School-Based Health Clinics: Improving Adolescent Sexual and Reproductive Health in British Columbia – An Integrative Literature Review

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Abstract

This integrative literature review strives to determine if the delivery of reproductive and sexual health services provided through high school-based primary care clinics can improve BC adolescent sexual and reproductive health. Adolescent sexual and reproductive health not only impacts life-long health; it also has significant societal implications. Although BC has begun to focus on adolescent health, innovative health service solutions are needed to improve adolescents' health. Systematic search through the University of Northern British Columbia online library databases and Google scholar and the evaluation of the literature using CASP analysis tools resulted in the inclusion of 10 articles. Findings suggest school-based health clinics (SBHCs) decrease barriers that adolescents experience when accessing health services as well as public health system costs. Moreover, SBHCs are an effective mechanism to support adolescent reproductive and sexual health needs, especially in those populations with elevated levels of sexual and reproductive risk factors. However, for SBHCs to be effective, sustainable funding needs to be sourced, and barriers adolescents experience when accessing services need to be evaluated and addressed. SBHCs can complement current adolescent-friendly services to meet this unique population's needs; however, further research is needed. More robust research on various demographics, health outcomes, and Canadian-based examination is required to strengthen SBHC implementation recommendations.

Keywords: adolescents; contraception, primary health care, unintended pregnancy; adolescent pregnancy, school-based health clinic, sexual health, reproductive health

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Glossary of Terms

Adolescent: Adolescence includes the ages between 13-18 years. It is a period of distinct health and developmental needs and a stage of knowledge and skill development that aids in assuming the adult role (World Health Organization [WHO], 2014b).

Adolescent-Friendly Health Services: Incorporates elements of equitability, accessibility, acceptability, appropriateness, and effectiveness with consideration to the adolescent population and health services provision (WHO, 2009, 2012).

Health Equity: Is included as a component of health care assess and is defined as the absence of imbalanced and avoidable or remedial health disparities among socially, economically, demographically, or geographically defined population groups (WHO, 2020).

Health care Access: A multi-dimensional concept that includes health service availability, utilization, relevance, effectiveness, equity, and related barriers to access (Gulliford et al., 2002).

High School (also known as secondary school): An academic institution that follows elementary school, because the elementary grades vary from province-to-province high schools have included grades 7 to 13 (ages 13-18). High schools vary in type (academic, vocational, technical, composite) and can be public (free) or private (fee-charging; Fine-Meyer, 2013).

Medical Home (also known as patient medical home): Is a care delivery model that provides longitudinal comprehensive primary care that facilitates partnerships between patients and providers. Medical homes provide primary care that is patient-centred, comprehensive, team-based, coordinated, accessible and committed to quality and safety (Primary Care Collaborative, 2020).

Primary Health Care Services: Primary health care functions to provide first-contact health services and ensures continuity and ease of movement across the health care system so that care remains integrated when Canadians require more specialized services (Government of Canada, 2012).

Primary Health Care: An approach to health and a spectrum of services beyond the traditional health care system, including social determinants of health (Government of Canada, 2012).

Primary Care: An element within primary health care that focuses on health care services, including health promotion, illness and injury prevention, and the diagnosis and treatment of illness and injury (Government of Canada, 2012).

Primary Care Provider: Providers such as family physicians, nurse practitioners, pharmacists, and telephone advice lines (Government of Canada, 2012).

Reproductive Health: A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its functions and processes (WHO, 2006, p. 4).

Reproductive Health Services: Sexual health services that specialize in sexual and reproductive health, including family-planning, education and services for prenatal care, safe delivery, and post-natal care, prevention of unsafe abortion1and management of the consequences of abortion, prevention and treatment of sexually transmitted infections, and other reproductive health conditions and education and counselling, as appropriate, on human sexuality, reproductive health and responsible parenthood (United Nations, 2017).

Sexual and Reproductive Health Risk Factors: Factors that increase odds of adverse sexual and reproductive health outcomes, including early pregnancy and sexually transmitted infections (STIs).

Sexual and Reproductive Health Protective Factors: Factors that decrease odd of adverse sexual and reproductive health outcomes, including early pregnancy and STIs.

School-Based Health Clinic/Center: A health clinic that is in or near a school facility that is organized through school, community, and health provider relationships and provides primary health services to adolescents (Social Security Act, 2018).

Sexual Health: "...a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled" (WHO, 2006, p.5).

Social Determinants of Health: Specific groups of social and economic factors that determine individual and population health. Social determinants relate to an individual's place in society, such as income, education, or employment (Government of Canada, 2020).

Chapter One: Introduction

According to Boislard and Poulin (2011), early sexual onset is linked to depression, antisocial behaviour, poor academic achievement, and substance use. A British Columbia (BC) adolescent survey reported that 34% of sexually active adolescents had intercourse before the age of 15 (Poon et al., 2015), and 46% of all adolescents have had intercourse by the age of 18 (Smith et al., 2019). While the Government of Canada (2017) has pledged to invest \$650 million to promote sexual and reproductive health and rights internationally, including support for contraceptive access, barriers to these services remain in Canada. The need to address adolescent sexual and reproductive health is particularly important because behavioural habits formed during the adolescent period have significant impacts on the health status during adulthood (National Research Council and Institute of Medicine, 2009). Historically, adolescent sexual and reproductive health has vastly been overlooked despite the adverse health outcomes, including increased risk of sexually transmitted infections (STIs), HIV, adolescent pregnancy, sexual coercion, exploitation, and violence (Morris & Rushwan, 2015).

In Canada, the rates of STIs continue to trend upward (Public Health Agency of Canada [PHAC], 2019), with those aged 15-24 years having the highest confirmed cases of STIs (British Columbia Centre for Disease Control [BCCDC], n.d.). Over the 5-year period between 2013-2017, Canadian adolescents between the ages of 15-19 saw a 10% increase in Chlamydia cases and a 37% growth in Gonorrhea cases (PHAC, 2019). Sedgh et al. (2014) further note that up to 40% of Canada's pregnancies are unintended, with rates likely higher than this in younger populations. In BC, those aged 17 and younger had a total of 624 births during the 2016-2017 year and 211 abortions in 2017 (Canadian Institute for Health Information, n.d.; Perinatal Services BC, 2018). Adolescent pregnancy has a greater risk for unfavourable outcomes at both

individual and societal levels, encompassing adverse physical and mental health risks, lower academic achievement, and high economic costs (Patel & Sen, 2012). Adverse outcomes can be related to delayed or lower health visit rates (Fleming et al., 2015). Barriers to sexual and reproductive health services can be attributed to a range of factors, including concerns about confidentiality, the unfamiliarity of services available, perceived attitudes of clinicians, limited access, and financial constraints (Douthit et al., 2015; Fleming et al., 2015).

This project aims to explore whether adolescent-oriented reproductive health care can be applied to improve BC adolescent health. A literature review was conducted using the "PIO" model (problem, intervention, outcome) to develop the research question: *Can sexual and reproductive health care services delivered to adolescents within a high school-based primary care clinic improve BC adolescent sexual and reproductive health?*

Chapter two will provide a background on adolescents, their growth and development, health care, adolescent sexual and reproductive health, interrelated concepts, and current adolescent health services available in BC. An overview and definition of school-based clinics will follow. The background chapter will be followed by the methods section describing the literature review approach used to find relevant articles to answer the clinical question. Next, the findings and critical analysis from the literature will be presented. Subsequently, a synthesis of the findings will be organized from themes found in the literature, recommendations for practice, and implications for future research. Finally, the literature review's limitations will be considered, and the paper's key points will be summarized.

Chapter Two: Background

This chapter will offer descriptions of key concepts and context to support this integrative review, including background on the adolescent population, examination of adolescent health care, sexual health concerns, and school-based health clinics (SBHCs) and costs.

What are Sexual and Reproductive Health?

According to the World Health Organization (WHO, 2006), sexual and reproductive health are essential for "responsible, safe, and satisfying sexual lives" (p.1). Sexual health requires an understanding of the factors that shape human sexual function and behaviour, including their relationship to physical and mental health, well-being, and maturation (WHO, 2006). The organization contends that sexual health is included as part of reproductive health and has defined reproductive health as:

A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes. Reproductive health therefore implies that people can have a satisfying and safe sex life and that they have the capacity to reproduce and the freedom to decide if, when and how often to do so. Implicit in this last condition are the right of men and women to be informed and to have access to safe, effective, affordable and acceptable methods of family planning of their choice, as well as other methods of their choice for regulation of fertility which are not against the law, and the right of access to appropriate healthcare services that will enable women to go safely through pregnancy and childbirth

and provide couples with the best chance of having a healthy infant. (WHO, 2006, p. 4) It is further noted by the United Nations (2017) that the information and services should incorporate access to family planning services, including safe and effective contraception, prevention, and treatment of reproductive health conditions including STIs, education and counselling on human sexuality, reproductive health, and parenthood. The definition of sexual health expands on reproductive health; WHO (2006) maintains that it is:

A state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled. (p.5)

Sexual health rights, according to the United Nations (2014), are a fundamental human right. Moreover, WHO (2006) stresses that all individuals should be free of coercion, discrimination, and violence, enabling them to attain the highest level of sexual health and reproductive health care services. Although adolescents have the same rights as adults, age, social status, and lack of autonomy lead to increased barriers to adolescent reproductive and sexual health (WHO, 2006).

Adolescence

Adolescence is a stage marked by physical, cognitive, and emotional growth as they begin to move into adulthood. WHO (2014b) describes adolescence as a period of distinct health and development needs and a stage of knowledge and skill development that help to assume the adult role. Historically, the characterization of adolescence has been defined by age and biological changes such as the onset of puberty and social role transitions, including obtaining employment (Sawyer et al., 2012). However, biological changes and social roles differ from one country to another; therefore, there is little consistency in the definition. For this paper, adolescents will include ages 13-18, as it describes the high school population this literature

review seeks to explore. In addition, the ages of 13-18 are accepted as adolescence through search databases.

Adolescent Sexual Growth and Development

Sexual development is a crucial component of adolescent growth and development. During adolescence, reproductive maturity is achieved, and intimate partner relationships are often initiated. Hormonal increases are central to pubertal transitions; these same hormones affect neural alterations (Suleiman et al., 2017).

Hormones, including testosterone, estrogen, oxytocin, and dopamine, all enhance the way sexuality is experienced. Oxytocin, as well as dopamine, contribute to enhanced feelings of love and connection. During puberty, testosterone increases height and musculature in males, deepens their voices and increases facial hair. In addition, testosterone has been associated with brain neural activation that affects risk-taking, threat avoidance, reward processing, and influences romantic and sexual behaviours (Suleiman et al., 2017). Along with testosterone, increases in estradiol and progesterone also contribute to remodelling and activation in the brain neurons. Estradiol and progesterone among both females and males are associated with social, sexual, and risk-taking behaviours (Suleiman et al., 2017). Furthermore, estradiol in young females is involved in the earliest components of puberty, including breast development. As a result, adolescent females are often perceived as sexually attractive long before reproductive maturity, and neurodevelopmental changes occur, increasing concerns regarding body image (Suleiman et al., 2017). Conversely, young males start producing sperm well before physical sex characteristics emerge in the pubertal stage.

Cognitively, adolescents are more motivated to seek rewards and engage in social relationships, including romantic relationships. Sawyer et al. (2012) stress that significant

transformations in the brain occur during adolescence. The limbic system, which controls reward processing, and pleasure-seeking, develops fully during adolescence. Conversely, the prefrontal cortex does not fully develop until after adolescence and governs planning, emotional regulation, decision making, multitasking, and self-awareness. The maturation of these two areas of the brain causes a developmental imbalance leading to increased risk-taking during the adolescent phase, as behaviours are driven by emotion and reward rather than rational decision making (Sawyer et al., 2012).

Various theorists worldwide have investigated adolescent risk behaviour, including behavioural psychological, neuro-behavioural, developmental, and sociological theorists (Peeters et al., 2019). It is widely agreed among these experts that experimentation during this period is normative; however, it does increase risk behaviour among adolescents (Peeters et al., 2019). Peeters et al. (2019) point out that although some risk behaviours are normative and socially adaptive in controlled and social ways, others negatively impact the successful transition from adolescence to adulthood. Sexual and reproductive risk behaviours include early sexual debut, multiple sexual partners, and a lack of contraception use, all of which can influence long termhealth outcomes (Poon et al., 2015). Moore et al. (2018) suggest that positive, supportive relationships with parents and others during this experimental phase help insulate adolescents against unhealthy risk behaviours and promote health and well-being.

Social Connection. Social factors can have a significant impact on sexual development. According to Smith et al. (2019), adolescents require "caring, supportive relationships, opportunities to grow, develop and challenge themselves, and the resources to participate in their community" (p.76). Satisfying and high-quality relationships with family, peers, and school staff have been found to help adolescents develop their sense of identity and encourage positive health outcomes (Moore et al., 2018; Province of BC, 2016; Ragelienė, 2016; WHO, 2014c).

Although adolescence is characterized by increased independence from family, researchers have found that parents remain the primary attachment figure, especially in times of stress (Chen et al., 2017). As characterized by high parental responsiveness and control levels, positive parental involvement is associated with positive behaviours that help guide adolescents from risky behaviours and promote resilience (Animosa et al., 2018). Chen et al. (2017) point out that peers and romantic relationships are referred to as a primary attachment figure only a quarter of the time As individuals progress through the adolescent phase, they spend more time with their peers. Peer groups support identity development through group norm role modelling and play a role in social status and emotional support (Chen et al., 2017). Adolescent behaviour is commonly influenced by friends' behaviour, suggesting these relationships can either increase positive behaviours or risk behaviours and related outcomes, including the use of alcohol and drugs, and adolescent pregnancy (Animosa et al., 2018).

School connections are defined as "the presence of supportive and caring relationships within schools" (Animosa et al., 2018, p. 53). Schools provide adolescents opportunities to interact with peer groups and build respectful adult-adolescent relationships and have been shown to influence adolescent self-concept and behaviour (Animosa et al., 2018; Ragelienė, 2016). These positive relationships have been found to be protective against pregnancy and risk behaviours, including substance use (Animosa et al., 2018; Chen et al., 2017; Moore et al., 2018; Ragelienė, 2016). Despite this, nearly 20% of BC adolescents report they do not have an adult to speak to about serious problems, and only 40% claim they feel connected to their community

(Province of BC, 2016). Adolescent-directed health services can improve community connectedness and decrease other risk factors in adolescent life (Foster et al., 2017).

Sexual and Reproductive Health Risk and Protective Factors

Poon et al. (2015) highlight that personal life experiences and social and economic conditions can affect sexual and reproductive health. Many adolescents engage in sexual risk behaviours resulting in adverse health outcomes. It is important to understand these risks and protective factors to enable the use of services that will reduce risks and improve health.

In the BC adolescent sexual health survey, Poon et al. (2015) explored various aspects of sexual and reproductive health, identifying the following as major sexual risk behaviours: (1) sexual debut before the age of 15 years; (2) having three or more sexual partners in the past year; (3) not using a condom or other barrier method or at last sexual encounter; (4) not using contraception at last sexual encounter; (5) using alcohol or drugs before having sexual intercourse (Poon et al., 2015). It was also found that societal effects influenced sexual risk behaviours. School absenteeism has been linked to risky sexual behaviour, suggesting they may have fewer sexual educational opportunities and supportive adult relationships. Those frequently absent from school were less likely to use barrier methods during the last sexual encounter and were more likely to use alcohol or drugs before intercourse (Poon et al., 2015).

According to the BC adolescent survey, 34% of sexually active adolescents had intercourse before the age of 15 (Poon et al., 2015). Furthermore, nearly half (46%) of sexually active gay males and 51% of sexually active bisexual males had their first experience before the age of 15. Comparatively, 49% of bisexual females and 56% of transgender adolescents had sexual intercourse before 15 years. These numbers highlight the need to support this vulnerable population more effectively. Boislard and Poulin (2011) also discovered that specific friendship elements, including gender, age, and substance use, all impacted sexual debut. Adolescents with higher portions of opposite-sex friends and substance use are correlated with younger age of sexual debut. The authors also noted that first intercourse was delayed in the presence of positive parent-child communication and adolescent self-disclosure (Boislard & Poulin, 2011).

According to Poon et al. (2015), adolescents who had intercourse before the age of 15 were more likely to have fewer friends and two or more sexual partners in the past year (33%). Among BC adolescents who have had intercourse, 20% had three or more partners in the past year, with males exhibiting this risk factor more frequently than females (21% vs. 19%). Those adolescents with three or more partners were more likely to reach sexual debut before age 15 and contract an STI. Of the adolescents with three or more partners in the past year, 9% had contracted an STI compared with 1% of adolescents with one sexual partner. STIs can have short- and long-term health effects, including infertility.

Another risk factor for contracting an STI is the lack condom use or barrier method. Poon et al. (2015) found that 31% of adolescents in BC did not use a condom or other barrier method the last time they had intercourse, and 83% of adolescents did not use a barrier method the last time they had oral sex. Lack of barrier methods during oral sex may indicate that adolescents are unaware of STI risks involved with this sexual activity (Poon et al., 2015). The survey found that condoms were the most common form of contraception among young people aged 12-18 in BC (Smith et al., 2019). Oral contraceptives were the second most common form of contraception and were utilized in 48% of last sexual encounters. Of note, 10% of sexually active adolescents used the withdrawal method as their only contraceptive method, and 46% used this method the last time they had intercourse (Smith et al., 2019). Withdrawal not only does not protect against STIs but with a failure rate of 20%, it is also a very ineffective form of pregnancy prevention (Jones, 2018).

Poon et al. (2015) report that 24% of sexually active adolescents used alcohol or drugs before their last encounter, with 4% of 17-year-olds reporting sexual violence or assault after using substances. The use of alcohol or drugs before sexual interactions can significantly impact the appropriate use of contraception and hinders one's ability to consent to sexual activities. Non-consensual sex was reported more commonly with older adolescents, with Poon et al. (2015) reporting up to 4% of 17-year-old adolescents experiencing sexual assault after substance use in the past year (vs. 2 % of 15-year-old adolescents).

Among BC adolescents, access to medical help was limited for 6% of males and 10% of females when they felt they needed it (Poon et al., 2015). Health care access is a multidimensional concept that includes components of service availability, utilization, relevance, effectiveness, equity, and related barriers to access (Gulliford et al., 2002). The literature suggests that confidentiality is a key barrier for adolescents regarding health services (Bender & Fulbright, 2013; Shaw et al., 2016). In BC, adolescents identified barriers to medical help, including being seen by someone they knew and concerns regarding what the practitioner may say (Poon et al., 2015). Moreover, Poon et al. (2015) identified inconvenient clinic hours and transportation difficulties as obstacles adolescents face when seeking health services. The health survey further found that transportation options, including public transportation and hitchhiking, had negative implications for contraceptive access and increased adolescents' likelihood of not using contraception (50%; Poon et al., 2015).

Contraception Accessibility. Across Canada, there are 39,000 unplanned adolescent pregnancies each year, with an associated cost of more than \$60 million annually (Black et al.,

2019). In The Ensuring Human Rights in the Provision of Contraceptive Information and Services document by WHO (2014a), it is proposed that unmet contraceptive needs are highest amongst vulnerable people, including adolescents, low-income, and rural populations. Contraceptive access is a human right that enables women to choose if and when to have children and provides greater control over their bodies and futures (WHO, 2014a). Adolescent pregnancy has a substantial impact on the social determinants of health and is associated with lower educational levels, job insecurity, and lower-income levels (Fleming et al., 2015; Patel & Sen, 2012). Social determinants of health include social and economic considerations such as income, education and employment and have significant individual and population health effects (Government of Canada, 2020). During adolescence, pregnancy can increase maternal anemia, preterm delivery, and postpartum hemorrhage (Kawakita et al., 2016). In a study by Fleming et al. (2015), the authors found that mood disorder rates are almost twice as high among pregnant adolescents when compared to adult pregnant women and nonpregnant adolescents. Mood disorders can have long-lasting adverse effects on maternal mental and physical health (Patel & Sen, 2012). In addition, children of adolescent mothers are more commonly hospitalized for respiratory, digestive, neurological, and infectious illnesses (Jutte et al., 2010).

In BC, prescribed contraceptive methods to teenagers have decreased from 49% in 2013 to 46% in 2018 (Smith et al., 2019). As costs are a significant barrier to contraception, multiple Canadian organizations have called for no-cost contraceptive access in Canada, including the Canadian Paediatric Society (2019) and a joint call for action by the Canadian Association of Midwives, Action Canada, OXFAM Canada, and the National Aboriginal Council of Midwives (2019). These groups point out that consistent contraceptive use dramatically reduces the risk of unintended pregnancy and the provision of contraception reduces health care costs (Canadian

Association of Midwives et al., 2019). The Canadian Paediatric Society further underscores that adolescents are disproportionately affected by cost barriers and are more likely to utilize available methods at no cost, such as condoms. Black et al. (2019) argue that the use of longacting reversible contraception (LARC) such as intrauterine devices and subdermal implants has a 99% pregnancy prevention rate and can decrease the costs of unplanned adolescent pregnancies by up to \$3 million (American Sexual Health Association, 2014). However, the upfront costs of these highly effective contraceptives make these options vastly unattainable for adolescents (Canadian Paediatric Society, 2019). Historically, Canada has had various programs to address contraceptive cost barriers, including government-run clinics and non-profits that offer low-cost or no-cost contraception. However, contraceptive options are frequently restricted due to budget constraints. The Canadian Medical Association and the Society of Obstetricians and Gynaecologists both propose that health care plans cover 100% of all contraceptive costs for all Canadian women through both provincial/territorial and federal funding. The Canadian Paediatric Society (2019) suggests this move could save \$320 million in direct medical expenses related to unintended pregnancies.

Existing restrictive policies may impede health services delivery based on age, sex, social status, disability, or other disparities and must be addressed. In Canada, most health care services are under provincial jurisdiction and thereby dictate how funds are disbursed. Provincially, the government can allocate funds for adolescent health and low-cost or free contraception, strengthening adolescent health. However, the federal government provides money through federal transfers and can significantly improve adolescent health. The federal government can place conditions on fund transfers to the provinces to achieve specific health goals (Government of Canada, 2014). Conditional funds could secure adolescent health resources and communicate

federal commitments to our future generations. Policies and procedures at the federal, provincial/territorial, and clinic-level can ensure adolescent-friendly health services are provided. The Canadian Paediatric Society (2019) proposes that legislative changes to ensure adolescents' confidentiality when accessing private family insurance plans are needed to decrease adolescent reproductive health barriers.

Sexual Health Knowledge

As adolescents become more aware of their sexuality, attractions, sexual orientation, and gender identity, they experiment with different roles (Stangor & Walinga, 2014). Adolescent sexual knowledge is established through adult-child interactions, including family knowledge and attitudes, school-based sexual education programs, the internet, and peers, significantly impacting sexual health and attitudes.

According to a Canadian study by Black et al. (2018), adolescents most often use the internet (52.2%) to source sexual health information. Family practitioners were the second most used resource (48.8%), with friends next (44%), followed closely by schools (41%; Black et al., 2018). This study demonstrates that primary care providers (PCPs) continue to be a valuable source for health information among Canadian adolescents and raises concerns about the quality of the information provided through online sources.

The Province of BC has a mandated sexual health program called *Physical and Health Education*, which incorporates sexual health concepts into the school curriculum (Province of BC, n.d., 2016). Sexual health education concepts that are offered by teachers through this curriculum, include healthy and abusive relationships, body image and gender identity, consent, contraception, and STIs (Province of BC, n.d.). Despite this, 15% of BC adolescents feel they are still not learning enough about sexual health, and a further 5% feel they would like to learn more about gender identity and sexual orientation (Smith et al., 2019). In a Canadian study by Cohen et al. (2012), it was reported that although teachers support school-based health education, only portions of the sexual health curriculum are being taught. Factors influencing teachers' willingness to teach the sexual health curriculum include comfort and knowledge with specific sexual health topics, lack of sexual health education, community attitudes toward sexual education, and topics that conflict with personal beliefs (Cohen et al., 2012). These findings are echoed by a BC youth survey in 2017-18 that found a wide range of sexual education programing is provided in schools; while some include LGBTQ+ content, others provided little beyond heterosexual relationships (YouthCo, n.d.). Deficits in sexual health knowledge and teaching can lead to significant health risks, including unplanned or unprotected sex, increased risk of STIs, unintended pregnancy, and abortion (Manlove et al., 2015).

Online health information can enhance adolescent sexual health knowledge and provide a comfortable environment to explore sensitive topics in private. However, the internet also contains unscientific and poor-quality health information that may hinder health (Tonsaker et al., 2014). Navigating online sources to find reliable information can be challenging, particularly for adolescent populations. PCPs have a greater ability to ensure adolescents have medically valid information that is communicated to fit their level of health literacy (Tonsaker et al., 2014). Despite this, a nation-wide Canadian study evaluating disadvantaged populations and providers working in the area of sexual health found that inconsistent sexual health education and limited, biased, and outdated practitioner practices are chief barriers to reproductive health (Hulme et al., 2015). Hulme et al. (2015) had several respondents reflect on the absence of unbiased and confidential providers for reproductive health services, resulting in the refusal to prescribe contraception or refer for abortion. The reluctance to prescribe often targeted specific

populations, such as adolescents, when these services conflicted with the practitioner's values and beliefs. The authors recommend specialized reproductive services, including youth clinics, and piloting internet medical consultations for rural medical abortions to address these issues (Hulme et al., 2015). Mazur et al. (2018) also argue that providing services tailored to adolescents and having employees who are friendly, respectful, and non-judgmental are essential components for adolescent-friendly sexual and reproductive health services.

What are Adolescent-Friendly Health Services?

Adolescents experience physical, emotional, and intellectual changes as well as changes in expectations, social roles, and relationships, which creates unique health needs (WHO, 2014b, 2014c). Adolescent-friendly services improve client-provider relationships and continuity of care, which are essential for reproductive health (Ambresin et al., 2013; Daley et al., 2019; Lim et al., 2012; WHO, 2009, 2012). If services fail to meet adolescent needs or make them feel unwelcome and embarrassed, adolescents will seek other types of less effective interventions (WHO, 2009). WHO (2012) states that for health services to be considered adolescent-friendly, they must be: equitable, accessible, acceptable, appropriate, and effective.

Equitability requires adolescent-friendly services for all adolescents and at the same level of care regardless of age, sex, ability or disability, social status, cultural or ethnic backgrounds (WHO, 2009). Accessibility, acceptability, and relevance highlight that these services are available to all adolescents and in ways that meet adolescent expectations and are tailored to the population's needs. Community members, including parents, should be informed of services to promote accessibility. Moreover, clinic policies need to promote non-judgmental and considerate care that is low-barrier (easily available), including drop-in appointments and materials that are easy to understand. Kuzma and Peters (2015) and the BC Integrated Adolescent Services

Initiative (BC-IYSI, 2015) recommend adolescent-friendly exam rooms, flexible clinic hours, appointment times, and walk-in appointments as methods to increase accessibility, acceptability, and appropriate adolescent health services. It is vital that healthcare providers are knowledgeable and competent to provide adequate and effective care for adolescents (WHO, 2009). The Canada Health Act (1985) supports these five tenants of adolescent-friendly health services listed by the WHO (2012), advocating that Canadian healthcare should abide by five principles: the provision of publicly provided services, comprehensive, universal, portable, and accessible to all individuals.

In recent years, BC has made significant efforts to provide more adolescent health services. In a policy framework released by the Province of BC (2016), the Ministry of Health advised the transformation of a health system focused on acute care, calling to establish integrated, comprehensive, and "wrap around" community-based services. This type of service is essential for adolescents, as noted in the BC-IYSI report in 2015, stating integrated health services build on health determinants, improving adolescent resilience and wellness. The report also proposes making services more accessible through locations near services commonly accessed by adolescents or through non-traditional access points, including educational sites. The province acknowledges that communities, health authorities, school boards, ministries, families, and adolescents need to work together to find positive ways to affect this population's health and well-being (Province of BC, 2016). However, the province also emphasizes the importance of trialling innovative programs and evaluating and demonstrating success before these programs are expanded to other communities (Province of BC, 2016).

Adolescent Health Services

Adolescent health services are commonly provided through community health centres and private practices, including family medicine clinics. PCPs strive to address the basic needs of health promotion, illness, and injury prevention, and diagnose and treat injuries and illnesses (Government of Canada, 2012). There are various sexual health services across BC, including adolescent-directed services both on and off school campuses. Most health clinic models involve comprehensive primary health care providing a variety of services. These services all attempt to respond to a variety of calls for action concerning adolescent health access.

History of Adolescent School-Based Health Services in BC

Historically, BC school health has mostly been a public health nurse (PHN) role, which began in the early 1900s with the School Medical Inspection Act (Green, 1984). The act stressed the need for adolescent health and provided one doctor's medical check-up to every adolescent in the province on an annual basis with PHN assistance. Green (1984) states that the PHN role quickly expanded to include independent screening for health and behavioural issues, controlling communicable and other contagious diseases, and providing health teaching within schools, including sexual and reproductive health (Green, 1984). The PHN role also extended to the home to provide health information and health guidance for families as a whole. PHN roles varied based on school board and medical inspector wishes and priorities identified by the PHN, allowing services to be tailored to each individual, family, and community. Since then, the PHN role has changed significantly, including removing PHNs from providing sexual health education in schools (Kirk, 2020), a service that supported adolescents in developing reproductive and sexual health knowledge. A BC-based study found that PHNs felt they lacked support, autonomy, and flexibility in practice, eroding PHN control, professionalism, and school relationships (Kirk, 2020). The author suggests that provincial and organizational changes have altered the planning, funding, and delivery of PHN services, reducing and, in some cases, eliminating PHN programs, making it difficult to anticipate and respond to local health issues. A study of Vancouver school reintegration of PHNs into high schools illustrates the need for improved adolescent school health services, with one principal stating:

...now that she's [the PHN] here, you realize that you're probably just scratching the surface of our population here. Like her day is filled with students coming before school and staying after school here. I could probably double her time here and have her not sit around twiddling her thumbs. So it's just now you kind of go, oh, gees, now that you know that demand---it's hard not to justify wanting to advocate for more because you feel as though that would be good and appropriate use. (Saewyc et al., 2014, p.18)

School-Based Health Clinics

Schools are an innovative method for adolescents facing health barriers to receive needed health services directly and efficiently (Yau & Newton, 2013). SBHCs are defined as a clinic "that is located in or near a school facility that is organized through school, community, and health provider relationships and provides primary health services to adolescents provided by primary care providers and other health professionals" (Social Security Act, 2018). For this review, SBHCs are defined as clinics that provide health services to adolescents aged 13-18. Although SBHCs typically offer comprehensive health services, this integrative review will focus on sexual and reproductive health.

While there is very little literature regarding SBHCs in Canada, within the United States, the total number of SBHCs has doubled over the last two decades, with a total of 2,584 SBHCs in 2018, which provide services to adolescents beyond the student population, including those

not attending school (Love et al., 2018). It is important to recognize that while school and health systems in the USA differ from those in Canada, the population, interventions, and health outcomes seen in the USA SBHCs are also relevant to Canadian adolescent populations. The WHO Global School Health Initiative (2017) stresses that school health programs must address equity issues and determinants of health and well-being. Health equity is an integral part of health care access and is defined as the absence of imbalanced and avoidable or remedial health disparities among socially, economically, demographically, or geographically defined population groups (WHO, 2020). School health clinics provide low-barrier access to birth control, STI testing, mental health support, and lifestyle counselling provided by various health practitioners, including doctors, nurse practitioners, public health nurses, social workers, and counsellors (Daley & Polifroni, 2018; Moradi, 2018). These services are provided in both the USA and Canadian SBHCs and have similar implications for risk behaviours and contraception use (Daley & Polifroni, 2018; Moradi, 2018; Shaw et al., 2016). Love et al. (2019) further indicate that 77% of schools with access to SBHCs receive government financial assistance (Medicaid) as they have high numbers of low-income families, thereby serving adolescent populations at the highest risk of poor health (Love et al., 2019). Shaw et al. (2016) also suggest that Canadian schoolbased health focuses on lower socioeconomic areas and those served by social assistance programs, similar to the USA's publicly funded Medicaid program. Love et al. (2019) found that placing SBHCs in areas of greatest need improved health equity.

According to Love et al. (2018), SBHCs work in various models, including in mobile locations or fixed sites on a school campus or clinics linked to the school but located near a school campus, as well as telehealth. Community needs and available resources determine services at each clinic. Some SBHCs prescribe and provide contraception, while other clinics refer out for these services. This review will consider various sexual and reproductive delivery models and approaches, including critical components such as confidentiality, developmentally appropriate education, STI testing and treatment, provision of contraception including hormonal and non-hormonal contraception, pregnancy testing, and reproductive health exams (Santa Maria et al., 2017). Although this integrative review focuses specifically on sexual and reproductive health, a holistic view of adolescent health must be considered as mental and physical health are interconnected with sexual and reproductive health.

Current Adolescent Health Services in BC

There are various sexual health services across BC, including adolescent services both on and off school campuses. Most health clinic models involve comprehensive primary health care and provide a variety of services. These services respond to various calls to action on adolescent health access and equity.

Primary Care Providers. In accordance with the Canadian Paediatric Society (2020), most adolescents see family practitioners through community clinics for ongoing health care. Even so, a 2014 study found that one-third of all adolescents do not have reproductive health included in their health maintenance visits (Alexander et al., 2014). When reproductive health does arise, only 3% of the appointment time is dedicated; however, conversations last, on average, only 40 seconds (Alexander et al., 2014). Family practitioners list several barriers to wholesome adolescent reproductive health maintenance, including lack of time, confidence, follow-up services, complexity of issues, and concerns regarding adolescent comfort (Burechailo & Collins, 2016).

Foundry Network. The Foundry Network resulted from a proposal entitled: *Transforming Access to Health and Social Services for Transition-Aged Adolescents*.

This proposal called for the creation of health and social services throughout BC to provide adolescent and family services to individuals aged 12-25 years with mental health disorders (Foundry, 2018). The network proof of concept involved five health centres and found that nearly half of respondents surveyed stated they would not have accessed services elsewhere in the absence of a Foundry. Initially, the northernmost site was in Prince George; however, the network has since expanded to ten sites with one site further north than Prince George and more proposed (Foundry, n.d.). Even so, Foundry sites are only located in larger cities and regional hubs throughout BC, limiting adolescent access because of cost and transportation. Foundry Network clinics' goal is to transform adolescent health care through integrated adolescent service centres that provide a "one-stop-shop" setting for health services, including primary care (physical and sexual health), mental health and substance use services, social services, and peer support. Furthermore, these centres link to schools, communities, and social service organizations, easing adolecent's transition to adult services. Adolescents reported that these services were easy to access and had an adolescent-friendly environment (Foundry, 2018). The proof of concept also found that integrated care has significant benefits and warrants more integrated care initiatives for the adolescent population (Foundry, 2018).

Options for Sexual Health. Options for Sexual Health is a non-profit society that provides sexual health services to over 60 locations across BC. The organization supports sexual health for all people, providing inclusive sexual and reproductive health care, information, and education (Options for Sexual Health, n.d.). The clinics are staffed by an array of health providers, including nurses, doctors, and trained volunteers. Services include low-cost contraception, STI screening, cervical cancer screening, pregnancy testing, sexual health counselling, and general sexual health information (Options for Sexual Health, n.d.). However, many communities remain underserved by restricted operating hours or are without clinics, with some clinics only operating four hours a month (Options for Sexual Health, n.d.).

SBHC in BC. Throughout BC, there are several SBHCs, including a clinic at Salmon Arm Secondary School that provides services to adolescents one day a week, and another at Nechako Valley Secondary School in Vanderhoof, providing weekly clinics to adolescents in this rural community. Furthermore, the South Island Division of Family Practice is actively involved in opening SBHCs, with three SBHCs open in this area. The John Barsby Secondary School Wellness Centre in the Nanaimo Lady Smith School District was their first endeavour, opening in 2016 in partnership with Island Health, First Nations community organizations, and other community groups (Moradi, 2018). This clinic is multidisciplinary, including nurses, child adolescent mental health workers, social workers, counsellors, and PCPs (Kenning & Devesa, 2016). Public health nurses provide pregnancy testing, low-cost birth control, and emergency contraception, while PCPs operate at a full scope, providing diverse services including assessment, diagnosis, and specialty referrals. The clinic is open four days a week, offering operating hours during and after school, Monday to Friday (Kenning & Devesa, 2016). These services complement other adolescent-friendly services within BC.

This chapter has discussed the purpose of this integrative review and explored the main concepts involved to provide a background and support its subsequent stages (Torraco, 2016). The following section will discuss the methods used to select the articles included in this integrative literature review and answer the question: *Can sexual and reproductive health care services delivered to adolescents within a high school-based primary care clinic improve BC adolescent sexual and reproductive health?*

Chapter Three: Literature Search Methods

An integrative literature review is undertaken to examine, critique, and synthesize the literature on a specified topic, organize current knowledge, and propose new perspectives and understanding (Torraco, 2016). This chapter will explore the research methodologies in this review, as guided by Torraco (2016). Torraco (2016) maintains that methods must be clearly described, including how the literature was selected, databases and the key terms used, literature inclusion or exclusion criteria, and literature analysis methods. This chapter will discuss these items in detail and expand on the analysis tool used, the Critical Appraisal Skills Program (CASP) tool.

Database Selection and Search Terms

The search for current, 2010-2020, peer-reviewed articles was conducted using the University of Northern British Columbia online library. Databases that were searched included CINAHL Complete, Medline (EBSCO), PubMed, and Women's Studies International. CINAHL Complete and PubMed have been utilized as they are large databases and contain current nursing and allied health literature. Medline using EBSCO was selected as a reliable source of full-text resources for medical journals. As pregnancy is intrinsically a gendered issue, the women's studies database: *Women's Studies International* was also searched. A focused search of Google Scholar was completed to include a variety of article types, including gray literature. In addition to database searches, resources were chosen from graduate study course work and literature reference lists. Each database was searched with similar terms; however, terms varied slightly due to the key terms utilized by each database. Boolean operators AND / OR were used to combine search terms. The search process began with brainstorming alternate phrases for key search terms, including "adolescent," "teen pregnancy," "health promotion/services," and "school health" to obtain a broad search. The expansion of alternate phrases was aided by using "suggested subject terms" in databases and exploding them when applicable. Additional search terms were gathered by using subjects linked to articles found while searching the databases. Combinations of specific search terms such as: "sexual health" and "adolescent health services" resulted in severely limited results (less than 20); therefore, a broader search strategy was utilized.

CINAHL Complete, a database containing nursing and allied health publications dating back to 1937, served as the literature search's starting point. CINAHL was searched using CINAHL headings, including "adolescent medicine," "adolescent health services," "pregnancy in adolescence," "preventative healthcare," and "sexual health," as well as other variables and key terms (non-CINAHL headings). This search produced 316 articles before exclusion criteria were applied.

The Medline using EBSCO was searched using MeSH headings and key terms (non-MeSH headings) with similar search terms used in the CINAHL database. Search terms included "adolescent," "school health services," and "sexual behaviour," resulting in a total of 29 sources. PubMed, a digital archive for life sciences literature at the National Institutes of Health, is a free and unrestricted source for health literature. This database has a unique search tool that generates comprehensive searches by enabling the searcher to enter key terms or concepts. The database then utilizes multiple tools and applies MeSH headings and key terms (non-MeSH headings) to produce a search. PubMed was searched using the term: "school based health clinics and adolescents and reproductive and sexual health," the database then generated several related search terms used to obtain articles. The PubMed search-algorithm produced 323 articles. The

Women's Studies International database combines six databases and provides sources for women's studies literature. The database was searched using key terms as no specific headings were available to search this database and led to a total of 1,979 articles. Finally, Google Scholar was searched using the terms: "school-based health clinics" and "pregnancy prevention" and "adolescence" resulting in 107 articles within the date range described in the inclusion criteria. A full summary of the search process can be reviewed for each database in Appendix A.

The process of excluding and including literature is also represented in a PRISMA flow chart (Figure 1). One reviewer completed the literature analysis for inclusion, which began with removing duplicate articles and reviewing abstracts. A total of 18 articles were selected for the final full-text review, with 10 meeting selection criteria for inclusion in this integrative review. Articles were excluded if they did not meet inclusion criteria, if they were unrelated to the research question, or had an inadequate quality of evidence as assessed using the CASP analysis tool.

Figure 1

Prisma Diagram



Inclusion and Exclusion Criteria

The search was focused by applying inclusion and exclusion criteria. Articles were restricted to the English language, and adolescent age was set to 13-18 years as it is the accepted age range in several search databases. Searches were further restricted to industrialized countries, as non-industrialized populaces are less comparable to the Canadian population and challenges experienced concerning social determinants of health. Search results were further limited to articles dated between 2010-2020 and peer-reviewed literature to ensure current and evidence-based research. A full summary of the inclusion and exclusion criteria is provided in Table 1.

Table 1

Inclusion and	Exclusion	Criteria j	for	Research	h A	lrticl	e Sei	lectior
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Inclusion Criteria		Exclusion Criteria			
•	Published between 2010-2020	•	Published before 2010		
•	English Language	•	Not published in English		
•	Reported data from Population ages 13-18 years	•	Exclusive focus on STIs		
•	Human Subjects	•	Editorials, press releases, opinion articles		
•	U.S.A, Canada, Europe, Australia, New Zealand	•	Brazil, Uganda, South Africa		
•	Peer reviewed	• Family-based education, school-based curriculums, or peer education			
		•	Mental health focus		
		٠	Unpublished manuscripts		
		•	Expert opinion reviews		

Critical Analysis

Torraco (2016) stresses that critical analysis is designed to deconstruct literature into basic elements and lays the foundation for critiquing articles. Critical analysis functions to identify the strengths and weaknesses of literature and expose knowledge taken for granted to help develop a more complete sense of the topic (Torraco, 2016).

The quality of evidence was evaluated using the CASP checklist tool. This tool provides a standardized method to assess the trustworthiness, results, and relevance of studies to the research question (CASP, 2020a). CASP checklists provide a series of questions that screen each article for applicability to current research, as well as assess the research design, data collection, analysis, and implications of outcomes (CASP, 2020b). Utilizing a three-point rating system established by Feder et al. (2006), each article's scores have been calculated (also see Duggleby et al., 2012; Norhayati et al., 2015). Each question in sections B and C of the CASP checklists is provided with a score between 1-3. A score of 1 (weak) is assigned to questions with poor explanations of the issue, including where, when, or how data was collected. A score of 2 (moderate) is applied for each question that addresses the issue but does not fully answer the question. Finally, a score of 3 (strong) is assigned to questions where the article provides broad justification and explanation of the issue. A total of 24 or 36 points could be assigned to each article, as CASP checklists and the number of questions varied based on the type of research. Table 2 shows the critical analysis CASP rating and quality rating of each citation.

Table 2

Author/Date	Title	CASP Rating
Bersamin et al. (2018)	Oregon school-based health centers and sexual and contraceptive behaviours among adolescents	29/36 Good Quality
Fisher et al. (2019)	Provision of contraception in New York City school-based health centers: Impact on teenage pregnancy and avoided costs, 2008- 2017.	25/36 Good Quality
Daley & Polifroni (2018)	Contraceptive care for adolescents in school-based health centers is essential!": The lived experience of nurse practitioners	21/24 High Quality
Daley et al. (2019)	The essential elements of adolescent-friendly care in school-based health centers: A mixed methods study of the perspectives of nurse practitioners and adolescents	20/24 Good Quality
Minguez et al. (2015)	Reproductive health impacts of a school health centre	26/36 Good Quality
Patel et al. (2016)	Postpartum teenagers' views on providing contraception in school- based health clinics	24/36 Good Quality
Sabharwal et al. (2018)	Examining Time to Treatment and the Role of School-Based Health Centers in a School-Based Sexually Transmitted Infection Program	31/36 High Quality
Shaw et al. (2016)	Teen clinics: Missing the mark? Comparing pregnancy and sexually transmitted infections rates among enrolled and non-enrolled adolescents	31/36 High Quality
Knopf et al. (2016)	School-based health centers to advance health equity: A community guide systematic review	20/24 Good Quality
Ran et al. (2016)	Economic evaluation of school-based health centers: A community guide systematic review	21/24 High Quality

CASP Rating and Quality of Literature

A literature matrices in Appendix B have been provided to help organize articles and visually represent each article's main components, including sample, key findings, and weaknesses and strengths. Torraco (2016) suggests that literature matrices can help organize article key concepts and increase the readers' understanding of the literature and strengthen the author's findings. This chapter presented the methods used to search, select, and analyze
literature for this integrative review. In the following chapter, data analysis will continue by comparing related ideas in the included articles and identifying themes.

Chapter Four: Findings

Through an integrative literature review process guided by Torraco (2016), the question: *Can sexual and reproductive health care services delivered to adolescents within a high schoolbased primary care clinic improve BC adolescent sexual and reproductive health?* was developed and explored. As discussed in chapter three, a systematic search and critical analysis of literature were completed using CASP checklist tools. Upon completion of this process, 10 relevant articles were chosen as they discussed the specific intervention and population presented in the research question. Critical analysis of each study included in this review resulted in common patterns; this chapter will synthesize this data and present themes from the literature related to SBHC effectiveness.

Review of the Literature

The systematic search identified a limited quantity of high-quality literature on SBHCs. Moreover, Canadian sources were not well represented. Despite this, eight primary studies and two systemic reviews relevant to the BC context were included in this integrative review of SBHC services. The primary studies included quasi-experimental studies (n=6; Bersamin et al., 2018; Fisher et al., 2019; Minguez et al., 2015; Patel et al., 2016; Sabharwal et al., 2018; Shaw et al., 2016), qualitative studies (n=1; Daley & Polifroni, 2018), mixed methods studies (n=1; Daley et al., 2019). Of these, only one study was conducted in Canada (Shaw et al., 2016), the remaining seven were completed in the USA (Bersamin et al., 2018; Daley & Polifroni, 2018; Daley et al., 2019; Fisher et al., 2019; Minguez et al., 2015; Patel et al., 2016; Sabharwal et al., 2018). The systematic reviews (n=2) were both completed in the USA and explored the economic costs and benefits of SBHCS (n=1; Ran et al., 2016) and educational and health outcomes of SBHCs in disadvantaged adolescents (n=1; Knopf et al., 2016). The primary studies included in this review investigated adolescent contraceptive use (n=3; Bersamin et al., 2018; Fisher et al., 2019; Minguez et al., 2015), use of reproductive health services (n=1; Minguez et al., 2015); impact on STI, pregnancy, birth and abortion rates (n=3; Fisher et al., 2019; Sabharwal et al., 2018; Shaw et al., 2016), provider and adolescent perceived perceptions and priorities of SBHC care (n=3; Daley & Polifroni, 2018; Daley et al., 2019; Patel et al., 2016), and health care costs associated with SBHCs (n=1; Fisher et al., 2019). Two of the primary studies compared lower-income and minority populations with higher socioeconomic status students (Bersamin et al., 2018; Shaw et al., 2016).

CASP appraisal and quality assessment found the literature consisted of predominantly "good" quality articles (n=6; Bersamin et al., 2018; Daley et al., 2019; Fisher et al., 2019; Knopf et al., 2016; Minguez et al., 2015; Patel et al., 2016), with the remaining articles "high" quality (n=4; Daley & Polifroni, 2018; Sabharwal et al., 2018; Ran et al., 2016; Shaw et al., 2016). Literature matrices in Appendix B provide a full overview of the key elements of the included literature.

Literature Themes

Whittemore and Knafl (2005) argue that data analysis requires a constant comparison process to examine literature to identify patterns, themes, and relationships. To strengthen the organization, facilitate data analysis, and the development of topics, matrices were used for article information, including sample, methods, and outcomes. The data was then organized into types of research, and similarities in data were compared to support the development of topics. The literature analysis found a lack of consensus on SBHC services, making it difficult to compare the literature. More rigorous research on SBHC effects and outcomes is recommended. Even so, the literature suggests that SBHCs can increase overall adolescent health and reduce risky health behaviours. Through the analysis process, the following themes were identified:

- 1) Stakeholder priorities and barriers to school-based reproductive health services
- 2) SBHC effects on reproductive health outcomes related to
 - a. Contraceptive use
 - b. Pregnancy/birth and abortion
 - c. STI and high-risk behaviours
- 3) SBHC sexual and reproductive health services health equity and costs

The remainder of this chapter will focus on expanding these themes from the analyzed literature.

Stakeholder SBHC Priorities and Barriers

WHO (2012) notes that stakeholder participation in the development, implementation, and ongoing evaluation of health services can improve systems to meet population needs. Stakeholders can include the Ministry of Health officials, health professionals, local organizations, and adolescents themselves. Two studies from the USA discuss stakeholder priorities and barriers, including a qualitative study from a PCP perspective (Daley & Polifroni, 2018) and a mixed-method study investigating PCP and adolescent perspectives (Daley et al., 2019).

Daley et al. (2019) found, through consensus (0.75+), that SBHC priority elements were confidentiality, accessibility, flexibility, respectful staf and a comfortable atmosphere, diverse service provision, and school-clinic relationships. The PCPs deemed SBHCs an ideal setting to protect privacy and confidentiality, declaring that adolescents felt comfortable, accepted, and cared for, and the on-campus location made it easier for adolescents to access follow-up appointments (Daley & Polifroni, 2018). Daley et al. (2019) discovered in adolescent focus

groups that adolescents felt confidentiality and privacy were the most important components, followed by accessibility, respectful SBHC staff, range of services available, comfortable SBHC environment, and positive school-clinic relationships. Students indicated that the confidential relationships with SBHC clinicians and staff members facilitated open communication and increased access to reproductive services, remarking "whatever happens in Vegas, stays in Vegas - whatever happens there, stays there" (Daley et al., 2019, p.10). Minguez et al. (2015) quantified this finding in their USA population study, reporting SBHC intervention schools were more willing to access reproductive health service (80%, p<.001) when compared to schools without SBHCs (37%, p<.001). Daley and Polifroni (2018) further supported these findings on the importance of confidentiality, stressing that some adolescents declined to attend community agencies for fear of being seen by a parent or neighbour. Disrupting confidentiality can be farreaching, with the erosion of relationships extending to all health providers, not just those directly involved (Daley & Polifroni, 2018). The authors suggest that building trusting relationships eases confidentiality concerns, facilitates comfort, continuity of care and timely access to services.

Daley et al. (2019) found that adolescents valued SBHC staff efforts in maintaining user privacy. These findings are further supported by the systematic review by Knopf et al. (2016) suggesting that adolescents are generally satisfied with SBHC care, and the establishment of SBHCs that supplement, rather than replace or duplicate community services, can improve the quality and acceptability of adolescent care. Students in a study by Daley et al. (2019) presented potential insufficiencies that compromised confidentiality and privacy, including thin clinic walls and small office sizes, and suggested making clinic rooms larger to mitigate this risk. Surprisingly, none of the participants expressed reluctance to use the SBHC due to thse concerns (Daley et al., 2019).

The accessibility and comprehensiveness of onsite services were emphasized by both Daley and Polifroni (2018) and Daley et al. (2019). One PCP highlighted the importance of integrating family planning into all health encounters stating, "...if they don't need it now they may need it sometime in the future, and they will remember that we talked about birth control and that it is available here" (Daley & Polifroni, 2018, p. 370). The PCPs in this study also maintained that onsite provision of contraception was essential since adolescents had several barriers to obtaining contraception. One practitioner stated onsite provision of contraception had "taken away one of the big frustrations because I knew there were times a kid was never going to get over to the main clinic or pharmacy" (Daley & Polifroni, 2018, p.374). This finding was further confirmed by Daley et al. (2019) as adolescents in this study felt the most important health services at SBHCs were reproductive healthcare services that encompassed prescribing and dispensing medications, STI testing and treatment, and prevention education.

For adolescents, accessibility incorporated positive environmental energy, an accessible location, flexibility in appointments, and services' availability (Daley & Polifroni, 2018; Daley et al., 2019). Although not all SBHCs are located within schools, adolescents felt these clinics removed transportation barriers for themselves and their parents; furthermore, students asserted that SBHC services were provided in fast and at convenient times that did not interfere with school responsibilities (Daley et al., 2019). Knopf et al. (2019) complement these findings arguing that onsite SBHCs have added benefits, including increased parental work time, reduced childcare, transportation time and costs. SBHC providers provided flexibility in follow-up

appointments, and students felt like active participants in their health decisions, increasing adolescent satisfaction and access to health services.

Student participants reported feeling comfortable, respected, and listened to by clinic staff and valued the consistent relationships they did not find from other community providers (Daley et al., 2019). The authors concluded that trusting and comfortable relationships were essential to the adolescent experience of SBHC and had a significant impact on willingness to engage in services, continuity of care, and adolescent perception of privacy and confidentiality (Daley et al., 2019). Daley and Polifroni (2018) also prioritized the respectfulness of staff and clinic environments, observing that counselling and supporting the adolescent's reproductive health decisions were priorities for PCPs at every visit. Practitioners stressed the significance of "being an askable provider" and "gaining a sense of trust," thereby facilitating access to comprehensive services throughout high school (Daley & Polifroni, 2018, p.371).

Although the development of trusting relationships takes time, Daley et al. (2019) propose that mechanisms that enhance continuity of care and distribute control are necessary. Because adolescents have unique development needs and are moving towards independence, health services need to be tailored to increase adolescent participation. The authors advise that staff working with adolescents need training, taking into account sexual and reproductive health, to tailor services to adolescents' diverse needs in a way that will involve them in care (Daley et al., 2019). Additionally, more research is essential to determine the effects of appointment times on adolescent-friendly care, the delivery of anticipatory guidance, and health outcomes.

Despite the facilitators to reproductive health, practitioners also pointed out barriers to the provision of services in SBHCs (Daley & Polifroni, 2018). PCPs felt that stakeholder misunderstandings regarding adolescent reproductive health restricted the prescribing and dispensing of contraception. For example, it is a common concern and misunderstanding of parents, schools, and communities that contraceptive services increase adolescent promiscuity and STIs (Daley & Polifroni, 2018). In addition, stakeholders, including parents, may not be familiar with the extent of SBHC services, further facilitating resistance. Daley and Polifroni (2018) remind us that an effective mechanism for building trust with the community and key stakeholders is to listen to and address concerns by supporting responses with appropriate evidence. From an adolescent point of view, students felt school policies and a lack of knowledge about SBHCs hampered their accessibility to reproductive health services (Daley et al., 2019). Students reported that not all school staff were well informed about their SBHC and available services, creating access barriers (Daley et al., 2019).

Daley et al. (2019) argue that health care providers need to advocate for adolescent sexual and reproductive health rights, the provision of these services, and help eliminate policies and procedures that impede adolescent access. For example, students reported having to carry a hall pass if they wanted to go to the SBHC in a study by Daley et al. (2019), which obstructed clinic access. Posting of flyers and signs around the school and advising users of SBHCs to tell friends about SBHC services were listed as ways to increase student knowledge of the clinics (Daley & Polifroni, 2018; Daley et al., 2019). To address school staff knowledge and stakeholder buy-in and engagement, the authors suggested inviting teachers to tour the clinic and attending faculty meetings to educate them on available services. Overall, these results suggest that SBHCs can provide essential adolescent-friendly care elements, including accessibility, confidentiality, and the development of trusting relationships.

Reproductive Health Outcomes

Six primary studies examined reproductive health outcomes including contraceptive use, pregnancy, birth, abortion and STI rates, and risk behaviours (Bersamin et al., 2018; Fisher et al., 2015; Minguez et al., 2015; Patel et al., 2016; Sabarwal et al., 2018; Shaw et al., 2016).

Contraception. Providing contraception at SBHCs enhances access to services in an adolescent-friendly manner, strengthening prescribing, dispensing, and the effective use of contraception (Bersamin et al., 2018; Knopf et al., 2016; Minguez et al., 2015). Multiple studies show that school health clinics have higher contraception rates (Bersamin et al., 2018; Daley & Polifroni, 2018; Knopf et al., 2016; Minguez et al., 2015). Moreover, Minguez et al. (2015) and Fisher et al. (2019) suggest that contraception with lower failure rates, such as the patch, pill, ring, injectables and LARCs, were more likely to be used by students with access to SBHCs.

In a USA study by Minguez et al. (2015), the use of hormonal contraception was higher in the intervention school (with an SBHC; 70%) compared to those in the non-intervention school (without an SBHC; 26%). Male users of SBHC at the intervention school were more likely to use condoms (70%, p<.000) versus nonusers (54%, p<.026) and comparison school students (52%, p<.026). Additionally, 80% of females and 41% of males who used SBHCs reported that SBHCs were their usual source of contraception (Minguez et al., 2015). Bersamin et al. (2018) reported comparable results with an increase of more than 30% in contraceptive use in SBHC schools than schools without SBHCs. Furthermore, the systematic review by Knopf et al. (2016) included two studies that found onsite contraception increased contraceptive uptake and reduced adolescent pregnancy rates.

Pregnancy, Births and Abortion. The provision and correct use of contraception directly influences pregnancy, birth, and abortion rates. In a cross-sectional study of postpartum

adolescents, most participants felt that contraceptive education was not sufficient for pregnancy prevention (Patel et al., 2016). In this study, 82% of the postpartum adolescents favoured having contraceptive services within school clinics. However, 18% felt such services would not have changed their pregnancy outcome (Patel et al., 2016).

Fisher et al. (2019) found that the provision of onsite contraception at SBHCs contributed to 28% of overall city decline of adolescent pregnancy (n=3,667), 28% of overall city decline of births (n=1,206), and 26% overall city decline in abortions (n=2,131) between 2007-2015, thereby decreasing associated health care costs. Other authors also reported reduced pregnancy and childbirth numbers with SBHCs (Knopf et al., 2016; Ran et al., 2016; Shaw et al., 2016). A large Canadian study (n= 181,444) examining pregnancy rates in adolescents not enrolled in school and students enrolled in school with and without SBHCs (Shaw et al., 2016). The authors found that the highest pregnancy rates occurred in non-enrolled adolescents and low-income areas (Shaw et al., 2016). Adolescents not enrolled in school represented 55% of total pregnancies, with a rate of 87.9 per 1,000 females. Students without SBHCs were often located in higher-income areas and had the lowest pregnancy rates (31.8 per 1,000 females). Although schools with SBHCs had a pregnancy rate of 42.8 per 1,000 females, they also accounted for higher percentages of low-income quintile geographical areas than those without SBHCs. Shaw et al. (2016) argue that although SBHCs reach high-risk populations, they do not adequately address unenrolled students' health inequities. The authors suggest additional strategies need to be considered to support these individuals.

STIs and Risk Behaviours. In a retrospective cross-sectional study examining students who tested positive for an STI (n=540) through a school-based education and screening program, Sabharwal et al. (2018) determined that onsite STI treatment was faster than if adolescents were

treated elsewhere. The diagnosis and treatment rate has implications for individual health outcomes, including fertility and STI transmission to other individuals. The study found that the average time to treatment at an SBHC was 17 days. Conversely, treatment from a community STI clinic was 28 days, and treatment elsewhere took an average of 47.5 days (p=<.0001). Although this study did not examine the reasoning behind the differences in treatment times, the authors suggest that the SBHC location and ease of access contributed to the reported results. Additionally, this assertion matches those seen by other studies discussed earlier in the chapter (Daley & Polifroni, 2018; Daley et al., 2019).

Minguez et al. (2015) investigated the impact of SBHCs through a quasi-experimental cross-sectional research design exploring the effect of SBHCs on access, quality of services and student use. The authors found that SBHC groups demonstrated an increase in sexual health counselling, including contraception, compared to the control group, thus reducing risk behaviours. Moreover, it was concluded that SBHCs improved HIV and STI knowledge in these students compared to participants without access to an SBHC, suggesting that onsite clinics can decrease the risk of acquiring and transmitting STIs (Minguez et al., 2015). However, the data collected in this study need to be interpreted with caution since the attrition rate was substantial in both intervention (22.7%) and control groups (32.8%), exposing the study to bias and limiting generalizability. In keeping with the results found by Minguez et al., 2016). However, Shaw et al. (2016) also examined STI rates among non-enrolled students finding this population had the highest rates. Of all STIs reported in this study, 48% were in students not enrolled in school (Shaw et al., 2016). Taken together, these studies outline that SBHCs have positive effects on reproductive health outcomes and the reduction of risk behaviours.

Health Equity and SBHC Costs

Several of the included studies examined health equity and costs associated with SBHCs (Bersamin et al., 2018; Fisher et al., 2019; Ran et al., 2016; Shaw et al., 2016). Bersamin et al. (2018) and Shaw et al. (2016) highlight that SBHCs are often funded in areas with a greater number of high-risk and socioeconomically disadvantaged students, suggesting that SBHCs are a successful strategy for targeting reproductive health in populations at most need. This claim is further supported through the systematic review by Knopf et al. (2016) arguing that SBHCs can improve health equity because lower socioeconomic populations are the most common users of SBHC services. However, Shaw et al. (2016) state that SBHCs within high schools do not reach high-risk adolescents not enrolled in school. The authors advise that SBHCs can reduce the number of non-enrolled students by increasing academic outcomes, reducing dropout rates, and further recommend targeted health services for prevention and intervention in this population. Shaw et al. (2016) also suggest that working with other organizations, along with SBHCs to increase health services and continuity of care, will have a more significant impact on health at the population level.

In the USA, Medicaid and collaborations with various agencies for service supports and grants are often utilized as funding mechanisms at SBHCs (Daley & Polifroni, 2018; Fisher et al., 2019; Ran et al., 2016). This system of funding can also be seen within the Canadian system, as discussed in this paper's background. For students on Medicaid, obtaining and using contraception is subsidized; however, additional costs associated with copayments or fees continue to create barriers. Calls for free contraception, as discussed in chapter two, are reiterated by Daley & Polifroni (2018), with one practitioner expressing, "someday maybe we

will give it away for free or the laws will change so there will be no copay for birth control" (p. 374).

Academically, SBHCs improve adolescent health status and health equity; however, economic implications need to be considered when providing these services. Ran et al. (2016) completed a systematic review of SBHCs across the USA, analyzing 21 studies on the cost and benefit of SBHCs. Both start-up and operating expenses were considered, as well as avoided health care costs and productivity. The authors found a wide range of operational and start-up costs depending on renovations necessary to develop the clinic, the number of services and users and the number of hours of operation and type of clinicians on staff. The authors determined that provider costs accounted for the bulk of operating expenses (Ran et al., 2016). Despite this, it was concluded that SBHCs contribute to economic, societal, and healthcare payers (including Medicaid and patients) benefits that outweigh SBHC costs (Ran et al., 2016).

At the patient and parent level, the authors found that SBHCs avoided treatments due to health care access bariers, loss of productivity, and transportation costs. In addition, it is concluded that SBHCs contribute substantial savings to the public system. Multiple American studies identify that Medicaid, a low-income assistance program that pays for medical expenses (US Department of Health & Human Services, 2015), is commonly used by SBHC populations (Bersamin et al., 2018; Daley & Polifroni, 2018; Fisher et al., 2019; Ran et al., 2016). These program services are comparable to social assistance programs within Canada. In a New York City study, Fisher et al. (2019) determined that Medicaid covers most adolescent births and pregnancies and that SBHCs supply accessible reproductive services that avoided substantial public health and Medicaid costs. Both Knopf et al. (2016) and Ran et al. (2016) conclude that a reduction in emergency department use is also seen with SBHC services' introduction. Knopf et al. (2016) included seven articles that found SBHCs that provided a range of four or more services resulted in the most significant reduction in emergency department use (Median reduction of 25.1%). Daley et al. (2019) advise that continued research of SBHC impact on adolescent health and education is vital for the continued growth and adaptation to meet patient population needs. Data on types and numbers of nationally visited SBHCs are needed to expand and increase funding for these services (Daley et al., 2019).

These integrated review findings suggest that SBHCs can provide adolescents with appropriate reproductive health and increase adolescent involvement in health services. Despite this, strong quality research remains limited. The next step in this review is to synthesize the findings to generate new ways of thinking (Torraco, 2016). Chapter five will discuss recommendations for future practice and research, and explore limitations and biases that may impact this integrative review.

Chapter Five: Discussion and Recommendations

Torraco (2016) contends that literature synthesis builds upon critical analysis to create new ways of thinking. This chapter will discuss the themes discovered in this paper's findings section regarding the research question: *Can sexual and reproductive health care services delivered to adolescents within a high school-based primary care clinic improve BC adolescent sexual and reproductive health?* Reducing barriers to adolescent sexual and reproductive health is complex; however, the literature on SBHCs has been applied to in the cotect of BC populations and proposes practice recommendations for primary care providers. Finally, areas of future research and limitations of the literature review will be offered.

Synthesis of Findings

Findings from the review of 10 articles, as presented through three major themes, found that SBHCs improve adolescent reproductive and sexual health, prevent STIs, and increase health equity. The three themes found in Chapter four were:

- 1) Stakeholder priorities and barriers to school-based reproductive health services
- 2) SBHC effects on reproductive health outcomes related to
 - a. Contraceptive use
 - b. Pregnancy/birth and abortion
 - c. STI and high-risk behaviours
- 3) SBHC sexual and reproductive health services health equity and costs

SBHCs and Sexual and Reproductive Health Access

The findings of this integrated review show that adolescents face various obstacles when accessing health services. The provision of adolescent-friendly services, including through SBHCs, can reduce these barriers and increase health access and health professional interaction.

Many elements affect access to services, including confidentiality, clinic staff, the range of services offered, transportation limitations, and clinic hours of operation (Daley & Polifroni, 2018; Daley et al., 2019; Knopf et al., 2016). Health services that are accessed by adolescents in BC are not free from these barriers. As noted in this paper's background, access to Options for Sexual Health clinics is limited by hours of operation and the lack of clinics in many communities. Foundry Network clinics offer inviting environments for adolescents; however, access to these clinics is often limited due to barriers associated with transportation. Community clinics may be limited, particularly in smaller communities, by the risk of being seen by family or family friends in waiting rooms. Moreover, community clinics often do not adapt services to the unique needs of adolescents. PCP training regarding these needs can increase the practitioner's ability to provide effective care and decrease the chance of missing important adolescent developmental health needs (Daley & Polifroni, 2018; Daley et al., 2019; Shaw et al., 2016).

Confidential and respectful clinic staff as well as shared decision-making is essential to adolescents and can determine if they engage in sexual and reproductive health services (Daley & Polifroni, 2018; Daley et al., 2019). Discussing psychosocial elements, including home, education and employment, peer group activities, drugs, sexuality, and suicide and depression during clinic appointments can increase communication and feelings of respect and address developmental needs. Having a presence inside the school beyond the clinic can help to build trusting relationships and enable students to get to know practitioners. Reproductive health is a crucial element of adolescent health; however, it also has associations with many other health components, including mental and physical health. Adolescent health clinics utilized as primary medical homes increase the centers' ability to provide provider continuity, supportive and respectful relationships, and comprehensive services. This idea of "wrap around" service is also advocated for by Canadian literature in the background of the paper. Furthermore, the provision of holistic, comprehensive care removes equity and access obstacles adolescents encounter for all health services.

Finally, findings in this review establish that the clinic environment and stakeholders have considerable impacts on the provision of sexual and reproductive health services (Daley & Polifroni, 2018; Daley et al., 2019; Ran et al., 2016). Misconceptions about adolescent sexual and reproductive health can limit services; conversely, partnerships involving community members, agencies, adolescents, and parents can inform service needs and improve access. Education and collaboration with stakeholders are important to increasing adolescent services. Concerns regarding the confidentiality and competence of providers are raised in the background and findings of this paper. Providing provider education can support PCPs in contraceptive prescribing and the provision of adolescent care. Furthermore, linkages with community agencies and school staff can be sources of referrals, and partnerships with community health services can ensure continuity of care by providing accessible health services to adolescents, even when the SBHC is closed. Moreover, SBHCs that are jointly operated through partnerships between hospitals, schools, and partner agencies increase the range of expertise and resources. This stakeholder involvement also aids in providing equitable, accessible, acceptable, appropriate, and effective services for adolescents, as discussed in the background.

SBHC funding is often a concern; therefore, it is essential to address sustainability and financing as part of community dialogue. Moreover, to reduce barriers, clinical environments need to be developed to provide care in an adolescent-friendly manner. These barriers are unique

to each community and require evolving strategies to address issues; therefore, ongoing assessment opportunities are vital.

SBHCs and Sexual and Reproductive Health Outcomes

The review of the literature has emphasized the importance of contraceptive prescribing and dispensing at SBHCs. Multiple authors found that students were more likely to use contraception properly when they received them at SBHCs (Bersamin et al., 2018; Knopf et al., 2016; Minguez et al., 2015). The immediate provision of contraceptives has a clear impact on the likelihood of adolescents obtaining contraception. Regardless of the health access point, contraceptives must be readily available. However, contraceptive costs remain a major barrier, particularly the most effective forms of contraception, such as LARCs. This paper's background and findings sections advocate for no-cost contraception (Canadian Paediatric Society, 2019; Canadian Association of Midwives et al., 2019; Daley & Polifroni, 2018). Although the findings emphasized the importance of providing contraception at SBHCs, it also established that contraceptive misconception limits practitioner prescribing (Daley & Polifroni, 2018), reinforcing the need to engage and educate key stakeholders. Advocacy and engagement in these areas promote awareness and highlight the importance of adolescent sexual and reproductive health.

Both the Canadian and USA literature included maintain that the prescribing and dispensing of contraception in SBHCs improve adolescent health through the reduction of pregnancy, birth, and abortion rates (Fisher et al., 2019; Knopf et al., 2016; Ran et al., 2016; Shaw et al., 2016). However, the findings suggest that students not enrolled in school do not have the same level of benefit from SBHCs (Shaw et al., 2016). As discussed in the background, not all SBHCs are located at schools, and those that are, may offer services to those not attending

school, which could be a method to engage these students in health and educational services. Increased accessibility reduces the barriers to follow-up care and has significant implications for health education, risk behaviour management, and STI screening and treatment. Moreover, diversity in the provision of adolescent health services can help meet the needs of a broader range of adolescents, making the exploration of innovative options for adolescent-friendly care important.

SBHCs and Health Equity and Costs

Health equity and costs associated with SBHCs were further highlighted in the included literature and an important consideration in implementing any health initiative. SBHC services target marginalized and socioeconomically disadvantaged populations (Bersamin et al., 2018; Fisher et al., 2019; Knopf et al., 2016; Ran et al., 2016; Shaw et al., 2016). As noted in the background, these populations have the greatest sexual and reproductive risk factors and have the greatest individual gain and impact on health resources. Ran et al. (2016) reported a wide range of costs associated with the initiation and running of SBHCs. This paper's background also notes that clinic locations and services may vary according to needs and resource availability, highlighting the need for clinics to be community/population-focused. Community focus is also vital for funding, collaborations with various community partners, including school districts and health authorities, and the utilization of quality improvement initiatives to enhance SBHC sustainability. Knopf et al. (2016) and Ran et al. (2016) suggest that economic benefits of SBHCs are a result of multiple elements, including increased uptake in preventative services, contraceptive use, and prenatal care, as well as the decrease in emergency department and hospital admissions, and health risk behaviours. The reduction of sexual and reproductive risk behaviours, including adolescent pregnancy, birth, abortion and STIs, have compounding

impacts across the lifespan and society. SBHCs within these areas in BC can create the most significant cost savings for the public system.

Recommendations for Practice

Although the SBHC model does not suit all circumstances and adolescent populations, the articles cited in this review support health clinic integration of SBHCs. SBHCs are in line with Canada Health Act tenants and should be used to supplement current health services in BC to increase health care access and education as well as appropriate contraceptive use and reduce unwanted pregnancies. Furthermore, the literature supports consideration in expanding or adjusting current health services to meet adolescent health needs (Knopf et al., 2016; Shaw et al., 2016). Table 3 presents practice recommendations gathered through the analysis of literature and suggestions for implementation.

Table 2

Practice Recommendations

Recommendations for Practice	Suggestions	for implementation	Supporting Literature
Increase adolescent access to sexual and reproductive health services through adolescent-friendly environments and services and the formation of respectful, trusting staff- adolescent relationships	 Formatic greatest r Ongoing barriers t stakehold Expansic ensure ac Impleme at comm providing Impleme care and O O 	on of SBHCs in communities/schools of need through needs assessment assessment of adolescent health care hrough community needs assessment and der feedback on or adjustment of current services to dolescent-friendly environments ntation of adolescent-friendly procedures unity providers and other agencies g health services for adolescents nt strategies that encourage continuity of comprehensive services, including: Transportation supports: If the health center is not on school grounds, implement a mechanism to facilitate safe transportation from school to the health centre Linking SBHCs with other community clinics to ensure students have access to service beyond SBHC hours of operation SBHCs as Primary Care homes Offer SBHC services to student beyond those attending that school Hours of operation are to be accessible	Bersamin et al., 2018; Daley & Polifroni, 2018; Daley et al., 2019; Knopf et al., 2016; Minguez et al., 2015; Patel et al., 2016; Ran et al., 2016; Sabharwal et al., 2018; Shaw et al., 2016
		to the target population, and the	

	 provision of clinic services during times the SBHC is closed should be arranged and clearly communicated Assessment of psychosocial elements of adolescent health by utilizing a tool such as HEADSS (BCCH, n.d.) Assess sexual and reproductive health into all adolescent health visits and provide comprehensive services, including education, guidance and assessment, pregnancy testing, pre/post- natal care, contraceptive prescribing and dispensing, and STI screening and treatment 	
	 Provide patient-centred care and shared decision making by providing clear communication of educational resources and all treatment choices to reduce power imbalances Encourage adolescents to express opinions, feelings, and preferences regarding care decisions Recognize the leadership role PCPs possess; advocates for policy change that supports adolescent sexual and reproductive health, including supportive school, healthcare, and government policies. Acknowledge and adhere to professional responsibilities regarding confidentiality 	
Increased contraceptive accessibility	 Dispensing of all forms of contraception onsite/ in office SBHCs as primary care homes Recognize the leadership role PCPs possesses; advocate for policy change that supports adolescent sexual and reproductive health including supportive school, healthcare, and government policies. 	Bersamin et al., 2018; Daley & Polifroni, 2018; Daley et al., 2019; Knopf et al., 2016; Minguez et al., 2015
Community and stakeholder partnerships, engagement, and education	 Educate stakeholders (including community members) regarding the need for evidence-based adolescent sexual and reproductive services Offer stakeholders opportunities to raise concerns through public meetings Collaborate with stakeholders (including adolescents) to identify priority sexual and reproductive health needs to determine services offered in each clinic and aid in the creation of supportive policies Yearly evaluation through annual needs/resource assessments – including feedback from both clients and other stakeholders Posting flyers around the school to increase student awareness of clinic services Develop partnerships to enhance sustainability and funding Link SBHCs with community clinic to increase knowledge and 	Bersamin et al., 2018; Daley & Polifroni, 2018; Daley et al., 2019; Knopf et al., 2016; Ran et al., 2016; Shaw et al., 2016

	engagement regarding clinic services and
	changes in these services
•	Identify a colleague mentor to support
	ongoing improvements in provider
	adolescent-friendly care and contraceptive
	knowledge support

Recommendations for Further Research

The analysis of the literature presented several areas of focus that are needed to understand SBHC benefits fully. Literature included various definitions and services provided regarding SBHCs; however, research must be completed comparing more heterogeneous adolescent health services. Furthermore, better descriptive information on the components of SBHCs being evaluated and populations' attributes are required for optimal program assessment, design and targeting. The impact on hours of SBHC accessibility, service comprehensiveness and school employee relationships with the clinic will help stakeholders allocate health funds in the most effective manner. The sustainability of SBHCs within the public system is a significant concern for key stakeholders. Although several studies have shown positive economic outcomes, funding sources for SBHCs are often through grants and other precarious funding sources. Further exploration into sustainable and innovative

funding sources, such as collaborations between different sectors, including health, educational, and community partnerships, is needed. Additionally, research on the long-term effectiveness of SBHCs, including academic achievement, income, and health, can help obtain more secure sources of funding.

Additionally, much of the literature has focused on SBHCs regarding minority, lowincome and high-risk populations in urban settings and older adolescents. Studies, including more diverse populations, are needed to understand the effects of SBHCs fully. The background of this review indicated that there are several SBHCs in BC. However, only one Canadian research article was included due to a lack of Canadian literature investigating SBHC outcomes. Most of the literature found was from the USA, of which has substantial differences in their health care system, for example, private versus public insurance and contraceptive options, including implantable contraception, which is limited in Canada (Island Sexual Health, n.d.). This makes the generalizability of these results more difficult as the populations may experience differences in access and barriers. Further research is needed with a Canadian population focusing on a wide variety of ages, genders, races, and ethnicities to enhance understanding of the impacts and applicability of SBHCs in Canada. Within Canada, individuals living in rural communities generally have poorer health outcomes and socioeconomic status than urban residents (Province of BC, 2016). Rural community members face additional barriers in accessing health care, among them the scarcity of services, particularly specialized services, financial constraints, poor internet, stigma, discrimination, and concerns regarding confidentiality and transportation (Douthit et al., 2015; Province of BC, 2016). To use SBHCs in rural communities, these factors, and different models, including telehealth, need to be explored to understand their applicability and effects on health.

Research Limitations

Integrative literature reviews help guide clinicians and policymakers by providing comprehensive information from numerous studies, defining gaps in knowledge, and areas for further research. However, bias can occur at any stage of the integrative review, including study design, data collection, and analysis (Pannucci & Wilkins, 2010). Assessing researcher bias is vital to avoid nonobjectivity and provide an effective critical assessment of the findings. To help avoid these biases, the study was guided by the University of Northern British Columbia (2018) document and Torraco (2016) to support structured methods, including vital components and organizational strategies. Despite this, several limitations to the integrative review findings exist.

Gaps in Literature

As noted earlier in this paper, much of the literature is based in the USA, because of this, the internal validity of the findings based on the BC population is limited. It is important to point out that the impacts of SBHCs on sexual and reproductive health in the BC population cannot be based solely on this integrated review. Furthermore, although SBHCs should be community and population-focused, the literature lacked heterogeneity of SBHC definition, services, providers, and roles, making it difficult to compare outcomes. The quality of the literature found for this review contained various gaps and methodological deficits that could increase potential biases. Some studies included were short in duration (Bersamin et al., 2018; Minguez et al., 2015; Patel et al., 2016; Sabharwal et al., 2018), contained a small number of participants (Daley & Polifroni, 2019) or had a significant amount of attrition (Minguez et al., 2015), potentially impacting the validity of results and statistical power. Moreover, many studies were quasiexperimental and lacked randomization of participants. A purposive sample was used in two studies (Daley & Polifroni, 2018; Daley et al., 2019), raising concerns that segments of SBHC user experiences were not captured. Focus on methodological aspects, including clear sample collection, numbers, and definitions of SBHCs, services, providers, and roles in future studies, would help strengthen research results and recommendations.

Other Considerations and Limitations

The overall lack of literature reporting on the effectiveness of SBHCs on sexual and reproductive health further limited this literature review. Although this review involved a nonexhaustive search of databases, broader searches among various areas of study are needed to ensure that all data has been explored. Data synthesis bias may be diminished by using the CASP Appraisal Tool that assessed each article's level and quality, ensuring a standardized and systematic assessment.

Finally, as the sole writer of this integrative review, my personal beliefs and biases must be recognized. It is important to consider that in previous roles, I have worked with the adolescent populations most likely to benefit from SBHCs. Acknowledgement and personal reflection of how this could impact my interpretation of results has been considered throughout the research process. To limit bias, the research process has been guided by Torraco (2016), ensuring clear documentation of methodologies and the use of a standardized assessment tool (CASP tool) to help to increase objectivity and systematic evaluation. Furthermore, support from my supervisory team provided valuable quality checks and guidance throughout the research process.

Chapter 5: Conclusion

According to WHO (2009), for many sexually active adolescents, "reproductive health services, such as the provision of contraception and treatment for sexually transmitted infections, either are not available or are provided in a way that makes adolescents feel unwelcome and embarrassed" (p1). This integrative review was completed to answer the research question: Can sexual and reproductive health care services delivered to adolescents within a high school-based based primary care clinic improve BC adolescent sexual and reproductive health? The paper highlights the barriers experienced by adolescents and provides innovative evidence-informed solutions to addressing health equity and access to adolescent and reproductive health. Key findings from this integrated review found that confidentiality, provider approach, and accessibility of services significantly impacted adolescent health service access. Furthermore, SBHCs must be population and community-focused, making facilities and services provided by clinics unique to each community. The literature suggests that SBHCs can reduce access barriers and health care costs while increasing population health, especially among socioeconomically disadvantaged groups. With the ability to increase contraception use, health education, and shared health decision-making, SBHCs can help adolescents' transition into the adult role as healthy members of society. Although SBHCs would complement the current health services, stakeholder engagement and secure funding sources are needed to support this primary care model. Furthermore, research on BC populations and more rigorous research is required to realize the effects on health, education, and economic implications.

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Appendix A: Search Strategy

Search #	Search Term used	Limits applied	Number of Results	Date Searched (mm-dd-yyyy)
1	Adolescent Medicine OR Adolescent Health OR Adolescent Health Services OR School health Services OR school based health centers (keyword)	None	528,930	07-12-2020
2	Adolescence+, pregnancy in adolescence+, adolescence (keyword), teenager (keyword)	None	535,265	
3	Preventative Health Care OR Community Health services OR maternal Health service OR School Health nursing OR school health OR school health services. OR	None	301,472	
4	Sexual Health OR reproductive health OR Contraception OR Hormonal Contraception, Or Contraceptives, Oral combined OR Family planning	none	12,490	
5	1 OR 2 and 3 and 4		316	
6		Date	185 Removal of duplicates 9	

Literature Search of CINHL Complete

Literature search of Medline using EBSCO

Search #	Search Term used	Limits applied	Number of Results	Date Searched (mm-dd-yyyy)
1	Adolescent") OR (MH "Adolescent Medicine") OR (MH "Adolescent Health Services") OR (MH "Adolescent Health") OR (MH "Adolescent Health") OR (MH "Pregnancy in Adolescence") OR (MH "Students") "adolescence" (keyword), "teenager" (keyword)	None	2,072,370	07-12-2020
2	(MH "School Health Services+") OR (MH "Schools, Public Health") OR (MH "Community Health Centers") OR "school based health center" (keyword)	None	30,967	
3	(MH "Primary Health Care") OR (MH "Primary Care Nursing") OR (MH "Delivery of Health Care") OR (MH "Comprehensive Health Care")	None	168,882	
4	(MH "Sexual Behavior") OR (MH "Reproductive Behavior") OF (MH "Health Risk Behaviors") OR (MH "Family Planning Services") OR (MH "Reproductive Health Services") OR (MH "Contraception") OR (MH "Hormonal Contraception") OR (MH "Contraception Behavior") OR (MH "Sexual Health")	RNone	94,303	
5	1 and 2 and 3 and 4	None	29	
6		Date	12 No duplicates	

Literature Search of PubMed

Search #	Search Term used	Limits	Number of	Date Searched
		applied	Results	(mm-dd-yyyy)
1	School: "educational status" [MeSH Terms] OR ("educational" [All	Date	323	07-13-2020
	Fields] AND "status"[All Fields]) OR "educational status"[All	2010-2020)	
	Fields] OR "schooling"[All Fields] OR "education"[MeSH Terms]			
	OR "education"[All Fields] OR "school's"[All Fields] OR			
	"schooled"[All Fields] OR "schools"[MeSH Terms] OR			
	"schools" [All Fields] OR "school" [All Fields]			
	based: "based"[All Fields] OR "basing"[All Fields]			
	health: "health" [MeSH Terms] OR "health" [All Fields] OR			
	"health's"[All Fields] OR "healthful"[All Fields] OR			
	"healthfulness"[All Fields] OR "healths"[All Fields]			
	clinics: "ambulatory care facilities"[MeSH Terms] OR			
	("ambulatory"[All Fields] AND "care"[All Fields] AND			
	"facilities"[All Fields]) OR "ambulatory care facilities"[All Fields]			
	OR "clinic"[All Fields] OR "clinic's"[All Fields] OR "clinical"[All			
	Fields] OR "clinically"[All Fields] OR "clinicals"[All Fields] OR			
	"clinics"[All Fields]			
	adolescent: "adolescences" [All Fields] OR "adolescency" [All			
	Fields] OR "adolescent" [MeSH Terms] OR "adolescent" [All Fields]			
	OR "adolescence" [All Fields] OR "adolescents" [All Fields] OR			
	"adolescent's"[All Fields]			
	reproductive: "reproduction"[MeSH Terms] OR "reproduction"[All			
	Fields] OR "reproductions" [All Fields] OR "reproductive" [All			
	Fields] OR "reproductively" [All Fields] OR "reproductives" [All			
	Fields] OR "reproductivity" [All Fields]			
	sexual health: "sexual health" [MeSH Terms] OR ("sexual" [All			
	Fields] AND "health"[All Fields]) OR "sexual health"[All Fields]			

Literature Search of Women Studies International

Search #	Search Term used	Limits applied	Number of Results 1	Date Searched (mm-dd-yyyy)
1	Adolescence and Adolescent health or adolescent health services or preventative health care or community health services and school health nursing and Sexual health	1	1,979	07-12-2020
2	-	Date	269 Removal of duplicates 254	

Google Scholar

Search #	Search Term used	Limits applied	Number of Results	Date Searched (mm-dd-yyyy)
1	"school-based health clinics" and "pregnancy prevention" and "adolescence"	none	350	07-12-2020
2		Date	107 Excluded Duplicates 12	

Primary Studies							
Authors, Date, and Title	l Study Focus and Setting	Study Design and Data Collection	Sample/ Context	Intervention Conditions	Key Outcomes and Results	Strengths/ Weaknesses	
Bersamin, M.,	Study focus: Explore	Study design:	Sample: School districts and	Conditions:	Question:	Strengths:	
Fisher, D.A. (2018)	between SBHC.	Quasi-experimental	schools were	prescribed	substantial effect on Adolescent	• sch	ntrollea Ior nod-level
	sexual behaviour and	Data collection	randomly sampled	contraceptives	Sexual Reproductive Health (1)	chi	aracteristics
Oregon school-	contraceptive use	method and time		51.9% of SBHC	in schools with a greater	• La	rge sample
based health centers and sexual	among 11 th graders	points: Use of the Oregon	SBHC N= 3,555 No SBHC N= 8.28	prescribe and 5 disnense	proportion of low-income students and or a higher		
and contraceptive	Setting: High School	Healthy Teens (OHT)		contracentives	percentage of minority	Weaknesses	- -
behaviours among	0	survey in $2015 - surve$	yTotal N= 11,840		adolescents and (2) at the	• Cr	sss-sectional data لا التقطيح
adolescents	Country:	voluntary and	Eleventh graders		individual level among lower-		ke cansal
	Oregon, USA	anonymous	from 134 high		income adolescent and/or	inf	erences regarding
		(administered once)	schools		minority adolescent	SB	HC effects
			(27 with SBHCs)		Outcomes:	• Dii	fferences hetween
		Descriptive analyses			Multilevel logistic regressions	E ES	HC services no
		and multilevel	Mean age: 16.6		found positive associations	acc	counted. e.g
		regression analyses			between SBHC presence and	pro	vision of condoms
		conducted	Gender: 51.5%		healthy sexual behaviour (OR =	VS	prescription
			temale		1.23, $p < .05$) and contraceptive	COL	ntraception
		Survey response rate 87% (n=11 840)			use (OR = 1.31 , $p < .01$).	• Lir	nited to Grade 11
		0//0 (II-11, 040)				stu	dents - may limit
		Study Period: 2015			Associations were stronger at schools with at least 50% of	ger	neralizability
					schools with at Icast 2070 UI scholants reseiving free or	• Sar	mple attrition –
					reduced-price lunch.	pot	centially impacting
					٩	001	collics of study
					Among SBHC schools,		
					prescribing and dispensing		
					positively related to		
					contraceptive use among		
					students who had sex within the		
					past 3 months (OR = 1.77 , p <		
					.01).		
					Findings suggest that exposure		
					10 ODITUS III general, anu		

Appendix B: Literature Review Matrix

HIGH SCHOOL CLINICS AND REPRODUCTIVE AND SEXUAL HEALTH

71

ADOLESCENT REPRODUCTIVE HEALTH AND SCHOOL CLINICS

	ns: Accounted for non- SBHC RHP contraceptive	methods and demographic differences Large sample	sses: Many data sources including primary data sources or combined primary	data analysis with data estimates from studies resulting in potential calculation error Estimated sexual activity was	consistent throughout the year Assumed SBHC clients used dispensed contraception for full school year –	potential to over/underestimate outcomes Comparison group N not listed Limited generalizability of results
availability of specific reproductive health services are effective population-based strategies to support healthy sexual behaviours among youth.	Question:StrengthWhat is the impact of increasing•* availability of and access to on- site contraceptive services at	SBHCs has had on contraceptive use among sexually active female adolescents in NYC, and consequently on city wide	adolescent pregnancies, burths, weakne and abortions from 2008-2017? Outcomes: Higher levels of moderately- most effective contraception use in SDLC DUD climete than theore	In SDATC MATE CITCLIS unal unose methods in the non-SBHC RHP group (49-64% vs 10-16%) <u>Estimated number of events</u> <u>averted:</u> Pregnancies N= 5,376	8, Abortions N= 2,104 Citywide Declines - SBHC RHP contributed a 28% decline in pregnancies in NYC residents aged 15-19 NYC residents aged 15-19	 Detween 2007-2015 a 28% decline in Births and 26% decline in abortions in NYC residents aged 15-19 between 2008-2015 <u>Costs avoided -</u> 2008-2017 1,908 avoided births would have been covered by Medicaid representing \$29,468,401in avoided public health costs
	Conditions: SBHCs staffed by nurse practitioners or physician assistants,	some staffed by physicians - Offer primary care services	 - Can 3^{ra} party bill, including Medicaid - NO out of pocket costs for services regardless of insurance status. 	Increase in the provision of hormons contraception noted over period of study with 36/44 SBHCs	2016-2017 2016-2017	
	Sample: SBHC N= 84,401 Comparison group	(non-SBHC RHP) N= Not listed Age: 15-19	Gender: Female			
	Study Design: fQuasi-experimental counterfactual method	Data Collection Method(s) and Time Points: Utilized publicly available local	data and program- specific data Adjusted for populatior (female) when possible	Estimate of averted events among SBHC was based on contraceptive methods dispensed/used by clients and the	authors estimated these clients would have used if not had access to the center (counterfactual comparison). SBHC contracentive	methods gathered from the SBHC Reproductive Health Project (RHP) clinical data. <u>Time points:</u> 2008- 2015 Non-SBHC Non-SBHC
	Study Focus: Evaluate the impact o increased availability and accessibility	contraceptive services through SBHCs including public health costs,	reductions in pregnancy, birth, and abortions Setting: High School	Country: New York City, USA		
	Fisher, R., Danza, P., McCarthy, J., & Tiezzi, L. (2019)	Provision of contraception in New York City school-based	health centers: Impact on teenage pregnancy and avoided costs, 2008-2017.			

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Results controlled for gender, ethnicity, and previously validated methods (Interaction Self-report data bias students had access Limited sample for sexual experience Small sample size Survey questions contraception use Used 2 statistical Baseline data not collected before Attrition bias Stratification Method and Recall bias Method) to SBC Weaknesses: Strengths: Medicaid representing \$891,951 with a similar NYC high school health care, reproductive health health care provider counseling willingness to use an SBHC for measured at various time points Use of hormonal contraception more likely to report receipt of - 2.379 avoided abortions that and classroom education about willingness of students to use would have been covered by education, and contraceptive contraception in comparison reproductive health services. Students in the SBHC were the SBHC for reproductive (first sex, last sex, and ever reproductive health and a Is there an increase the Age: not listed. mental health education, and contract Grade 9-12 students providers, and health counseling and use of without a SBHC? in public costs **Outcomes: Ouestion:** No SBHC N= 1,316 full-time adolescent - SBHC staffed by reproductive health - Primary care and physicians or NN, services provided medicine trained **Conditions:** educators SBHC intervention Non-SBHC 37.6% served as Baseline returning students (grade 10-12) had research subjects; **SBHC** N= 2,700 Grade 9 students varying years of **Cotal N= 4,016** SBHC 46.5% questionnaire modeled Gender: evaluating effects over exposure Sample: these services, receipt Youth Risk Behaviour female Time Point: Sept 2009 Female rates calculations based Risk Behaviour Survey NYC DOHMH Bureau on 2006-2010 National 2011, 2013, and 2015 teen pregnancy, birth, ised the NYC Youth of Vital Statistics for Contraceptive failure to use the SBHC for after the 2007 NYC Study Period: 2009 Study Period: Nov Pre-tested 64 item past 1,2 and 3 years Quasi-experimental <u> Time points:</u> 2007-**Method and Time** Setting: High School - No SBHC 67.2% Time points: 2009. and abortion data survey for Family 2008- June 2017 77.3% (N=2087) **Data Collection** paper and pencil counseling, and use of Response rates: Study Design: - SBHC school (N=884) Growth Points: of reproductive health Survey 2015 Examines the impact students' willingness Country: New York health impacts of a reproductive health, Gibson, E., Orr, M., of a New York City providing comprehensive & Samant, S (2015) public (SBHC) education and Study Focus: by measuring contraception contraceptive City, USA Reproductive school health Minguez, M., Santelli, J.S.,

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		 rengths: Approved by a review board review board An initial pilot study completed Stratified sampling Interviews continued until saturation of themes Purposive sampling - may not capture all experiences regarding the provision of contraception to teens in SBHC
used) was greater among students in the SBHC. Most students in grades 10-12 using contraception in the SBHC reported receiving contraception through the SBHC.	Comparing students in the non- intervention school to SBHC nonusers and SBHC users, found stepwise increases in receipt of education and provider counseling, willingness to use the SBHC, and contraceptive use.	Question: Describe the lived St experience of nurse practitioners (NPs) providing contraceptive care to teens in SBHCs in hopes to shape health Outcomes: 3 themes emerged: (1) Contraception is an essential part of care for adolescents using SBHCs (2) There are many hurdles to negotiate, e.g., SBHC policies restricting contraceptive services; adult misconceptions regarding teens and sex – contraceptive access will e increase teen sex; Lack of awareness of SBHC services; confidentiality concerns (3) Practitioners are torn between proving care needed and what they can legally provide according to health statutes and restrictions they encountered from school district policies or parental exclusions
		Conditions: Descriptive phenomenological open-ended interviews beginning with: "Please explain the experience of providing contraceptive care to adolescents in SBHCs. Describe your experiences, thoughts, feelings, and perspectives until you have no more to say. You are welcome to provide clinical examples to illustrate your experience. There are no correct or incorrect answers."
		Sample: Purpose stratified sampling NPs recruited through statewide (Connecticut) SBHC contact list English speaking licensed NPs that worked in a high school SBHC for minimum 1 year N= 12 Age: 31-64 years (Mean 52.3) Gender: Female
		Study Design: Qualitative research Descriptive phenomenological imethod Method and Time Points: Open-ended interviews until saturation of themes Interviews were audio- recorded and transcribed Study Period: Not stated
		 i, Study Focus: Explore the lived experience of NPs e providing contraceptive care to adolescents in SBHCs to better understand the issues influencing f contraceptive access s to adolescent Setting: High School Country: Connecticut, USA
		Daley, A., Polifron E. (2018) Contraceptive car for adolescents in school-based health centers is essential!": The lived experience o nurse practitioner

ADOLESCENT REPRODUCTIVE HEALTH AND SCHOOL CLINICS

	Diversity in sample	and SBHC sites	Evaluated two	perspectives of	adolescent-friendly	care in SBHCs	Clear research	questions and	methods	SSSes:	Purposive sampling	Limited	generalizability to	populations beyond	unose une Northeastern region	of IISA	Adolescent answers	were hased on NP	determined essential	elements of SBHCs																	
tranat			•				•			Weakne	•	•					•	•																			
Questions.	1) What does an expert panel of	NPs identify as the essential	elements of providing	adolescent-irtendiy nealur care services to teens in SRHCs?		2) What is the adolescent	perspective on the essential	elements of adolescent-friendly	health care services specific to	SBHCs?		3) How do the perspectives of	NPs and adolescents intersect	 regarding the essential elements of adolescent-friendly care in 	SBHCs?	Outcomes:	1) Confidentiality/Privacy.	accessibility, clinician/staff.	SBHC clinical services, SBHC	environment, and relationship	between school and SBHC	(Consensus ≥ 0.75 level	[N=200])	ľ.	2) Confidentiality/Privacy	(32%); Accessibility (18.7%);	Clinicians/staff(14%); types of	services offered/provided	(14%); SBHC environment	(14%); Kelauonsmp between school and SBHC (8%)		3) Shared Perspectives:	Confidentiality – what happens	in the SBHC stays there and the	importance of a private setting:	<u>Accessibility - services available</u>	when needed and are flexible <u>SBHC services</u> – Mental health and reproductive care
Conditions.	Ouantitative Strand:	INPs asked to respond	to question:	w nat are une accential alements of	providing adolescent	friendly care in	school-based health	centers?"	 Rounds 2-3 	panelists were asked	their level of	agreement of each	element $(1 = \text{strongly})$	disagree; 5= Strongly aoree)	- Rounds 3-4.	panelists were asked	to consider remaining	elements in terms of	group response and	make changes as	desired		Qualitative Strand:	Focus group question	were generated from	phase 1.	- adolescents were	provided 5 dots, and	hased on importance	or value of each	"essential element"	found in phase 1 and	briefly explain the	element. Participants	were able to allocate	as many of their dots	w cavit rutit as uncy saw fit.
Samula.	NPs Recruited	through professiona	organizations and	personal contacts	Adolescents	recruited through	purposive sampling		$NP_{S} N = 21$	Attrition of 1 NP	Adolescents N= 30	e.	Age:	<u>NPs:</u> Not reported Adolescents: 13-19	Mean age 16.5)	IsGender:	s <u>NPs:</u>	s 100% female	<u>Adolescents:</u>	43.3% female	56.7% male															
Study Design:	Mixed methods	Qualitative and	Quantitative	Nata Callection	Method:	Quantitative strand	(phase 1):	Delphi technique to	establish consensus	from panel of NPs on	essential elements of	adolescent-friendly can	at SBHC.	4 Panelist Kounds	Qualitative strand	(Phase 2):	Multiple-category focu	groups with adolescent	Total of 6 focus group	with 3-8	individuals/group	:	Data was audio	recorded and	transcribed verbatim	into Atlas.ti7, and	analyzed using content	analysis	Mixing of quantitative	and qualitative data	(Phase 3):	Data from each	previous phase was	compared and	contrasted through	connected analysis	Study Period: Not Reported
Study Former	, Juury Focus. Identify essential	elements of	adolescent-friendly	the nersnectives of	NPs providing the	care and adolescents	receiving these	services		Setting: Adolescent	SBHC SBHC		Country: USA																								
Daley A Dolifroni	E., & Sadler, L	(2019)	The second of	the essentiat elements of	adolescent-friendly	care in school-	based health	centers: A mixed	methods study of	the perspectives of	nurse practitioners	and adolescents																									

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	gths: Approval from a review board Teen perspective Large sample	cuesses: Only explored postpartum teenagers' opinions on contraception contraception options for this study Limited generalizability as sample only from one hospital in Texas	gths: Clear research question Considerable sample size considerable sample size considerable sample size considerable sample size identify why SBHC's were able to provide faster follow-up, only hypothesizes in discussion Limited generalizability
	Strena		Streng Wcak
Relationship with school and <u>SBHC</u> – Need to work collaboratively	Question: What are the opinions of post-partum adolescents regarding having contraceptive services available in high school clinics	Outcomes: 82% (332 participants) were in favour of having contraceptive services at school clinics Of the 18% that were not in favour of contraceptive services at SBHCs, most of these individuals felt it would not have made a difference regarding pregnancy In multivariate modeling, factors associated with more than one pregnancy: older age, young age of sexual debut, marriage t Contraceptive education is not enough to prevent teen pregnancy	Question: Do school-based STI screening programs improve time to programs improve time to reatment? Overall, 540 students had positive results. 427 had chlamydia (79.1%), 59 had gonorrhea (10.9%), and 54 had dual infections (10.0%); 144 were tested in a school with a SBHC on site (26.7%).
	Conditions: Interview surveys conducted face-to- face by principal t investigator and in	private Upon completion of interview respondents were reimbursed for their time For statistical analysis, marginal analysis, marginal testing was done using Fisher's Exact Test, while multivariate testing was based on a logistic regression model and standard Chi-square coefficien test.	Conditions: Testing and STI education located on high school campus Mass education through 20 min video that teaches about bacterial and viral STIs STIs CChicago Department of Public Health contacted STI positiv
	Sample: Approached in the postpartum unit (within 5 days of delivery) at the John	Sealy Hospital (Galventon, Texas) N= 404 (95%) Mean Age: 17 +/- 1 year Gender: Female	Sample: Schools recruited for SB STI screening via a verbal presentation to school's principal and SBHC staff 42 schools participated Schools with SBHC
	Study Design: Quasi-experimental A cross-sectional study of postpartum teens	Data Collection Method and Time Points: Interview Survey – 18 multiple choice questions regarding socio-demographic background, pregnancy history, contraceptive history, sexual and contraceptive education Study Period: July 2013-July 2014	Study Design: Quasi-experimental Retrospective Cross- sectional study Data Collection Method and Time Points: Time to treatment of students who tested positive and received treatment was measured from the date
	Study Focus: Explore opinions of postpartum teenagers in Texas regarding offering contraceptive	services in SBHCs Setting: Hospital/ High School Country: Texas, USA	Study Focus: Examines whether students who tested positive for STIs in a school-based ascreening program had differing times to treatment location treatment location Setting: High School Country: Chicago, USA
	Patel, P.R., Huynh, M.T., Alvarez, C.A Jones, D., Jennings, K. & Snyder, R.R. (2016)	Postpartum teenagers' views or providing contraception in school-based health clinics.	Sabharwal, M., Masinter, L., & Weaver, K. (2018) Examining Time to Treatment and the Role of School- Based Health Centers in a School-Based Sexually Transmitted Infection Program

ADOLESCENT REPRODUCTIVE HEALTH AND SCHOOL CLINICS

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	s: Large sample size, making results generalizable Collection of data and analysis is clearly outlined Attempted to address several confounding elements, e.g., stratification for wealth Attempted to avoid areall bias with the use of administrative data Did not address all variables (e.g., STI rates) Lacks details of the impacts of SHC and adolescent-directed services
Of the 483 students who received treatment (89.4%), those treated at a SBHC had a faster time to treatment compared to STI clinics (median 17 days versus 28 days, respectively, p<.001). For students testing positive in the Chicago school-based STI program, time to treatment is accelerated in locations with SBHCs. Treatment for STIs after diagnosis was faster in SBHC compared to adolescents that were treated elsewhere (47.5 days, P<0.0001)	Hypothesis:Strength(1) adolescents not enrolled in school will have higher STI and pregnancy rates than in- school- adolescents, as pregnancy has been shown to be associated with school drop out (2) that STI and pregnancy rates in schools with clinics will be higher (lower) than schools without clinics, as clinics were in schools in "higher needs" areasStrength schools were areasOutcomes: (1) Non-enrolled adolescents had higher STI and Pregnancy rates (2) STI and Pregnancy rates areasWeaknee schools without clinics, as clinics were schools in "higher needs" areasOutcomes: (1) Non-enrolled adolescents without SBHCs when compared to those without SBHCs when compared to those without SBHCs when compared to those
patients advising then to follow-up with health provider	Conditions: Teenagers classified as not enrolled in school were those with no enrolment record each year, excluding students graduating in the year of interest, or in the years prior to the year of interest. Students in schools that did not have Grade 12 were also excluded Students who transferred schools mid-year were excluded Pregnancies were defined with a previously published
Students tested for STIs N= 6,915 Student's tested + for STI N=540 Mean Age: 17 Gender (tested + for STI): 68.5% female 31.5% male	Sample: All adolescents in Manitoba enrolled in high school, or not with continuous health coverage between 2003-2010 SBHC School Students N= 26,223 N= 26,223 N= 26,223 N= 25,223 N= 25,223 N= 25,223 N= 25,223 N= 25,223 N= 23,154 N= 123,154 N= 123,154N= 123,154 N= 123,154 N= 123,154N= 123,155 N= 123,155N=
of the test to date of treatment. Data was analyzed using SAS version 9.3 to assess descriptive statistics of the sample, and median time to treatment for both groups of students Study Period: Oct 2012-June 2013	Study Design: Quasi-experimental Retrospective population-based study Data Collection Method and Time Points: PATHS data Resource files: 1. Manitoba Health Insurance Registry, demographic information 2. Hospital Abstracts, which contain information on all hospitalizations (including birth) in Manitoba 3. Medical Services, information on ambulatory physician visits in Manitoba
	Study Focus: Compare pregnancy and positive STI rates between three groups: adolescents enrolled in schools with school-based clinics, adolescents enrolled in schools without school-based clinics and adolescents who were not enrolled in school SBHCs were in areas of "high need" Canada
	Shaw, S. Y., Metge, C., Taylor, C., Chartier, M., Charette, C., Lix, L., PATHS Equity Team (2016) Teen clinics: Missing the mark? Comparing pregnancy and sexually transmitted infections rates among enrolled adloscents

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ADOLESCENT REPRODUCTIVE HEALTH AND SCHOOL CLINICS

Authors, Date, and Title	Study Focus and Setting	Study Design, Data Collection and Quality Assessment	Sample	Intervention Conditions	Key Outcomes and Results	Strengths/ Weaknesses
Ran, T, Chattopadhyay, S Hahn, R. A., & Community Guide Systematic Review (2016) Economic evaluation of school-based health centers: A community guide systematic review	Study Focus: Evaluates the economic cost and benefit of SBHCs USA - Northwest (5) - Midwest (2) - Whole USA (7)	Study Design Systematic review Data Collection Method: Databases N=7 PubMed, EconLit, ERIC, JSTOR, Social Sciences Citation Index, databases at the Centre for Reviews & Dissemination at the University of York, and Google Scholar University of York, and Google Scholar Dissemination at the University of York, and Google Scholar Information on study methods, results and interpretation was abstracted following the Community Guide systematic economic review methods Study Period Literature collected from Jan 1985- Sept 2014 Analysis conducted in 2014	N=22 17 peer-reviewed journal articles 3 non-journal articles were reports on cost and benefit of SBHCs SBHCs providing services to students pre k-grade 12	 15 studies reported on costs of SBHCs 10 studies reported on benefit of SBHCs 3 societal perspective 1 from both societal and Medicaid perspective 3 studies reported on both cost and benefit of SBHCs 	Question: What are the economic costs and benefits of SBHCs? Outcomes: SBHC benefits outweigh costs and area effective and efficient setting for health costs and area effective and from \$16,300 – \$659,684 per year per SBHC – \$659,684 per year per SBHC – \$659,684 per year per SBHC operation costs driver was salaries and benefits (80-90% of operation costs) SBHC sontribute economic benefits to operation costs) SBHC scontribute economic benefits to perients economic benefits to Society, healthcare payers (e.g., Medicaid) and patients - Societal perspective: total annual benefit per S912,878 - Societal Benefit-cost ratio ranged from 1.38 – 3.05 - Patient level: included averted treatment, lost productivity, and transportation costs - Health payer perspective: SBHCs are related to net savings to Medicoid between \$15,028	 Strengths: Costs and expenditures were adjusted to 2013 US dollars to ensure comparability of the studies Meaknesses: Only 2 studies reported # of SBHC users - creates potential error when evaluating per user costs

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HIGH SCHOOL CLINICS AND REPRODUCTIVE AND SEXUAL HEALTH

Systematic Reviews

	 Clear SBHC definition and research question Clear SBHC definition and research question Search strategy provided Inclusion/exclusion criteria clearly presented, but only explored health and educational databases Described level of evidence in primary studies Review results were transparent Methodologic limitations of individual studies: lack of randomization (selection bias) Few studies adjusted for background health differences SBHC effects may have been under/overestimated because evaluators did not obtain baseline data
\$969/visit and \$46-1,166 per person Decrease in Medicaid and hospitalization cost in the presence of SBHCs	Question: State How effective are SBHCs In improving the educational and health outcomes of disadvantaged 4 students? Is intervention Is intervention Effectiveness affected by: Effectiveness affected by: Is intervention Effectiveness affected by: Extent of services Pre focus of SBHC on specific health issues Availability of services W Pre focus of SBHC on specific health issues Demographic W • The focus of SBHC on specific health issues Demographic W • Demographic Characteristics of population served SBHCs Demographic • Demographic Count of pocket costs vs no cost to student SBHCs Demographic • Demographic Cout of pocket costs vs no cost to student Dut of pocket costs vs no cost to student SBHCs • Demographic Out of pocket costs vs no cost to student SBHCs SBHCs SBHCs • Dut of pocket costs vs no cost to student Cost to student SBHCs SBHCs • Duto of cost to student Health-related Outcomes Instructed SBHCs • Duto of cost to student Health equity SBHCs SBHCs SBHCs SBHCs SBHCs<
	 - 23 studies assessed SBHC whole-school effects by comparing all students in SBHCs with all students in SBHCs with all students in non-SBHC settings (1, ed studies) or students in schools before and after the implementation of SBHCs (8 Studies); one study included ed both comparisons. r - 17 studies assessed SBHC user-only effects by comparing users with non- users within SBHC schools (8 studies) or SBHC (8 studies) or SBHC (8 studies) or SBHC users with non- users within SBHC schools (8 studies). ed ury - 4 studies assessed both whole-school and SBHC user-only ed ury - 4 studies assessed both whole-school and SBHC user-only ed effects. - 2 studies compared SBHCs - 1 comparing an SBHC with onsite contraceptive services with an SBHC withou
	 N=46 32 studies 32 studies published after 2000 4 studies publish before 1990 f t Predominantly urban context 10 studies conducted in mix rural and urban o suburban areas 26 studies conducted in mix rural and urban o SBHC 1 study evaluated middle school SBHC 1 studies evaluated middle school SBHC 1 study evaluated middle school SBHC 12 studies assesse combinations of grade levels
	Study Design: Systematic Review Data Collection Method: PubMed, Embase, CINAHL, ERIC, Google, NTIS, Web o Science and WorldCa Science and WorldCa Claality Assessment: 2 Reviewers independently evaluated each study pindependently evaluated each study interpretation on study methods, results and interpretation was abstracted following standard Community Guide criteria method from first available dates to July 2014 Analysis conducted in 2014-15
	Knopf, J.A., Finnie, Study Focus: K.K.C., Peng, Y., Explore the Hahn, R.A., effectiveness of Truman, B.I., SBHCs on <i>l</i> emon-Smiley, M., educational and ohnson, V.C., health outcomes o ohnson, R.L., disadvantaged ielding, J.E., students Muntaner, C., Hunt, C., Phyllis Jones, Country: C., & Fulliove, Articles from US/ M.T. (2016) (45) and New M.T. (2016) (45) and New dryance health quity: A ommunity guide ystematic review

contraceptive uptake and reduced pregnancies	More services and more	including outside of scho	hours was associated with	greater reductions in ER	use
comparing an SBHC before and after innolementation of	onsite contraceptive	evaluating the	effectiveness of the	contraceptive services	