

**HOW NURSE PRACTITIONERS WORKING IN RURAL COMMUNITIES CAN
REDUCE THE BARRIERS TO ACCESS PRIMARY HEALTH CARE SERVICES FOR
OLDER ADULTS**

by

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Abstract

Due to the aging population worldwide, need to access primary health care (PHC) services is increasing. Older adults are at a heightened risk of developing chronic diseases, poor health outcomes, and increased emergency department visits. Living in rural communities also increases the risk of chronicity for older adults due to a lack of PHC resources. However, there is limited information available to provide insight into how healthcare providers can reduce barriers to access to PHC for older adults. As PHC providers, nurse practitioners are in a position to implement strategies to reduce barriers older adults in rural communities face with accessing PHC services. An integrative literature review was conducted to identify barriers nurse practitioners within rural communities can reduce to improve older adults' access to PHC services. An analysis of the literature revealed the complexity of barriers that prevent older adults from accessing PHC services in rural communities. Environmental, systemic, and individual barriers were reviewed alongside programs and interventions relevant to reducing barriers in the findings. Findings from the literature review suggested strategies to reduce these barriers, which nurse practitioners can promote in the PHC setting. These strategies include virtual care, home visits, nurse practitioner-models of care, interdisciplinary teamwork, and role clarification. In addition to these strategies, implications for practice, limitations of the study and suggestions for future research are discussed.

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Chapter I: Introduction

With the increase in the aging population throughout the world, there is a heightened need for access to adequate healthcare services within this population (Ford et al., 2018). Access to healthcare services, such as PHC, has been widely linked to reduced hospital admissions for older adults with chronic conditions, decreased emergency department visits, and better overall health outcomes (Kurpas et al., 2018; Weaver et al., 2014). Older adults who reside in rural communities have higher healthcare needs due to their increasing comorbidities and limited access to PHC (Ford et al., 2015). Nurse practitioners are often involved in delivering PHC to this population. Additionally, with the projected increase in the population over the age of 65, older adults will become a significant portion of nurse practitioner caseloads (Auerhahn et al., 2012).

Nurse practitioners play an important role in the provision of PHC services (Auerhahn et al., 2012). Throughout Canada and many parts of the world, nurse practitioners are being utilized to provide PHC to patients in rural communities. Several of these rural communities have experienced shortages of PHC providers and nurse practitioners are being used to help reduce that shortage (Weaver et al., 2014). Rural communities also have higher age-adjusted death rates than urban communities, which contribute to increasing illness and premature death due to lack of resources (Hewitt et al., 2019). There is currently a gap in PHC for older adults who live in rural communities and the measures to reduce barriers to accessing care. This gap is demonstrated by the lack of access for older adults to “safe, effective, timely, equitable, and patient-centered care” (Hewitt et al., 2019, p. 128). Cost-effective quality PHC services are in demand due to rising patient expectations, and the number of chronically ill and aging populations (Auerhahn et al., 2012). Therefore, nurse practitioners may have the opportunity to

improve access to high-quality PHC across the continuum of care (Prasad et al., 2014). Thus, it is important to evaluate how nurse practitioners could reduce the barriers older adults face with accessing adequate healthcare in Canada.

The purpose of this integrative review is to identify barriers encountered by older adults in rural communities that limit access to PHC services and to evaluate strategies that nurse practitioners can implement to reduce those barriers. This review will be guided by the research question: How can nurse practitioners working in rural communities reduce the barriers to access PHC services for older adults?

Chapter II: Background and Context

Like many other nations worldwide, Canada has an aging population (Statistics Canada, 2016). According to the 2016 census, 16.9% of the population are 65 years and over, while 2.2% are 85 years and over. This proportion is projected to increase to 6.8 million persons aged 65 years and older in 2020 and will account for 25% of Canada's population by 2036 (Shah et al., 2019; Statistics Canada, 2016). The increased life expectancy of Canadians is related to improved living conditions and the advances made in health promotion, illness prevention, and treatment options (Statistics Canada, 2016). However, this rise in the aging population also has considerable implications for the health of Canadians and the healthcare services they will need in the future. For instance, as people age, more healthcare services are needed. These services include supporting the aging population through programs, a comprehensive continuum of health services, and promoting healthy aging (Canadian Medical Association [CMA], 2013). Promotion of programs and healthy aging include physical activity, injury prevention, nutrition, and mental health (CMA, 2013). A continuum of health services incorporates delivering high-quality care for all aspects of older adult's health, such as community-based healthcare, home care, and long-term and palliative care (CMA, 2013). This continuum makes it easier for older adults to stay at home as long as possible and transition smoothly to another level of care when indicated (CMA, 2013). Therefore, older adults (persons aged 65 years and older) may require a more diverse approach to their healthcare that involves multiple disciplines collaborating through an interdisciplinary approach. Currently, Canada is prioritizing this approach by shifting from solo family physician practices to developing new models of PHC (Heale et al., 2018).

As the demographic of Canada changes, its shift has major impacts on the healthcare system (Shah et al., 2019). For example, adults aged 65-years and older visit their PHC provider

more than 3-times as often as adults and children under 18 (Shah et al., 2019). Therefore, as the population ages, the healthcare system must be prepared to predict the needs of older adults to prevent excess strain on the system while providing adequate access to care. Further, older adults are living longer, and as their population grows, there is a predicted increase in the “incidence and prevalence of chronic illnesses and multiple comorbidities” (Auerhahn et al., 2012, p. 193). Nearly 75% of Canadians aged 65-years and older have at least one chronic condition (CMA, 2013). With higher rates of chronic illnesses, older adults will need access to appropriate healthcare services, including PHC. Poor access to PHC services is associated with higher levels of chronic disease, consumption of more medication, and shorter life expectancy (Shah et al., 2019). However, variability has been noted with the access to PHC in older adults in rural communities. For example, older, rural individuals have reduced access to care due to multiple factors, including geographic isolation, poor transport availability, and the association with deprivation (Ford et al., 2015). Other issues with the access of PHC include the lack of appropriate support networks for older adults’ families, budgetary constraints from the healthcare system, and the lack of a range of knowledge-based, social, language, or practical skills (Kurpas et al., 2018).

This chapter will identify and define the central concepts including nurse practitioners, older adults, PHC, and rural communities. This chapter will also explore access to PHC, barriers that older adults face regarding access to PHC in rural communities and nurse practitioners’ roles as PHC providers to older adults.

Concepts

Nurse Practitioners. Nurse practitioners are healthcare professionals who work in advanced practice roles to meet the complex health needs of patients in a wide variety of settings

(Canadian Nurses Association [CNA], 2019). These advanced practice roles include autonomously diagnosing, ordering, and interpreting diagnostic tests and prescribing pharmaceuticals within the nurse practitioner scope of practice (CNA, 2019). Nurse practitioners act as key contributors to PHC services in many Canadian communities (Auerhahn et al., 2012). They provide care and management for complex clients with multiple co-morbidities, often vulnerable populations such as older adults (Hungerford et al., 2016). In many parts of the world, nurse practitioners provide PHC to patients in rural communities (Auerhahn et al., 2012). Shortages of PHC providers is a common issue throughout Canadian rural communities, and nurse practitioners are being implemented into these communities to help reduce that shortage (Peckham et al., 2018; Weaver et al., 2014). Nurse practitioners also play a major role in the development of organizational and community programs, quality improvement, interprofessional collaboration, capacity building, and the advancement of health policies (CNA, 2019).

Older Adults. The term older adult has been used interchangeably in other sources with elderly, older people/person, and senior (Falkenstern et al., 2005; Ford et al., 2018; Statistics Canada, 2016). In Canada, the term senior can indicate a person who is 65 years or older and is generally used in institutional referents such as government, programs, portfolios, and entitlements (Taylor, 2011). Therefore, aging is often measured by chronological age; however, the aging process is not uniform due to differences in genetics, lifestyle, and overall health (Rural Ontario Institute [ROI], 2019). According to the World Health Organization's (WHO, 2015) World Report on Aging and Health, aging can occur at a biological level, leading to a decrease in physiological reserves, which puts an individual at an increased risk for many chronic diseases, including a decline in their capacity. Despite these biological changes, aging can shift an individual's role and social position, leading to new roles, viewpoints, and

interrelated social contexts (WHO, 2015). Many older adults are also discussed as having chronic conditions, yet this is not always the case. Therefore, older adults will be addressed as individuals 65 years and older who may or may not have chronic conditions for this integrative review.

Primary Health Care. Primary health care is a principle-based, comprehensive approach which focuses on how services are delivered across the lifespan and the continuum of care in all settings (CNA, 2015). In North America, PHC is often confused with primary care due to a lack of conceptual clarity. Primary health care and primary care are used interchangeably throughout the literature; however, primary care refers to delivering community-based clinical health care services on an individual level (CNA, 2015). The focus of PHC includes multiple factors that determine a population's health and the importance of ongoing care to implement health promotion strategies in the prevention of chronic diseases and injuries (CNA, 2015). Primary health care has also been discussed as the health system level that provides the first point of access to healthcare services (Government of Canada, 2012; Shah et al., 2019). These health care services can include preventative measures, such as screening, health checks, and chronic disease monitoring, focusing on providing patient-specific care over time (Ford et al., 2018; Shah et al., 2019).

Rural Communities. Rural is “of or relating to the country, country people or life, or agriculture” (Miriam-Webster, 2020). In comparison, a community is “a unified body of individuals with common interests living in a particular area” (Miriam-Webster, 2020). Rural communities are areas outside of population centers in which the population densities and living conditions can vary greatly (Statistics Canada, 2016). Population centers are defined as areas with a population of at least 1,000 and a density of 400 or more people per square kilometre.

They can be divided into three groups, with small population centres ranging of a population between 1,000 and 29, 999, medium populations centres with a population between 30,000 and 99,999, and large urban population centres of a population 100,000 and over (Statistics Canada, 2016). Therefore, rural areas include all territory outside population centres (Statistics Canada, 2016). International organizations and government agencies have attempted to standardize the definition of rural. For instance, the rural location can be outside the city limits or boundaries of a town. There can be natural amenities, agricultural development, limited infrastructure, and limited industrial development (MacGregor-Fors & Vázquez, 2020). In the context of this integrative review, rural communities are areas outside of urban or highly populated centres.

Access to Primary Health Care

Access to PHC is a multi-factorial concept related to an individual or community's access to the medical care system. The degree of access to PHC services can be connected to the population accessing services and the location of the services. The concept of access is complex as an individual may have good access but may never need to use a service (Ford et al., 2015). Therefore, many have argued that the concept of access is not linear and depends on the balance between the health service need and the health service use (Ford et al., 2015). For instance, the term access is “the ease with which a person can obtain needed care from the practitioner of choice within a time frame appropriate to the urgency of the problem” (Premji et al., 2018, p. 214). Access to PHC also involves the availability of a PHC provider and a multidisciplinary team. Therefore, depending on the location of a population accessing these services may be challenging.

In Canada, approximately 15% of the rural population is 65 years and older (Saskatchewan Population Health and Evaluation Research Unit [SPHERU], 2018). Rural areas

and people are often considered under-serviced and lack the full range of public services such as PHC, education, and community support (ROI, 2019). This lack of public services can also include the deprivation of public infrastructure, most recently with technological services, crucial for social and economic development across Canada (ROI, 2019). Research has also found that older adults living in rural communities are at risk of poor access and often have higher health needs, higher risk for mental illness, and more chronic disease than urban seniors (Ford et al., 2018; SPHERU, 2018). Within the older adult population, there is an increase of chronic comorbid conditions. These comorbidities are related to elevated rates of accessing PHC services and multiple specialist visits (Kurpas et al., 2018).

The CMA (2013) discusses policies to improve access to PHC for older adults in Canada. They discuss that all levels of government should be involved in programs and supports to promote healthy aging, an environment and society that is supportive of an aging society, and healthcare services which provide optimal care and support to older Canadians (CMA, 2013). Although government policies and strategies are in place to improve Canadian's access to PHC services, especially vulnerable populations such as older adults, there has been little improvement over the last two decades (Premji et al., 2018).

In Canada, each province has separate policies in place for PHC. For instance, in British Columbia (BC), the PHC policy aims to achieve patient-centred, integrated, comprehensive, and high-quality care (Peckham et al., 2018). The Ministry of Health of British Columbia discusses two priorities: interprofessional teams as a focus of the primary and community care system and to strengthen collaboration between specialists and PHC providers (Peckham et al., 2018). Most provinces have shifted towards a similar approach that focuses on developing interprofessional teams to provide access to PHC services. Areas such as Manitoba, Ontario, Nova Scotia, Alberta,

Newfoundland and Labrador, and New Brunswick have developed these interdisciplinary teams (Peckham et al., 2018). These teams consist of physicians, nurse practitioners, physiotherapists, registered nurses, occupational therapists, mental health counsellors, etc., to improve access and effectiveness of PHC services (Peckham et al., 2018). Provinces that differ from this approach include Prince Edward Island, Quebec, Nunavut, and the Northwest Territories (NWT) (Peckham et al., 2018). In the NWT and Nunavut, Community Health Centres exist which provide most of the PHC services. In Nunavut, these centres are led by registered nurses, while physicians provide support remotely or visit communities periodically. In most of the NWT, nurse practitioners and registered nurses are the main PHC providers, with family physicians working primarily in hospitals (Peckham et al., 2018).

Although rural areas are often considered to be underserved, these communities consist of deep interpersonal ties and share a sense of community (ROI, 2019). For example, rural communities can include various policy, social and personal factors that contribute to the meaning of community essence (ROI, 2019). Therefore, older adults may function well in their home/community but lack access to appropriate services. This lack of access is where rural communities may struggle to provide suitable environments for older adults, given the limited healthcare services that often exist (ROI, 2019). However, it is essential to discuss that although rural communities often are lacking access to healthcare services, older adults may thrive in other ways such as through a support system of friends and family, walkability to basic services in the community, and the feeling of establishment (ROI, 2019).

Barriers to Accessing Primary Health Care

To fully understand the barriers that older adults face when accessing PHC services, it is vital to understand the factors involved with access and how they may interfere with accessing

PHC services. According to the Council of Ontario Universities (2013), there are five barriers to accessibility; however, to organize this integrative review, barriers most related to older adults were chosen and divided into three broad categories: environmental, systemic, and individual barriers. Environmental barriers can include the natural or built environment that could somehow impede or prevent an individual from accessing PHC (Council of Ontario Universities, 2013). Systemic barriers can consist of policies, practices, and procedures that result in individuals or a population receiving unequal access (Council of Ontario Universities, 2013). Further, individual barriers for older adults accessing PHC services can include behaviour, perceptions, and technology for this review.

Environmental Barriers. Access to PHC services can be inversely associated with the distance or travel time in which people within certain areas are located. In Canada, 20% of the population lives in rural communities (Weil et al., 2018). Living in rural communities, older adults are at a higher risk of physical impairment and mobility concerns than non-rural older adults (Weil et al., 2018). Many of these rural and remote communities lack access to basic PHC services due to a shortage of healthcare providers (Shah et al., 2019). Older adults living in rural communities are frequently unable to access healthcare quickly or efficiently (Hewitt et al., 2019). This inability to access the proper PHC services may lead to improper utilization of emergency departments, or not seeking care at all (Hewitt et al., 2019).

Additionally, older adults in rural communities may forego routine preventative exams and screening for preventable or treatable conditions due to inaccessibility of these services (Hewitt et al., 2019). Due to the inaccessibility of many PHC services, older adults may not be able to remain in their homes and community (ROI, 2019). Therefore, geographic location becomes a primary barrier for access to healthcare services due to rural areas which struggle to

provide appropriate environments for older adults to age well in their own home/community (ROI, 2019).

Systemic Barriers. Many older adults face inadequate access to PHC providers in rural communities in Canada (Shah et al., 2017, 2019). This unequal healthcare provider distribution and increasing service needs of older adults and the aging population, especially those with chronic conditions, can result in poorer health, shorter life expectancy and higher rates of disability (Shah et al., 2017). Multiple factors contribute to the shortage of healthcare providers. These factors include the retirement of practicing providers, the inability to accept new patients by aging providers seeking to reduce their workload, difficulty in recruiting and retaining new providers to rural areas, and fewer medical students who are pursuing family practice careers (Hewitt et al., 2019). These factors inadvertently leave a smaller number of physicians to serve and practice in rural communities.

Other systemic factors that are barriers for older adults accessing PHC services include the lack of communication and collaboration between healthcare providers, which subsequently affects experiences of care and patient outcomes (Kurpas et al., 2018). This lack of communication and collaboration is between PHC providers and specialists, nurse practitioners and physicians, and other interdisciplinary team members (Ford et al., 2015). In a survey by Weaver et al. (2014), 6% of respondents, most of whom were older adults, reported that allied health professionals were involved in the treating their chronic conditions. The adverse outcomes that have resulted from these barriers include delayed care, forgone care, or no preventative care in the past year (Hewitt et al., 2019).

Individual Barriers. With the world changing and technology becoming more relied upon by the healthcare system, older adults may not have the skills, and the desire to adapt to

service changes (Ford et al., 2018). Information and communication technologies provide an opportunity to improve rural healthcare delivery for older adults, and therefore older adults are the fastest-growing user group of technology (Batsis et al., 2019). For example, the development of high-speed internet in rural locations provides areas with telemedicine delivery, which was not feasible ten to twenty years ago (Batsis et al., 2019). This development has made virtual healthcare services more accessible for rural communities. However, older adults have less experience with emerging technologies (Batsis et al., 2019). They also have considerable sensory, memory, and other aging-related barriers to engage in telehealth or telemedicine services offered for many rural individuals (Batsis et al., 2019). Technology barriers can include video-conferencing services, and new appointment systems put in place at PHC clinics (Batsis et al., 2019; Ford et al., 2018). Fine-motor eye-hand coordination issues contributed to the video-conferencing service barriers (Foster & Sethares, 2014). New appointment systems, such as automated voice messaging machines, were another barrier that older adults faced with technology services (Ford et al., 2018).

Older adults, like other populations, have perceptions of how the healthcare system functions in Canada. For many older adults, these social norms or perceptions have led to the belief that PHC providers will make special provisions if they are unwell, as they do not unnecessarily access the system (Ford et al., 2018). However, accessibility or availability of these services is not always an option leading to frustration and lack of seeking PHC after having a poor experience (Kurpas et al., 2018). Thus, individual barriers noted by older adults in multiple studies were the breach of a social contract or not wanting to access PHC services due to feeling that their concerns were not likely to be heard or that they may be regarded as minor issues (Ford et al., 2018; Hewitt et al., 2019).

Nurse Practitioners as Primary Health Care Providers

According to the Canadian Nurses Association (CNA, 2019), 6,159 nurse practitioners are working throughout Canada. Over 3 million Canadians receive their health care from a nurse practitioner, with 93% of Canadians reporting that a nurse practitioner can meet their day-to-day health needs as their PHC provider (CNA, 2019). Around one-third of nurse practitioners in Canada work in hospitals, while two-thirds work in community or PHC or long-term care facilities (CNA, 2019). The role of the nurse practitioner was initially developed in response to an anticipated shortage of PHC providers (Grant et al., 2017). Nurse practitioner roles were implemented to improve access to PHC, especially for underserved and vulnerable populations, and enhance PHC providers and teams (Grant et al., 2017). However, as each province developed legislation expanding the nurse practitioners' scope of practice, many provinces have nurse practitioners in specialized areas. These specialized areas include pediatrics, neonatology, oncology, heart failure clinics, mobile clinics, internal medicine, emergency departments, etc. (Alden-Bugden, 2019; Marceau et al., 2020). Each year, the number of nurse practitioners grows and as does their role in the provision of PHC services (Grant et al., 2017).

As the population aged 65 years and older continues to increase, older adults will comprise a large portion of nurse practitioner caseloads. These caseloads will contribute both to PHC settings and acute care settings as the hospitalization rate for adults aged 65 and over is more than three times versus adults under 65 years (Auerhahn et al., 2012). In addition, multiple physical, cognitive, and functional comorbidities requiring complex interventions lead to increased length of stay and higher risk for complications in many hospitalized older adults (Auerhahn et al., 2012). Thus, nurse practitioners may provide opportunity for improving access to high-quality, cost-effective PHC across the continuum of care, specifically for older adults

(Prasad et al., 2014). Their role in providing clinical care and education, supporting prevention, health, and wellness, and using evidence-based practice is necessary to the management of complex patients with chronic conditions (Prasad et al., 2014). Therefore, with the population of older adults seen with chronic diseases and the nurse practitioner's ability to care for this population competently, there has been support and implementation of the nurse practitioner role to improve health outcomes, functional status, and quality of life (Grant et al., 2017; Prasad et al., 2014).

Chapter III: Methods

A comprehensive search of the literature was completed to explore the research question: How can nurse practitioners working in rural communities reduce the barriers to access PHC services for older adults? The research question was developed through the Population, Intervention, and Outcome (PIO) format to guide the search (Gray et al., 2017). The University of Northern British Columbia's online library services were utilized for this literature search. The electronic databases CINAHL, PubMed, MEDLINE (Ovid), and PsycINFO were searched in September 2020. These databases were selected due to their relevance in nursing literature, allied health disciplines, and nursing specialities (University of Northern British Columbia, n.d.). Keyword search terms and medical subject headings (MeSH) related to the research question included the search terms: nurse practitioner, rural community, access, primary health care, and older adult (see Tables 1 & 2).

Search Strategies

An initial search was conducted to ensure that the relevant keywords and MeSH terms selected for this literature search were appropriate. In addition, a table was created to include important concepts that would guide the research strategies (see Table 3). Relevant keywords and MeSH terms were used to create a primary search strategy which was then adapted and applied to each database (see Table 4). The search was discussed with a university librarian to include the most applicable subject headings and keyword strategies for this integrative review.

Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were applied to the search to narrow down the literature results further (see Table 5). Interventions that determined how nurse practitioners can provide access to PHC in rural communities for older adults were included to demonstrate how nurse

practitioners can approach these barriers to access and implement them into practice. Studies that discussed barriers older adults face to accessing PHC were also chosen, as barriers are essential for nurse practitioners to understand and identify to create change and improve access. The exclusion criteria were non-peer reviewed sources, and articles written in a non-English language. The date range of articles was left open as the available literature on access to care for older adults is limited. Therefore, it was important to broaden the search results and include all relevant literature. Articles were included if the study addressed models of healthcare or nurse practitioner-led models which focus on access to PHC in rural communities. Articles were excluded if the title and abstract did not apply to accessing PHC services or to the potential role nurse practitioners have in rural communities regarding access.

Table 5

Inclusion and Exclusion Criteria of Literature Search

Inclusion	Exclusion
Nurse practitioners	Published in non-English language
Rural settings	Non-peer reviewed literature
Older adults	
Interventions/Tools	
Primary health care setting	
Barriers to accessing primary health care	

Search Results

The total search produced 158 articles, which were exported into the citation manager Zotero. After duplicates were removed, 129 articles remained. Abstracts and titles were searched for relevance, and limits were applied to the articles as part of the inclusion and exclusion criteria; 98 items were removed. After the exclusion of irrelevant articles, a total of 31 articles were left. Each article was read to determine applicability to the research question. Additionally, reference lists were searched, and 3 articles were added due to their pertinence to the research question. Lastly, a forward search of each article was completed for an additional 5 articles. Eighteen articles were included for the final number in the literature search. See Figure 1 for the complete literature search flow diagram.

Chapter IV: Findings

The framework that guided this literature analysis were the appraisal tools found in Davies and Logan (2018), the Critical Appraisal Skills Programme ([CASp], n.d.), and Hoffman et al. (2017). These appraisal tools provided structure for the critical appraisal of systematic reviews, mixed-methods studies, qualitative, and quantitative studies and further provided insight on the quality of the literature. Pertinent information relevant to the research question guiding this review was obtained and will be discussed using themes.

The final search of the literature resulted in a total of 18 articles (see Appendix A). Most of the articles were published in Canada (n=8) and the United States (n=4). Two articles were published in Australia, two in the United Kingdom, one in South Africa, and one included the countries Canada, the Netherlands, the United States, the United Kingdom, Slovenia, Guam, and Australia. The articles in the literature matrix ranged in dates from 2005 to 2019. The largest number of articles were published in 2019 (n=6), then 2018 (n=3), and lastly 2016 (n=4). One article was published in the year 2014, 2008, and 2005, while two articles were published in 2017. The literature was comprised of nine quantitative studies, three mixed-methods studies, three qualitative studies, and three systematic reviews.

To effectively reduce barriers to older adults' access of PHC services in rural communities, nurse practitioners working in rural communities must recognize these barriers. In the literature, sixteen of the eighteen articles discussed barriers to access of PHC services (Batsis et al., 2019; Bresick et al., 2016; Clare, 2019; Dolovich et al., 2019; Ford et al., 2018, 2019; Heale et al., 2018; Hewitt et al., 2019; Hungerford et al., 2016; Hunter et al., 2016; Prasad et al., 2014; Ross et al., 2016; Shah et al., 2017, 2019; Wakerman et al., 2008; Weil et al., 2018). Although barriers will not be examined as a main theme in this review, relevant barriers will be

explored throughout each theme. This is important for nurse practitioners to gain an understanding of the barriers that prevent older adults from accessing PHC services to improve access for this population.

Three main themes arose from the review of literature in the literature review matrix. These themes included virtual care, an interdisciplinary approach among PHC teams, and the implementation of nurse-practitioner models of care. The articles contained in this review focused on virtual care in terms of telemedicine and telehealth, interdisciplinary teams, which included the importance of role clarification among team members, and nurse practitioner-led models of care that incorporated home visits. The following sections will address these identified themes.

Virtual Care

Virtual care is a broad term that can include mobile services for patients with the use of video technology or mobile-based technology to access PHC services through a provider (Batsis et al., 2019; Clare, 2019; Ross et al., 2016; Wakerman et al., 2008). The literature can use telemedicine and telehealth interchangeably to describe virtual care. Telemedicine and telehealth services will be examined, including the barriers that these services can reduce for older adults accessing PHC services in rural communities when applied by nurse practitioners.

Telemedicine and Telehealth. Four of the eighteen articles included in the literature review discussed the delivery of telemedicine or telehealth programs as a strategy for improving access to PHC services in rural communities (Batsis et al., 2019; Clare, 2019; Ross et al., 2016; Wakerman et al., 2008). Telemedicine and telehealth programs included videoconferencing using desktop computers, laptops, tablets, and smartphones (Batsis et al., 2019). These services can also include virtual appointments made over the phone without the use of a video system

(Clare, 2019). Telemedicine and telehealth can be used to increase access to and sustain service for communities too small to support discrete rural service (Wakerman et al., 2008). This increase in access is essential for improving access to health services for widely dispersed and isolated populations and by providing access to PHC while overcoming the shortage of PHC providers (Batsis et al., 2019; Wakerman et al., 2008).

Improvements seen with the implementation of telemedicine programs in an older adult population include improved cognitive function and improvements in fall, exercise, and strength-based measurement (Batsis et al., 2019). Other developments include ease of access and time to see a provider. For instance, a telehealth video technology program implemented in a rural, northern community in Alberta found all members who accessed this service felt the wait time was appropriate (Ross et al., 2016). Participants also reported they were able to understand the provider and would use the service again (Ross et al., 2016). The use of virtual outreach services, such as telehealth, has also shown improved access to records, reduced physician on-call hours, and increased the use of consultation hours (Wakerman et al., 2008). Therefore, access to PHC services and the lack of healthcare providers in rural and remote areas are barriers that telehealth and telemedicine have helped overcome (Wakerman et al., 2008).

Ten of the eighteen articles in the review of literature highlighted that environmental barriers such as rural and remote locations pose as a barrier for older adults accessing PHC services (Batsis et al., 2019; Ford et al. 2018, 2019; Hewitt et al., 2019; Hungerford et al., 2016; Ross et al., 2016; Shah et al., 2017, 2019; Wakerman et al., 2008; Weil et al., 2018). Thus, the location in which older adults reside as a barrier to accessing PHC services is evident in the literature. Further, the literature showed inequities in distributing PHC services across Alberta, Saskatchewan, and South Western Ontario (Shah et al., 2017, 2019). Nurse practitioners in

Alberta and Saskatchewan demonstrated lower access scores per 10,000 people; however, there was no significant correlation between a general practitioner and nurse practitioner access scores in both provinces (Shah et al., 2017). The findings demonstrated that nurse practitioners may address gaps in areas with poor access (Shah et al., 2017). Therefore, as nurse practitioners are practicing in many rural communities in Canada, the need to identify barriers relevant to older adults and if nurse practitioners can implement telemedicine and telehealth programs to improve access is important (Batsis et al., 2019; Ross et al., 2016).

The literature found remote and rural locations demonstrated higher rates of chronic conditions by individuals due to fewer transportation options, either from older adults not having a vehicle or license or a family member/support person to drive them to and from appointments (Batsis et al., 2019; Ford et al., 2018). This inaccessibility to transportation prevented many older adults in rural communities from accessing PHC services. Similarly, Ford et al. (2019) found that the transportation costs vs. transportation access were more of a barrier faced by older adults to accessing PHC services. Transportation costs range from the lack of funds to purchase and maintain a vehicle, or service a taxi transportation service (Ford et al., 2019).

Four studies in the literature review discussed telehealth and telemedicine programs; each article discussed them differently. For example, in the systematic review by Batsis et al. (2019), the authors looked at studies which used all intervention-based groups and synchronous video conferencing modalities. These devices ranged from video conferencing with a pan-tilt-zoom camera and handheld medical camera systems to video-conferencing-enabled personal computers and peripherals to computers with web cameras and microphones (Batsis et al., 2019). These devices were all under the telemedicine model with the patient on the receiving end and a specialist, physician, nurse practitioner, or other interdisciplinary team members on the

transmitting end (Batsis et al., 2019). The video contact ranged from monthly to three times per week. Therefore, the modality of service in these studies consisted of a device (laptop, tablet, computer, cellphone) that provided video via a camera to connect the patient with the healthcare professional (Batsis et al., 2019).

In another approach, a telehealth program developed in Northern Alberta included a space to house telehealth equipment in the community (Ross et al., 2016). The PHC clinic offered a private consultation space for PHC providers and had a licensed practical nurse (LPN) who worked at the clinic and was responsible for screening patients requesting telehealth appointments. The LPN would screen patients through the list of patient's symptoms and conditions (Ross et al., 2016). Walk-in patients were also accepted and filtered by the LPN. The provider was able to have complete control of the high-resolution camera, allowing them to manipulate the camera and image for the physical assessment (Ross et al., 2016). The clinic also provided a digital stethoscope and a noise-cancelling headset so that the provider could listen to the patient's lungs and heart (Ross et al., 2016).

Clare's (2019) pilot project offered nurse practitioner services, including comprehensive physicals, screening for disease, prescribing, referrals, health promotion counselling, treatment of acute and chronic conditions, and prevention strategies. These services were all offered either in the home or the office environment, depending on the client's choice. Telehealth services included were described as video, email, or phone options (Clare, 2019). A nurse practitioner would be available 24/7 through rotated on-call schedules and house calls on weekdays from 10 am to 7 pm (Clare, 2019). The pilot project provided nurse practitioners with a laptop, and portal printer-fax machine for house calls and appropriate tools such as portable weigh scale for assessments (Clare, 2019).

Lastly, Wakerman et al. (2008) discussed multiple health service models that are reviewed in the next section. One of these service models included virtual outreach services such as telehealth. Virtual outreach services address the health needs of communities with populations too small to support permanent local services by providing access through virtual or periodic visiting services (Wakerman et al., 2008, p. 7). Thus, instead of discussing a specific program and incorporating it into a study, Wakerman et al. (2008) looked at the which models of care would be more appropriate for population size of a community. The authors also examined if governments implemented these models appropriately into smaller communities, how it could improve access for residents. Within the literature that discussed virtual care, there was no one specific approach that was given for nurse practitioners or PHC providers to follow.

Integrating Nurse Practitioner-Models of Care

Models of care provide a framework that includes a theoretical basis, standards, evidence-based practices, key performance indicators and measurable outcomes (Hungerford et al., 2016; Wakerman et al., 2008). These models of care can be nurse practitioner-focused, guiding the work of nurse practitioners. For instance, models of practice that include nurse practitioners or nurses can manage or organize interdisciplinary teams (Prasad et al., 2014). This organization is relevant when providing care to populations across various settings to develop proactive approaches for multidisciplinary team members and nurse practitioners (Hungerford et al., 2016; Prasad et al., 2014; Wakerman et al., 2008). In the literature, nurse practitioner models of care included a nurse practitioner who has competencies in PHC, related to assessments, diagnoses, and treatment of acute, emergent, and chronic conditions (Prasad et al., 2014). The inclusion of a nurse practitioner supports communities and populations such as older adults to provide flexibility in multiple settings for adaptation. Nurse practitioner models of care can also

provide more proactive approaches for healthcare providers, reduced interdisciplinary conflict through awareness of other roles, and a shared understanding of outcomes (Hungerford et al., 2016).

Three out of eighteen articles discussed the importance of implementing a model of care that considers the PHC provider, population, and community in the literature (Hungerford et al., 2016; Prasad et al., 2014; Wakerman et al., 2008). For example, the study by Hungerford et al. (2016) created an aged-care nurse practitioner model which targeted the needs and preferences of the aging demographic in rural and remote communities in Australia. These needs and preferences included ongoing management of acute and chronic conditions, comprehensive health assessments, prescriptions, advice, and development of health management plans and referrals when necessary (Hungerford et al., 2016). The study by Prasad et al. (2014) implemented a nurse-practitioner model of care that integrated a nurse practitioner with extra geriatric training/education. The nurse practitioner was to act as a collaborator between various partners such as family members, long-term care staff, home care services, various community organizations, and family physicians.

Lastly, the authors discussed multiple models of care to determine the best service options for rural and remote communities in Australia (Wakerman et al. 2008). These models included discrete, integrated, and outreach/virtual outreach models of care. *Discrete service models* provide PHC to communities with a rural population or communities characterized by larger, more closely settled communities (Wakerman et al., 2008). Services offered included walk-in clinics and university clinics. Their purpose was to sustain a primary care provider in rural and larger remote communities with difficulties retaining providers (Wakerman et al., 2008). *Integrated service models* focus on improved access to services and involve coordination

between access to services that are not otherwise available locally. These models are useful in communities that are smaller and more isolated to reduce the need for patients to travel and maximize the range of locally available services (Wakerman et al., 2008). *Outreach/virtual outreach service models*, which the writer discussed previously, addressed populations too small to support permanent local services by providing access through virtual or periodic visiting services (Wakerman et al., 2008).

Clearly defined models, specifically nursing models of practice, provide a framework for healthcare providers and systems (Hungerford et al., 2016; Wakerman et al., 2008). The literature showed models of care to offer pre-existing structures for clinical governance and general management and funding (Wakerman et al., 2008). Models of care can also improve collaborative agreements negotiated at a systemic level between the nurse practitioner, other health professionals, and various service providers (Wakerman et al., 2008). Models of care that focus on nurse practitioners have been used to manage or organize teams, thereby meeting the needs of patients (Hungerford et al., 2016). The benefits of a well-implemented model included the development of proactive approaches for healthcare teams, higher personal value of healthcare providers, and the improvement of interdisciplinary teamwork (Hungerford et al., 2016). Well-functioning interdisciplinary teams can lead to reduced interdisciplinary conflict and improved outcomes for patients due to shared goals and enhanced continuity of care (Hungerford et al., 2016).

The lack of adequate PHC resources for rural communities was the most common systemic barrier indicated in the literature (Batsis et al., 2019; Ford et al., 2018; Hewitt et al., 2019; Shah et al., 2017; Wakerman et al., 2008; Weil et al., 2018). For example, the lack of adequate PHC resources included the shortage of permanent PHC providers in rural

communities, no after-hour or weekend clinics for patients to access, shortages of clinic staff, lack of geriatric specialists, and high patient-to-practitioner ratio. This lack of PHC resources reduces the access to health and preventative services for rural older adults (Ford et al., 2018; Hewitt et al., 2019; Weil et al., 2018). Further, the literature noted that with the increasing strain and demand on PHC services, national and regional policies have begun to add more pressure to the delivery of services, thereby limiting these services to disadvantaged older adults (Ford et al., 2018). The delivery of services included the time providers are taking with each appointment, leading to primary care providers doing more without the necessary resources (Ford et al., 2018). Older adults in rural Canadian communities also discussed feeling anxious about the lack of healthcare in their communities and have thought about moving to another area to live closer to a hospital with specialists and resources (Hewitt et al., 2019).

In rural communities, a model with characteristics that captures population aggregation to support minimum services threshold requirements while ensuring adequate access to care is crucial (Wakerman et al., 2008). For example, remote locations need virtual outreach models, whereas rural communities do well with discrete and integrated PHC models (Wakerman et al., 2008). Nurse practitioner-led transitional care models that support frail older adults transitioning between health sectors with the provision of follow-up care, education, self-management support, and medication review have also found better outcomes and lower healthcare costs (Prasad et al., 2014). Nurse practitioner-led models of “dementia care have led to better behavior management and caregiver support, and those related to chronic disease management have been associated with better health outcomes and less hospitalizations” (Prasad et al., 2014, p. 1773).

The literature also emphasized socioeconomic factors, which serve as systemic barriers for older adults’ accessing PHC services (Batsis et al., 2019; Bresick et al., 2016; Shah et al.,

2019). Socio-demographic factors such as unemployment, educational level, and type of dwelling may add to the complexity and challenge of providing PHC to communities where these issues are prevalent (Bresick et al., 2016). System-specific factors related to coverage and financial barriers were also other common socioeconomic factors that may prevent older adults from accessing PHC services (Heale et al., 2018; Hewitt et al., 2019). For instance, older adults may not always have the financial and social supports required to implement the treatment plans for their conditions. They may also not be able to afford medications, devices, or even appropriate food (Heale et al., 2018). On a systemic level, a nurse practitioner-led model of care program implemented by Prasad et al. (2014) had expected short-term outcomes of enhanced care coordination and integration within the community. Appropriate referral to community resources gave older adults increased system navigation support, improved awareness of available supports and resources, enhanced linkages with community support services, and easier access to these community support services (Prasad et al., 2014).

Home Visits. Home visits were an intervention strategy completed by the nurse practitioner to improve access to PHC services (Clare, 2019). In the project developed by Clare (2019), the nurse practitioner's role included managing video appointments and telephone calls when appropriate and attending appointments at the patient's home if they were unable to travel. However, challenges that arose with home visits included the obligations to provide efficient, timely care (Clare, 2019). Timely care was difficult for nurse practitioners to achieve in the context of professional commitments, especially ensuring privacy and confidentiality when conducting a video consultation in the car between scheduled home visits or talking with a client on the phone (Clare, 2019). In a similar program developed by Prasad et al. (2014), a specialized geriatric nurse practitioner collaborated with PHC providers and a geriatrician to provide

coordinated, comprehensive care. This care consisted of supporting older adults as they transitioned between sectors, including their home, the hospital, and retirement and long-term care homes (Prasad et al., 2014). The geriatric nurse practitioner would provide follow-up through home visits if the patients could not come into the clinic due to barriers such as frailty, location, and lack of transportation (Prasad et al., 2014). Home visits are essential when looking at what a nurse practitioner-led model of care should incorporate to reduce the barriers older adults face when accessing PHC services in rural communities (Clare, 2019; Prasad et al., 2014).

In summary, there are multiple models of care are discussed in the literature to address the lack of access to PHC for older adults. These models of care were discrete, integrated, outreach/virtual outreach, and nurse practitioner-led models. Models of care can include home visits provided nurse practitioners, which fall under an outreach model of care, and can be implemented into rural communities. However, there is an apparent lack of a model that incorporates all the models discussed in the literature which could reduce barriers to older adults' access to PHC services in rural communities.

Interdisciplinary Teams

Interdisciplinary teams consist of healthcare professionals within PHC who work collaboratively together to provide optimal care for the population (Weil et al., 2018). This team-based approach can address complex patients and issues by providing comprehensive care that enhances each discipline's practice (Weil et al., 2018). The literature discussed that older adults often have multiple chronic conditions or comorbidities and need either a specialized approach with the inclusion of geriatric specialists or interdisciplinary teams (Prasad et al., 2014; Weil et al., 2018).

Interdisciplinary care is essential to improving older adults' access to PHC services by nurse practitioners (Prasad et al., 2014). Without interdisciplinary care, nurse practitioners may have difficulty collaborating with interdisciplinary team members to provide older adults with a comprehensive approach to care, therefore reducing their access to appropriate PHC services. An interdisciplinary approach to care has been highlighted in the findings to be an integral part of reducing barriers to accessing PHC for older adults in rural communities (Bresick et al., 2016; Heale et al., 2018; Prasad et al., 2014). Interdisciplinary teams were developed in PHC to enable healthcare providers to manage patients more effectively with chronic conditions, and to provide a better integration with tertiary care (Prasad et al., 2014). With an interdisciplinary approach, "there is a more comprehensive provision of information and screening for health promotion, disease prevention, and early detection guided by epidemiology and the health profile of user communities" (Bresick et al., 2016, p. 9).

Further, the collaboration between nurse practitioners, geriatricians, and PHC providers demonstrated a positive effect on the functional status of older adults in hospital, improved their overall well-being, and reduced hospital admissions and institutionalization (Prasad et al., 2014). Similarly, there is a more supportive environment with effective interprofessional team functioning and fewer community referrals because the team is accessible (Heale et al., 2018). An increased connection between services and patients improves through an integrated system consisting of a care coordinator or nurse practitioner (Prasad et al., 2014). However, it is pertinent to understand that while services may be available in PHC, if they do not meet an acceptable level of performance, issues of accessibility for older adults and PHC services may still arise (Bresick et al., 2016). Therefore, if the level of performance from the PHC providers or the service itself is not meeting an acceptable level for patients, older adults may be experiencing

a gap in comprehensive care or an interdisciplinary approach limiting their access to PHC services (Bresick et al., 2016).

As previously discussed, the literature found the collaboration between interdisciplinary team members, nurse practitioners, and specialists to be an integral aspect of interdisciplinary care for older adults living in rural communities, leading to improved access to PHC services (Heale et al., 2018). For example, lack of adequate PHC resources and providers for rural communities was the most common systemic barrier indicated in the literature (Batsis et al., 2019; Ford et al., 2018; Hewitt et al., 2019; Shah et al., 2017; Wakerman et al., 2008; Weil et al., 2018). This lack of PHC providers also consisted of the lack of specialists available for older adults (Batsis et al., 2019). The absence of geriatricians and geriatric care combined with high patient-to-practitioner access to health and preventative services for rural older adults is a barrier for older adults accessing the type of care that may benefit the most (Weil et al., 2018).

Multiple studies indicated that reduced access to PHC providers and health services, primarily due to the workforce shortage throughout healthcare and the rural location of specific communities, served as a barrier for older adults (Hewitt et al., 2019; Wakerman et al., 2008). For instance, the “2014 Canadian Community Healthy Survey reports that three out of ten provinces determine that the proportion of residents was higher than the national average of 14.9% without regular doctor” (Shah et al., 2017, p. 97). In correlation, patients may choose to visit the immediate care clinic or emergency care services when they cannot see their PHC providers due to long wait times or inaccessibility (Hewitt et al., 2019). This use of immediate or emergency care raises the concern that older adults in Canada may not have access to PHC providers due to the lack or unavailability of providers in rural communities, therefore putting strain on the emergency/urgent care settings (Hewitt et al., 2019).

The aging population was an individual barrier that arose multiple times in the literature (Shah et al., 2017; Ford et al., 2019; Weil et al., 2018). Aging has distinct issues and presents unique situations regarding access to PHC (Weil et al., 2018). As adults age, they require a more comprehensive approach from PHC providers due to a potential increase or development of chronic conditions, assessment of activities of daily living, housing, transportation, caregivers, end of life care, and appropriate community resource linkages (Falkenstern et al., 2005; Ford et al., 2018; Heale et al., 2018; Hewitt et al., 2019). In the literature, physicians and nurses consistently responded with higher impact ratings from chronic conditions than older adults indicating that older adults are not accessing services due to minimization of their chronic conditions and need for care (Falkenstern et al., 2005). With an interdisciplinary team available for older adults, this could increase their access to other healthcare roles providing a more comprehensive approach (Falkenstern et al., 2005).

Dolovich et al. (2019) developed The Health TAPESTRY (Health Teams Advancing Patient Experience: STREngthening QualitY) intervention program to improve team-based PHC. This program included interprofessional PHC teams using new in-home technologies and community engagement to provide a comprehensive approach to care based on patient's goals, risks, and needs (Dolovich et al., 2019). Goal examples included physical activity, productivity, social connection, maintenance of health, and mental health (Dolovich et al., 2019). The study found that patient-centred primary health care with an interdisciplinary team involvement improved patient experience measures (Dolovich et al., 2019). This improvement is important when determining how nurse practitioners can reduce individual barriers, such as the complexity of aging, to increase older adults' access to PHC services (Dolovich et al., 2019).

Other individual barriers discussed in the literature relating to older adults were language barriers (Hewitt et al., 2019; Ross et al., 2016), cultural or religious lack of understanding (Hewitt et al., 2019), and lack of trust in the PHC provider (Hewitt et al., 2019). Interdisciplinary teams can address these individual barriers by collaborating with a nurse practitioner and having more members of the team available for older adults to see as providers. In many rural communities, older adults often have no choice in who their PHC provider is. If they have concerns or barriers such as language and culture, there are often limited resources to fix this (Hewitt et al., 2019). There is a comprehensive delivery of care with multiple disciplinary lenses that can reduce these individual barriers through collaboration and a targeted approach to address individual needs (Weil et al., 2018). Therefore, when several disciplines collaborate and contribute to the best practice, interdisciplinary teams can improve access to PHC services (Weil et al., 2018).

Role Clarification. Role clarification was an important factor that arose multiple times regarding the interdisciplinary team approach (Heale et al., 2018; Hungerford et al., 2016; Prasad et al., 2014). When interdisciplinary team members understand each other's roles, including the nurse practitioner role, then appropriate referrals and utilization of each member's skill set can be accomplished (Heale et al., 2018). Nurse practitioners may have different skillsets and scope of practice depending on their prior experience or nursing background. Therefore, it was important for nurse practitioners to clarify their role to the interdisciplinary team members if this was the first time a nurse practitioner worked with the team (Prasad et al., 2014). For example, nurse practitioners can be available for home visits; however, it was dependent on which team member was the most appropriate for the visit. If the practitioner feels as though the patient would benefit from a different team members' visit, this could be discussed as an option for

registered nurses, registered psychiatric nurses, or social workers within the interdisciplinary team (Heale et al., 2018). Thus, the literature discussed the need for clarity of roles and responsibilities and the need to adapt the practice to the specific professional relationships among team members was discussed to give each team member the opportunity to work to their full scope. This ability to work to their full scope of practice would make healthcare providers more accessible to patients and improve their care delivery (Heale et al., 2018; Hungerford et al., 2016).

Role clarification of nurse practitioners is also important when they are involved in older adults' care, and to assess their individual needs. For example, treating older adults as whole and unique individuals was found in the literature to be pertinent when looking at nurse practitioners reducing barriers to accessing PHC services for older adults (Hewitt et al., 2019). As previously discussed, one of the individual barriers faced by older adults included the lack of trust in PHC providers due to unmet expectations and lack of respect shown to patients by the provider. This is evident through a study participant stating "I felt totally disrespected. I am in my 80's, so I have a few problems and he [PHC provider] didn't deal with even one of them" (Hewitt et al., 2019, p. 12). Therefore, the older adult patient felt disrespected due to lack of treatment from the PHC provider who did not adequately assess their individual, and unique needs. Some nurse practitioners may have an opportunity to overcome this barrier for older adults' accessing PHC services as some can allocate more time with patients during appointments (Heale et al., 2018). In the study by Heale et al. (2018), authors discussed that nurse practitioner visits are around 30 minutes and potentially longer if the patient has multiple chronic conditions or older adults who may need more time in the appointment. Thus, nurse practitioners may take the time to address

the individualized needs of older adults and clarify their role in the older adult's plan of care to provide better access to PHC services for this population (Heale et al., 2018).

Participants discussed that although living in rural communities presents challenges in the quality of health care services if they had a more permanent, rather than temporary, member of the community who would spend time listening to them, this would improve their perceived access to care (Hewitt et al., 2019). Therefore, while nurse practitioners may not be able to solve diminishing numbers of PHC providers in rural communities across the country on their own, they can treat each patient as a unique individual to improve their quality of care (Hewitt et al., 2019).

Other individual barriers that arose in the literature which focused on older adults include marginalization due to age, feeling like a nuisance, perceived as excluded from services, and that services are not user-friendly to the elderly (Ford et al., 2018, 2019; Hewitt et al., 2019). Older adults who also found it challenging to access PHC services discussed a sense of frustration that the practice breached "social contract" by not recognizing that they seldom utilized services available (Ford et al., 2018, p. 6). This social contract is described as a set of unwritten rules perceived by a patient, relating to and based on older adult's experiences (Ford et al., 2018). With healthcare providers not recognizing these social contracts, older adults are at risk for not accessing PHC services.

Additionally, findings discussed that the introduction of the nurse practitioner role improved access to care in an area short of PHC providers, with 817 previously unattached patients added to the nurse practitioner's caseload (Hunter et al., 2016). The nurse practitioner role also improved access for some complex patients. One participant in a study by Hunter et al. (2016) described connecting another patient to the NP for PHC services due to difficulty finding

a PHC provider and struggling within the health care system. Therefore, with proper role clarification by the nurse practitioner, there can be improved access to PHC services for older adults through other interdisciplinary team member's referrals or community awareness (Hunter et al., 2016).

Chapter V: Discussion

Relevant themes identified through the integrative literature review included virtual care, nurse-practitioner models of care, and interdisciplinary teams. In the literature, barriers were highlighted that prevented older adults in rural communities from accessing PHC services. Thus, nurse practitioners have an opportunity to reduce some of the barriers preventing older adults in rural communities from accessing PHC services. With virtual care services, the implementation of nurse-practitioner models of care, and interdisciplinary teamwork, nurse practitioners may reduce barriers for older adults in rural communities accessing PHC services.

Virtual care, such as telemedicine and telehealth, was discussed in the findings as an integral part of how nurse practitioners could reduce barriers of geographic isolation in the context of rural communities whose population must travel to receive specialized care and PHC. Thus, virtual care demonstrates equivalent outcomes, highlighting the potential for telemedicine and telehealth to address geographic barriers while delivering positive health outcomes to older adults (Batsis et al., 2019). Similarly, older adults in the literature were comfortable using technology to enhance access to care; therefore, nurse practitioners can offer some of these services, such as virtual appointments using a telephone or a laptop with videoconferencing (Clare, 2019). Suggestions for nurse practitioners to implement into practice include the availability of telephone appointments, obtaining telehealth or telemedicine equipment for more remote locations so the nurse practitioner could assess patients virtually (Batsis et al., 2019; Clare, 2019; Wakerman et al., 2008). This mode of virtual care can also be used for nurse practitioners to connect older adults in rural communities to specialists in larger centres, which allows older adults to stay in their home community and avoid traveling for healthcare related appointments (Clare, 2019; Ross et al., 2016). If there were an option for older adults to choose

virtual appointments via telemedicine and telehealth, nurse practitioners could promote improved access to this population. Therefore, if nurse practitioners offered a service to older adults in a rural community that provided virtual appointments via phone calls or video conferencing, this could help decrease these environmental barriers apparent in the literature. This is essential when looking at how nurse practitioners can help reduce barriers to access for older adults and how the implementation of virtual care by nurse practitioners could reduce some of these environmental barriers, thereby improving access to PHC services.

Another strategy discussed in the literature was home visits from nurse practitioners or interdisciplinary team members (Clare, 2019). Home visits by PHC providers may not always fall under coverage through Canada's publicly funded healthcare system (ref). Private healthcare organizations may continue to offer these services, and if nurse practitioners are working under a private organization this could be something they could try to advocate for in practice or advocate for an expansion of services in the public health model of care (Clare, 2019; Hunter et al., 2016). Publicly funded healthcare systems improve population health while balancing the need to provide high-quality healthcare with cost-containment and maximum efficiency (Clare, 2019). In Canada, public healthcare services typically target the largest users of expensive resources: the aged and marginalized population (Clare, 2019). Clients may be willing to pay for healthcare services like home visits, but there may not be much advantage to targeting this demographic if the aim is reducing illnesses that result in hospital admission or emergency room care. However, the not-for-profit public sector may find better value in offering house calls to specific populations like the housebound frail or elderly (Clare, 2019). Therefore, if nurse practitioners had the option to provide this service in the rural communities it could help reduce barriers for older adults accessing PHC.

Interdisciplinary teamwork also plays a role for nurse practitioners in rural communities to improve access and reduce barriers to PHC services for older adults. Weil et al. (2018) suggested that interdisciplinary partnerships can improve rural care by addressing issues in a team-based environment that may be too complex for one discipline or multiple disciplines to solve. Therefore, this effective teamwork allows members to have an overall goal for patients, establish shared and explicit goals, and work collaboratively to treat patient problems (Weil et al., 2018). Thus, to improve older adults' access to PHC services, nurse practitioners could engage with interdisciplinary team members to reduce some of the barriers of access for older adults, which are apparent in the literature.

With the current lack of geriatric specialists and services in rural communities to increase access to PHC for older adults, Prasad et al. (2014) have suggested that a nurse practitioner-led transitional care model which supports older adults' transition between health sectors, manages chronic diseases, and educates on health prevention can improve access to PHC. The collaboration between the nurse practitioner, geriatrician, and family physicians highlights the need to provide enhanced care for older adults within the PHC setting (Prasad et al., 2014). If nurse practitioners could implement a model of care for older adults in rural communities, it would be important to incorporate telemedicine components based on the community size. Furthermore, if the model were to be a nurse practitioner-led model of care that implements nurse practitioners into a family health team to aid in the management and support of frail, older adults, this has also been shown to be successful to improve access (Prasad et al., 2014).

Important features of the nurse practitioner-led model of care for older adults are highlighted below and can guide nurse practitioners in practice:

- Nurse practitioners can play a central role in care of older adults.

- Nurse practitioners and PHC providers form the core team in consultation with a geriatrician and collaboration with community partners, as needed, including families.
- Nurse practitioners can provide early identification and intervention in health promotion.
- Nurse practitioners can provide access to Comprehensive Geriatric Assessment to identify systemic, medical, and psychosocial concerns that place older adults at risk.
- Nurse practitioners (and other PHC providers) can arrange provision of care in the least disruptive environment, most commonly in the individual's home (Prasad et al., 2014).

In addition to nurse practitioner-led models with the involvement of a geriatrician, or geriatric specialized nurse practitioner, other models are available if these resources are not offered. Although there was no clear model or approach that nurse practitioners could implement into rural communities, the literature did provide models of care that may be better suited for certain community sizes, such as rural and remote communities. Wakerman et al. (2008) suggest that for a model of care to be successfully implemented in a community supportive policy, community readiness, workforce organization and supply, funding, linkages, and government management and leadership are necessary. Essential elements of sustainable PHC services for small rural and remote communities include environmental enablers which help prepare an environment for change to improve access to PHC services (Wakerman et al., 2008). These enablers include: a supportive policy which ensures sustained service funding; co-ordination of policy and funding across national and provincial governments; and an appropriate level of

community readiness for involvement in planning, implementation and monitoring of health service activity (Wakerman et al., 2008). Therefore, to implement these strategies, nurse practitioners in rural communities could do a community assessment and identify specific needs of the older adult population.

Older Adults' Perspective

According to the *Age-Friendly Rural and Remote Communities: A Guide*, older adults would prefer to remain independent, with the ability to live autonomously in their own homes (Gallagher et al., 2007). In rural communities, there is a lack or shortage of long-term care options for older adults, and therefore, can result in the older adult having to leave the community to access long-term care facilities (Gallagher et al., 2007). One of the participant's suggestions was the provision of a continuum of care in the community, from home care to assisted living, to well-coordinated facility care (Gallagher et al., 2007). Therefore, nurse practitioners could play a role in the promotion of continuity of care for older adults through the addition of home visits to their practice in rural communities or as a liaison between PHC and community-based care (Prasad et al., 2014).

Older adults also discuss the importance of contributing and benefiting from community life through involvement in senior activities that promote physical activity and social or group interactions (British Columbia [BC] Ministry of Health, 2014; Gallagher et al., 2007). Some suggestions include the incorporation by healthcare providers and community members of programs to improve access and reduce barriers to PHC services for older adults (Gallagher et al., 2007).

For example, programs and interventions that other communities have implemented in BC include:

- *East Kootenay Senior Caregivers' Network: Rural* provides information and support for caregivers through local group meetings, buddy system, newsletter and tollfree phone line (Gallagher et al., 2007).
- Village of Lumby used funds from the *Age-friendly Rural and Remote Communities Initiative* identified transportation as priority and provide low-cost door-to-door transportation to area activities, events, and services (Gallagher et al., 2007).

These programs are two examples of how nurse practitioners could collaborate with community members and policymakers to reduce environmental barriers such as lack of transportation, or support for spouses caring for their partners or family members in caregiver roles for older adults.

Limitations

One of the main limitations of this integrative review is the lack of literature that is specific to answering how nurse practitioners can reduce barriers for older adults accessing PHC services. For instance, as previously discussed, multiple themes were revealed from the literature, yet the literature does not give one straightforward approach that answers the *how* part of the research question. The research discussed multiple barriers that older adults face with accessing PHC services; however, there was a lack of a clear approach on how these barriers could be addressed in practice. Therefore, the literature suggested ways that nurse practitioners can collaborate with interdisciplinary team members and certain models of care that could improve barriers such as geographic location, although a more specific approach needs exploration in future research.

The types of evidence retrieved in the literature consisted of mainly qualitative and quantitative studies. Most primary studies used convenience sampling or hand-selection of participants, highlighting a risk for researcher bias. However, the qualitative research design provided rich and valuable subjective experiences of older adults' access to PHC services in rural communities that collectively contributed towards informing the research question.

Implications for Practice

In practice, many nurse practitioners will be working with older adult patients in some capacity. Thus, older adults need to receive access to PHC services to reduce the chronicity of diseases and promote health prevention and longevity. If nurse practitioners are unaware of the strategies available to implement into their practice, then older adults may not receive the adequate care that they need. Nurse practitioners should be aware of how the lack of access to PHC services can negatively affect older adults' overall health.

Nurse practitioners improve the health of hard-to-reach populations challenged with access and acceptability of traditional healthcare services (Grant et al., 2017). They bridge the gap between older adults' hospital discharge and their next appointment with their PHC provider, "advocate for clients and help them navigate complex services, and advocate to ensure timely information sharing and implementation of a consistent treatment plan" (Grant et al., 2017, p. 54). They also provide a service that individuals may otherwise have difficulty accessing for reasons including affordability, geographical isolation or extended waiting times (Grant et al., 2017). Nurse practitioners working in rural areas also spend more time with their older adult patients and therefore had a better understanding of how chronic conditions impact older adults' daily lives (Falkenstern et al., 2005). Therefore, nurse practitioners and the inclusion of an

interdisciplinary team, are in position to reduce barriers to accessing PHC services for older adults and enhance their general healthcare experiences.

Further, if nurse practitioners were to implement virtual care into practice for older adults who may not have access to transportation, include home visits, and collaboration with interdisciplinary teams, they can reduce barriers to older adults accessing PHC services. By identifying barriers in rural communities where nurse practitioners work, a targeted approach to improving access to vulnerable older adults can be achieved (Ford et al., 2018). With the support of individual communities, there is an opportunity for close collaboration between health authorities and healthcare professionals to improve access to PHC services. This improvement can occur through more home visits, telephone or videoconferencing consultations, multidisciplinary team partnerships, and role clarification (Dolovich et al., 2019; Weil et al., 2018).

Nurse practitioners who demonstrate a connection to the rural community are more likely to become trusted healthcare professionals (Hunter et al., 2016). This connection to the community shows through interacting with patients, and mentorship from local physicians in the context of connecting to the community, facilitating positive working relationships and a sense of shared responsibility within the PHC team (Hunter et al., 2016). Interdisciplinary partnerships can improve rural-care transitions by blending the skills of disciplines to increase the provision of all-inclusive care (Weil et al., 2018). Healthcare professionals must support a targeted approach to improving access when vulnerable older people use PHC services. Closer collaboration between health authorities and providers to improve targeted services for the aging population can lead to the improvement of access for older adults to PHC services (Ford et al., 2018).

Future Research

Future research is needed to explore how nurse practitioners working in rural communities can reduce barriers to older adults accessing PHC services. As indicated in the literature, there are multiple barriers that older adults face when trying to access PHC services on environmental, systemic, and individual levels. However, there is a gap in the research that addresses how nurse practitioners working in rural communities can reduce these barriers. Therefore, it would be pertinent for future research to focus on how nurse practitioners, as PHC providers, can specifically address these barriers by using programs or tools and implementing this into practice.

In Canada, there are also gaps in the extent to which each province has adopted, funded and implemented the strategic components of improving access to PHC services for older adults. For example, more federal leadership could facilitate collaboration and support healthy aging initiatives across Canada, which can reduce the resources required for provincial and territorial governments to develop stronger responses in rural areas still under development (SPHERU, 2018). Therefore, a review of implemented programs and policies to assess these principles and strategies would be an area for future research (SPHERU, 2018). In the case of provinces and territories still working to develop a strategy, review of existing strategies and interventions offers the opportunity to identify and adopt best practices into their plans of action (SPHERU, 2018).

Conclusion

Reducing barriers for older adults in rural communities to improve access to PHC services is a complex topic. The consequences of lack of access to PHC services for older adults increases the necessity of PHC providers to incorporate strategies into their practice to prevent

poor outcomes. This integrative review examined strategies for nurse practitioners to reduce barriers to access for older adults while working in rural communities. Through a comprehensive literature search, relevant articles were reviewed, with eighteen articles selected. The analyzed findings of these articles provided insight into how the reducing of barriers for older adults to accessing PHC services by nurse practitioners working in rural communities can be applied to the PHC context.

A synthesis of the findings highlighted the importance of incorporating virtual care through telehealth and telemedicine modalities, implementing nurse practitioner-led models into practice, and collaborating with interdisciplinary teams. Home visits by nurse practitioners and role clarification were also two areas that could improve access to PHC for older adults. However, the literature did not provide a straightforward approach that nurse practitioners could implement to reduce barriers to access to PHC services for older adults. There are many opportunities for future research from this integrative review. Additional research should address strategies to promote programs or tools that nurse practitioners can implement into practice. Strategies on federal and provincial levels in Canada must also be considered for future research to promote healthy aging initiatives for older adults.

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Table 1

Concept Table for Search Strategy

Concept	Keyword	MeSH	CINAHL Heading
Nurse Practitioner	nurse practitioner(s) OR family nurse practitioner(s) OR advanced practice nurse	"Nurse Practitioners"[Mesh] OR "Family Nurse Practitioners"[Mesh]	Nurse Practitioners Advanced Practice Nurses
Rural Community	rural OR rural community(ies) OR rural population(s) OR rural area(s)	"Rural Population"[Mesh]	Rural Population Rural Area Medically Underserved Area
Access	health care access OR health services accessibility OR delivery of health care	"Health Services Accessibility"[Mesh] OR "Delivery of Health Care"[Mesh]	Health Services Accessibility Health Care Delivery
Primary Health Care	primary health care OR primary care	"Primary Health Care"[Mesh]	Primary Health Care
Older Adult	aged OR senior(s) OR elderly OR older adult(s) OR older person(s) OR geriatric(s)	"Aged"[Mesh]	Aged

Table 2

Comprehensive Search Strategy (September 25, 2020)

Search Terms	Database	Total Number of Citations
("Nurse Practitioners"[MeSH Terms] OR "Family Nurse Practitioners"[MeSH Terms] OR "nurse practitioner*" [All Fields] OR "family nurse practitioner*" [All Fields] OR "advanced practice nurse*" [All Fields] AND ("Rural Population"[MeSH Terms] OR "rural" [All Fields] OR "rural communit*" [All Fields] OR "rural population*" [All Fields] OR "rural area*" [All Fields]) AND ("Primary Health Care"[MeSH Terms] OR "Primary Health Care" [All Fields] OR "primary care" [All Fields]) AND ("Aged"[MeSH Terms] OR "Aged" [MeSH Terms] OR "Aged" [All Fields] OR "senior*" [All Fields] OR "elder*" [All Fields] OR "older adult*" [All Fields] OR "older person*" [All Fields] OR "geriatric*" [All Fields]) AND ("Health Services Accessibility"[MeSH Terms] OR "health care access" [All Fields] OR "Health Services Accessibility" [All Fields] OR "Delivery of Health Care"[MeSH Terms] OR "Delivery of Health Care" [All Fields])	PubMed	110
(("Advanced Practice Nurses") OR ("Nurse Practitioners")) AND (("Rural Population") OR ("Medically Underserved Area") OR ("Rural Areas")) OR ("Rural Communities") OR ("Underserved Community") OR ("Underserved Population") AND ("Health Services Accessibility") OR ("Health Care Access") OR ("Health Care Delivery")) AND ("Primary Health Care") OR ("Primary Care")) AND ("Aged") OR ("Senior") OR ("Elderly") OR ("Older Adult") OR ("Older Person") OR ("Geriatric"))	CINAHL	17
(nurse practitioner OR family nurse practitioner OR advanced practice nurse) AND (rural population OR rural area OR rural community OR underserved community OR underserved population) AND (primary health care or primary care) AND (Health Care Access OR Treatment Barriers OR Health Care Delivery) AND (aged OR senior OR elderly OR older adult OR older person OR geriatric)	PsycINFO	4
(Nurse Practitioners OR nurse practitioner) AND (rural population OR rural area OR rural community OR underserved community OR underserved population) AND (Primary Health Care OR primary health care) AND (Health Services	Medline (Ovid)	27

Accessibility OR health care access OR Delivery of Health Care OR health care delivery) AND (aged OR senior OR elderly OR older adult OR older person OR geriatric)		
TOTAL RETRIEVED		158

Table 3

Brainstorming Concepts

Concept	Nurse Practitioner	Rural Community	Access	Primary Health Care	Older Adult
	Family nurse practitioner Practitioner Primary care provider Advanced practice nurse	Rural population Rural area Underserved area	Accessibility Services Barrier Delivery	Primary care	Aged Elderly Senior Older person Geriatric

Table 4

PubMed Search and Results

#1	"Nurse Practitioners"[Mesh] OR "Family Nurse Practitioners"[Mesh] OR "nurse practitioner*" OR "family nurse practitioner*" OR "advanced practice nurse*"	26,656
#2	"Rural Population"[Mesh] OR "rural" OR "rural communit*" OR "rural population*" OR "rural area*" OR "Medically Underserved Area"[Mesh] OR "medically underserved area*"	200,051
#3	"Health Services Accessibility"[Mesh] OR "health care access" OR "health services accessibility" OR "Delivery of Health Care"[Mesh] OR "delivery of health care"	1,093,042
#4	"Primary Health Care"[Mesh] OR "primary health care" OR "primary care"	288,782
#5	"Aged"[Mesh] OR aged OR senior* OR elder* OR "older adult*" OR "older person*" OR geriatric*	5,592,486
#6	#1 AND #2 AND #3 AND #4 AND #5	TOTAL=110

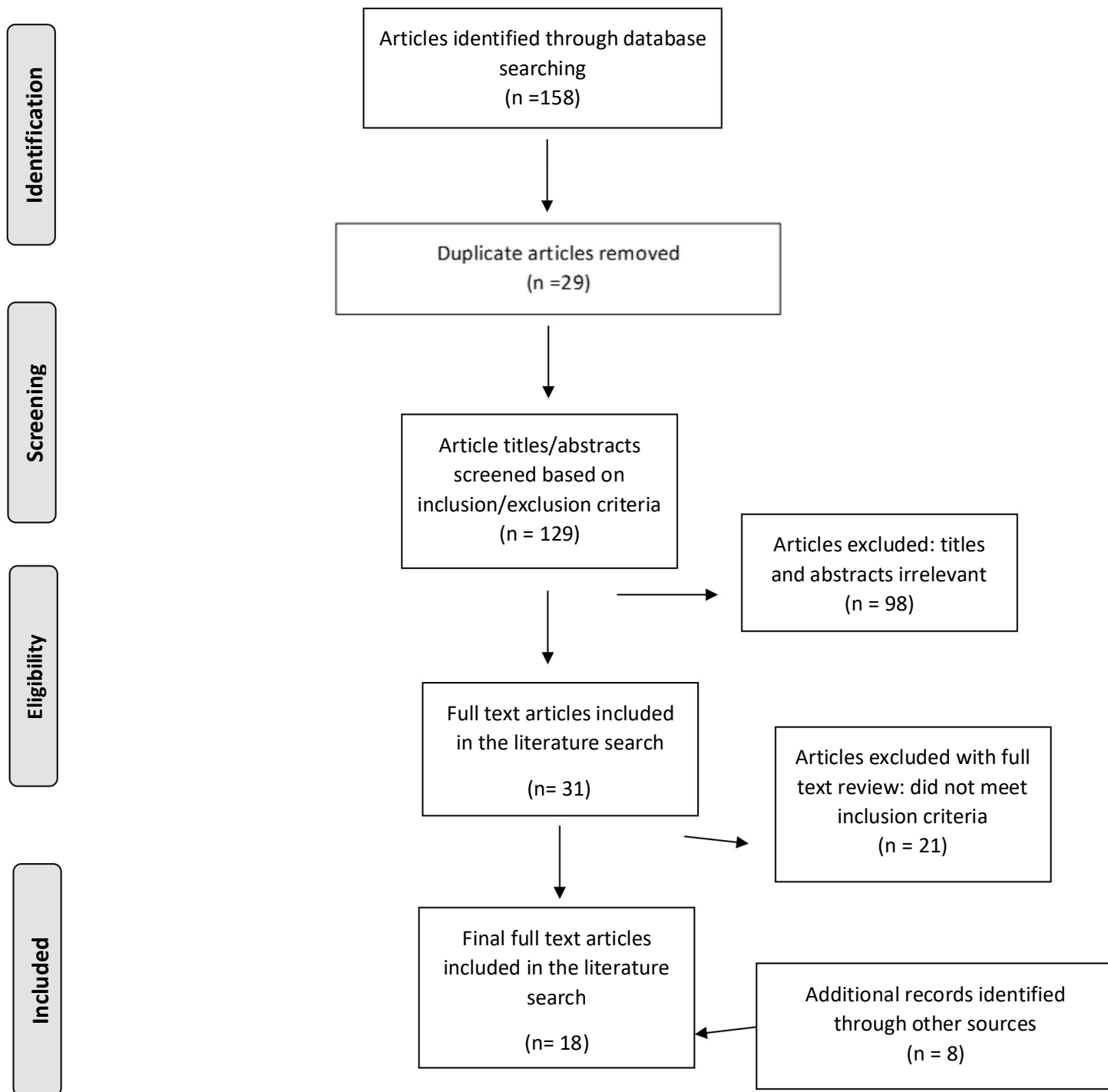


Figure 1. Literature Search Flow Diagram for Search Conducted September, 2020

Appendix A

Evidence Matrix of Literature Reviewed (*N*=18)

Author(s), Date, & Country	Study Design	Sample	Purpose	Barriers to Access	Interventions	Key Findings	Strengths & Limitations
Batsis et al. (2019), United States	Systematic review of qualitative and quantitative research.	-Systematic review, according to PRISMA guidelines. Search of PubMed, Cochrane Library, Web of Science, CINAHL, EMBASE and PsycINFO. N=17 -Participants were an average of 65.1 years to 86.45 years.	-To appraise the evidence which outlines telemedicine interventions conducted in older adults in non-hospital settings through the evaluation of both rural and urban studies.	1)Remote and rural locations. 2)Lack of resources: limited specialists. 3)Transportation. 4)Socioeconomic disparities. 5)Less experience with emerging technology.	-Telemedicine care delivered either in home or living/long-term care setting -Telemedicine had to be live, real-time, synchronous, or two-way video conferencing on both the receiving and delivery end.	-Telemedicine interventions are feasible among older adults regarding acceptability, adherence, and self-reported function. -4 studies focused on fall, exercise, or strength-based measures and demonstrated improvements in all areas with the use of telemedicine. -3 studies reported that improved cognitive function was found by using telemedicine. -5 studies reported no difference in the improvement of utilization parameters.	-Eligibility criteria for participants are clearly demonstrated. -Study-level outcomes were evaluated based on effectiveness and acceptability of outcomes. -Authors focused on peer-reviewed publications and omitted gray literature. -Cochrane Collaboration's Risk-of-Bias Tool used. -Authors have not formulated focused research question. However, objective of the review is clear. -One independent assessor manually reviewed included articles for additional studies.

Bresick et al. (2016), South Africa	Quantitative study. Cross-sectional design.	<p>-13 primary care facilities.</p> <p>-Each reflected user and staff diversity.</p> <p>-User sample size based on PHC measures from a previous PCAT study.</p> <p>-1432 users interviewed.</p> <p>-87 full time doctors and nurses working in PHC.</p>	<p>-“To obtain a baseline measure of performance and organisation at comprehensive PHC facilities by determining users’ experience and managers’ and practitioners’ assessments of PHC” (p. 2).</p> <p>-“Determine gaps between users’ experience of PHC and desired performance on the universally accepted essential PHC domains and to identify those that need strengthening, and aligning with evidence-based care and with provincial and national health plans” (p. 2).</p>	<p>1)Sociodemographic: unemployment, education level.</p> <p>2)Lack of relationship and trust with PCP.</p>	<p>-Use of PCAT to determine the extent to which PHC is “aligned with the evidence for cost-effective care based on users’ access to, and utilisation in their care, of first contact access, ongoing care, comprehensive care, coordinated care, family and community-oriented care and cultural competence” (p. 2).</p>	<p>-Urban users scored first contact access and cultural competence significantly higher than rural users, whereas rural users scored coordination, comprehensiveness (services available), services provided and family-centredness higher.</p> <p>-Users scored 39.9% vs. 62.4% of practitioners and managers on comprehensive care provided.</p> <p>-Practitioner scores are (77%) vs. users and managers (52% and 45%, respectively) on family-centered care.</p>	<p>-Field work management and data quality control done by experienced research assistant.</p> <p>-3-day training workshop to administer the PCAT.</p> <p>-Use of EpiData and exportation to Stata version 12.0 for statistical analysis.</p> <p>-Multivariate binomial regression analysis was used.</p> <p>-90% acceptance rate for questionnaires of users; 71% for practitioners and 74% of managers.</p> <p>-Assured anonymity to respondents; identifiable and personal info not required.</p> <p>-Sampled each PCF over 5 days</p> <p>“may not represent the user experience other weeks of the year</p>
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Clare (2019), Canada	Quantitative study. Pilot project design.	-3 types of participants invited: current clients, clients identified by company physicians who might benefit or want house calls (chronic disease or mobility issues); and persons in community who might be interested in service. -Sampled via snowball sampling.	-To evaluate the feasibility of providing house calls and telehealth services using NPs.	1)Lack of home- based services. 2)Decreasing PCP in rural communities. 3)No telehealth or telemedicine options for patients.	-Services offered: comprehensive physicals and screening for disease, treatment of acute and chronic conditions, phlebotomy and specimen collection, prescribing, referrals to specialist, health promotion counseling, integration of illness prevention strategies, and self-care education. -Telehealth services (video, email, or phone). -“NPs were available for house calls on weekdays from 10 am to 7 pm and rotated on-	-NPs, initially, felt overwhelmed managing large workload. -Obligations to provide efficient, timely care was difficult to achieve. -Home visits provided an opportunity for history-taking and patient assessment that increased NPs comfort with virtual calls.	given the changing operational and seasonal effects” (p. 10). -Miserable Nurse Practitioner Job Satisfaction Scale used. -No formal ethics application done due to time constraints. -Business goals may have conflicted with conventional research process. -Convenience sampling relying on current clients limits generalizability. -Equal representation of each cohort not obtained.
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Dolovich, et al. (2019), Canada	Quantitative study. Randomized controlled trial design.	-158 intervention and 154 control participants. -Participants >70 years old rostered with the McMaster Family Health Team, living in Hamilton Ontario.	-To evaluate the Health Teams Advancing Patient Experience: Strengthening Quality program and determine if implementation of the program allows older adults to obtain their health goals more effectively.	1)Lack of interdisciplinary teams.	call duty on the off hours so that access was 24/7” (p. 21). -Designed a multicomponent and multistage intervention with the participation of patients, volunteers, health care providers and community representatives.	-No statistically significant differences between groups with outcomes reported by patients at 6 months. -Lower rate of hospital admission in intervention group vs. control group (6.96% vs. 14.94%). -Fewer medications used in intervention group vs. control. -Increase in PHC engagement.	-Applicable to real-world practice. -High response rate from participants. -In-depth data analysis. -Large sample size of participants; 10% loss to follow-up accounted for. -Trial masked, not blind. -Researchers had access to files identifying patient randomization status. -6-month trial may have been too short, preventing researchers from fully examining goal-directed care of older adults.
Falkenstern et al. (2005), United States	Quantitative study with survey design.	-122 community-dwelling adults aged 55 years and older who	-N/A	-Elderly participants were instructed to rate the impact of each of their chronic	-Older adults assigned a significantly lower mean impact rating than healthcare providers to 8 of	-Participants were informed in writing that no identifying information included.	

Ford et al. (2019), United Kingdom	Quantitative study. Randomised controlled trial design.	-34 patients recruited (26 female, 8 male) -Participants were patients aged 64 years or older. Mean age of 81.6 years. -Four general practices were recruited	healthcare providers' estimates of the impact of the same conditions on older adults" (p. 195). -How healthcare providers' impact ratings for chronic conditions are affected by length of time in clinical practice and having rural or urban older adults as patients.		conditions. All affirmative responses were scored on a scale from 1 to 4, with higher scores reflecting greater impact. -Means for the older adults' ratings of impact were then calculated for each of the 11 conditions by averaging the affirmative responses. -Healthcare providers' impact ratings were calculated by averaging estimates of impact for each health condition.	the 11 chronic conditions. -Physicians with a mostly rural clientele were significantly closer to the older adults' self-ratings of cancer impact.	-Informed consent given. -Human Subjects Committee's approval was obtained. -A panel of 8 physicians reviewed content for validity and 7 APNs. -Under representation of men in the study.
				1)Age. 2)Chronic conditions. 3)Transportation. 4)Rural areas. 5)Lack of available appointments. 6)Interactions with receptionists.	-Practices allocated to the intervention arm were asked to improve the ease of the booking system and transport options for socio-economically disadvantaged older people without access to a car.	-Impact of interventions: fewer complaints, call stacking system well received, more receptionists needed. -Practices successfully designed and implemented their own context-sensitive service	-Ethical approval from NHS North East National Research Ethics Committee. -Freedom for PHC practices to develop their own service change. -Sample size adequate for what researchers were looking for

Ford et al. (2018), United Kingdom	Qualitative study.	<p>-Total of 15 participants.</p> <p>-Interviews with adults over 65 years of age and focus groups with healthcare professionals.</p> <p>-Participant age ranges from 67 to 87 years old with average age of 78.</p>	<p>-To explore barriers to PHC for socio-economically disadvantaged older people in rural areas by identifying barriers and understanding how these barriers affect access.</p>		<p>1) Breach of social contract.</p> <p>2) Difficulties with engaged telephone lines.</p> <p>3) Lack of appointment times.</p> <p>4) No home visits.</p> <p>5) Receptionists were negative toward patients.</p> <p>6) Inability to receive telephone consultation vs. in-person visit.</p> <p>7) Lack of transportation.</p> <p>8) Marginalization due to age.</p>	-N/A	<p>-Practices were given a support manual, containing an evidence summary and trial requirements, four development meetings with the lead researcher over a 4-week period and a grant of £1500.</p>	<p>changes based on development meetings.</p>	<p>-3% response rate initially due to the inclusion criteria that participants must not have access to vehicles.</p> <p>-Low response rate of 37.3% for post questionnaires may lead to inadequate validity of data results.</p> <p>-Unclear how participants were recruited prior to randomisation of practices.</p>	<p>-Researcher roles were thoroughly explained in data collection.</p> <p>-Rigour and trustworthiness ensured through coding, generation of themes, accuracy check of transcripts, and review of themes by team and representatives.</p> <p>-Comparison approach used to avoid confirmation bias.</p> <p>-May not have reached full saturation with</p>	<p>Themes: social contract, impact of physical resources and skills, views on expectations of health services and aging, service constraints, and need for targeted services for this age group.</p>
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Grant et al. (2017), International	Scoping review design of qualitative and quantitative studies.	-74 articles included in the review from developed countries (Canada, Netherlands, US, UK, Slovenia, Guam, & Australia).	-To explore how the NP role has been taken up to primary health care settings in developed countries. -To summarize evidence of efficacy of these roles.	9)Feeling like concerns were not heard. 10)Services that are not user-friendly for older adults. 11)Restricted resources (time spent with patients), home visit options. 12)Rural areas. -N/A	-N/A	-“NPs work with vulnerable populations in rural areas such as the frail or elderly” (p. 54). -NP interventions resulted in positive outcomes for individuals and groups. -Outcomes varied from physiological data, hospital admissions, use of health services, self-reported health, cost savings, and morality/morbidity.	third and fourth focus groups. -Member checking not done
						-Search strategy explained well using key nursing electronic databases. -Dates clearly identified. -Exclusion and inclusion criteria clear. -Studies were evaluated using the CASP tool. -Quality of articles was rated moderate to high (n=66 out of 74). -Results consistent with those of past research regarding NPs having the capacity to work with socioeconomically disadvantaged populations.	

Heale et al. (2018), Canada	Qualitative study.	<p>-8 NPs included in sample.</p> <p>-Interviews conducted from Dec 2015-2016.</p> <p>-NPs were recruited to participate in a telephone interview from 4 NPLCs located in Ontario</p> <p>-Communities were traditionally underserved with high numbers of patients who had no access to primary health care services.</p>	<p>-To identify potential gaps, or issues in healthcare delivery at NPLCs.</p> <p>-To determine how NPs in NPLCs evaluate the impact of the NPLC model on the quality of care they provide to patients with diabetes and multimorbidity.</p>	<p>1)Patients not accustomed to working with interdisciplinary teams.</p> <p>2)Mental health issues.</p> <p>3)Transportation.</p> <p>4)Hidden costs of community services.</p>	-N/A	<p>Themes: 1)Limited access to provider; often did not have primary health care for many years, undiagnosed chronic conditions. These patients needed a higher level of care.</p> <p>2)Interprofessional team functioning; supportive environment; less community referrals because the team was accessible.</p> <p>3)Role clarification.</p>	<p>-Ethics approval received by Laurentian University Research Ethics Board.</p> <p>- "Audit trail established through compilation of research protocol, review of documents, and summaries of interviews which enhanced trustworthiness of data gathering" (p. 555).</p> <p>-Credibility through cross-checking and verification of themes with other sources.</p> <p>-No discussion if data saturation was reached.</p>
Hewitt et al. (2019), United States	Mixed methods study.	<p>-2 focus group sessions were conducted with a sample of 8 rural community members each.</p> <p>-5 males and 3 females in each focus group.</p>	<p>-To examine perceived access to PHC through data generated from two focus groups, and to propose practical solutions to perceived barriers.</p>	<p>1)Needs unmet by PCP (quick appointment times).</p> <p>2)Lack of available appointment times.</p> <p>3)No immediate care services over the weekends or evenings.</p> <p>4)Lack of speciality services.</p>	-N/A	<p>Three relevant concepts:</p> <p>1)Patients chose to visit immediate care clinic when unable to see their own PCP.</p> <p>2)Patients visit this clinic whether they are publicly, privately insured,</p>	<p>-Consent given by participants.</p> <p>-Used review of transcripts, classified data into themes for data analysis.</p> <p>-Small sample size. May not be generalizable.</p>

Hungerford et al. (2016), Australia	Mixed methods study.	-1 participant aged 30-44 and all others were age 65 or older.	-To discover how patients saw their ability to access PHC, what they perceived as barriers, and what they thought were possible solutions.	5)Language. 6)Culture. 7)Lack of trust with PCP. 8)Financial barriers. 9)Rural areas.		or uninsured. 3)Patients visit immediate care clinic regardless of if they have a PCP.	
		-NPs, managers, medical practitioners, and allied health workers. -Older adults > 65 years of age.	-To evaluate NP models within Australia and provide a comprehensive description of community-based clinic-located NP models.	1)Rural and remote areas. 2)Lack of age specific PHC models for older adults.	-N/A	-Implementation of the community-based, clinic-located NP model provided residents with a more comprehensive approach to the delivery of healthcare, reducing their travel time to consult a GP. -Challenges to the model included the organisation's limited capacity to back-fill the NP for leave and professional development entitlements. -Need for the organisation to explain the NP role more clearly to patients. -Inclusion of an additional component of the nursing model:	-Authors mentioned reasons why they used a case study design, and noted the potential weaknesses involved. -Case study design may cause findings to limit generalisability; however, findings can still be transferable to similar context. -Part of large-scale Australian study that incorporated NP models of care. -Ethics approval received.

Hunter et al. (2016), Canada	A mixed-methods study using semi-structured interviews and questionnaires.	-14 patients, one HCP, two LNs, and one NP -200 randomly selected patients under NP panel were mailed surveys with 41 returned.	-To study a community-initiated rural NP practice and formulate recommendations for other rural communities. Aim to determine benefits and challenges of a rural PHC NP role.	1)Lack of role clarification. 2)Funding for PHC NP. 3)Lack of access for NP's ongoing education and role isolation.	-N/A	influence of context. -Positive trends in diabetes and dyslipidemia management. -Slightly negative trend in hypertension outcomes. -Increase in access to PHC services, addressing mental health and chronic disease management service gaps. -NP services average \$903.44/day using base FFS schedule, not including chronic disease and rural service fees. -Interdisciplinary collaboration between physician and NP. -90% of respondents agreed that NPs explanation of illness and injury were strong. -92% of patients would return to NP or refer a friend.	-Use of multiple data sources and methods. -Transferability of findings is limited by small sample size and single-site study approach. -Risk for bias from sampling a limited number of records to describe NP practice, and from those who participated in surveys and interviews. -Limited response from rural HCPs did not allow study to effectively capture their insights. -Low response rate of surveys (21%).
Prasad et al. (2014), Canada	Quantitative study.	-Older adults aged 65 years and older	-To develop a model of care for older adults to	1)Chronic conditions and comorbidities.	-NP-Geri and PCPs form the core team in	-Collaboration between nurse practitioners,	-Unique ecosystem approach which

	Retrospective design.	living in rural North Perth, Ontario	increase access to PHC and to improve the quality of care they receive through collaboration with other healthcare professionals.	2)Transition between health sectors for older adults. 3)Lack of follow up care. 4)Lack of education, management, and support.	consultation with a geriatrician and collaboration with community partners. -NP-Geri assesses individual needs and health service delivery, working across sectors. -Twice-monthly visits to retirement homes. -Case-finding in collaboration with PCPs, community, and acute care partners. -Early identification and intervention and health promotion. -Access to Comprehensive Geriatric Assessment to identify at risk elders. -Transition from sector to sector in person when possible and with written, verbal, and	geriatricians, and PHC providers can have a positive effect on the functional status of older adults in hospital, improve their overall well-being, and reduce hospital admissions and institutionalization.	include multiple collaborative parts to provide improving quality of life for older adults and improving access to care. -Relatability to real-world problems; this program could be taken and implemented in other areas with NP. -Unclear how an NP who is not specialized in geriatrics would be affected. -The retrospective design of the study is a potential weakness as the initial data used for comparison may be of poor quality.
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Ross et al. (2016), Canada	Quantitative study.	-60 patients, all members of the First Nations band -Most common age group 19-35; variety of ages were seen from less than 1 year to over 90 years of age. -25% were 55 years and older.	-To determine if the use of telehealth can improve access and continuity of care in PHC. -To bridge the gaps in provision of specialty care in Alberta by implementing video telehealth technology to connect rural residents with PCPs or specialists.	1)Geography. 2)Availability of PHC services. 3)Language.	electronic communication. -Discharge planning and follow-up. -System navigation support to ensure access to available community supports and resources. -Ability to drive for distant home visits.	-34% of patients were seen for rashes, followed closely by prescription refills (24%), pain (14%), URTI/flu (10%), other (16%). -All felt the wait time was acceptable and most were able to get same-day or next-day appointments, very easy to book appointments. -All indicated they would use the service again.	-Stakeholders included were physicians, NPs, RNs, community health members, receptionists, and LPNs. -Wide range of ages of participants indicates generalisability. -Feasibility and sustainability of project were thoroughly assessed by authors. -May not be generalizable to non-First Nations' communities. -12-week program was not long
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Shah et al. (2017), Canada	Qualitative study.	<p>-5025 GPs and 423 NPs included.</p> <p>-Data for physicians and NPs used from 2014 CIHI database.</p> <p>-Used community-based GP and NP who provided direct care services outside acute care settings.</p>	<p>-To examine and compare the geographic accessibility to two front line PHC services in the two Canadian provinces of Saskatchewan and Alberta focusing on how NPs are distributed in comparison with GPs at the municipal level.</p>	<p>1) Shortage of healthcare providers.</p> <p>2) Age.</p> <p>3) Chronic conditions.</p> <p>4) Rural areas.</p>	-N/A	<p>-Inequities found in the distribution of PHC services across Alberta and Saskatchewan within more rural and remote municipalities.</p> <p>-10.80 vs 9.29 access score for GPs in Alberta vs Saskatchewan.</p> <p>-NP access score .70 vs 1.42 in Alberta vs Saskatchewan.</p> <p>-No significant correlation between GP and NP access scores in both provinces.</p> <p>-“Results demonstrate NP services may be addressing gaps in family physician access in poorly-served categories” (p. 100).</p>	<p>enough according to some stakeholders and participants.</p> <p>-3SFCA method was applied to estimate access score or geographic accessibility; used previously many times for health care services.</p> <p>-Very thorough and well-described method section.</p> <p>-Multiple figures included in paper which were easy for reader to follow.</p> <p>-Pearson correlation test used with statistical software to analyse how NPs are distributed vs GPs.</p> <p>-Distance parameter included to increase validity.</p>
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Shah et al. (2019), Canada	Quantitative study.	-Data acquired from Health Force Ontario and Marketing Recruitment Agency, and 2016 Census Canada. -GP and NP data for Ontario was included	-To present a conceptual partnership model that integrates nursing, gerontology, and public health disciplines for support of rural-residing older adults.	1)Rural areas. 2)Transportation. 3)Sociodemographic characteristics of individuals. 4)Inability to retain PCPs to rural areas.	-N/A	-7.1% of province's FPs practised within the area of SWO. -68.3% of FPs provided PHC, and 31.7% worked alternative practice models. -FPs in rural communities often worked in the ER department as well or did other specialties. -Accessibility score in SWO 6.59 PCPs per 10,000; higher than provincial average of 6.03. -Geographic accessibility for rural areas and medium population centres were lower. -Most areas with low accessibility and higher % of seniors were located near London.	-Analyzed data through a geospatial approach called E2SFCA. -Used Network Analyst to implement data. -Used choropleth mapping approach with standard deviation classification scheme. -May not be generalizable to more remote communities throughout Canada. -The interpretation of full-time equivalent PCP hours may not have reflected the times rural practitioners spent doing other specialties within community due to lack of providers.
Wakeman et al. (2008), Australia	Systematic review.	-Databases searched: Medline, CINAHL, EBM Reviews, AMED, OVID, APAISHealth,	-To review the available published literature on innovative models of comprehensive primary health care in rural and	1)Rural and remote locations. 2)Reduced access to PCPs and health services. 3)PHC models that are not specific to community size and population.	-N/A	-Discrete PHC services to sustain general practitioner service in rural areas experiencing difficulty with retention (e.g., incentives).	-Central concepts clearly defined according to inclusion and exclusion criteria. -Comprehensive search; included peer-reviewed articles, grey

<p>Weil et al. (2018), United States</p>	<p>Quantitative study.</p>	<p>-Program developed by Nursing and Public Health faculty. -Led by ACNP who previously directed an adult-gerontology NP program. -Nurses were trained to be APNs in rural</p>	<p>-To examine the historical and conceptual basis of public health, with a specific focus on health disparities in elderly and rural populations on both an individual and population levels.</p>	<p>1)Rural areas. 2)Age. 3)Lack of specialized care. 4)Lack of effective interdisciplinary approach.</p>	<p>-Community-based course led by ACNP to bring together the best practices in community health, nursing, and gerontology.</p>	<p>-Preceptor development and recruitment in the rural and frontier areas. -Development of relationships and work with new preceptors as partners is important for improving interdisciplinary partnerships. -Limited number of AGACNPs exist to</p>	<p>-Integrated services, 'shared care' model. -Comprehensive primary health care services addressing Aboriginal community members. -Outreach models, 'fly-in-fly-out' method. -Telehealth and telemedicine.</p>	<p>literature, and web searches of government departments, workforce agencies, etc. -Results interpreted through clear tables: rural and remote PHC models, and environmental factors/essential service requirements. -Does not discuss specialized PHC models for older adults; may have different outcomes if a model were implemented with this population. -AGACNP was first of its kind in the region. -Timelines were restricted so the team had to rapidly plan and carry out tasks. -More time might be needed in future programs to develop relationships. -Generalizability is noted, as this program could be</p>
<p>remote Australia to identify what models work well, where, and why.</p>	<p>ATShealth, EMBASE, H&S, INFORMIT, Meditext, and RURAL. -Dates: 1993-2005.</p>	<p>remote Australia to identify what models work well, where, and why.</p>	<p>remote Australia to identify what models work well, where, and why.</p>	<p>remote Australia to identify what models work well, where, and why.</p>	<p>remote Australia to identify what models work well, where, and why.</p>	<p>remote Australia to identify what models work well, where, and why.</p>	<p>remote Australia to identify what models work well, where, and why.</p>	

		and frontier areas.					serve as preceptors, and those in rural and frontier areas have fewer technology resources available to them for online preceptor training.	implemented in other areas to include rural nurses.
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