with limited access to specialized care and the use of paper-based records is still a hindrance to efficiency. Furthermore, improvement of coordination and service delivery across the country requires the enhancement of 24hrs service availability and e-health solutions integration.

More so, in Saudi Arabia, LGBTQ+ individuals encounter barriers in accessing primary level healthcare because of stigma, discrimination, and prohibitive regulations. Many are hesitant to access services for fear of mistreatment and due to the lack of culturally oriented care. These matters demand better training of providers, guarantees of confidentiality and the creation of safe environments in healthcare institutions, as well as legal and cultural changes in society.

With Saudi Arabia's emphasis on primary healthcare as a cornerstone of public health, notable achievements in disease control, service provision, and human resource have been realized hence enhancing a more integrated and responsive health system, however, dealing with the existing gaps is critical in improving access and effectiveness of healthcare in the most unserved areas.

### **8.3. Primary Care and Preventative Public Health in the Netherlands**

Netherlands has developed successfully a primary care within its public health system, balancing the focus on both prevention and early treatment. Most health-related problems are addressed by general practitioners (GP), who are not just treating the ailment but also help in preventing it through health checks, immunizations, and lifestyle guidance. This is simply because, the goal is to identify health problems before they develop into chronic illnesses such as diabetes and hypertension.

Another notable feature of the Dutch system is that it also stresses on chronic disease management as well. Primary care is crucial in the long-term management of conditions like diabetes or any cardiovascular diseases. In this regard, GPs actively engage patients in health promotion, provide ongoing support and education and modify treatment strategies to ensure that the progression of disease and its complications do not occur and hence, reduce the need for hospital admissions.

For primary health concentration, the Netherlands developed additional and distinct activities aiming at population health promoting through primary care settings: Health promotion was integrated into the routine General practitioner visits to promote smoking cessation, dietary habits, and physical activity, such campaigns incorporated in regular practices improved population health status. The Dutch system has, therefore, enhanced the use of preventive healthcare while improving the health of the population by utilizing primary care.

Nonetheless, there are still some inadequacies that could be addressed. One such concern is the accessibility of primary care services, which is particularly a problem in rural areas where it is not easy to find a general practitioner. Also, there is inequality concerning certain population groups, vulnerable inclusive, who do need, or may need, some preventive interventions, while these are extensively promoted.

Dutch policies on public health have employed primary care efficiently, integrating it into a broader spectrum of disease prevention and focusing on a continuum of care that includes early detection, treatment and education. At the same time, efforts to overcome the existing do not strengthen the capacity of the system as they can potentially add-on to these strategies at the moment since there exists absence of close geographical areas devoid of primary healthcare services.

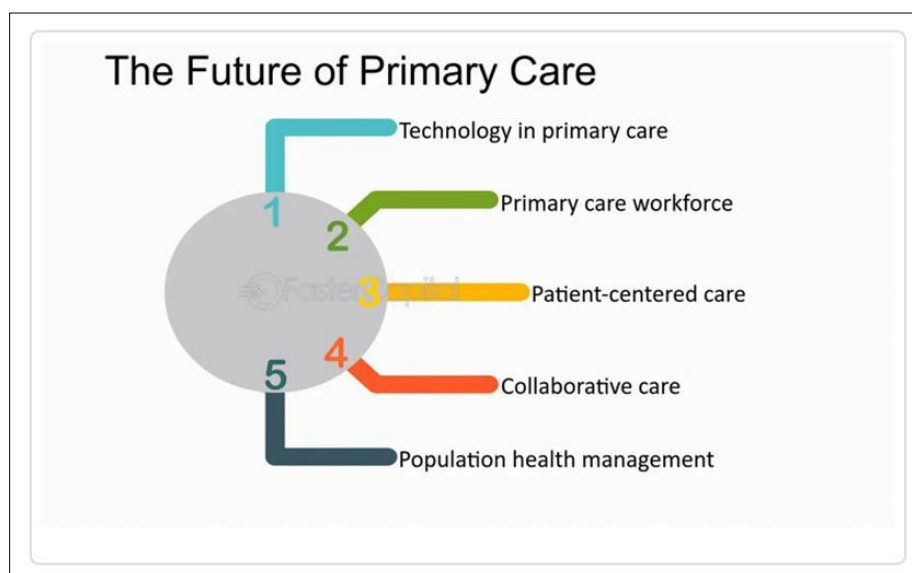
## 9. Methodology

This paper undertakes a literature review to demonstrate the current understanding about transforming the primary care infrastructure geared towards improving access to preventative public health services in neglected and marginalized populations such as LGBTQ+ communities. The methodology comprised data triangulation from several peer-reviewed medical association reports, journal articles, scholarly websites, and other pertinent literature. It focuses on major recommendations of the studies, core gaps in research, and the barriers and policy issues that affect the comprehensiveness and efficiency of the delivered preventative health service in primary care settings.

The search for literature was performed in such recognized databases as PubMed, Google Scholar, JSTOR, The Lancet, and institutional repositories as well. Key search terms included: "primary care," "primary care infrastructure," "preventative public health services," "underserved communities," "health equity," "access to health." and their synonyms. The exclusion criteria were publications not in English and was qualitative in nature and other articles published before 2014. Beneficial studies and literature were chosen based on their pertinence to the research objectives and the significance of primary care infrastructure on preventative public health and primary care-public health integration.

## 10. Future Directions: Innovations in Primary Care and Preventative Health Services

A growing number of authors feel that these new technologies might make it necessary to change the way primary care is offered (Butzner & Cuffee, 2021). Telemedicine, for Example, has already managed to bridge some geographical gaps. Such patients who are situated in far off regions or equipped with difficulties to travel to the clinics have begun utilizing the advantages of the virtual consultations or remote monitoring tools. Such services will be more popular in primary healthcare since many patients will be able to manage chronic ailments or get preventive healthcare without visiting the clinic (CAMP, 2024) within the foreseeable future as shown in figure 3.



**Figure 3** The future of primary care (Source: Faster Capital, 2024)

AI is enabling the design of more preventive health services (Bingham et al., 2022). AI is able to mine large databases and able to detect certain regularities, evaluate probabilities, and even make recommendations. This would help primary care providers in the delivery of improved integrated care which is data driven and aimed at the diagnosis of new health challenges and the effective prevention of the patients.

The significance of self-monitoring through wearable devices and gadgets is being widely recommended for enhanced health and wellness (Butzner & Cuffee, 2021). Such wearable devices include smart watches and fitness trackers that track a patient's heart rate, sleep cycles, or daily level of physical activity for both patients and healthcare professionals. Such information could help shape the adjustment of preventive strategies, encourage positive behavioral changes, or detect potential health problems in their incipient stage before they become significant.

It is also expected that the collaboration between primary care physicians and mental health practitioners and public health professionals will develop further rapidly in the near future (Lucas et al., 2023; CAMP, 2024). Such a model also guarantees that relevant health resources are fully utilized and there is an even preventive health intervention within the multiple dimensions of preventive care for physical, mental and social health.

In regard to the last point, future health equality will remain central to the promotion of such innovations as mobile health kiosks or community screening programs or health sector reforms that allow people access to affordable preventive services (Lucas et al., 2023).

Such activities would ensure that every segment of the population enjoys access to comprehensive primary care and preventive services regardless of their social conditions, history or the region of residence.

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## 11. Integrating Primary Care and Public Health

Primary care and public health need to be integrated to ensure a better healthcare system (Koo et al., n.d.). Primary care is concerned with providing personal care including disease management and prevention of diseases through checkups and screenings, while public health's role is more focused on health education and social determinants of health at the population level.



**Figure 4** Integration of primary health care (Source: NWCPHP, 2021).

The combination of these approaches enables healthcare to respond to the demands of its clients and at the same time the health needs of the entire population as shown in figure 4. This integration means that primary care practitioners can assist patients in accessing public health services which address social determinants including housing, food and education (NWCPHP, 2021). With such an approach, primary care and public health can enhance population health through addressing medical care needs as well as the social determinants of health.

Another advantage is improved prevention; primary care services include screening and early interventions while for wider public health initiatives such as lifestyle changes, it can be a more mass approach such as community outreach

program (Martin, 2017). Such strength adds to the individual effort and the population's health and health care effort in caring for the people.

Furthermore, the integration of these fields ensures improved collection of data and monitoring. For instance, primary care professionals should support some of the public health components that will assist in trend analysis, detection of new health threatening issues or even a better response to health emergencies. In the end, however, it is the combination of primary care and public health that makes the practice of health care more effective through the protection of the health of individuals and the health of the population.

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## 12. Conclusion

The findings of this study have underscored the importance of primary care structures in enhancing the reach of preventive public health interventions among communities that are underserved and vulnerable groups such as the LGBTQ+ people. It is central in the provision of preventive services, but there are still a lot of significant challenges such as lack of resources, improper training of providers and lack of cultural sensitivity in management areas. Such failures tend to be more common in the regions occupied by the underserved populations, these are marginalized groups too, hence, these health inequities be worsened.

Given the basic principles established by this research, there is a clear need for system-driven strategies that will help meet the specific health care needs of the LGBTQ+ patients. Stigma, provider ignorance, and the unavailability of an organic integration approach within healthcare systems often lead to a lack of preventive care among LGBTQ+ individuals. It is imperative for primary care systems to integrate cultural competence, sensitivity training, and health policies that are inclusive to curtail the existing barriers that hamper access to primary care infrastructure among LGBTQ+ patients.

There is need to take urgent measures towards workforce development with an emphasis on preparing providers to respond to the needs of underserved communities including LGBTQ+. Such primary care providers should be properly trained to use cultural competence and place an emphasis on preventative care as part of their core training.

In addition, as systems of primary care and public health come together, the preventative capacity including education and meta services is likely to grow. This joint effort can enhance the management of the services, boost the provision of preventive measures and decrease healthcare fragmentation. There should be policies that will promote integration of this nature and allow primary care providers to partner with public health agencies in a bid to promote population health in a holistic manner.

Finally, there is dire need to increase the resources allocated towards the development of primary health care services and infrastructure particularly in underserved population groups. Investments should focus on increasing access to care through expanded facilities, the use of telehealth and community outreach programs. By addressing these key recommendations, primary care systems can be strengthened and access to preventative services enhanced for all including the LGBTQ+ community thereby eradicating health inequities.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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