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Examining the Provision of Sexual and Reproductive Health Services at School-Based Health Centers: Structural, Organizational, and Community Factors

by
Brenda Lopez

DISSERTATION
Submitted in partial satisfaction of the requirements for degree of
DOCTOR OF PHILOSOPHY

in

Nursing

in the

GRADUATE DIVISION
of the
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

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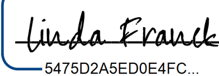
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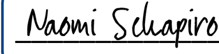
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Committee Members

Dedication and Acknowledgments

I would like to recognize my exceptional dissertation committee for their commitment and mentorship with my doctoral work. Linda S. Franck, PhD, RN, FAAN, Samira Soleimanpour, PhD, MPH, Cherry Y. Leung, PhD, RN, PNP, and Naomi A. Schapiro, PhD, RN, CPNP. I would like to express my deepest appreciation to Dr. Franck, my advisor and dissertation chair, for challenging me to become the nursing scientist that I am today. Dr. Franck guided and encouraged me while I faced personal hardships during this four-year journey; without her understanding and support I could not have completed this program. I'm deeply indebted to Dr. Soleimanpour, who generously introduced me to national school-based health research, and I am incredibly grateful for all that I have learned from her. I'm extremely grateful to Dr. Soleimanpour, whose expertise in school-based health research was essential to the development of my doctoral work. I would like to extend my sincere thanks to Dr. Leung, for her mentorship and support as my qualifying exam chair. I am also grateful to Dr. Schapiro, for sharing her extensive knowledge and insight on adolescent and school-based health. I would also like to thank Dr. Thomas J. Hoffman for his collaboration and guidance on my manuscript analyses. I'm very appreciative to Dr. Monica McLemore, her passion and extensive Reproductive Justice work inspired me to pursue a doctoral degree at UCSF. Dr. McLemore created a community and made me feel incredibly supported as a first-generation Latinx doctoral student at UCSF.

Words cannot express my gratitude to my family and extended family for their on-going support and words filled with love and encouragement. When this journey became incredibly challenging and I had self-doubts, all of them kept me going and kept me focused on the finish line. I am forever grateful to my parents, Jose and Maria, for all the sacrifices they have made for me to reach and achieve this dream. I could not have undertaken this journey without my son,

Cesar Angelo, who has always been my motivation and the driving force that pushed me to complete this program. I am infinitely grateful to my partner, Matt, whose gentle love, encouragement, and support kept me focused on successfully completing my dissertation. I extend my appreciation to my best friends, Gaby and Paulina; I really value their friendship, especially through the difficulties over the last four years. I am a first-generation student and daughter of immigrant parents, and thus my dissertation is dedicated to my parents, Jose and Maria.

This dissertation was funded by the UCSF Abortion Care Training Incubator for Outstanding Nurse Scholars (ACTIONS) Program and the University of California President's Pre-Professoriate Fellowship.

Examining the Provision of Sexual and Reproductive Health Services at School-Based Health Centers: Structural, Organizational, and Community Factors

Brenda M. Lopez

Abstract

Background: Adolescents face increased rates of poor sexual and reproductive health (SRH) outcomes, including sexually transmitted infections and teen births. School-based health centers (SBHCs) are recognized as a public health strategy and evidence-based model to improve access to SRH services for adolescent populations. The provision of SRH and contraceptive services at SBHCs in the United States (U.S.) vary and remain inequitable yet it is unclear what current factors have the greatest influence on the provision of these services.

Method: This dissertation includes an integrative literature review that searched 5 databases (PubMed, Embase, ERIC, CINAHL, Web of Science) for relevant research published from January 2011 through December 2023. Eight studies were critically appraised, and findings were summarized and synthesized. This dissertation also analyzed secondary cross-sectional data from the 2021-2022 National School-Based Health Care Census survey along with public data from the National Center for Education Statistics on characteristics of schools where the study SBHCs were located during the 2021-2022 school year. The analyses include bivariate analyses with chi-square tests and a forward stepwise logistic regression model with omnibus Wald tests for covariates with more than two groups.

Results: The literature review findings in Chapter 2 demonstrated that SRH services vary from contraceptive counseling to long-acting reversible contraceptives and 46% of SBHCs dispensed contraceptives on-site, according to the latest published data available from the 2016-2017 school year. The federally funded Title X Family Planning Program and school/district level

policies drove the provision of SRH services at SBHCs in the U.S. Chapter 3 demonstrated that based on recent data from the 2021-2022 school year, 84% of adolescent-serving SBHCs offered SRH services. The SBHCs that had greater odds of providing any SRH services were those that received state and local government funding, were located at a middle, high or combined grade schools, had ten years or more of operation, and had physician assistants employed on their primary care staff. SBHCs in the southern region of the U.S. or those located in an elementary school had lower odds of providing any SRH services. Chapter 4 showed that 70% of adolescent-serving SBHCs that offered SRH services dispensed contraceptives on-site. SBHCs with the greatest odds of dispensing contraceptives on site were those that received federal and local funding, were located at high schools or combined grade/non-traditional schools, and were located at schools that had 75% or more Black, Indigenous, and other people of color (BIPOC) identifying student population.

Conclusion: This dissertation provides a contemporary description of the provision of SRH and contraceptive services at adolescent-serving SBHCs in the U.S. The provision of SRH and contraceptive services at SBHCs have increased however remain inequitable. This dissertation identified characteristics that impacted the odds of SRH and contraceptive services being provided at SBHCs. Findings can inform future program and policy development to help ensure equitable access to SRH for adolescents.

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List of Abbreviations

BIPOC = Black, Indigenous, and people of color

CHC = Community health clinic

CPT = Current procedural terminology

COVID-19 = Corona virus

EHR = Electronic health record

FQHC = Federally qualified health center

HCPCS = Healthcare common procedure coding system

ICD-9 = International classification of diseases, ninth revision

ICD-10 = International classification of diseases, tenth revision

IUD = Intrauterine device

LARC = Long-acting reversible contraception

MD = Physician

NP = Nurse practitioner

PA = Physician assistant

PCP = Primary care provider

PNP = Pediatric nurse practitioner

RJ = Reproductive justice

SBHA = School-based health alliance

SBHC = School-based health center

SHC = School health center

STD = Sexually transmitted disease

List of Abbreviations

STI = Sexually transmitted infection

SRH = Sexual reproductive health

US = United States

Chapter 1

Introduction

Background

Problem statement

Adolescents continue to face poor sexual and reproductive health (SRH) outcomes including high rates of sexually transmitted infections (STIs) and teen births (CDC, 2022; CDC, 2024; Osterman et al., 2022). In 2022, adolescents were reported to have more than 2.5 million STI cases, including chlamydia, gonorrhea, and syphilis (CDC, 2022). In 2022, the STI-related direct medical costs were 16 billion dollars and those aged 15-24 years accounted for 26% of the total cost (CDC, 2022). Adolescents also face racial and ethnic SRH disparities. In 2021, birth rates per 1,000 were disproportionately higher among adolescent Black (22 births) and Latinx (21 births) females aged 15 to 19 years compared to their White (9 births) counterparts (CDC, 2024).

School-based health centers (SBHCs) are recognized as an evidence-based model of care that increases access to various types of health care for children and adolescents. SBHCs are located on or close to school campuses (Love et al., 2019). The SBHC's proximity reduces barriers to health care access, addresses confidentiality concerns, and increases continuity of care (CSHA, 2023; Love et al., 2019). Adolescents can have access to SBHCs when they need or want services. SRH is one of the types of services that are offered at SBHCs. SRH services can include sexual health education and counseling, contraceptive provision and counseling, pregnancy prevention and testing, as well as STI prevention, testing, and treatment.

Although adolescents face poor SRH outcomes, in 2021 only 50% of SBHCs offered SRH services and in 2016-2017 46% of adolescent-serving SBHCs dispensed at least one contraceptive method on-site (Soleimanpour et al., 2021; Sullivan et al., 2022). Further, there are inequities in access to the provision of SRH and contraceptive services at SBHCs across the

United States (U.S.) (Sullivan et al., 2022). Data from the 2016-2017 school year, the most recent published data available, show that the South U.S. region had the greatest number of SBHCs, however had the lowest percentage of SBHCs dispensing contraceptives on-site (Sullivan et al., 2022).

SRH and contraceptive services are controversial and can be impacted by federal and state level laws and policies. SRH services are offered to adolescents at SBHCs under state minor sensitive and confidential services. Sensitive and confidential services vary due to varying state minor consent and right to privacy laws (Sharko et al., 2022). Some states have restrictive minor consent and privacy laws while others do not have explicit laws in place (Sharko et al., 2022). Local policies also prohibit the provision of contraceptive services at SBHCs (Keeton et al., 2012; Sullivan et al., 2022). School and school district policies have historically been reported as having the greatest negative impact on the provision of contraceptives being dispensed on-site at SBHCs (Keeton et al., 2012; Sullivan et al., 2022). In addition, the 21st Century Cures Act, which was signed into law in 2016 to accelerate medical product development and bring innovative practices to patients, banned "information blocking", further compromising adolescent confidentiality when accessing sensitive and confidential services (Sharko et al., 2022; Pasternak et al., 2023). The 21st Century Cures Act allows parents or guardians of minor aged adolescents to access the adolescent's EHR. This makes it possible for these parties to access confidential clinical care notes, laboratory results and medications that the adolescent has asked to be kept private.

Structural determinants of health can help explain the inequity of SRH services at SBHCs. Structural determinants of health are defined as "cultural norms, policies, institutions, and practices that define the distribution or maldistribution of social determinants of health"

(Crear-Perry et al., 2021). Structural determinants of health shape the distribution of power and resources leading to health inequities (Crear-Perry et al., 2021). Crear-Perry et al. (2021) described the impact of structural and social determinants on Black maternal morbidity and mortality demonstrating the inequities between racial groups. Structural determinants of health inequities in reproductive health exist in the U.S. (Crear-Perry et al. 2021). Structural determinants of health can also be applied to the SRH outcomes of adolescent populations. Addressing structural, organizational and community level characteristics can provide interventions aimed at health equity.

This dissertation was driven by the Sullivan et al. (2022) study that examined on-site dispensing of contraceptives at adolescent serving SBHCs. Sullivan et al. (2022) utilized the School-Based Health Alliance's 2016-2017 National School-Based Health Care Census (Census) survey data to examine the provision of contraceptives at SBHCs during the 2016-2017 academic year. Their study found that school and school district policies that prohibited dispensing of contraceptives were decreasing over the prior 15 years, however these policies continued to be the leading policy type prohibiting on-site dispensing of contraceptives at SBHCs.

Gaps in knowledge

The provision of contraceptives was last examined by Sullivan et al. (2022) through the Census 2016-2017 survey. Since 2016-2017 there have been changes in federal and state policies impacting access to SRH and contraceptive services in the U.S. There needs to be an examination of the current provision of SRH and contraceptive services at SBHCs. It is unknown what type of policies are currently supporting or continuing to prohibit the provision of SRH and contraceptives at SBHCs nationally. Further, Title X Public Health Service Act, a federally

funded program, was negatively impacted during Donald Trump's presidential term 2017-2021 (Frederiksen et al.,2023; NARA, 2019); it is unknown how this affected SRH and contraceptive services at SBHCs nationally in 2021-2022.

Prior research examining the provision of SRH and contraceptive services at SBHCs has not explicitly acknowledged or proposed a theoretical framework to guide the study (Ethier et al., 2011; Smith et al., 2011; Minguez et al., 2015; Bersamin et al., 2018; Boniface et al., 2021; Boniface et al., 2022; Sullivan et al., 2022; Maier et al., 2023). This gap highlights the opportunity to apply a theoretical framework to guide this dissertation. Crenshaw's (1989) intersectionality framework was applied as a lens to guide the research. Previous research has not examined Black, Indigenous, and other people of color (BIPOC) adolescent populations and the provision of SRH and contraceptive services at SBHCs nationally. The U.S. history of sexual and reproductive oppression driven by racism and experienced by vulnerable and marginalized populations cannot be ignored (Ross & Solinger, 2021). The history of reproductive harm to vulnerable and marginalized populations has illuminated the need to apply a theoretical framework that addresses structural injustices associated with inequitable access to SRH services.

Existing literature has not examined additional factors affecting the provision of contraceptives dispensed on-site at SBHCs nationally. The proportion of SBHCs that have a written policy in place prohibiting the provision of contraceptives dispensed on-site is unknown. This dissertation aimed its research to address these gaps in the literature on SRH and contraceptive services for adolescents at SBHCs nationally.

Purpose of the study and specific aims

The purpose of this dissertation is to examine the provision of SRH and contraceptive services at SBHCs nationally as well as to identify structural, organizational and community level characteristics associated with the provision of these services. This dissertation will update and expand on the Sullivan et al. (2022) study that utilized the 2016-2017 Census survey to examine the provision of contraceptives at SBHCs during the 2016-2017 school year (SBHA, 2017). The dissertation studies were guided by the intersectionality framework (Crenshaw, 1989). The dissertation aimed to 1) synthesize the existing literature on SRH and contraceptive services at SBHCs in the U.S.; 2) identify the proportion of SBHCs that provided SRH services while identifying structural, organizational and community level characteristics associated with the provision of SRH services in SBHCs; 3) identify the proportion of SBHCs that dispensed contraceptives on-site and identify structural, organizational and community level characteristics associated with the provision of on-site dispensing of contraception and lastly; 4) identify policies and other factors that prohibit the provision of contraceptives at SBHCs.

In this dissertation, SRH services are defined as providing any of the following services: sexual health education and information, contraceptive provision or counseling, and pregnancy and STI prevention, testing, or treatment. The provision of on-site dispensing of contraceptives is defined as any contraceptives dispensed on-site and does not include prescriptions that the patient fills off-site. The literature in this dissertation did not define male or female and for this dissertation they were defined as a person's assigned sex, also termed as biological sex, defined as "...anatomical, physiological, genetic, or physical attributes that determine if a person is male, female or intersex. These include both primary and secondary sex characteristics, including genitalia, gonads, hormone levels, hormone receptors, chromosomes, and genes" (PFLAG,

2024). Additionally, Hispanic and Latino were not defined in the literature reviewed and for this dissertation Hispanic was defined as "...a person with ancestry from a county whose primary language is Spanish" and Latino was defined as "...a person with origins from anywhere in Latin America (Mexico, South and Central America) and the Caribbean" (Alexander, 2022).

Organization of the dissertation

This dissertation consists of five chapters. An introductory chapter that provides the drive behind the dissertation, an overview of the existing literature, and the context for the need of this research. Chapter two provides a review of the literature on SRH services, and the provision of contraceptives provided at SBHCs in the U.S. Chapter three presents data from the most recent survey of SBHCs nationally on the proportion of adolescent-serving SBHCs in the U.S. that provided SRH services, and the structural, organizational, and community characteristics associated with the provision of SRH services at SBHCs. Chapter four includes the findings on the proportion of adolescent-serving SBHCs providing SRH services that dispensed contraceptives on-site, as well as the structural, organizational, and community characteristics associated with the provision of contraceptives on-site. This chapter also identifies policies and other factors prohibiting the provision of contraceptives at SBHCs. Chapter five summarizes the dissertation findings and discusses impact on research, nursing clinical practice, and policy.

Positionality

My clinical practice as a pediatric nurse practitioner (PNP) in the community health care setting has provided me with direct experience and awareness regarding the range of SRH and contraceptive services available at SBHCs. Over the last six years, I have practiced at numerous SBHCs through various organizations. This direct experience allowed me to quickly learn that

some SBHCs had restrictive policies only being able to offer SRH education and counseling while other SBHCs offered various types of contraceptives that were dispensed on-site.

Witnessing firsthand the barriers to SRH and provision of contraceptives at SBHCs along with the health consequences for adolescent populations motivated me to investigate this phenomenon. My clinical experience in the SBHC setting has driven my commitment to Reproductive Justice, leading to my decision to pursue a doctoral degree to thoroughly examine the structural, organizational, and community level characteristics associated with SRH and contraceptive services offered at SBHCs in the U.S.

Specifically, I aim to apply my clinical experience and doctoral training to increase access to SRH and contraceptive services for adolescents at SBHCs. As a nurse scientist, it is important to acknowledge that racial and health disparities are impacted by institutional racism and structural barriers that further prevent health equity among oppressed and marginalized populations (Boyd et al., 2020). Therefore, my research is focused and aimed to assist in addressing barriers to health equity and inform policies that prohibit accessibility to SRH and contraceptive services at SBHCs.

Significance

My dissertation research adds new knowledge on the characteristics that support effective SRH services and the provision of contraceptives at SBHCs. This research updates and expands the literature by examining additional factors and current policies that may affect the provision of contraceptives dispensed on-site at SBHCs. Examining structural, organizational, and community characteristics can illuminate various levels for policy advocacy that can support and expand access to SRH and contraceptive services for adolescent populations. Further, these studies were guided by Crenshaw's (1989) intersectionality framework. This research will aid in

transforming structural injustices by identifying current policies that may be contributing to the poor SRH outcomes and the prohibition of SRH services among vulnerable and marginalized adolescent populations. This dissertation will also provide an overall understanding of necessary policy changes needed at a federal, state and/or local levels while including the context of the issues that arise with race, ethnicity and socioeconomic status. The dissertation findings can inform policy advocates and policy makers with evidence-based research findings to support the need for accessible and equitable SRH and contraceptive services at SBHCs nationally.

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Chapter 2

Reproductive Health Services and the Provision of Contraceptives at School-Based Health Centers: An Integrative Literature Review

Reproductive Health Services and the Provision of Contraceptives at School-Based Health Centers: An Integrative Literature Review

Abstract

Background: School-based health centers (SBHCs) are recognized as a public health strategy and evidence-based model to improve access to reproductive health (RH) services. However, contraceptive and RH services vary across SBHCs impacting equitable access to these services. This review aims to (1) describe the proportion of SBHCs in the U.S. that provide contraception and RH services, (2) investigate the specific characteristics of contraceptive and RH services provided by SBHCs among public middle and high schools in the U.S., and (3) examine the influence of policies and funding on the existence of services provided at SBHCs in public middle and high schools in the U.S.

Methods: In this integrative review, 5 databases (PubMed, Embase, ERIC, CINAHL, Web of Science) were included in the search for relevant research published from January 2011 through December 2023. Eight studies were critically appraised, and findings summarized and synthesized.

Findings: RH services vary from contraceptive counseling to long-acting reversible contraceptives and 50% of SBHCs dispense contraceptives on-site. Title X funding and school/district level policies drive the provision of these services.

Implications: This review adds to the understanding of RH service provision at SBHCs and informs policy and funding strategies aimed at improving access to these services at SBHCs.

Conclusions: Access to RH and contraceptive care at SBHCs remains inequitable. Funding and policies continue to play a role in RH services and contraception at SBHCs.

Keywords: School-based health centers, adolescent, reproductive health, contraception, health policy, teen pregnancy

School-based health centers (SBHCs) are a public health strategy to improve access to health care and reach adolescents for reproductive health (RH) services. Access to RH services at SBHCs prevent sexually transmitted infections (STIs) and support teen pregnancy through appropriate referrals. There is a lack of standardization of contraceptive and RH services across SBHCs.

Adolescent Reproductive Health

In 2020 to 2021 there was an overall 7% decrease in teen birth rates among individuals aged 15 to 19 years.[1] This is equivalent to 13.9 births for every 1,000 in 2021, a decline from 15.4 births in 2019, reaching an overall decrease of 67% since 2007.[1] Although there has been an overall decrease in teen births in the United States (U.S.), teen birth rates continue to be higher in the U.S. compared to other highly resourced countries.[2] Further, in 2022, adolescents and youth aged 15-24 years of age accounted for nearly half of the reported STI cases that included chlamydia, gonorrhea, and syphilis.[3] In 2022, STI expenses totaled 16 billion dollars in direct medical cost with STIs among individuals ages 15-24 years old accounting for 26% of the total cost.[4]

These concerning STI rates have been attributed to decreased likelihood of receiving preventative care compared to the adult populations as a result of barriers associated with accessing RH services.[5] RH services are defined as sexual health education, contraception, pregnancy, STI testing and treatment, counseling, and referrals to external services.[6]Accessible youth friendly RH services and contraceptive care can prevent poor adolescent health outcomes including teen pregnancy and STI rates.[3,4,5]

School-Based Health Centers

SBHCs began in the 1960s as a strategy to support teen pregnancy, teen parents, and family planning access.[7] SBHCs are described as a model that increases health care access for children and youth who are racial/ethnic minorities and in low-income communities.[7] SBHCs can be located on various school types including elementary schools, middle schools, high schools, and non-traditional schools.[7] The proximity of SBHCs to schools increases health care access and reduces barriers including transportation, time, cost, confidentiality concerns, and continuity of care.[7] SBHCs can provide developmentally appropriate and confidential RH services.[8] SBHCs allow adolescents to seek services when they want or need to.

Provision of Contraception and Access to Reproductive Health

The number of SBHCs in the U.S. has grown since the academic year 1998-1999 from 1,135 to 2,584 SBHCs in 2016-2017.[7] In 2016-2017, the most recent year of published data, less than half (46%) of adolescent-serving SBHCs in the U.S. dispensed at least one contraceptive method on-site.[9] Although adolescents face poor RH outcomes, and SBHCs have increased over the past 20 years, the provision of contraceptives and screening for STIs among adolescents in SBHC settings remains controversial. RH services are influenced by varying state minor consent and privacy laws and policies.[6,110,11,12,13] SBHCs that can provide RH care may be restricted from providing a full range of contraceptive services due to varying state laws and policies.[13] Standardizing the provision of contraceptive care that includes a full range of access (i.e. dispensed on-site at the SBHCs) could increase adolescent access to contraceptives; thus, decreasing time of contraceptive initiation, reducing undesired teen pregnancy, and improving birth outcomes.[14,15]

The U.S. Health Resources and Service Administration (HRSA) under the Women's Preventative Services Guidelines recommends that adolescents have access to a full range of female-controlled contraceptives to prevent undesired pregnancy and improve birth outcomes.[16] The U.S. Food and Drug Administration describes a full range of contraceptive methods for women including: sterilization surgery; surgical sterilization via implant; implantable rods; copper intrauterine devices; intrauterine devices (IUDs) with progestin; the injection; oral contraceptives, contraceptive patches; vaginal rings; diaphragms; contraceptive sponges; cervical caps; female condoms; spermicides and emergency contraception.[16] However, for this review, full range access is defined as availability of any type of contraceptive being dispensed on-site at the SBHCs.

Influence of Policies and Laws on SBHCs Reproductive Health Services

Policies and laws guide the availability of RH services and contraception offered to minors at SBHCs. Controversy regarding these services is related to both state and federal laws. Minor consent and privacy laws vary by state; some states do not have an explicit policy in place.[13] Minor consent and privacy laws allow adolescent to access confidential and sensitive services. Confidential and sensitive services are defined as accessing services for sexual assault evaluation, STI testing and treatment, HIV testing and treatment, contraceptive care, prenatal care, substance abuse treatment, and mental health care.[13,17,18]

Parents are described as playing an influential role in providing support or opposition to legislators on consent and minor confidentiality laws.[18,19] Privacy protection laws include disclosure of sensitive services to parents or guardians and access to adolescents' health information in the electronic health record (EHR) due the 21st Century Cures Act.[13] The 21stCentury Cures Act's ban on "information blocking" compromises adolescent

confidentiality.[20] Although clinicians may have intentions to protect the adolescent's confidentiality and privacy, the parent or guardian may have access to the adolescent's EHR gaining access to confidential clinical care notes, laboratory results, and medications.[20] Protecting confidentiality and privacy for adolescents is critical to continue promoting access to sensitive and confidential care.

The lack of access to full-service contraception and RH services at SBHCs creates barriers to the initiation of contraceptive methods, disrupts the life course of sexually active adolescents, and results in poorer health outcomes, and persistent racial and health disparities. Moreover, little is known about which policies are most effective for promoting effective school-based health services. Therefore, there is a need to examine the characteristics and policies that influence access to contraceptives dispensed on-site and RH services at SBHCs.

The aims of this integrative literature review are: (1) to describe the proportion of SBHCs in the U.S. that provide contraception and RH services, (2) to investigate the specific characteristics of contraceptive and RH services provided by SBHCs among public middle and high schools in the U.S., and (3) to examine the influence of policies and funding on the existence of services provided at SBHCs in public middle and high schools in the U.S.

Methods

Search Strategy

This review focuses on contraception and RH services at SBHCs in public middle and high schools in the U.S. Literature search strategies were developed in consultation with a research librarian and utilized medical subject headings (MeSH) terms and keywords related to the phenomena of interest. The databases searched were PubMed, Embase, ERIC, CINAHL and Web of Science. The main search terms applied were teen pregnancy, adolescent, pregnancy

prevention, school-based health centers, contraception, and reproductive health. A hand search of the references was also conducted.

Inclusion criteria for the literature search were: (1) SBHCs in public middle and high schools in the U.S.; (2) quantitative studies with the following designs - randomized controlled trials (RCTs), quasi-experimental studies, cross sectional, case-control and longitudinal studies, cohort studies; (3) qualitative studies; (4) mixed- method studies; (5) available in full text, published in English and in a peer reviewed journal; (6) studies focused on contraception and/or RH services; (7) studies focused on policy and/or funding influence and; (8) studies that were published from January 1, 2011 through December 28, 2023 to capture contemporary practices.

The exclusion criteria applied were: (1) SBHCs in public elementary schools; (2) SBHCs outside of the U.S.; (3) studies that were focused on adolescent pregnancy prevention programs not provided through a SBHC; (4) studies that focused on clinic settings other than SBHCs; and (5) commentaries, reviews, and pilot studies.

Study Selection and Data Extraction

The literature search results were imported to EndNote20 software to facilitate screening and removal of duplicates. Initial titles and abstracts were screened by the first author. The studies with eligible abstracts were included for full text screening. Studies that did not meet inclusion criteria were excluded with documented rationale for their exclusion (**Figure 2.1**). Studies where it was unclear if they fit the inclusion criteria from abstract or full text review were reviewed by additional authors and decisions made by consensus.

Key study characteristics and findings from the included studies were extracted and summarized: author, publication year, location, setting, research question or aims, study design,

sample characteristics, study methods, data source, analysis, results, strengths, and limitations (**Table 2.1**).

Quality Appraisal

The studies were critically appraised utilizing the Quality Assessment Tool for Methodologically Diverse Research Articles (QATSDD).[21] The QATSDD is a 16-criteria quality assessment tool[22] for assessing the quality of quantitative, qualitative, and mixed methods studies. Fourteen of the criteria apply to qualitative and quantitative studies, and all 16 criteria are applicable to mixed methods studies. The criteria are measured on a 4-point Likert scale, 0 (not at all), 1 (very slightly), 2 (moderately) and 3 (complete) (**Table 2.2**).[21]

Results

Eight studies met the inclusion criteria and were included for the final analysis (**Figure 2.1** and **Table 2.1**). Two studies utilized the same dataset, but reported on different outcomes.[23,24] The studies were conducted from 2011 to 2022. Seven of the studies were from five states: California, New York, Oregon, Texas, and Washington. One was a national study that included participating SBHCs by U.S. region. The study designs were cross-sectional, retrospective, quasi-experimental, and mixed methods. The SBHC sample sizes ranged from one SBHC to 1,418 SBHCs in the U.S.[9,25] The SBHCs were located at public middle and high schools.

The literature reviewed did not define female or male in their study. For the purpose of this literature review the following definition was used, male and female are a person's assigned sex also termed as biological sex defined as "...anatomical, physiological, genetic, or physical attributes that determine if a person is male, female or intersex…"[26] These attributes include both "…primary and secondary sex characteristics, including genitalia, gonads, hormone levels,

hormone receptors, chromosomes, and genes."[26] In addition, Hispanic and Latino were also not defined and this literature review applied the following definitions; Hispanic was defined as "...a person with ancestry from a county whose primary language is Spanish" and Latino was defined as "...a person with origins from anywhere in Latin America (Mexico, South and Central America) and the Caribbean."[27]

The adolescents in the study samples ranged from 14-22 years of age or were described as students in the 7th through 12th grade. Racial and ethnic demographics varied across studies. Three studies had a majority of adolescents that identified as White.[23,24,29] In one study, the majority (78%) of males and females identified as Latino while in another study a greater percentage (88.1%) identified as Hispanic.[10,25] Two studies also consisted of a predominantly Hispanic sample.[28,30] Three studies included both male and female adolescents[10,25,29], while four studies only included females in their sample.[23,24,28,30] One study did not include adolescent characteristics, however, did include SBHC characteristics.[9]

Objective measurements included in the studies were International Classification of Diseases, Ninth Revision (ICD-9) and International Classification of Diseases, Tenth Revision (ICD-10)[23,24] diagnosis codes, Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) [23,24] procedure codes. A retrospective chart review through an EHR database was conducted to retrieve objective measures.[30] Additional objective measures used were contraceptive method type (implant, IUD, other), receipt of services (ever received RH care, received STI or pregnancy care and ever had an STI test) and Title X Public Health Service Act (Title X) status. Title X is a federally funded family planning program designated to provide RH services to low-income, uninsured, and adolescent individuals.[31] One study used survey data to examine on-site dispensing, and whether the SBHC provided one or more

contraceptive methods.[9] In the same study, survey data were used to examine school district, state law/policy/regulation, sponsor or SBHC policies that prohibited contraceptive provision.[9]

Two studies used survey data including questionnaires modeled after the 2007 New York City (NYC) Youth Risk Behavior Survey and questions related to contraceptive use, use of health services, clinical counseling, sexual education, and willingness to use the SBHC.[10,25] One study utilized the 2015 Oregon Healthy Teens Survey to examine lifetime sexual behavior, lifetime healthy sexual behavior, and sexual behavior in the past three months among those with and without access to a SBHC.[29] Further, one study utilized both surveys and interviews.[28] The surveys were conducted to examine telehealth uptake and satisfaction among adolescents initiating a long-acting reversible contraception (LARC) at SBHCs in NYC. The in-depth interviews were conducted to explore experiences with LARC services and perceptions of telehealth at SBHCs.[28]

Convenience sampling was utilized in six studies.[9,25, 26, 28-30] The national study used the Census survey which was a computer assisted self-administered survey completed by representatives of SBHCs in the School-Based Health Alliance's national database.[9] One study recruited participants from a classroom where classes were randomly selected from the Spring schedule of classes and can be considered as cluster sampling method.[10] There were limitations in the included studies that should be taken into consideration. First, two studies utilized the same dataset, however, different variables were examined.[23,24] Second, there are limitations to self-administered survey data collection including recall and response bias. Third, the surveys were created in English and translated into Spanish without description of validation of the translated survey instruments, compromising validity of the instruments.[10] Fourth, the literature reviewed did not report the application of a theoretical framework.

The quality of the eight studies included was moderate. Studies were not excluded based on quality scores due to limited literature on this topic. The percentage of the QATSDD ranged from 64% to 83% with an average quality score of 76% (**Table 2.2**).

Proportion of SBHCs that Provide Contraception and Reproductive Health Services

Only four studies described the proportion of contraception and RH services.[9,23-25] A national sample of SBHCs that 46% of SBHCs serving adolescents dispensed one or more contraceptive methods on-site.[9] One study examined SBHCs in Oregon that prescribed and dispensed contraceptives on-site; 74% of the SBHCs prescribed contraceptives while 52% both prescribed and dispensed contraceptives on-site.[29] The trend of LARC provision was examined with Title X participation where Title X participating SBHCs provided an increased number of both IUDs and implants (67%).[23] Title X participating SBHCs also provided a higher proportion of IUD and implant visits, receipt of IUDs (3%) and receipt of implant (4%) compared to non-Title X 0.4% and 2%.[23] A study conducted in Oregon examined LARC provision and contraceptive counseling among SBHCs and community health centers (CHCs).[24] CHCs were more likely to provide on-site LARC (67%) compared to SBHCs (36%), however SBHCs provided more contraception counseling visits per clinic (255 vs 142) and greater contraception provision to adolescents.[24]

Receipt of Reproductive Health Services and Contraception at SBHCs and Student Health Outcomes

Ethier et al. (2011) was the only study that compared receipt of services among male and female adolescents. Adolescent males with access to a SBHC were no more likely than those without to have reproductive health care, have sexually transmitted disease/infection (STD/STI) or pregnancy prevention care, use contraceptives at last sex, and have screening for an STI.[10]

Adolescent females with access to a SBHC were more likely to have had STI or pregnancy prevention care, have used hormonal contraceptives at last sex, and be screened for an STI.[10] In addition, adolescent females with access to a SBHC were more likely to have used emergency contraception at their last sexual encounter compared to those without access to a SBHC.[10]

SBHCs in Oregon that prescribed and dispensed contraceptives on-site were positively associated with contraceptive use among 11th graders who had ever had sex and those who had sex within the past three months compared to those without a SBHC.[29] Students with access to SBHCs that prescribed and dispensed contraceptives and had ever had sex were 42% more likely to report contraceptive use at last sex. Similarly, students who reported having sex within the past three months with access to SBHCs that prescribed and dispensed contraceptives were 77% more likely to report contraceptive use at last sex. The types of contraceptives prescribed and dispensed at the SBHCs in this study (located in Oregon) were not examined.[29]

Provision of Contraceptives at SBHCs

Smith et al. (2011) compared an SBHC that dispensed contraceptives on-site with a SBHC that used a referral policy and did not dispense contraceptives on-site. The SBHC that dispensed contraceptives on-site compared to the SBHC with a referral policy had a greater number of kept appointments for hormonal contraception and lower pregnancy rates.[30] Furthermore, Sullivan et al. (2022) examined contraceptives dispensed on-site at SBHCs nationally by a report of one or more contraceptives on-site and LARC provision. Contraception provision with one or more contraceptives dispensed on-site was reported by 46% of SBHCs nationwide. SBHCs located in urban areas and in high schools had more than 3 times the odds of providing one or more method on-site.[9] In addition, SBHCs in the West and Northeast regions of the U.S. were found to have greater odds ($p<0.001$) of providing contraceptives. The Southern

regions of the U.S. were found to have the largest number of adolescent-serving SBHCs but had the lowest percentage of dispensed contraceptives.[9] The low provision of contraceptives at SBHCs in the South region may be related to the variability in state minor consent policies for sensitive health care services including STI testing and treatment, HIV testing and treatment, and contraception.[13]

The provision of LARCs in Oregon was described as IUDs and implants, only implants, only IUDs, or neither.[23,24] LARC provision was examined in NYC as implants and IUDs.[28] The national study found that administration of LARC increased from 2% in 2002 to 23% in 2017 with a cumulative change of 1,761% in 15 years.[9] LARC provision was compared among SBHCs and CHCs in Oregon. LARC initiation was examined with telehealth uptake and satisfaction with services at SBHCs in NYC during the COVID-19 pandemic.[28] Contraceptive implants had greater initiation (62%) compared to IUDs (38%) at the SBHCs in NYC.[28] Telehealth visits were not preferred over in-person visits, 82% of respondents preferred to be seen in-person for future LARC visits while 17.8% reported no preference. None of the respondents preferred telehealth as a visit format at SBHCs in NYC.[28] Contraceptive counseling was also examined in a comparison among CHCs and SBHCs in Oregon.[24] SBHCs in Oregon offered more counseling visits per clinic, highlighting the importance of providing contraceptive counseling and access.[24]

Although Sullivan et al. (2022) examined if one or more contraceptives were dispensed on-site, the studies did not examine if the types of contraceptives provided were in full range. Lastly, although seven studies did not examine barriers to services, there were two studies that examined policy barriers.[9,30]

Policy and Funding Influence

Two studies reported the influence of policy on the provision of contraception at SBHCs.[9,30] Smith et al. (20211) examined differences between a SBHC that did not dispense contraceptives on-site but used a referral policy for this service with a SBHC that dispensed contraceptives on-site. The SBHC with provision of contraceptives dispensed on-site compared to the SBHC with referral policy had a greater number of kept appointments for hormonal contraception and lower pregnancy rates. Sullivan et al. (2022) described policy influence as policy-level barriers to providing access to contraceptive methods.[9] The policies reported in the study were school district, state law/policy/regulation, and sponsor or SBHC policy. Policies at the school or district level had the greatest impact on the dispensing of contraceptives on-site.[9] These policies are reported to negatively impact the provision of contraceptives as they prohibit on-site dispensing at SBHCs. There was a downward trend from 2001 to 2017 in the proportion of SBHCs reporting policy prohibition.[9] Smith et al. (20211) reported the contraceptive service policy for dispensing on-site was determined by the school principal based on political and personal factors.[30]

Funding influences were also examined on the existence of services provided at SBHCs. Title X status was examined in three studies.[23,24,30] The studies compared SBHCs that participated in Title X to those that did not participate. Title X status was also examined with LARC provision[23,24] and on-site dispensing of contraceptives.[30] Title X SBHCs provided more IUDs and implants and a higher proportion of IUD and implant visits.[23,24]

Discussion

This integrative literature review provides a new analysis of the proportion of SBHCs providing RH services and contraception for adolescents, their characteristics, policy, and funding influences over the past decade in the U.S.

Proportion of SBHCs that Provide Contraception and Reproductive Health Services

According to the most recent published data, about 50% of SBHCs dispense contraceptives on-site.[9] SBHCs and RH services provided have expanded from prior decades, however, gaps in RH and contraception services persist. A persistent gap in the literature includes the uneven representation of SBHCs across the U.S. and the inability to compare access to services at SBHCs. For example, five of the studies were on the West or East Coast of the U.S.,[10,23,24,25,29] and only one was a national study.[9] Studies that specifically examined SBHCs in rural locations were not found. Future studies are needed in the South and Midwest parts of the country to further examine the RH and contraception services in these geographic regions. Specifically, future studies are needed in the Southern region of the U.S. as it accounts for the largest number of SBHCs however the lowest percentage in provision of contraception.[9]

Characteristics of Reproductive Health Services and Contraception at SBHCs

The provision of RH services and contraception varied across SBHCs and ranged from contraception counseling to LARCs, IUDs, and implants.[9,10,23,24,28,29] SBHCs continue to provide STI screening, pregnancy prevention care, and contraceptive methods. [9,10,23,24,28,29] Further, LARC provision at SBHCs has an overall increase of 1,761% in 15 years.[9] Racial and ethnic health inequity among adolescent populations persists. The studies lacked representation of diverse adolescent populations. [10,23,24,25,28,29,30] Non-white adolescents (2.6-2.9%) had lower adjusted probability of LARC provision visits compared to their white counterparts (3.6%) at

SBHCs in Oregon,[23] indicating the need to investigate factors in inequity to LARC provision. These studies highlight the need for future research to examine racial and ethnic disparities aimed at improving sexual health outcomes and health inequities among underserved adolescent populations.

New findings on the characteristics of RH services include adolescents' preference for in-person versus telehealth LARC follow-up visits and greater number of kept appointments for hormonal contraception at SBHCs.[28,30] SBHCs also provide more contraceptive counseling visits and greater contraception provision compared to CHCs.[24] Adolescents are utilizing RH services at SBHCs located at public middle and high schools in the U.S. These findings support the need for access to SBHCs that provide RH services and contraception. The findings on the characteristics of RH services and contraception support the vital role of SBHCs as they can provide unique access to sensitive confidential services, contraception, pregnancy testing, and STI screening for adolescent populations. Future studies are needed to examine the range of RH services being provided at SBHCs. Lastly, studies conducted outside of the U.S. should be considered as they could provide insight to the contraceptive and RH services provided to adolescents in other countries.

Policy and Funding Influence

Funding and policies continue to influence RH services and contraception at SBHCs[9,23,30]. Title X as a funding source was an important SBHC characteristic with increased LARC provision.[23] Other funding sources were not examined in the studies. Provision policies are also influenced by school principals based on political and personal factors,[30] highlighting community level influences on contraception provision policies at SBHCs. The national study supports existing literature regarding school and school district policy influence on the provision

of contraception, although this trend is now declining.[9] The results from this review can inform policy and support advocacy for increased and equitable access to RH services and the provision of contraception at SBHCs. Specifically, this review can increase engagement at the school and school district level to address barriers and continue expanding the provision of services at SBHCs.

Conclusion

This literature review supports the important role of the provision of contraceptives and access to RH services at SBHCs among adolescent populations. Adolescents should have the right and be empowered to make informed and autonomous decisions about their sexuality, RH and have access to these essential services. The provision of contraceptives dispensed on-site and LARCs at SBHCs has increased over time, but equity has not been achieved.[9,23,24] The increase in LARCs may reflect the accessibility and acceptability of these methods among adolescent populations. In addition, future studies are needed to examine the proportion of SBHCs in the U.S. that provide any RH services.

Although SBHCs are recognized as an evidence-based model for providing RH services and contraceptives, many face challenges with funding and policies that impact access to these services. Future studies examining provision of full range contraceptives and RH services at SBHCs at a national level are needed. Research aiming to increase the capacity of SBHCs to provide equitable and comprehensive RH services is crucial. More research is needed to examine current policies, if any, at the federal, state, school/school district and sponsoring health organization level.

Racial and ethnic disparities persist, needing more attention to achieve health equity. There is a need for future studies that apply theories or conceptual frameworks that consider the

root of racial and ethnic disparities and oppression, including structural, community, and organizational influences. Future studies addressing these concepts will inform policymakers and reproductive justice policy advocates in advocating for standardized access to RH services and the provision of contraceptives at SBHCs.

Table 2.1 *Study Characteristics*

Study (Author, year)	State	Study Design	Aims	Data Source	Outcome Measures	Sample	Setting of SBHC	Age	Overall Conclusion
Bersamin et al. (2018)[29]	Oregon	Cross-sectional	To investigate the association between SBHCs and sexual behavior and contraceptive use among 11th graders.	2015 Oregon Healthy Teens survey, Oregon Health Authority Public Health Division	Sexual behavior, lifetime; Healthy sexual behavior, lifetime; Sexual behavior, past 3 months	134 high schools, 27 high schools with SBHCs	High School	11th graders	SBHC presence is positively associated with healthy sexual behavior. Among sexually active adolescents, SBHC presence is positively associated with contraception at last sexual intercourse. Among sexually active students, greater likelihood of contraceptive use at SBHCs that prescribe and dispense contraceptives compared to those that do not.
Boniface et al. (2022)[24]	Oregon	Retrospective cohort study	To examine the role Oregon SBHCs compared to CHCs play as sources of adolescent contraceptive care (counseling and provision of most effective methods) at the visit level.	EHR, Oregon electronic health record data, 2012-2016	Diagnosis codes (ICD-9 and ICD-10) and procedure codes (CPT and HCPCS)	33 SBHCs, 58 CHCs	Rural and urban; SBHC described as serving adolescents	14-19 years of age	CHCs and SBHCs are sources of contraceptive services for adolescents. SBHCs participation in Title X plays an important role, including improvement of on-site access to LARC. Over time SBHCs had a greater increase in LARC provision. SBHCs served younger and non-white adolescents.

Key Legend: Key Legend: School-based health center (SBHC), school health center (SHC), School-based health alliance (SBHA), community health clinic (CHC), sexually transmitted disease (STD), long-acting reversible contraception (LARC), intrauterine device (IUD), electronic health record (EHR), United States (US), New York City (NYC), international classification of diseases, tenth revision (ICD-10), international classification of diseases, ninth revision (ICD-9), current procedural terminology (CPT), healthcare common procedure coding system (HCPCS)

Table 2.1 *Study Characteristics*

Study (Author, year)	State	Study Design	Aims	Data Source	Outcome Measures	Sample	Setting of SBHC	Age	Overall Conclusion
Boniface et al. (2021)[23]	Oregon	Retrospective cohort study	To examine the provision of contraception of adolescents at Oregon SBHCs. To examine trends over time, by race/ethnicity, Title X clinic status.	EHR, Oregon electronic health record data, 2012-2016	Diagnosis codes (ICD-9 and ICD-10) and procedure codes (CPT and HCPCS)	33 SBHCs, 58 CHCs	Rural and urban SBHC described as serving adolescents	14-19 years of age	The provision of IUDs and implants increased from 2012-2016. There was a higher rate of implant provision compared to IUDs. The provision of hormonal methods decreased from 2012-2016. Title X SBHCs provide more contraceptive care to adolescents than non-Title X SBHCs. Non-white adolescents had lower probabilities of LARC provision than white adolescents.
Ethier et al. (2011)[10]	California	Quasi-experimental	To examine whether students from urban high schools selected from areas with high rates of teen births and STDs will differ in their receipt of reproductive health care and use of contraception depending on whether they have access to a SBHC.	Survey instrument for demographics, sexual behavior, and receipt of services Authors utilized questions from the Youth Behavior Risk Survey	Sexual behavior, and receipt of services	6 SBHCs	High school, urban	15-19 years of age	The population reflects the persistent racial and ethnic health disparities experienced by adolescent populations. This study supports the important role of SBHC access to sensitive services and for the prevention of teen pregnancy and STDs among adolescent high school student populations.

Key Legend: Key Legend: School-based health center (SBHC), school health center (SHC), School-based health alliance (SBHA), community health clinic (CHC), sexually transmitted disease (STD), long-acting reversible contraception (LARC), intrauterine device (IUD), electronic health record (EHR), United States (US), New York City (NYC), international classification of diseases, tenth revision (ICD-10), international classification of diseases, ninth revision (ICD-9), current procedural terminology (CPT), healthcare common procedure coding system (HCPCS)

Table 2.1 *Study Characteristics*

Study (Author, year)	State	Study Design	Aims	Data Source	Outcome Measures	Sample	Setting of SBHC	Age	Overall Conclusion
Maier et al. (2023)[28]	New York	Mixed methods	To explore adolescents' preferences and experiences with telehealth supported LARC services in New York City SBHCs during the COVID-19 pandemic.	Semi-structured 30–60-minute interviews and survey	Survey assessing telehealth uptake and satisfaction with services among patients initiating a LARC method; Exploring experiences with SBHC based LARC services and perceptions of telehealth	6 SBHCs	Urban	14-21 years of age	Low uptake and preference for telehealth in the SBHC. Adolescents and young adults prefer in-person SBHC visits. SBHCs access may eliminate barriers to care.
Minguez et al. (2015)[25]	New York	Quasi-experimental	To examine the willingness of students to use the SBHC for reproductive health education, contraceptive counseling, and use of contraception in comparison with a similar New York City high school without a SBHC.	64 item questionnaire modeled after the 2007 NYC Youth Risk Behavior Survey	Willingness to use SHC for reproductive health care, receipt of classroom education and health care provider counseling, use of contraception, and source of contraception	1 SBHC	High school, urban	High school aged	Students with access to reproductive health services provided by a SHC had greater exposure to reproductive health education, counseling, and use of hormonal contraception.

Key Legend: Key Legend: School-based health center (SBHC), school health center (SHC), School-based health alliance (SBHA), community health clinic (CHC), sexually transmitted disease (STD), long-acting reversible contraception (LARC), intrauterine device (IUD), electronic health record (EHR), United States (US), New York City (NYC), international classification of diseases, tenth revision (ICD-10), international classification of diseases, ninth revision (ICD-9), current procedural terminology (CPT), healthcare common procedure coding system (HCPCS)

Table 2.1 *Study Characteristics*

Study (Author, year)	State	Study Design	Aims	Data Source	Outcome Measures	Sample	Setting of SBHC	Age	Overall Conclusion
Smith et al. (2011)[30]	Texas	Retrospective cohort study	To determine if receipt of hormonal contraception on-site compared to providing referral for hormonal contraception affected subsequent pregnancy rates.	Chart review and electronic database review from 9/2008-12/2009	Positive pregnancy test result during or after birth control use	2 SBHCs	Urban	14-22 years of age	Students with access to on-site hormonal contraception had significantly lower rates of pregnancy and higher frequency of kept follow up appointments compared to SBHC that used a referral policy for contraception. Pregnancy rates were also higher among students without a prior history of pregnancy at the SBHC that used a referral policy for contraception.
Sullivan et al. (2022)[9]	South, Northeast, Midwest, and West U.S. regions	Cross-sectional study	To examine the predictors and characteristics of contraceptive provision at SBHCs in the 2016-2017 school year, changes in the types of methods provided at SBHCs between 2001 and 2017, changes in reported barriers to contraceptive provision at SBHCs between 2001 and 2017.	SBHAs-National School Based Health Care Census data collected from 2001 to 2017 and 2015-2016 National Center for Education Statistics Public Elementary/ Secondary School Universe Survey data	Whether the SBHC provided 1 or more contraceptive method on site, respondent report of the types of policies, if any that prohibit contraceptive provision	1,418 SBHCs	Middle school, high school, urban, rural	Middle and high school aged	46% of adolescent serving SBHCs dispense 1 or more contraceptive methods on site. SBHC years of operation, urban/rural geography, host school type, and provider team were significant predictors of contraceptive provision. A downward trend in the proportion of SBHCs reported policy prohibition. Between 2002 and 2017, SBHCs providing 1 or more on-site contraceptives increased. The number of and adolescent serving SBHCs increased.

Key Legend: Key Legend: School-based health center (SBHC), school health center (SHC), School-based health alliance (SBHA), community health clinic (CHC), sexually transmitted disease (STD), long-acting reversible contraception (LARC), intrauterine device (IUD), electronic health record (EHR), United States (US), New York City (NYC), international classification of diseases, tenth revision (ICD-10), international classification of diseases, ninth revision (ICD-9), current procedural terminology (CPT), healthcare common procedure coding system (HCPCS)

Table 2.2 *QATSDD Quality Assessment*

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Sum of scores	Percentage score
Bersamin et al. (2018)[29]	3	3	3	1	3	3	2	1	0	3	3	3	0	3	n/a	n/a	31	74%
Boniface et al. (2022)[24]	3	3	3	1	2	3	2	2	0	3	3	3	0	2	n/a	n/a	30	71%
Boniface et al. (2021)[23]	3	3	3	1	2	3	3	3	1	3	3	3	0	2	n/a	n/a	33	79%
Ethier et al. (2011)[10]	3	3	3	1	3	3	2	3	0	3	3	3	0	2	n/a	n/a	32	76%
Maier et al. (2023)[28]	3	3	3	1	1	3	3	3	0	3	3	3	3	3	3	2	40	83%
Minguez et al. (2015)[25]	3	3	3	1	2	3	3	3	1	3	3	3	0	3	n/a	n/a	34	81%
Smith et al. (2011)[30]	3	3	2	1	1	3	2	1	0	3	3	2	0	3	n/a	n/a	27	64%
Sullivan et al. (2022)[9]	3	3	3	1	3	3	2	3	0	3	3	3	0	3	n/a	n/a	33	79%

Key Legend: Quality Assessment Tool for Methodologically Diverse Research Articles (QATSDD)

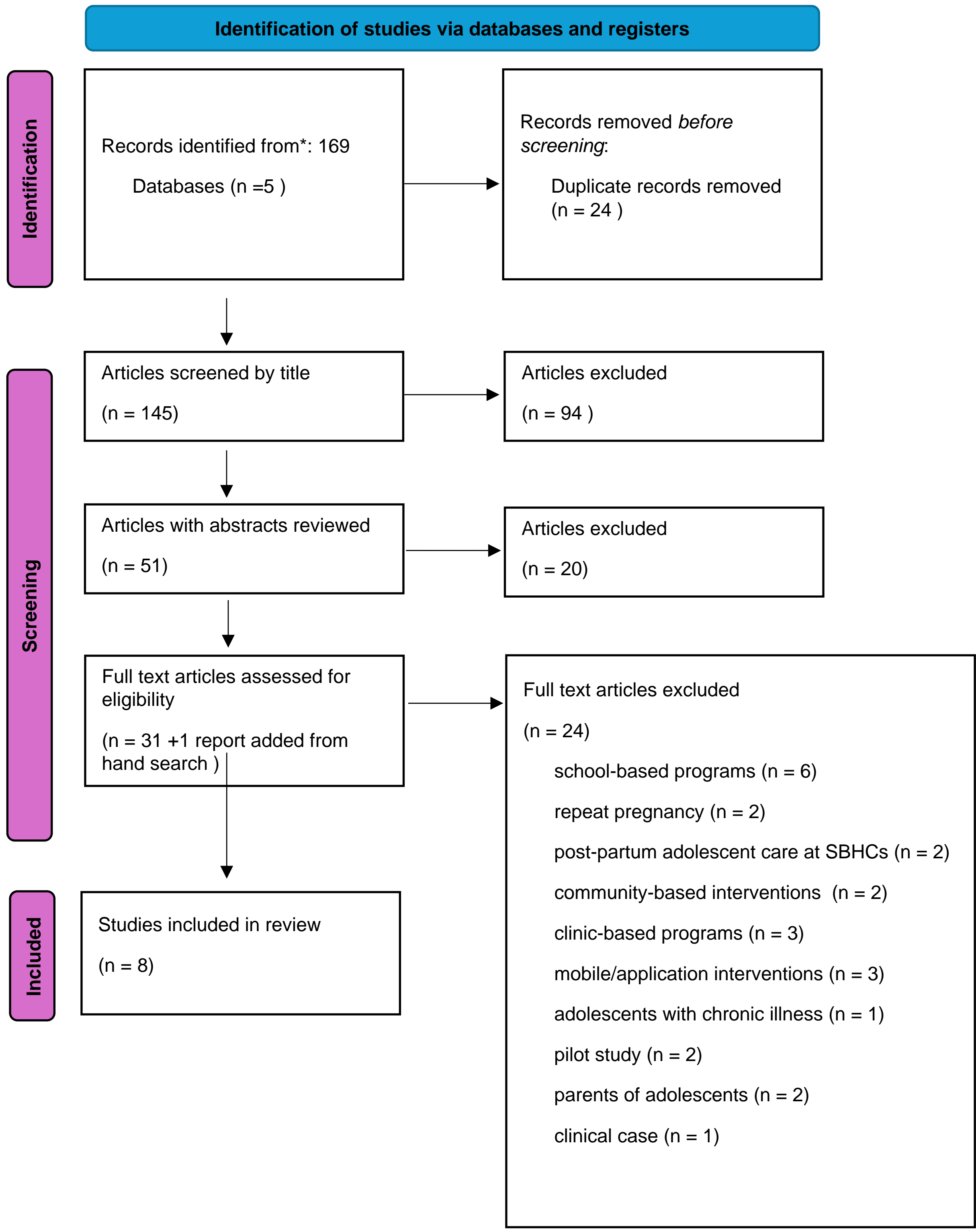

Figure 2.1 *PRISMA Diagram*

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Chapter 3

Structural, Organizational, and Community Characteristics Associated with the Provision of Sexual and Reproductive Health Services at U.S. School-Based Health Centers

Structural, Organizational, and Community Characteristics Associated with the Provision of Sexual and Reproductive Health Services at U.S. School-Based Health Centers

Abstract

Introduction: Access to sexual and reproductive health (SRH) services at school-based health centers (SBHCs) remains inequitable and it is unclear what current factors have the greatest influence on the provision of these services. The primary outcome measure of interest was whether SBHCs provided any SRH services. The study aimed to (1) identify the proportion of SBHCs in the United States (U.S.) that provide any SRH service and the structural, organizational, and community level characteristics of SBHCs that provide these services; and (2) examine structural, organizational, and community level characteristics associated with SRH service provision.

Methods: This study analyzed secondary cross-sectional data from the 2021-2022 National School-Based Health Care Census survey from 1,016 SBHCs nationally, along with public data from the National Center for Education Statistics for SBHCs during the 2021-2022 school year. The primary outcome measure of interest was whether SBHCs provided any SRH services. Analysis included bivariate analyses with chi-square tests and a forward stepwise logistic regression model with omnibus Wald tests for covariates with more than two groups.

Results: Eighty-four percent of adolescent-serving SBHCs in this study offered SRH services in the 2021-2022 school year. SBHCs that received state and local government funding, were located at middle, high, or combined grade schools, were operating for 10 or more years, and employed physician assistants on their primary care staff had greater odds of providing any SRH services. SBHCs in the southern region of the U.S. and those located in an elementary school had lower odds of providing any SRH service.

Conclusions: This study provides a contemporary description of the provision of SRH services at U.S. SBHCs. Advocacy is needed at the state and local levels to support access to SRH services.

Introduction

Adolescents face increased risk of sexual and reproductive health (SRH) problems, such as pregnancy and sexually transmitted infections (STIs). Adolescent birth rates in the United States (U.S.) continue to decline, with birth rates decreasing 7% from 2020 to 2021 among adolescents ages 15 to 19 years (Osterman et al., 2023). Overall, adolescent birth rates are trending downward each year with an overall decrease of 67% from 2007 through 2021 (Osterman et al., 2023). However, the U.S. continues to have higher birth rates for young people under 19 years of age compared to other high resource countries (Centers for Disease Control and Prevention [CDC], 2021).

Poor health and educational outcomes are associated with adolescent births. For example, 53% of adolescents who give birth obtain a high school diploma by age 22 years, compared to 90% of those who do not give birth during adolescence (Child Trends, 2018). Racial and ethnic inequities persist as Black and Latinx adolescents in the U.S. continue to experience disproportionately higher rates of teen births. The CDC 2021 data describe adolescent Black and Latinx (21 births) females aged 15 to 19 years experienced disproportionately higher birth rates compared to their White counterparts (Black: 22 births/1,000 adolescents; Latinx: 21 births/1,000 adolescents; White: 9 births/1,000 adolescents; CDC, 2024).

STIs are another health concern faced by adolescents. In 2022, adolescents had more than 2.5 million STI cases, including chlamydia, gonorrhea, and syphilis (CDC, 2022). Further, there was an alarming 79% increase in syphilis and a 183% increase in congenital syphilis rates for

adolescents between 2018 to 2022 (CDC, 2024). In 2022, STIs among those aged 15-24 years accounted for 26% of the 16 billion dollars in direct medical costs in the U.S. (CDC, 2022). The rising STI rates among young people aged 15-24 years are attributed to a decreased likelihood of accessing preventative care (CDC, 2017).

School-based health centers (SBHCs) aim to increase access to SRH services and decrease negative SRH outcomes for adolescents by providing care where young people spend most of their day. SBHCs began in the 1960's and have since increased access to health care services for underserved children and adolescents (Love et al., 2019). Services at SBHCs are often provided by a multi-disciplinary team and may include primary care, immunizations, dental care, vision care, mental health services, nutrition education, social services, health promotion and SRH services (CSHA, 2023; Love et al., 2019). SBHCs are described as a student-focused health center or clinic located on or close to school grounds (CSHA, 2023). The number of SBHCs in the U.S. grew from 1,135 in 1998-1999 to 2,584 SBHCs in 2016-2017, which is the latest year of published data (Love et al., 2019). However, according to the most recent national data on SBHCs collected during the COVID-19 pandemic (2020-2021), only 50% of SBHCs in the U.S. offered SRH services, though availability of these services may have been impacted by the pandemic (Soleimanpour et al., 2021).

SRH services provided at SBHCs range from sexual health education, contraception, pregnancy testing, STI testing and treatment, counseling, and referrals to external services (CSHA, 2023). Research has shown that access to services, including SRH services, at SBHCs reduce barriers to health care access, including transportation, time, cost, confidentiality concerns, and continuity of care (Love et al., 2019). In the U.S., access to SRH services is influenced by varying state minor consent and privacy laws and policies (CSHA, 2023; Ethier et

al., 2011; Sharko et al., 2022). Additionally, availability of SRH services in the U.S. is influenced by funding sources at the federal, state and local government levels, particularly the Title X Public Health Service Act. The Title X Public Health Service Act is a federally funded program that was enacted in 1970 and the only federal domestic program that has supported access to family planning and preventative health services for adolescents, low-income, and uninsured individuals (Napili, 2023).

Developmentally appropriate SRH services at SBHCs are essential to support adolescents seeking this care and improve SRH outcomes (Keeton et al., 2012). SBHCs may help bridge income-based and racial/ethnic disparities for children and adolescents from low-income families (Love et al., 2019; Boudreaux et al., 2023). For instance, in California, SBHCs serve higher need schools, however, access is not equitable among highest need schools where 87% of students eligible for free and reduced priced lunch (FRPL) and 90% are students of color (California School-Based Health Alliance [CSHA], 2024). The National School Lunch Program (NSLP) provides eligible students in public schools with FRPL. FRPL is often used as a proxy measure for the percentage of students living in poverty or as a school level measure for school poverty (National Center for Education Statistics, 2023). Furthermore, FRPL is used as a measure for eligibility for the federal Title I program, which provides schools serving large populations of low-income families with supplemental federal funds for education programs and services (CSHA, 2024). SBHCs can increase access to health services for low-income children and adolescents, highlighting the need for equitable access to all services at SBHCs, including SRH.

This study updates and contributes new knowledge to the existing literature on the provision of SRH services at U.S. SBHCs. The present study builds on Sullivan et al.'s (2022) research, a cross-sectional study that utilized Census data from the 2016-2017 school year to

examine the characteristics and predictors of contraceptive provision along with the changes in barriers to contraceptive provision between 2001 and 2017 at SBHCs nationally. The Sullivan et al. (2022) study found that less than half (46%) of adolescent-serving SBHCs in the U.S. dispensed at least one contraceptive on-site in the 2016-2017 school year. Further, Sullivan et al. (2022) found that SBHCs located in the West U.S. region (>2 times greater odds), those operating for 10 years or more (>3 times greater odds), and those located at high schools (>4 times greater odds) or other schools that served combined or non-traditional grade levels (>2 times greater odds) had higher odds of dispensing at least one contraceptive method on-site. The Sullivan et al. (2022) study did not examine the provision of any SRH service or explicitly apply a theoretical framework and this study addresses these gaps. The present study sought to update the literature by exploring more recent data on SRH service provision from the 2021-2022 school year, as well as examining additional characteristics that may be associated with the provision of SRH services at SBHCs.

To our knowledge, no studies have explored the structural, organizational and community level characteristics of SRH provision at SBHCs nationally. The study aimed to (1) identify the proportion of SBHCs that are providing any SRH service and the structural, organizational, and community level characteristics of SBHCs that provide these services; and (2) examine structural, organizational, and community level characteristics associated with SRH service provision.

Methods

The study design is a secondary analysis of cross-sectional data from the 2021-2022 National School-Based Health Care Census survey (referred to as the Census) that was conducted by the School-Based Health Alliance (SBHA), in partnership with the University of California, San Francisco (UCSF), in 2022 (School-Based Health Alliance [SBHA], 2022). The dataset also included public school data from the National Center for Education Statistics on characteristics of students enrolled in schools where the study SBHCs were located during the 2021-2022 school year that were merged with the Census data by UCSF.

For over 20 years, the Census has documented the growth of SBHCs nationally (Love et al., 2019). The Census is conducted every three years; the most recent survey was conducted during the 2021-2022 school year. The survey is self-administered and self-reported by the individual that is identified as the most knowledgeable about the care delivered by the SBHC. These individuals include health care program directors, managers, administrators, providers or clinicians and administrative staff members (Love et al., 2019; Soleimanpour et al., 2023). The survey captures descriptive information on the operations of the SBHC and this data allows for reporting on SBHC programming and trends over time (Love et al., 2019).

Theoretical Framework

Prior literature on SRH services at SBHCs does not explicitly apply a theoretical framework (Ethier et al., 2011; Smith et al., 2011; Minguez et al., 2015; Bersamin et al., 2018; Boniface et al., 2021; Boniface et al., 2021; Sullivan et al., 2022; Maier et al., 2023). The intersectionality framework guided this research (Crenshaw, 1989). Intersectionality describes the interaction of multiple marginalized identities (i.e., race, ethnicity, gender, class) and how they shape an individual’s experience (Crenshaw, 1989). Adolescents can have multiple

marginalized identities including race, ethnicity, economic status, gender, sexuality and minor legal status. The adolescent's multiple marginalized identities can intersect at the SBHCs and impact their access to services. Crenshaw's (1989) intersectionality framework shows how racism and other forms of inequality impact access to health care, including SRH access based on these multiple intersecting factors (Ross & Solinger, 2021). The intersectionality framework provides a comprehensive approach to understanding the inequities in the provision of SRH services at SBHCs and creating solutions by examining structural, organizational, and community level influences. Applying the intersectionality framework to the Census data can help guide identifying structural, organizational and community level intervention recommendations to address the inequity of SRH services at SBHCs nationally without ignoring racial ethnic inequities among adolescent populations.

Study Sample

The 2021-2022 Census sample included 1,518 SBHCs, representing approximately 500 sponsoring organizations across 47 states and the District of Columbia. The Census sample accounted for approximately 39% of the estimated 3,900 SBHCs nationally that were known to the SBHA in 2022. The Census sample excluded SBHCs that did not complete the survey (43%; n= 2,237) and did not provide primary care during the 2021-2022 academic year due to not meeting the SBHA's definition of a SBHC (9%; n= 353). The final study sample excluded SBHCs that were not adolescent-serving (located at a school that served students in grade 6 and higher) (13%; n= 493). SBHCs that had inconsistent responses to questions about receipt of federal funding and Title X Public Health Service Act participation (0.1%; n=3), and SBHCs that were reported to be permanently closed (<0.1%; n= 1) or not open (0.2%; n= 5) during the 2021-

2021 school year were also excluded. The final study sample comprised 1,016 SBHCs that met the inclusion criteria.

IRB Approval

The study was determined to be non-human subjects research by the Institutional Review Board (study number 21-34271) because the data are about organizations and not human subjects.

Measures

Primary Outcome. The primary outcome measure of interest was whether the SBHC provided any SRH services. SRH services were defined in the Census as sexual health education and information, contraceptive provision or counseling, or pregnancy or STI prevention, testing, or treatment.

Structural Characteristics. The structural characteristics were defined as characteristics of healthcare systems (Brown et al., 2019). The covariates of interest extracted from the Census were U.S. region where the SBHC was located, federal government funding, state government funding, local government funding, and school system funding. U.S. regions were categorized as a structural characteristic as healthcare systems vary by state (U.S. Census Bureau, 2022) (**Table 3.1**).

Organizational Characteristics. Organizational characteristics were defined as characteristics of healthcare organizations available in the Census data. The organizational characteristics covariates were SBHC years of operation derived by subtracting the year the SBHC was established from the study year (2022), SBHC lead sponsor entity type, operational status of the SBHC during the 2021-2022 school year (fully or partially open), and whether the SBHC staffed

any of the following primary care providers (PCP): physicians, nurse practitioners (NP), or physician assistants (PA).

Community Characteristics. Community characteristics were defined as characteristics of socioeconomic, service, physical, and social environment (Brown et al., 2019). Community and school level covariates included school type where the SBHC was located, percentage of students that were FRPL-eligible at the school where the SBHC was located, percentage of Black, Indigenous, and other people of color (BIPOC) students at the school where the SBHC was located, and whether the school(s) where the SBHCs were located were eligible for the Title I program. These data, which were obtained from the National Center for Education Statistics (2023), were matched by UCSF to the Census data based on the name of the schools where respondents said the SBHC was located. Title I program was described as a community characteristic as it is based on the student population poverty level (California Department of Education, 2024; CSHA, 2024).

Statistical Analyses

Analyses were conducted with STATA/BE 17.0 software (College Station, Texas). To address the aim of describing the structural, organizational, and community level characteristics of SBHC that provide any SRH services, first a bivariate analysis with chi-square tests was conducted to compare proportions of each covariate in relation to the outcome variable (provision of any SRH service). Then, if the difference in proportions were statistically significant at the $p<0.2$ level, they were considered for inclusion in the multivariable model. Multiple imputation by chained equations with 10 imputations was conducted to handle missing data (a complete case analysis would have had 13% missing) (van Ginkel et al., 2020). Multiple random seeds were tested to ensure the results were stable. Next, a forward stepwise logistic

regression model was conducted to examine associations among the covariates and the provision of any SRH. Covariates significant at the $p<0.05$ level were retained in the final model, using omnibus Wald tests for covariates with more than two groups.

Results

Differences in Provision of SRH Services by SBHC Characteristic

Of the 1,016 SBHCs serving adolescents with data in the 2021-2022 Census that met study criteria, 84% (n= 850) provided SRH services. In bivariate analyses, there were significant differences between the proportion of SBHCs providing SRH services and those that did not by U.S. region, state and local government funding, operational status, years of operation, lead sponsor organization, PCP type employed, Title I school designation, type of school, and percentage of BIPOC student enrollment in the school where the SBHCs were located. Among the SBHCs that provided any SRH service (n=850) compared to those that did not provide any SRH service (n=166), the West U.S. region had the largest number of SBHCs that provided any SRH service (n= 292). Forty-five percent (n=377) of SBHCs that provided any SRH service reported receiving state government funding compared to 43% (n=68) of the SBHCs that did not provide any SRH service. Local government funding was received by 17% (n=148) of SBHCs that provided any SRH service compared to 5% (n=8) of SBHCs that did not provide any SRH service (**Table 3.2**). Receipt of Title X Public Health Service Act funding was 100% among the 18% (n=135) of SBHCs that received federal government funding and provided any SRH service, whereas none of the SBHCs that did not receive federal funding were eligible for Title X Public Health Service Act funding. Therefore, Title X Public Health Service Act was not included as a covariate.

Among the SBHCs that provided any SRH service, FQHC or similar was reported as the SBHCs lead sponsor by the majority of SBHCs (60%; n=505) and those that did not provide any SRH service (66%; n=110). Over half (56%; n=463) of SBHCs that provided any SRH service reported 10 or more years of operation compared to 34% (n=46) of those that did not provide any SRH service. Seventy-four percent (n=592) of SBHCs that provided any SRH service were located at schools that received Title I federal funding compared to 86% (n=137) of those that did not provide any SRH service. Among SBHCs that provided any SRH service, 62% (n=528) were located at high schools compared to 31% (n=52) of SBHCs that did not provide any SRH service. Forty-eight percent (n=406) of SBHCs that provided any SRH service were located at a school that had 75% or more BIPOC students enrolled compared with 42% (n=68) of those SBHCs that did not provide any SRH service (**Table 3.2**).

Factors Associated with SBHC SRH Service Provision

The multivariable model from a forward stepwise multivariate logistic regression comparing SBHCs that provided any SRH services with SBHCs that did not provide any SRH services indicated that U.S. region and state and local government funding were independent statistically significant structural level predictors of the odds of SRH provision.

SBHCs located in the South U.S. regions had 0.53 lower odds of providing any SRH service compared to SBHCs in the Northeast region. There were no significant differences in SRH provision between the Northeast region and either the West (p=0.82) or Midwest (p=0.15) regions (refer to **Table 3.1** for description of U.S. regions). SBHCs that received state government funding had >1 times odds of providing any SRH service compared to SBHCs that did not receive state government funding (p=0.03). SBHCs that received local government

funding had more than two times the odds of providing any SRH service than the SBHCs that did not receive local government funding (p=0.01) (**Table 3.3**).

The organizational level predictors that were significant in the final model included SBHC years of operation and PA as PCP type. SBHCs with 10 or more years of operation had >2 times greater odds of providing any SRH compared to SBHCs that had 0-2 years of operation (p=0.02). There were no differences between SBHCs with 0-2 years and 3-9 years of operation (p=0.85). SBHCs that staffed PAs as PCPs had >3 times greater odds of providing SRH services compared to those that did not have PAs (p=<0.001) (**Table 3.3**).

The school type where the SBHC was located was the only statistically significant community-level predictor of any SRH service. SBHCs located at a high school had >5 times greater odds of providing any SRH service compared to SBHCs located at an elementary school (p=<0.001). SBHCs located at “other” types of schools (i.e., kindergarten -12thgrade, continuation schools, non-traditional schools) had >3 greater odds of providing any SRH service compared to SBHCs located at an elementary school (p=0.001). Lastly, SBHCs located at a middle school had >1times greater odds of providing any SRH service compared to SBHCs located at an elementary school (p=0.04) (**Table 3.3**).

Discussion

This study aimed to identify the proportion of U.S. SBHCs that are providing any SRH service and the structural, organizational, and community level characteristics of SBHCs providing SRH services and those that were not. Additionally, this study also examined the associations between structural, organizational, and community level characteristics and the provision of any SRH service. Based on the most recently available Census data from the 2021-2022 school year, our study found that the availability of SRH services at SBHCs remain

inequitable, as service provision varied across the U.S. Structural, organizational and community predictors were identified. This suggests multiple levels of policy intervention is needed to increase SRH service provision at SBHCs nationally.

SBHCs at middle, high school, and other types of schools (i.e., kindergarten -12th grade, continuation school, non-traditional school) continue to be the community and school level characteristics that support existing empirical literature on providing SRH services (Sullivan et al., 2022). SBHCs continue to serve racial and ethnic minority student populations, 48% of SBHCs in the Census sample served 75% or more BIPOC students, however this was not a statistically significant predictor. Previous studies did not examine BIPOC students served with provision of contraceptives and this study adds to the existing literature (Sullivan et al., 2022). Access to SRH services at SBHCs among underserved communities can bridge SRH inequities. Future research can continue to examine BIPOC student populations, indicators of poverty and the provision of SRH services.

To our knowledge this is the first study to examine SBHCs nationally explicitly guided by theory and using the intersectionality framework. The theory-driven approach using the intersectionality framework, guided the inclusion of a broad range of structural, organizational, and community level factors were considered, such as race, ethnicity, and poverty of the student population served by the schools and SBHCs. Although race, ethnicity or poverty were not retained in the final model, further investigation of these factors and other community-level characteristics should be explored in future studies. Applying the intersectionality framework can continue to guide research aimed at achieving equitable access to SRH services for all adolescents. Future theory-driven research can consider the application of additional frameworks

that also highlight marginalized populations and health equity such as Reproductive Justice or Preventative Science (Ross & Solinger, 2021; Goodrum et al., 2024).

We found that 84% of adolescent-serving SBHCs in this study provided SRH services in 2021-2022. This represents a 34% increase in the provision of SRH services since prior national data on SBHCs were collected during the COVID-19 pandemic (2020-2021) (Soleimanpour et al., 2021). However, it is important to note that the percentage may have been lower in the 2020-2021 school year because those data included all SBHCs, not only those SBHCs serving adolescents and because the data were collected shortly after the onset of the COVID-19 pandemic, which may have impacted services (Soleimanpour et al., 2021). Yet, this finding adds to the existing literature by Sullivan et al. (2022), which only examined the provision of contraceptives in the 2016-2017 Census. SRH services are crucial for adolescent health as these services include STI screening and treatment, initiation and surveillance of contraceptives, early detection of pregnancy and appropriate referrals.

Our study provides new findings on the associations of structural predictors of SRH funding. We found that state and local government funding were significant predictors in the provision of SRH, whereas federal funding was not. There are federally funded programs, such as the Title X Public Health Service Act, that are designated for SRH services and intended to increase SRH access for marginalized patient populations who would otherwise not have access to these services (Dawson, 2020). However, federal funding allocated for SRH services was compromised prior and during the Census collection. Our findings may reflect the emergency state and local government funding measures that were taken by several states as a response to mitigate the negative SRH effects by the loss of federal funding (Dawson, 2020).

We found that all SBHCs that reported receiving federal government funding with Title X Public Health Service Act participation provided SRH services. Title X Public Health Service Act, a federally funded program, was impacted during the Census data collection 2021-2022 due to changes in the U.S. presidential administration (The U.S. National Archives and Records Administration [NARA], 2024). In 2019, during Donald J. Trump's presidential term 2017-2021, modifications were made to the Title X Public Health Service Act regulations that prohibited funds to be utilized for pregnancy options counseling, and abortion referrals (Frederiksen et al.,2023; NARAL, 2019). The changes to Title X Public Health Service Act regulations reflect the 18% of participating SBHCs in Title X Public Health Service Act in 2021-2022. Further, the modification to Title X Public Health Service Act regulations led to patients losing access to SRH sites that previously participated in Title Public Health Service Act. In 2021, Title X Public Health Service Act was restored to provide equitable access to family planning services (Dawson, 2020; Frederiksen et al., 2023; U.S. Department of Health and Human Services [HHS], 2021). Presidential administration changes demonstrate its impact on SRH service access at SBHCs. Access to SRH services in the U.S. have been challenged and are on the political agenda for the upcoming 2024 U.S. presidential election (Ranji et al., 2024). The presidential election outcome will either protect or continue to jeopardize reproductive rights.

Title X Public Health Service Act has historically overruled state law. However, in 2022 a Texas judge ruled the Title X Public Health Service Act program violated parental rights and as of today clinics participating in Title X Public Health Service Act in the state of Texas and the fifth circuit (Texas, Mississippi, and Louisiana) must obtain parental consent for adolescents seeking family planning services (Klibanoff, 2024). In addition, states with abortion ban laws may refuse to follow Title X Public Health Service Act regulations (Frederiksen et al., 2023).

Future studies can examine SBHCs in the U.S. currently participating in Title X Public Health Service Act and the provision of SRH services. In addition, a mixed-methods study can examine adolescent SRH outcomes and experiences with SRH since the Texas 2022 court ruling to capture the impact of this court ruling. Our data suggests that state and local government funding may have been utilized to overall support SRH services in SBHCs. Future research can continue to examine funding sources and access to SRH services (California Department of Health Care Access and Information [HCAI], 2024).

Our study found that SBHCs with 10 or more years of operation had >2 greater odds while Sullivan et al. (2022) found that there was >3 greater odds with the provision of contraceptives. Perhaps SBHCs that have 10 or more years of operation in a community have built trust thus making the provision of SRH services more acceptable to the community. SBHCs with employed PAs were also an operational characteristic associated with the provision of SRH services. The operational characteristic of employing PAs is a surprising finding, and perhaps may be a proxy for other organizational differences. Additionally, our findings support having midlevel providers at SBHCs. SBHC lead sponsor organization was not a significant characteristic in the Census 2021-2022 sample compared to previous Census administrations (Sullivan et al., 2022). The change in significant operational level characteristics demonstrates the need to continue examining SRH services at SBHCs as influences can change over time.

Limitations and Strengths

The study findings should be considered in light of several limitations and strengths. The SBHA keeps track of SBHCs in the U.S. and their updated contact information, but there may be some SBHCs not known to the SBHA. We speculate that SBHC staff and operational changes during the COVID-19 pandemic may have contributed to the 39% response rate of the estimated

3,900 SBHCs nationally that are known to the SBHA. The response rate of 39% impacts generalizability of results to all SBHCs in the U.S. The COVID-19 pandemic may have also affected services, and the modality of the services provided at SBHCs; this study did not examine the modality (i.e., in-person, telehealth) or utilization of SRH services though other studies have examined the modality of these services (Gallardo et al., 2022; Soleimanpour et al., 2021).

This study has several strengths. This research has updated the literature on the 2016-2017 Census data on SRH services at SBHCs nationally. This study is the first to apply the intersectionality framework as a lens to examine structural, organizational, and community characteristics on SRH services at SBHCs. The findings are relevant to the current Reproductive Justice issues and offer insight into the structural, organizational, and community level influences that can improve access to SRH services at SBHCs nationally.

Conclusion

Although over three-quarters (84%) of adolescent-serving SBHCs in this study offered SRH services, inequities in the access of SRH services persist. There are geographical inequities to SRH access, the South U.S. region has the second largest number of SBHCs, however continues to have lower odds of SRH provision. We found that SBHCs located at high schools or "other" type of schools (i.e., kindergarten -12th grade, continuation schools, non-traditional schools), SBHCs that had PAs as PCP provider type, and SBHCs that received local government funding were the strongest predictors of the provision of any SRH service at SBHCs. Advocacy is needed at the federal, state and local levels to maintain the availability of funding that support and expand access to SRH services. The on-going SRH policy changes highlight the importance of SRH access. Gaining involvement in professional nursing associations that prioritize health

policy advocacy could be an entry point to having a voice in ongoing efforts to improving SRH access. These findings highlight the importance of continuing to apply a theoretical framework that examines structural, community and organizational level factors.

Table 3.1 *Description of the United States Regions*

US Region	States in US Region
Midwest	Illinois, Indiana, Iowa, Kansa, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
South	Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia
West	Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

U.S. Census Bureau. (2022). Census Regions and Divisions of the United States.

US, United States

Table 3.2 *Characteristics of SBHCs and the Provision of Sexual and Reproductive Health Services, 2021/22*[1]

	SBHCs that do not offer SRH services n=166	SBHCs that offer SRH services n=850	*p* value
Structural Characteristics			
US region, (n) %			**<0.001**
Northeast	(19) 11	(147) 17	
Midwest	(49) 30	(161) 19	
South	(67) 40	(249) 30	
West	(31) 19	(292) 34	
Federal government funding[2], (n) %			0.72
Yes	(68) 43	(377) 45	
No	(90) 57	(469) 55	
State government funding[2], (n) %			**<0.001**
Yes	(52) 33	(467) 55	
No	(106) 67	(379) 45	
Local government funding[2], (n) %			**<0.001**
Yes	(8) 5	(148) 17	
No	(150) 95	(698) 83	
School system funding[2], (n) %			0.86
Yes	(21) 13	(117) 14	
No	(137) 87	(729) 86	
Organizational Characteristics			
Operational status, (n) %			**0.10**
Fully open	(137) 84	(744) 88	
Partially open/temporarily closed	(27) 16	(100) 12	
Lead SBHC sponsor organization[2], (n) %			**0.02**
FQHC or similar	(110) 66	(505) 60	
Hospital or medical center	(27) 16	(160) 18	
Non-profit/community-based organization/other	(13) 8	(133) 16	
School system	(16) 10	(50) 6	

Note: Boldface indicates statistical significance. A threshold of p<0.2 was applied for inclusion in multivariable regression

[1] Data shown represents the number of non-missing responses for each item.

[2] Respondents could select more than one response.

[3] Includes kindergarten-12th grade school, continuation school, and non-traditional school

SRH, sexual reproductive health; SBHC, school-based health center; FQHC, federally qualified health center; FRPL, free or reduced-priced lunch; BIPOC, Black, Indigenous, and other people of color; PCP, primary care provider

Table 3.2 (continued)

	SBHCs that do not offer SRH services n=166	**SBHCs that offer SRH services n=850**	***p* value**
Organizational Characteristics			
Years of operation, (n) %			**<0.001**
0-2 years	(28) 20	(96) 12	
3-9 years	(63) 46	(265) 32	
10 or more years	(46) 34	(463) 56	
Physician PCP[2], (n) %			0.35
Yes	(31) 19	(182) 22	
No	(134) 81	(644) 78	
Nurse practitioner PCP[2], (n) %			0.37
Yes	(146) 88	(709) 86	
No	(19) 12	(117) 14	
Physician assistant PCP[2], (n) %			**<0.001**
Yes	(14) 8	(185) 22	
No	(151) 92	(641) 78	
Community Characteristics			
Type of school, (n) %			**<0.001**
Elementary school	(56) 34	(89) 10	
Middle school	(40) 24	(139) 17	
High school	(52) 31	(528) 62	
Other[3]	(18) 11	(94) 11	
Percent of total student enrollment who are FRPL eligible, (n) %			0.82
Low poverty (25.0% or less)	(20) 12	(118) 14	
Mid low poverty (25.1%-50.0%)	(48) 29	(220) 26	
Mid high poverty (50.1%-75.0%)	(44) 27	(233) 28	
High poverty (>75.0%)	(52) 32	(275) 32	

Note: Boldface indicates statistical significance. A threshold of p<0.2 was applied for inclusion in multivariable regression

[1] Data shown represents the number of non-missing responses for each item.

[2] Respondents could select all that applied

[3] Includes kindergarten-12th grade school, continuation school, and non-traditional school

SRH, sexual reproductive health; SBHC, school-based health center; FQHC, federally qualified health center; FRPL, free or reduced-priced lunch; BIPOC, Black, Indigenous, and other people of color; PCP, primary care provider

Table 3.2 (continued)

	SBHCs that do not offer SRH services n=166	**SBHCs that offer SRH services n=850**	***p* value**
Community Characteristics			
Located at a Title I school, (n) %			**0.002**
Yes	(137) 86	(592) 74	
No	(23) 14	(204) 26	
Percent of total student enrollment who identify as BIPOC, (n) %			**0.02**
Less than 25%	(44) 27	(170) 20	
25-49%	(34) 21	(132) 16	
50-74%	(17) 10	(138) 16	
75% or more	(68) 42	(406) 48	

Note: Boldface indicates statistical significance. A threshold of $p<0.2$ was applied for inclusion in multivariable regression

[1]Data shown represents the number of non-missing responses for each item.

[2]Respondents could select all that applied

[3]Includes kindergarten-12th grade school, continuation school, and non-traditional school

SRH, sexual reproductive health; SBHC, school-based health center; FQHC, federally qualified health center; FRPL, free or reduced-priced lunch; BIPOC, Black, Indigenous, and other people of color; PCP, primary care provider

Table 3.3 *Forward Selection Multivariable Logistic Regression Analysis of the Association Between Covariates and the Provision of SRH services*

SBHC Characteristic	Reference	Covariate	OR (CI)	*p* value
Structural Characteristic				
U.S. region[1]	Northeast	Midwest	0.62 (0.33, 1.18)	.15
	Northeast	South	0.53 (0.29, 0.96)	**.04**
	Northeast	West	0.93 (0.48, 1.80)	.82
State government funding[1]	No	Yes	1.59 (1.05, 2.41)	**.03**
Local government funding[1]	No	Yes	2.72 (1.25, 5.93)	**.01**
Organizational Characteristic				
Years of operation[1]	0-2 years	3-9 years	1.06 (0.60, 1.85)	.85
	0-2 years	10 plus years	2.09 (1.15, 3.79)	**.02**
Physician assistant PCP[1]	No	Yes	3.27 (1.78, 6.01)	**<.001**
Community Characteristic				
School type where the SBHC is located[1]	Elementary	Middle school	1.75 (1.03, 2.99)	**.04**
	Elementary	High school	5.13 (3.20, 8.23)	**<.001**
	Elementary	Other[3]	3.10 (1.63, 5.87)	**.001**

[1]Omnibus Wald p-value = <0.001; Boldface indicates statistical significance ($p<0.05$)

[3]Includes kindergarten-12th grade schools, continuation schools, and non-traditional schools.

SRH, sexual reproductive health; SBHC, school-based health center; US, United States; PCP primary care provider

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Chapter 4

Examining the Provision of Contraceptives at School-Based Health Centers: Structural, Organizational, and Community Characteristics

Examining the Provision of Contraceptives at School-Based Health Centers: Structural, Organizational, and Community Characteristics

Abstract

Introduction: The provision of contraceptives at school-based health centers (SBHCs) in the U.S. has increased over time, from 24% (barrier methods only) in 2002 to 46% (at least one contraceptive method) of SBHCs in 2016-2017 (Sullivan et al., 2022). The factors influencing contraceptive provision are unclear. This study aimed to (1) identify structural, organizational, and community-level characteristics associated with the on-site dispensing of contraceptives among SBHCs that provide sexual and reproductive health (SRH) services; and (2) identify policies and other factors prohibiting the provision of contraceptives dispensed on-site.

Methods: This study analyzed secondary cross-sectional data from the 2021-2022 National School-Based Care Census Survey. The study sample included 850 SBHCs across the U.S. that served adolescents and provided SRH services. Bivariate chi-square tests and forward stepwise logistic regression were conducted to examine associations between SBHC characteristics and the on-site dispensing of contraceptives.

Results: Seventy percent of SBHCs that served adolescents and provided SRH services dispensed contraceptives on-site. SBHCs that received federal and local funding and were located at a high school or combined grade/non-traditional school, and those serving 75% or more Black, Indigenous, and other people of color (BIPOC) student populations had greater odds of dispensing contraceptives on-site. SBHCs in the South and Midwest U.S. regions, those receiving school system funding, and those with nurse practitioners as primary care providers had lower odds of dispensing contraceptives on-site.

Conclusion: The majority of adolescent-serving SBHCs that offer SRH services also provided contraceptives on-site in the 2021-2022 school year. SBHCs may be bridging racial and ethnic reproductive health inequities by supporting contraceptive dispensing at SBHCs at schools with

high proportions of BIPOC students. Regional and funding differences in the provision of contraceptives suggest the need for federal and local advocacy. Nurse practitioners can advocate for maintaining and expanding access to contraceptives for adolescent populations.

Background

School-based health centers (SBHCs) are school-affiliated health centers that increase student access to health services because they are student-focused and located on or close to school campuses (CSHA, 2023). The number of SBHCs increased in the U.S. from 1,135 in 1998-1990 to 2,584 SBHCs in 2016-2017 (Love et al., 2019). SBHCs are recognized for being in underserved communities and increasing access to health care services that are provided by a multi-disciplinary team (Love et al., 2019). The SBHC multi-disciplinary team can include primary care, vaccines, dental care, vision services, mental health services, nutrition education, social services and sexual and reproductive health (SRH) services (CSHA, 2023; Love et al., 2019). SBHCs increase access to SRH services for adolescents. The California School-Based Health Alliance (CSHA) defines SRH services as sexual health education, contraception, pregnancy testing, sexually transmitted infection (STI) testing and treatment, counseling, and referrals to external services (CSHA, 2023).

Adolescents are at increased risk for poor health outcomes such as STIs and undesired pregnancy (Centers for Disease Control and Prevention [CDC], 2021b; 2021c;2022). Studies have shown that SBHCs improve health outcomes among adolescents by improving access and uptake to health services (Knopf et al., 2016). Policies and laws guide the availability of SRH services and contraception offered to minors at SBHCs. For example, SRH services are influenced by varying state minor consent and privacy laws and policies (CSHA, 2023; Ethier et al., 2011; Sharko et al., 2022). Some states may have liberal laws while others may be very restrictive. In addition, some states do not have an explicit policy in place (Sharko et al., 2022).

School and school districts also guide the availability of on-site dispensing of contraceptives at SBHCs (Sullivan et al., 2022).

Previous literature on the provision of contraceptives at SBHCs in the U.S. is limited and demonstrated that SRH services at SBHCs range from counseling to long-acting reversible contraceptives dispensed on-site. Policies and funding were characteristics of the provision of contraceptives at SBHCs. The federally funded Title X Family Planning Program was found to support contraceptives dispensed on-site while school/school district policies were found to prohibit the provision of contraceptives at SBHCs (Ethier et al., 2011; Smith et al., 2011; Minguez et al., 2015; Bersamin et al., 2018; Boniface et al., 2021; Boniface et al., 2022; Sullivan et al., 2022; Maier et al., 2023). The literature has not explored current policies that may be associated with the provision of contraceptives at SBHCs nationally. Further, the proportion of SBHCs that are prohibited from dispensing contraceptives and have a written policy in place is unknown. Existing studies on the provision of contraceptives at SBHCs have not explicitly applied a theoretical framework (Ethier et al., 2011; Smith et al., 2011; Minguez et al., 2015; Bersamin et al., 2018; Boniface et al., 2021; Boniface et al., 2022; Sullivan et al., 2022; Maier et al., 2023).

Our study is updating and expanding on the most recent published data on the provision of contraceptive services at SBHCs (Sullivan et al., 2022). Sullivan et al. (2022) used the National School-Based Health Care Census survey (Census) 2016-17 data to examine if adolescent serving SBHCs dispensed contraceptives on-site and the reported policies that prohibited SBHCs from dispensing contraceptives on-site (refer to methods for full description of the Census). The prohibiting policies that were explored included state law/policy/regulation, school or school district policy, and lead sponsor or SBHC policy. Sullivan et al. (2022) found

that 46% of adolescent-serving SBHCs were dispensing at least one contraceptive on-site and that school and school district policies had the greatest influence and negatively impacted the provision of contraceptives (Sullivan et al., 2022). School and school district policies were found to have a decreased trend from 2001 to 2017. SBHCs in West U.S. region (>2 times), those located at high schools (>4 times) or non-traditional type of schools (>2 times), and with 10 or more years of operation (>3 times) had greater odds of dispensing at least one contraceptive on-site (Sullivan et al., 2022). Our study applied the Crenshaw (1989) intersectionality framework and examined student demographics including race/ethnicity and poverty with the provision of contraceptives on-site, all of which were not explored by Sullivan et al. (2022). Our study also examined the proportion of SBHCs that had a written policy in place if they did not dispense contraceptives on-site and explored additional community factors that may be prohibiting the provision of contraceptives.

This study's specific objectives were to (1) identify structural, organizational and community level characteristics associated with on-site dispensing of contraception, among SBHCs that provide SRH services; and (2) to identify policies and other factors prohibiting the provision of contraception being dispensed on-site.

Method

The study design was a secondary analysis of cross-sectional data from the National School-Based Health Care Census survey (Census) 2021-2022 dataset (School-Based Health Alliance [SBHA], 2022). The Census has been conducted triennially by SBHA for over 20 years and describes SBHC organization and operational trends. The survey is adapted at every administration to capture the needs and social norms of communities (Love et al., 2019). The survey is self-administered and self-reported by the individual who is most knowledgeable about

the operations at each participating SBHC. School-level characteristics of the enrolled students where the respective SBHC was located were obtained from the National Center for Education Statistics (NCES) and merged in the Census 2021-2022 dataset (NCES, 2023).

Theoretical framework

Previous literature on SRH and contraception at SBHCs did not explicitly acknowledge or propose any theory or frameworks to guide the studies (Ethier et al., 2011; Smith et al., 2011; Minguez et al., 2015; Bersamin et al., 2018; Boniface et al., 2021; Boniface et al., 2022; Sullivan et al., 2022; Maier et al., 2023). This research was guided by Crenshaw's intersectionality framework (Crenshaw, 1989). The intersectionality framework describes the interaction of marginalized identities (i.e., race, ethnicity, gender, class) and how they shape an individual's lived experiences (Crenshaw, 1989). Specifically, intersectionality was created to illustrate the interaction of racial and gender oppression experienced by Black women that could not be adequately addressed by considering either race or gender alone.

Multiple marginalized identities exist for adolescents, including race, ethnicity, economic status, gender, sexuality and minor legal status. These marginalized identities intersect at the SBHCs and affect access to contraception. The intersectionality framework will serve as the foundation to examine structural determinants of health and its impact on the provision of contraceptives at SBHCs. The intersectionality framework will provide an understanding of the structural, organizational and community characteristics of the provision of contraceptives at SBHCs. The intersectionality framework can assist in advocating to transform structural, organizational and community level injustices that create barriers to these services at SBHCs. The intersectionality framework provides a comprehensive approach to identify structural,

organizational, and community characteristics that impact access to SRH services and further perpetuate ethnic and racial inequities.

IRB Approval

This study was determined to be non-human subjects research by the Institutional Review Board (study number 21-34271). Data were anonymized to maintain the privacy of the participating SBHCs.

Setting and Population

The Census sample was drawn from the known population of SBHCs serving public elementary, middle, and high schools in the U.S. All estimated 3,900 SBHCs known to the SBHA serving public elementary, middle, and high schools in the U.S. were eligible to take part in the 2021-2022 Census (Soleimanpour et al., 2023) and were invited to participate in the survey.

Sample

The final 2022 Census sample included 1,518 SBHCs, representing approximately 500 sponsoring organizations (i.e., federally qualified health centers or similar, hospital or medical centers, local health departments, mental health agencies, non-profit organizations, school systems, tribal governments, universities) across 47 states and the District of Columbia. The Census sample represented approximately 39% of the estimated 3,900 SBHCs nationally. The Census excluded SBHCs where the respondents did not complete the Census (43%; n= 2,237) and those that did not provide primary care (9%; n= 353).

The study sample excluded the Census respondents that were not open in the 2021-2022 academic year (0.2%; n= 5) or were permanently closed (n= 1), SBHCs that did not serve adolescents (i.e., students in any grade 6th through 12th) (13%; n=493), SBHCs that did not

provide SRH services (4%; n=166), and those with inconsistent responses to questions about receipt of federal funding and participation in the Title X federal SRH funding program (0.1%; n=3) were also excluded. The final study sample for this analysis was 850 SBHCs.

Measures

Primary Outcome. The primary outcome for this analysis was dispensing of any contraceptive on-site at the SBHC. Any contraceptive included the following options being offered on-site at the SBHC; male or female condoms, oral contraceptive pill, contraceptive patch, NuvaRing, Depo-Provera shot, hormonal implant, intrauterine device (IUD), and other methods. Prescriptions provided by the SBHC that the patient filled off-site did not meet the definition of on-site dispensing. The primary outcome was dichotomized into SBHCs that provided onsite-contraceptive dispensing and SBHCs that did not provide the service.

Covariates. The following covariates were considered for association with the primary outcome variable.

Structural Characteristics. Characteristics of healthcare systems denote structural characteristics (Brown et al., 2019). The structural characteristics for analysis that were available in the Census dataset were U.S. regions (Midwest, Northeast, South, West) where the SBHC was located, federal government funding, state government funding, local government funding, school system funding, state law/regulation policy, school or district policy, and sponsor or SBHC policies. U.S. region was included as a structural characteristic because healthcare systems vary by state and region (U.S. Census Bureau, 2022). Similar to the Sullivan et al. (2022) study, our study will be applying the Northeast region as the reference group for the U.S. regions (**Table 4.1**).

Organizational Characteristics. Organizational characteristics were defined as the characteristics of the healthcare organizations responsible for the SBHC. The organizational level covariates examined were: SBHC years of operation (fully or partially open), SBHC operational status, lead SBHC sponsor organization, physician (MD) primary care provider (PCP), nurse practitioner (NP) PCP, physician assistant (PA) PCP, and organizational level barriers to provided contraceptives on-site. These barriers were listed in the survey for respondents to select from, including written policy prohibiting on-site dispensing of contraceptives, lack of demand, lack of trained providers, provider discomfort, and lack of funding.

Community and School Characteristics. These characteristics represent the socioeconomic, service, physical, and social environment in which the SBHC operates (Brown et al., 2019). Community and school level covariates available in the Census included the type of school where the SBHC was located, Title I federal program status of the school where the SBHC was located, percent of total student enrollment eligible for free and reduced-price lunch (FRPL) at the school where the SBHC was located, percent of students identifying as Black, Indigenous, and other people of color (BIPOC) students at the school where the SBHC was located, and community level barriers to provision of contraceptives that respondents could select from a list, including parent/guardian consent, local culture/politics, and patient attitudes/misconceptions.

Statistical analysis

The STATA/BE 17.0 software (College Station, Texas) was used for statistical analysis. Data were first analyzed using descriptive statistics. To identify structural, organizational, and community characteristics associated with the on-site dispensing of contraceptives among those

adolescent-serving SBHCs that provided SRH services, first bivariate analyses with chi-square tests were conducted to compare proportions of the covariates in relation to the primary outcome. Statistically significant differences in the bivariate analyses at the $p<0.2$ level were then considered for inclusion in the multivariable logistic regression model. A complete case analysis would have had 10% missing data, and the missing data threshold was set at 5% (Schafer, 1999). Therefore, multiple imputations by chained equations were conducted to handle missing data with 10 imputations, and multiple random seeds were tested to ensure stable results (van Ginkel et al., 2020).

A forward stepwise logistic regression was then conducted to examine associations between the covariates and on-site dispensing of contraceptives. Covariates significant at the $p<0.05$ level were retained in the final model, using omnibus Wald tests for covariates with more than two groups. Among the SBHCs that did not dispense contraception on-site (n=243), frequencies were examined to identify policies and other factors reported as prohibiting on-site contraception dispensing.

Results

Characteristics of SBHCs and the Provision of Contraceptives

Of the adolescent-serving SBHCs that provided SRH services (n=850), 70% dispensed contraceptives on-site. Fifty-seven percent of SBHCs that dispensed contraceptives on-site were SBHCs with 10 or more years of operation, 89% were fully open during the 2021-22 school year, and 83% had NPs on staff providing primary care services. The majority of SBHCs that dispensed contraceptives on-site were located at high schools (71%). Over half (54%) of SBHCs were located at schools with 75% or more BIPOC students and 37% of SBHCs served students at schools with high poverty measured by percent of total school enrollment eligible for the FRPL

program. The West U.S. region had the greatest proportion of SBHCs (n=241) that dispensed contraceptives on-site compared to other regions of the U.S.

The structural characteristics that met criteria for inclusion in the multivariable logistic regression model were U.S. regions (p=<0.001), federal government funding (p=<0.001), local government funding (p=<0.001), and school system funding (p=0.001). The organizational characteristics that met inclusion criteria were: SBHC years of operation (p=0.003), SBHC operational status (p=0.17), lead SBHC sponsor organization (p=<0.001), MD PCP (p=0.006), and NP PCP (p=0.003). The organizational characteristic PA PCP (p=0.80) did not meet inclusion criteria. Lastly, the community characteristics that met inclusion criteria were school type where the SBHC was located (p=<0.001), the percent of FRPL eligible of total student enrollment at the school where the SBHC was located (p=0.001), Title I status (p=<0.001), and the percent of BIPOC students served at the school where the SBHC was located (p=<0.001) (**Table 4.2**).

Structural, Organizational, and Community Characteristics Associated with Provision of Contraceptives On-site

The forward selection multivariable logistic regression analysis demonstrated the structural, organizational, and community/school level characteristics that were independently associated with contraceptives being dispensed on-site compared to adolescent-serving SBHCs that do not dispense contraceptives on-site. U.S. region, federal government funding, local government funding, and school system funding were the structural characteristics associated with on-site dispensing. SBHCs located in the West region did not have a statistically significant association of dispensing contraceptives compared to the reference group of SBHCs in the Northeast region. SBHCs located in the Midwest had 0.25 lower odds and those in the South

region had 0.25 lower odds of dispensing contraceptives on-site compared to the Northeast region. SBHCs that received federal and local government funding had >2 times greater odds of dispensing contraceptives on-site than SBHCS that were not receiving funding from these sources. However, SBHCs that received school system funding had 0.60 lower odds of dispensing contraceptives on-site than those not receiving school system funding (**Table 4.3**).

SBHC operational status during the 2021-2022 academic year and having an NP as a PCP type were the organizational characteristics associated with on-site contraceptive dispensing. SBHCs that reported being fully open had two times greater odds of dispensing contraceptives on-site compared to the SBHCs that were partially open/temporarily closed. SBHCs with NPs as a PCP had 0.42 times lower odds of dispensing contraceptives compared to not having NPs as a PCP (**Table 4.3**).

The community/school characteristics that were statistically significant with the provision of contraceptives were the type of school where the SBHC was located and the percentage of students identifying as BIPOC in the school where the SBHC was located. SBHCs located at a high school had 4.65 times greater odds of dispensing contraceptives on-site than those located at an elementary school. SBHCs serving another type of adolescent serving school (i.e., kindergarten through 12th grade, continuation school, and non-traditional school) had more than three times greater odds of dispensing contraceptives on-site compared to SBHCs located at an elementary school. SBHCs that were located at schools with 75% or more BIPOC student population had more than two times greater odds of dispensing contraceptives on-site compared to SBHCs in schools that were located at schools with less than 25% of BIPOC student population (**Table 4.3**).

Characteristics of SBHCs Prohibited from Dispensing Contraceptives On-Site

Of the adolescent-serving SBHCs that offered SRH services but did not dispense contraceptives on-site (n=243), 43% were in the South and 30% were in the Midwest U.S. regions. Over half (53%) reported having 10 or more years of operation, 86% were fully open during the 2021-2022 academic year, and 44% were SBHCs located at high schools. Over one-third (36%) were located at schools with 75% or more of their student enrollment identifying as BIPOC and 26% were in schools that served a large portion of students in high poverty (**Table 4.3**).

Policies and Other Factors Prohibiting the Provision of Contraceptives

Policies. Of the adolescent-serving SBHCs that offered SRH services but did not dispense contraceptives on-site (n=243), 84% (n=108) reported having a written policy prohibiting them from dispensing. Policies that prohibited SBHCs from dispensing contraceptives on-site were examined; SBHCs could report multiple policies that prohibited services. State law/regulation/policy was reported by 44% (n=99) of SBHCs as the type of policy prohibiting on-site contraceptive dispensing. Of the SBHCs that reported state law/regulation/policy as the type of policy prohibiting on-site dispensing (n=99), 40% (n=40) were in the Midwest and 57% (n=56) were in the South U.S. region (results not displayed). Thirty-six percent (n=82) reported school/district policies and 25% (n=57) reported sponsor or SBHC policies as the types of policies prohibiting the provision of contraceptives from being dispensed on-site (**Table 4.4**).

Factors. Organizational and community factors that prevent or inhibit on-site contraceptive dispensing at SBHCs were examined. Local culture/politics (41%; n=73) and parent guardian consent (21%; n=38) were the highest reported factors that prevent or inhibit the

provision of contraceptives on-site. Very few SBHCs reported provider discomfort (6%; n=10), lack of trained providers (5%; n=9), and lack of funding (2%; n=3) as organizational factors that prevent or inhibit the provision of contraceptives being dispensed on-site. Few SBHCs reported patient attitudes/misconceptions (8%; n=15) as community factors that prevent or inhibit the SBHC from dispensing contraceptives on-site (**Table 4.4**).

Discussion

Our study aimed (1) to identify structural, organizational and community level characteristics associated with on-site dispensing of contraceptives among adolescent-serving SBHCs that provide SRH services; and (2) to identify policies and other factors associated with the prohibiting of contraceptives being dispensed on-site, among adolescent-serving SBHCs that offer SRH services but do not dispense contraceptives on-site. To our knowledge, this is the first study to examine structural, organizational and community level influences on on-site dispensing of contraception at SBHCs. In addition, our study is the first to examine the provision of contraceptives at SBHCs using the intersectionality framework. Our study updated and expanded on the literature from Census 2016-2017 on the provision of contraceptives at SBHCs nationally. Structural, organizational and community level characteristics along with policies and other factors have been identified on the provision of contraceptives at SBHCs.

In the 2021-2022 school year, 70% of adolescent-serving SBHCs that offered SRH services in this study, were dispensing contraceptives on-site. Our study provides new findings on the provision of contraceptives and racial/ethnic minority adolescent populations served at SBHCs. SBHCs that were located at schools serving 75% or more BIPOC student population had greater odds of dispensing contraceptives on-site. The Sullivan et al. (2022) study did not examine BIPOC student populations with the 2016-17 Census. The intersectionality framework

was applied as a lens for our study and examined the multiple marginalizations that exist for adolescents (i.e., race, ethnicity, and poverty) and how they intersect with access to contraceptive services at the SBHCs. The intersectionality framework provided a holistic understanding on the provision of contraception by examining root levels of influence. Although FRPL, a proxy for poverty, did not have a statistically significant association with the provision of contraceptives, future research can continue to examine how identities (i.e., race, ethnicity, class) intersect with access to these services.

SBHCs are recognized for being in underserved communities with higher percentage of students receiving FRPL and higher percentage of Black and Hispanic students (Love et al., 2019). SBHCs may be bridging racial and ethnic health inequities by providing access to contraceptives to underserved adolescent populations. Future studies are needed examining SRH outcomes among the BIPOC student population served at SBHCs. Additional studies examining adolescents' access to other types of health care and pharmacies are needed. BIPOC adolescents may have less access to primary care clinics, other types of family planning health care clinics, and pharmacies. Therefore, SBHCs that are dispensing contraceptives on-site may be the only health care available for BIPOC adolescent populations. It is critical that adolescents of all races and ethnicities have access to contraception. Given that SRH and contraception has a history rooted in sexual violence and oppression among marginalized communities (Ross & Solinger, 2021), it is important to not ignore structural racism as a possible influence on schools with 75% or more BIPOC students having greater access to contraceptives. Future studies can examine the quality of contraceptive counseling at SBHCs with high rates of contraceptive dispensing to ensure that options and choice are being provided.

The structural characteristics associated with the provision of dispensing contraceptives on-site at SBHCs are the U.S. regions, federal government funding, local government funding, and school system funding. The South and Midwest regions continue to have lower odds of dispensing contraceptives on-site compared to SBHCs in the Northeast region (Sullivan et al., 2022). Inequitable access to the provision of contraceptives in SBHCs persists across the U.S. Advocating to secure federal and local funding is needed to maintain and expand access to these services for adolescent populations. Contraceptive care and access are on the political agenda of the 2024 presidential election and the elected president may expand or continue to support the ban of these services (Ranji et al., 2024). Future studies will be needed after the 2024 presidential election examining regional, urban and rural differences, and funding with access to contraceptives at SBHCs nationally.

Our study expands the literature on the prohibition of contraceptives at SBHCs. Eighty-four percent of adolescent-serving SBHCs that offer SRH services but did not dispense contraceptives on-site had a written policy prohibiting contraceptives distribution on-site. School and school district policies historically have had the greatest influence on the provision of contraceptives at SBHCs (Keeton et al., 2012; Sullivan et al., 2022). Our study demonstrates that state law/regulation/policy and school/district policy continue to be reported as the policy types prohibiting the dispensing of contraceptives on-site at adolescent serving SBHCs. Of the SBHCs that reported state law/regulation/policy as type of policy prohibiting on-site dispensing the majority were in the South and Midwest U.S. regions. The Midwest and South regions have states that have restrictive or no explicit minor consent and right to privacy laws for contraceptive care and may be contributing to the prohibition of contraceptives from being dispensed on-site (Sharko et al., 2022). Future research can further examine the provision of

contraceptives at SBHCs through a mixed methods or qualitative study to investigate those that did not have written policies in place and are prohibited from dispensing contraceptives on-site.

The organizational characteristics found in our study that are associated with the provision of contraceptives confirm and add to the previous literature on the provision of contraceptives at SBHCs (Sullivan et al., 2022). SBHCs with a fully open operational status during the 2021-2022 academic year had higher odds of dispensing contraceptives on-site. SBHCs with a fully open operational status may have greater opportunity to provide access to contraceptives for adolescent populations by offering greater availability for adolescents to access services. The Census data was collected shortly after the onset of the COVID-19 pandemic, and it is possible that operational status could have been impacted by SBHC staff changes. Future studies can further explore current operational barriers that prevent SBHCs from operating as fully open. The organizational factors that were reported by very few SBHCs that prohibited the provision of dispensing contraceptives on-site were provider discomfort, lack of trained providers, and lack of funding. The structural factors may have greater influence than organizational factors on the prohibition of contraceptives on-site at SBHCs.

Our study found that adolescent-serving SBHCs located at a high school or other type of school continue to be a community characteristic associated with the provision of contraceptives, like the Census 2016-2017 findings (Sullivan et al., 2022). The community level factors that were the highest reported factors that prevent or inhibit the provision of contraceptives on-site were local culture/politics and parent guardian consent. Few SBHCs reported patient attitudes/misconceptions as community level factors that prevent or inhibit the SBHC from dispensing contraceptives on-site. A future study with adolescents and/or parents could provide a different perspective on these factors. Future qualitative studies can examine the specifics on the

local culture and politics that are inhibiting the provision of contraceptives at SBHCs. Parental guardian consent can also be operationalized and further explored in future studies.

Limitations and Strengths

Limitations to be considered include the 39% response rate of SBHCs nationally, which impacts generalizability of results. Survey burn-out, staff and operational changes during the COVID-19 pandemic were considered as possible non-response reasons. The SBHA maintains an on-going list of SBHCs with their updated contact information, however it is possible that there may be some SBHCs that are not known to the SBHA. The SBHA asks for the individual most knowledgeable about the SBHC operations to complete the Census, however some of the survey questions may have been unfamiliar to the respondent. Our study examined the provision of contraceptives dispensed on-site and did not focus on the types of contraceptive methods dispensed at the SBHCs. Future studies can examine the proportion of contraceptive methods that are dispensed at SBHCs. SBHCs can have multiple provider types (NP, PA, MD) and this does not reflect the type of provider that delivered care.

Strengths of our study include being the first to explicitly apply a theoretical framework with the provision of contraceptives at SBHCs nationally. The intersectionality framework can continue to be applied as a lens in future research on characteristics associated with the provision of contraceptives at SBHCs. Our study findings are updating and expanding the literature on the provision of contraceptives at SBHCs nationally and provide various levels for possible policy reform.

Nursing Implications

NPs along with other types of providers are practicing at SBHCs that provide SRH services (83%; n=458). Our study demonstrates that there are lower odds of on-site dispensing at SBHCs that have NP PCPs. The NP practice and prescriptive authority varies across states in the U.S. (NCSL, 2024). Some states require NPs to have a supervising MD that outlines practice, procedures, and prescribing authority (NCSL, 2024). In other states NPs can have full independent practice authority however MD supervision is required for prescribing medications (NCSL, 2024). Further, NPs in some states have a full independent practice and prescriptive authority (NCSL, 2024). NPs may also be restricted from dispensing contraceptives on-site due to school or school district policy that prohibits dispensing contraceptives on-site. NP practice and prescriptive authority legislation reform is needed for NPs in all states to have full independent practice and prescribing authority.

NPs at SBHCs are important as they provide primary care and access to confidential and sensitive services for adolescent populations. NPs can have a role in advocating for equitable access to these services by exploring opportunities to gain involvement at the school and school district level. Further, NPs practicing at SBHCs prohibited from dispensing contraceptives on-site can advocate through their clinical testimonials and findings from this study for policy reform protecting SRH and policies aimed at expanding SRH services.

Table 4.1 *Description of the United States Regions*

US Region	States in US Region
Midwest	Illinois, Indiana, Iowa, Kansa, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
South	Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia
West	Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

U.S. Census Bureau. (2022). Census Regions and Divisions of the United States.

US, United States

Table 4.2 *Characteristics of SBHCs and the Provision of Contraceptives Dispensed On-Site, 2021/22*[1]

	SBHCs that did not dispense contraceptives on-site n= 243	**SBHCs that dispensed contraceptives on-site n=570**	***p* value**
Structural Characteristics			
U.S. region, (n) %			**<0.001**
Northeast	(32) 13	(111) 20	
Midwest	(73) 30	(85) 15	
South	(104) 43	(133) 23	
West	(33) 14	(241) 42	
Federal government funding[2], (n) %			**<0.001**
Yes	(72) 30	(295) 52	
No	(169) 70	(273) 48	
State government funding[2], (n) %			0.883
Yes	(134) 56	(319) 56	
No	(107) 44	(249) 44	
Local government funding[2], (n) %			**<0.001**
Yes	(19) 8	(119) 21	
No	(222) 92	(449) 79	
School system funding[2], (n) %			**0.001**
Yes	(47) 20	(61) 11	
No	(194) 80	(507) 89	
Organizational Characteristics			
Years of operation, (n) %			**0.003**
0-2 years	(40) 17	(48) 9	
3-9 years	(72) 30	(177) 32	
10 or more years	(124) 53	(329) 59	
Operational status, (n) %			**0.17**
Partially open/closed temporarily	(34) 14	(60) 11	
Fully open	(209) 86	(505) 89	
Lead SBHC sponsor organization[2], (n) %			**<0.001**
FQHC or similar	(124) 51	(357) 63	
Hospital or medical center	(56) 23	(95) 17	
Non-profit/community-based organization/other	(36) 15	(94) 17	
School system	(27) 11	(22) 3	

Note: Boldface indicates statistical significance. A threshold of p<0.2 was applied for inclusion in multivariable regression
[1]Missing data excluded. Data shown represents the number of respondents to each question.[2]Respondents could select more than one response. SBHC, school-based health center; FQHC, federally qualified health center

Table 4.2 (continued)

	SBHCs that did not dispense contraceptives on-site n= 243	**SBHCs that dispensed contraceptives on-site n=570**	***p* value**
Organizational Characteristics			
Physician PCP [2], (n) %			**0.006**
Yes	(38) 16	(135) 25	
No	(203) 84	(415) 75	
Nurse practitioner PCP [2], (n) %			**0.003**
Yes	(220) 91	(458) 83	
No	(21) 9	(92) 17	
Physician assistant PCP [2], (n) %			0.80
Yes	(55) 23	(121) 22	
No	(186) 77	(429) 78	
Community Characteristics			
Type of school, (n) %			**<0.001**
Elementary school	(45) 19	(39) 7	
Middle school	(64) 26	(65)11	
High school	(106) 44	(402) 71	
Other[3]	(28) 11	(64) 11	
Percent of school enrollment eligible for FRPL program, (n) %			**0.001**
Low-poverty (25.0% or less)	(35) 14	(81) 14	
Mid-low poverty (25.1%-50.0%)	(57) 24	(147) 26	
Mid-high poverty (50.1%-75.0%)	(86) 36	(131) 23	
High-poverty (>75.0%)	(64) 26	(208) 37	
Title I, (n) %			**<0.001**
Yes	(199) 84	(369) 70	
No	(39) 16	(157) 30	
Percent of school enrollment identifying as BIPOC, (n) %			**<0.001**
Less than 25%	(65) 27	(95) 17	
25-49%	(49) 20	(76) 13	
50-74%	(41) 17	(92) 16	
75% or more	(87) 36	(304) 54	

Note: Boldface indicates statistical significance. A threshold of p<0.2 was applied for inclusion in multivariable regression [1]Missing data excluded. Data shown represents the number of respondents to each question. [2]Respondents could select more than one response. [3]Other kindergarten-12th grade, continuation school, and non-traditional school. SBHC, school-based health center; FQHC, federally qualified health center; FRPL, free or reduced-priced lunch; BIPOC, Black, Indigenous, and other people of color; PCP, primary care provider

Table 4.3 *Forward Selection Multivariable Logistic Regression Analysis of the Association between Covariates and the Provision of Contraceptives On-Site*

Characteristic	Reference	Covariate	OR (CI)	*p* value
Structural Characteristic				
U.S. region[1]	Northeast	Midwest	0.25 (0.14,0.44)	**<0.001**
	Northeast	South	0.25 (0.15,0.44)	**<0.001**
	Northeast	West	1.28 (0.68,2.40)	0.44
Federal government funding[1]	No	Yes	2.57 (1.75,3.76)	**<0.001**
Local government funding[1]	No	Yes	2.09(1.17,3.75)	**0.01**
School system funding[2]	No	Yes	0.60 (0.36,0.99)	**0.05**
Organizational Characteristic				
Operational status[4]	Temporarily closed/partially open	Fully open	2.61 (1.46,4.65)	**0.001**
Nurse Practitioner PCP type[3]	No	Yes	0.42 (0.23,0.79)	**0.01**
Community Characteristic				
School type where the SBHC is located[1]	Elementary	Middle school	0.90 (0.47,1.72)	0.75
	Elementary	High school	4.65 (2.64,8.19)	**<0.001**
	Elementary	Other[a]	3.55 (1.74,7.24)	**<0.001**
Percent of school enrollment where the SBHC was located identifying as BIPOC[1]	Less than 25%	25-49%	0.69 (0.38,1.23)	0.21
	Less than 25%	50-74%	1.32 (0.74,2.36)	0.34
	Less than 25%	75% or more	2.01 (1.25,3.24)	**0.004**

[1]Omnibus Wald p-value = <0.001; [2]Omnibus Wald p-value = 0.001; [3]Omnibus Wald p-value = 0.003; [4]Omnibus Wald p-value = 0.17; Boldface indicates statistical significance ($p<0.05$)
a: includes kindergarten-12th grade schools, continuation schools, and non-traditional schools.
BIPOC, Black, Indigenous, and other people of color; US, United States; PCP, primary care provider

Table 4.4 *Policies, and Other Factors Reported to Prohibit Contraceptives Dispensed On-Site at SBHCs, 2021/22*[1]

	SBHCs that did not dispense contraceptives on-site n= 243
Structural Characteristics	
State law/regulation/policy[2]**, (n) %**	
Yes	(99) 44
No	(127) 56
School or district policy[2]**, (n) %**	
Yes	(82) 36
No	(144) 64
Sponsor or SBHC policy[2]**, (n) %**	
Yes	(57) 25
No	(169) 75
Organizational Characteristics	
Lack of trained providers[2]**, (n) %**	
Yes	(9) 5
No	(168) 95
Provider discomfort[2]**, (n) %**	
Yes	(10) 6
No	(167) 94
Lack of funding[2]**, (n) %**	
Yes	(3) 2
No	(174) 98

[1]Missing data excluded. Data shown represents the number of respondents to each question. [2]Respondents could select more than one response. [3]Other schools include kindergarten-12th grade, continuation school, and non-traditional school. SBHC, school-based health center

Table 4.4 (continued)

	SBHCs that did not dispense contraceptives on-site n= 243
Organizational Characteristics	
Written policy prohibiting on-site dispensing of contraceptives, (n) %	
Yes	(108) 84
No	(14) 11
Don't know	(7) 5
Community Characteristics	
Parent/guardian consent[2], (n) %	
Yes	(38) 21
No	(139) 79
Local culture/politics[2], (n) %	
Yes	(73) 41
No	(104) 59
Patient attitudes/misconceptions[2], (n) %	
Yes	(15) 8
No	(162) 92

[1]Missing data excluded. Data shown represents the number of respondents to each question.
[2]Respondents could select more than one response
[3]Other schools include kindergarten-12th grade, continuation school, and non-traditional school.
SBHC, school-based health center

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Chapter 5

Discussion

The purpose of this dissertation was to (1) review the existing literature on the proportion of U.S. SBHCs that are providing SRH services, characteristics of SRH services, and identify policies and funding impacting the provision of SRH services at SBHCs in the U.S; (2) examine the proportion of SBHCs that are providing SRH services and the structural, organizational, and community characteristics associated with the provision of SRH services at SBHCs; and (3) examine the proportion of SBHCs that are dispensing contraceptives on-site and the structural, organizational, and community characteristics associated with the provision of contraceptives, lastly identify policies and other factors that are prohibiting the provision of contraceptives at SBHCs. This final chapter synthesizes the findings, proposes future directions, and highlighting nursing implications and policy advocacy recommendations.

Summary of Chapters

Chapter 2. An integrative literature review was conducted to examine existing research on the provision of reproductive health (RH) and contraceptive services at SBHCs in public middle and high schools in the U.S. Five databases were utilized with a search strategy that was developed in collaboration with a research librarian. Among the five databases, eight studies met inclusion criteria and provided preliminary characterization of SRH services and contraception for adolescents at SBHCs (Ethier et al., 2011; Smith et al., 2011; Minguez et al., 2015; Bersamin et al., 2018; Boniface et al., 2021; Boniface et al., 2022; Sullivan et al., 2022; Maier et al., 2023) (**Figure 2.1**). The studies were critically appraised utilizing the Quality Assessment Tool for Methodologically Diverse Articles (QATSDD) (Sirriyeh et al., 2012) (Table 2.2).

Three of the identified studies described the proportion of contraception and SRH services in SBHCs and supported an increasing trend in the provision of long-acting reversible contraceptives (LARCs) at SBHCs (Boniface et al., 2021; Boniface et al., 2022; Sullivan et al.,

2022). Two of these studies found that SBHCs in Oregon had intrauterine device (IUD) provision increase of 0.9% to 4% and implant provision increase of 1% to 7% from 2012 to 2016 (Boniface et al., 2021; Boniface et al., 2022). Similarly, the third study reported a LARC increase of 2% in 2002 to 23% in 2017 for SBHCs nationwide (Sullivan et al., 2022). Funding source was an important SBHC characteristic associated with increased LARC provision; Title X SBHCs reported a greater IUD increase of 4% compared to 2% non-Title X SBHCs (Boniface et al., 2021). These studies support the need for access to various contraceptive methods at SBHCs (Boniface et al., 2021; Boniface et al., 2022; Sullivan et al., 2022). Overall, RH services ranged from contraception counseling to LARCs, IUDs, and implants. None of the studies examined comprehensive RH services at SBHCs.

Two studies examined the influence of policy on the provision of RH services and contraception (Sullivan et al., 2022; Smith et al., 2011). The national study examined policy-level barriers to providing access to contraceptive methods at SBHCs (Sullivan et al., 2022). The Smith et al. (2011) study compared an SBHC that dispensed contraceptives on-site to an SBHC that had a referral policy in place. Study findings support existing literature on school and school district policy influence on the provision of contraception, although this trend is now declining (Sullivan et al., 2022). Title X as a funding source was an important SBHC characteristic with increased LARC provision. This review informs the purpose of my study aimed at addressing inequities in access to SRH and contraceptive provision at SBHCs.

Findings from this review informed the purpose of my dissertation studies aimed at addressing inequities in access to SRH services and the provision of contraception at SBHCs. The Sullivan et al. (2022) study, which examined the provision of contraceptives at SBHCs in 2016-2017, drove my dissertation studies in Chapter 3 and Chapter 4.

Chapter 3. Chapter 3 updates and expands the literature on the proportion of SBHCs that provided SRH services at SBHCs nationally. The dissertation findings expand the existing literature by utilizing the updated Census 2021-2022 data to inform health policies and practices with respect to SRH services at SBHCs. This chapter provided an understanding of the current characteristics associated with the provision of SRH services at adolescent-serving SBHCs nationally. These findings expand the literature through characteristics that have not been previously identified.

This dissertation study demonstrates that 84% of adolescent-serving SBHCs in this study sample provided SRH services during the 2021-2022 academic year. The structural level characteristics associated with the provision of SRH services included U.S. region, and state and local government funding. SBHCs located in the South and Midwest U.S. region had 0.25 times lower odds of providing SRH services (p=<0.001) compared to those in the Northeast region. SBHCs that received state (p=0.03) and local government (p=0.01) funding sources had >1.5 times greater odds of providing SRH services.

The organizational characteristics associated with the provision of SRH services at adolescent serving SBHCs included SBHCs with 10 or more years of operation and SBHCs that had a fully open operational status during the 2021-2022 school year. SBHCs that had 10 or more years of operation had >2 times the odds of providing SRH services compared to SBHCs with 0-2 years of operation (p=0.02). It may be that SBHCs with greater number of years in the community have established trust and expanded types of services offered. SBCHs that had physician assistants (PA) as primary care provider type during the 2021-2022 school year had >3 times greater odds of providing SRH services (p=0.001) compared to SBHCs that did not have PAs as primary care provider type.

The only community characteristic associated with the provision of SRH services was the type of school where the SBHC was located. SBHCs located at middle schools had >1 times greater odds of providing SRH services (p=0.04) compared to those located at an elementary school. SBHCs located at high schools had >5 times greater odds of providing SRH services (p=<.001) compared to SBHCs located at elementary schools. Lastly, SBHCs were located at combined grade or non-traditional schools had >3 times greater odds of providing SRH services (p=0.001) compared to those located at an elementary school. This study provided systems level characteristics on access to SRH services at SBHCs nationally.

Chapter 4. Chapter 4 findings expand and update the literature on the provision of on-site dispensing of contraceptives at adolescent-serving SBHCs that offered SRH services. This dissertation study demonstrated that 70% of adolescent-serving SBHCs that offered SRH services in this study sample dispensed contraceptives on-site during the 2021-2022 school year. Prior research utilizing the 2016-2017 Census demonstrated that 46% SBHCs were dispensing at least one contraceptive on-site (Sullivan et al., 2022). The dissertation study found a 24% increase in the proportion of SBHCs that dispensed contraceptives on-site compared to prior research utilizing the 2016-2017 Census demonstrating that 46% of SBHCs were dispensing at least one contraceptive on-site (Sullivan et al., 2022). However, the Sullivan (2022) study was not limited to only SBHCs that were providing SRH services, which likely contributes to the observed increase. The structural characteristics associated with on-site dispensing of contraceptives among SBHCs that offered SRH services were U.S region, state government funding, and local government funding. Inequities in the provision of contraceptives at SBHCs were found; the South and Midwest regions had lower odds of providing these services (p=<0.001). SBHCs that received federal (p= <0.001) and local government funding had >2

times greater odds of dispensing contraceptives on-site (p=0.01). Protecting funding that supports contraceptive services is critical in order to maintain and expand these services at SBHCs nationally.

The organizational characteristics associated with the provision of contraceptives at adolescent-serving SBHCs that offered SRH services were being fully open status during the 2021-2022 academic year and having a nurse practitioner (NP) as a primary care provider type. SBHCs with fully open operational status during the 2021-20211 school year had >2 times greater odds of dispensing contraceptives (p=0.001). SBHCs that reported a fully open operational status may have had more opportunity to provide contraceptives on-site than those that were temporarily closed or partially open during the 2021-2022 school year. SBHCs with NPs as a primary care provider type had 0.42 lower odds of dispensing contraceptives on site. State NP practice and prescribing authority varies in the U.S. (NCSL, 2024) and can be considered as a reason why SBHCs with NPs had lower odds of dispensing contraceptives on-site.

The community characteristic associated with the provision of contraceptives at adolescent SBHCs that offered SRH services were SBHCs located at high schools, located at combined or non-traditional schools, and being located at a school where the percentage of students that identified as BIPOC was 75% or more. SBHCs located at a school where 75% or more students identified as BIPOC had >2 times greater odds of dispensing contraceptives on-site (p=0.004). Several considerations for this finding were discussed and further research is needed to reach conclusions.

The intersectionality framework by Crenshaw (1989) was applied to the methods of this research. The intersectionality framework provided a lens for the data analysis by examining the

intersection of race, ethnicity, class, and gender. The intersectionality framework guided the identification of the structural, organizational, and community characteristics associated with the provision of contraceptives at SBHCs nationally. The intersectionality framework supported identifying additional factors and policies reported that may be contributing to the persistent inequities in the provision of contraceptives.

Discussion of Implications for Research

The findings in this dissertation can guide future research. Written policies prohibiting the provision of contraceptives can be further explored by examining if the policy is implemented by the lead sponsor, school or school district. The specifics of culture and politics as a factor in prohibiting on-site dispensing of contraceptives are unknown, and a qualitative study can further explore these concepts. A future study on the geographical proximity of SBHCs to pharmacies, primary care health centers, and other family planning health centers may illuminate the need and inequitable access to SRH and contraceptive services at SBHCS. This dissertation was the first to examine on a national level the percentage of students that identified as BIPOC at the school where the SBHC was located.

SRH services have been compromised while under previous elected U.S. presidents and are on the current 2024 presidential election agenda. Future research can examine the positive or negative impact on SRH and contraceptive services after the 2024 U.S election (Ranji et al., 2024). Research examining SRH and contraceptive services at SBHCs post 2024 U.S. Presidential election can inform the persistent or decreasing structural injustices of these services.

Discussion of Implications for Nursing

Given that NPs are one of the main provider types practicing at SBHCs, and the study findings demonstrated that provider discomfort and lack of training were not reported by many SBHCs as factors contributing to the prohibition of contraceptives dispensed on-site. These findings are encouraging for the field of medicine and nursing education and training. In the U.S., NP practice and prescribing authority varies by state (NCSL, 2024) and can be considered as a reason why SBHCs with NPs had lower odds of dispensing contraceptives on-site. Advocacy is needed for NPs to have full independent practice and prescribing. Further, nurses and advanced practice nurses in the school or SBHC setting can get involved at the school or school district level to advocate for the provision of SRH and contraceptive services at SBHCs. Involvement in professional nursing organizations that prioritize health policy and be an advocacy entry point for equitable SRH and contraceptive services at SBHCs. As a nurse scientist, it is key to disseminate the study findings to move the SBHC field forward and continue conducting research on SRH and contraceptive services at SBHCs nationally.

Discussion of the Implications for Policy

This research adds to our current understanding of the policies prohibiting on-site dispending at SBHCs. State level policy reform is needed to address the varying minor confidentiality and privacy laws that serve as barriers to SRH and contraceptive services for adolescent populations (Sharko et al., 2022). Federal level advocacy is needed to protect and secure federal funding designated for SRH and contraceptive services. It is key to inform policy advocates and policy makers with evidence-based research findings that support the need for accessible and equitable SRH and contraceptive services at SBHCs nationally. This dissertation can aid in transforming structural injustices including policies that create barriers to SRH and

contraceptive services at SBHCs. Legislation reform is needed to support NPs practice and prescribing authority across the U.S.

Conclusion

This dissertation updates and expands the field on the provision of SRH and contraceptives at SBHCs. Findings describe the structural, organizational, and community characteristics associated with the provision of SRH and contraceptives at adolescent-serving SBHCs. The study findings demonstrated that 84% of adolescent-serving SBHCs across the U.S, provided SRH services during the 2021-2022 school year. Among the SBHCs that provided SRH services, 70% are dispensing contraceptives on-site. The findings demonstrate an increase in the proportion of SBHCs that provided SRH and contraceptive services nationally during the 2021-2022 school year compared to prior years (Sullivan et al., 2022). Inequities and barriers to SRH and contraceptive services at SBHCs persist. Lastly, there is limited literature examining these services on a national level and several recommendations were provided for future research on the provision of SRH and contraceptive services at adolescent serving SBHCs.

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