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Sexual and Reproductive Health Services in School-Based Health Centers: A Literature Review

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ABSTRACT

Background: School-Based Health Centers (SBHCs) are designed to provide youth-friendly services and to reduce barriers associated with accessing services. SBHCs serving teens provide varying ranges of sexual and reproductive health services. Most provide abstinence and contraceptive counseling, pregnancy testing, vaccinations against human papillomavirus (HPV), and on-site diagnosis and treatment for STIs. However, the evidence on the impact of SBHCs on adolescent sexual and reproductive health remains limited.

Methods: The current scoping review focuses on identifying broad patterns and mapping approaches of promoting SBHC health services in order to offer recommendations for advancing sexual and reproductive health services in SBHCs along with directions for future research.

Results: Among the 18 studies meeting the inclusion criteria, 13 reported significant positive changes in adolescents' sexual and reproductive health based on services provided by SBHCs.

Conclusion: SBHCs that are motivated to address the sexual and reproductive health needs of the students they serve may need to look to the experiences of more mature centers for a way forward. The older an SBHC is, the more likely it is to offer contraceptive services on-site. The challenges that have had an impact on the provision of a full array of sexual and reproductive health services at SBHCs are related to politics and funding.

Keywords: School-based health centers, Sexual and reproductive health, Prevention services, Child and adolescent health

INTRODUCTION

Since the founding of the first school-based health centers (SBHCs) over 50 years ago, researchers have attempted to measure their impact on child and adolescent physical and mental health and academic outcomes [1,2]. SBHCs are defined as health centers located in schools or on school grounds that provide acute, primary, and preventive health care [1,3]. Depending on a variety of factors, SBHCs generally provide immunizations; testing and treatment of sexually transmitted infections; contraception, pregnancy testing, prenatal care; mental health assessment and treatment; crisis intervention and referrals; substance abuse counseling; health education; and dental care [1]. Services are often provided by a multidisciplinary team that may include physicians, nurse practitioners, physician assistants, school nurses, health educators, dentists, and mental health providers. SBHCs also vary significantly in their hours of operation, with some open a few hours a week and others open for the full school day, weekends, and/or through the summer [1,3].

There has been tremendous growth in the establishment of SBHCs across the USA, with an increase in the number of SBHCs in the past 25 years, from 150 in 1989 to 2,584 in 2016 [4]. Starting in 2014, more than 90% of SBHCs were traditional, but the distribution shifted in 2017 with the growth of telehealth exclusive SBHCs [4]. Twenty percent of SBHCs now have at least one provider available through telehealth [4]. SBHCs are distributed widely but unevenly in 48 of the 50 states, including 201 in Texas, 199 in California, 196 in New York, and 115 in Florida while almost half (46%) of SBHCs serve communities in urban areas, 36% are in rural areas, and 18% are located in suburban areas [4].

SBHCs potentially can improve physical and mental health as well as academic outcomes. Embedded within schools, SBHCs have the ability to provide services to most children and adolescents [1]. SBHCs are designed to provide youth-

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friendly services and to reduce barriers associated with accessing services (e.g., finances, inconvenient hours, transportation) [1,5]. They also have the capacity to teach young people when and how to access health care and to modify attitudes and behaviors [1,6] While the SBHC model has not yet received widespread recognition and support [5,7] there is evidence that delivery of health care within schools may reduce more expensive types of care, such as emergency room use and inpatient hospital care [1]. This may be a function of increased preventive care including the likelihood of having at least one physician visit and an annual dental examination [5].

Prior research has confirmed the potential benefits of well-integrated and adequately funded SBHCs, including improving health care access, reducing absenteeism, facilitating management of chronic disease, and preventing risky behaviors among students [8-10]. The American Academy of Pediatrics has argued that SBHCs facilitate better management and control of behavioral problems that affect student performance and disrupt the school environment and that the benefits extend beyond physical and mental health to include decreased dropouts and improved academic success [9-12].

Sexual and Reproductive Health Services

SBHCs serving teens provide varying ranges of sexual and reproductive health services. Most provide abstinence and contraceptive counseling, pregnancy testing, vaccinations against human papillomavirus (HPV), and on-site diagnosis and treatment for STIs [4,13]. Many SBHCs offer programs on sexual orientation and gender identity, sexual assault, rape prevention and counseling, and intimate partner violence [13]. More than half of SBHCs report providing HIV counseling and testing, although a significant proportion (19%) have policies that prohibit HIV testing [13].

The evidence on the impact of SBHCs on adolescent sexual and reproductive health remains limited [13,14]. Offering reproductive health care at SBHCs is associated with youth's delayed initiation of sexual intercourse, decreased number of sexual partners and increased contraceptive use [13]. Nevertheless, few studies have found significant relationships between SBHCs and adolescent sexual and reproductive health [13-15]. With the goal of providing a foundation for strengthening services in SBHCs nationwide, this scoping review examines studies evaluating interventions that may be designed to focus on sexual and reproductive health services. Specifically, the evidence of the effects of SBHCs on adolescent sexual and reproductive health are examined in this review. The research question guiding this review was: How effective are SBHCs in improving the sexual and reproductive health outcomes of adolescent students?

METHODS

A scoping review was fitting because of the exploratory nature of the research question. Scoping reviews facilitate the summary of research findings drawn from existing literature with a goal of making recommendations and identifying research gaps [16,17]. The current scoping review focused on identifying broad patterns and mapping approaches of promoting SBHC health services in order to offer recommendations for advancing sexual health services in SBHCs along with directions for future research. Although reporting guidelines do not currently exist for scoping reviews [18], a systematic search of the literature for interventions that promote sexual and reproductive health services in SBHCs was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines as closely as possible. Following Arksey & O'Malley's 2005 framework for scoping reviews, the present scoping review followed five stages: (a) identifying the research question, (b) identifying studies, (c) selecting studies, (d) extracting and charting the data, and (e) collating/summarizing the results [19].

In order to be included in this review, studies had to evaluate an intervention or program that included sexual and reproductive health services through an SBHC. In addition, studies had to include process outcomes (i.e. contraception use by adolescents) and any sexual behavior measures (e.g. sexual activity, condom use during sexual intercourse, number of sexual partners), as defined by each study, to be eligible.

The databases Google Scholar, PubMed, and Web of Science were searched using the keywords "school-based health centers" and "sex*" for articles published between 2010 and 2020. The initial general Google Scholar search used the words "school-based health centers sex" altogether and produced 17,900 items. The next Google Scholar search was advanced in order to filter the results. The key words used were "allintitle: school-based health centers AND sexual", which produced nine items, two of which met criteria. The next search was a PubMed advanced search of keywords "sbhcs AND sex*" which produced 29 items, of which 11 met criteria. The next search was a Web of Science advanced search of "sbhcs AND sex*" which produced 222 items in which 12 met criteria. Title and abstracts were screened to identify articles that potentially met the inclusion criteria. In total, 237 articles were identified for further assessment, and the full texts of these articles were reviewed. After excluding articles that did not meet the inclusion criteria 18 articles were identified for inclusion. Relevant information from each study, including year, location, sample, method, and main findings was extracted. **Table 1** includes a summary of all included articles.

Table 1. Summary of included articles.

Authors	Year	Location	Sample	Method	Main findings
Bersamin, Paschall & Fisher	2018	Oregon	134 high schools (27 schools with SBHCs) and 11,840 students who participated in the 2015 Oregon Healthy Teens Survey.	This study is based on survey data collected in 2015 from a sample of 11th graders in Oregon public high schools and information on SBHCs provided by the Oregon Health Authority Public Health Division. Descriptive analyses were first conducted to examine sample characteristics and compare schools with and without SBHCs among the total sample of 11th graders. Multi-level regression analyses were then conducted to assess the association between SBHC presence and sexual behaviors including healthy sexual behavior among the full sample, and contraceptive use and having sexual intercourse in the past three months among those who reported ever having sexual intercourse.	Multilevel logistic regressions found positive associations between SBHC presence and healthy sexual behavior (OR =1.23, $p < .05$) and contraceptive use (OR = 1.31, $p < .01$). Associations were stronger at schools with at least 50% of students receiving free or reduced-price lunch. Among SBHC schools, prescribing and dispensing contraceptives onsite was positively related to contraceptive use among students who had sex within the past 3 months (OR = 1.77, $p < .01$). Findings suggest that exposure to SBHCs in general, and availability of specific reproductive health services, may be effective population-based strategies to support healthy sexual behaviors among youth.
Denny et al.	2012	New Zealand	9107 students from 96 New Zealand high schools	Students self-reported whether they were sexually active, how often, they used condoms or contraception, and their involvement in pregnancy. School administrators completed	There was an inverse association between hours of nursing and doctor time and pregnancy involvement among sexually active students, with fewer pregnancies among

				questionnaires on their school-based health services, including doctor and nursing hours per week, team-based services, and health screening. Analyses were conducted using multilevel models controlling for individual variables, with schools treated as random effects.	students in schools with more than 10 hours of nursing and doctor time per 100 students. There was no association between doctor visits, team-based services, health screening, and reproductive health outcomes.
Ethier et al.	2011	California	A classroom- based sampling strategy was used to recruit participants for the study. Classes were randomly selected from the Spring schedule of classes. By virtue of being enrolled in a selected class, all students in the class were eligible to participate. A total of 19,078 high school students were enrolled in selected classes and were therefore eligible to participate in the study.	A total of 12 urban California high schools, selected from areas with high teen pregnancy and STD rates, half with school-based health centers (SBHCs), participated in an intervention study designed to improve sexual health among adolescents. Of the participating students, 44% indicated that they had ever had sexual intercourse and were included in these analyses.	Access to an SBHC did not influence receipt of reproductive health care for either males or females and did not influence contraceptive use, either hormonal or condoms, for males. For females, however, those with access to an SBHC had increased odds of having received pregnancy or disease prevention care (adjusted odds ratio [AOR] 1.45, 95% confidence interval [CI] 1.16-1.80), having used hormonal contraceptives at last sex (AOR 1.68, 95% CI 1.24-2.28), and were more likely to have ever been screened for an STD (AOR 1.85, 95% CI 1.43-2.40). Also among female students, those with access to an SBHC were more likely to

					have used emergency contraception at last sex (AOR 2.1, 95% CI 1.08-4.22).
Fisher & Luong	2016	New York City	This study uses pooled 2009, 2011, and 2013 data from the New York City Youth Risk Behavior Survey (N=32,896) to compare the prevalence of and associations between selected sexual risk behaviors and attending schools with SBHCs. All analyses were limited to ever SA female students (N=5147) and a subset of analyses were limited to SA female students attending schools with SBHCs (N=1,338).	Bivariate and multivariate logistic regression models were used to assess associations between attending a school with a SBHC and contraceptive use, HIV testing, sexual risk behaviors, and pregnancy among SA females; and between using the SBHC and the same outcomes. All multivariate models controlled for age, race and survey year.	SA female students attending schools with SBHCs were significantly more likely than SA female students attending schools without SBHCs to have used hormonal contraception at last sex (OR=1.8), to have used dual contraception at last sex (OR=1.8), to have been tested for HIV (OR=1.5), and to have gotten contraception at school the last time they got contraception (OR=8.7), after controlling for age, race and survey year. Among SA female students attending schools with SBHCs, those who used the SBHC at their school were significantly more likely than those who had not used the SBHC to have used hormonal contraception at last sex (OR=3.3), to have not used a condom at last sex (OR=1.8), to have been tested for HIV (OR=1.6), to have gotten contraception at school the last time they got contraception (OR=9.4), and to have used emergency contraception at last

					sex (OR=3.4) after controlling for age, race and survey year.
Fisher, Luong & Tiezzi	2016	New York City	Patient-level clinical data from visits to SBHCs between October 2010 and May 2015 were used to examine LARC use among sexually active females. Data from 23 SBHCs were included in the analysis: 8 SBHCs with onsite LARC services with data available for at least 12 months prior to the onsite availability of LARC, and 15 SBHCs without the onsite availability of LARC to serve as a comparison group. The comparison group was also limited to SBHCs that did not have access to an in-network referral clinic for LARC insertions.	Rates of LARC use were calculated for the 12 months before onsite LARC provision and for 12-month periods subsequent to the implementation of onsite LARC availability. LARC use rates were also determined for each of these time periods for the comparison group. We used a logistic regression model to compare the probability of LARC use at each of the 8 onsite SBHCs before and after the implementation of LARC services. We also compared the change in LARC use between the onsite and comparison SBHCs by using a difference-in-differences model to measure the effects of onsite LARC availability on LARC use.	Baseline LARC use rates at the onsite SBHCs were in the range of 0.64-4.92 %. After the availability of LARC onsite, LARC use increased in all sites. The average expected increase in LARC use based on the rate of increase in the comparison group was 0.7 Percentage Points (PP), and the average observed increase was 3.8 PP at the onsite SBHCs; therefore, the average attributable increase was 3.1 PP. At 6 of the 8 onsite SBHCs, the observed increase in LARC use was significantly higher than the expected increase based on the comparison sites.
Gibson et al.	2013	New York City	2,076 students	Access and quality of health services were evaluated at an urban high school with a SHC compared with a school without a SHC, using a quasiexperimental research design. Data were collected at the beginning of the school year, using a paper and pencil classroom questionnaire. We	Students at the SHC school were more likely to report having a regular healthcare provider, awareness of confidential services, support for health services in their school, and willingness to utilize those services. Students in the SHC school reported higher quality of care as

				measured SHC impact in several ways including grade by school interaction terms	measured by: respect for their health concerns, adequate time with the healthcare provider, understandable provider communications, and greater provider discussion at their last visit on topics such as sexual activity, birth control, emotions, future plans, diet, and exercise. Users of the SHC were also more likely to report higher quality of care, compared with either nonusers or students in the comparison school.
Hoopes et al.	2016	Seattle, Washington	A total of 102 students diverse in race/ethnicity and socioeconomic backgrounds completed the survey (mean age 16.2 years, range 14.4-19.1 years)	In this cross-sectional study, female patients receiving care at 2 SBHCs in Seattle, Washington completed an electronic survey about sexual and reproductive health. Primary outcomes were (1) LARC knowledge as measured by percentage correct of 10 true-false questions and (2) LARC acceptability as measured by participants reporting either liking the idea of having an intrauterine device (IUD)/subdermal implant or currently using one.	Approximately half reported a lifetime history of vaginal sex. Greater LARC knowledge was associated with white race (regression coefficient [coef] =26.8; 95% CI 13.3-40.4; P < .001), history of vaginal intercourse (coef = 29.9; 95% CI 17.1-42.7; P<0.001), and current/prior LARC use (coef = 22.8; 95% CI 6.5-40.0; P = 0.007). Older age was associated with lower IUD acceptability (odds ratio = 0.53, 95% CI 0.30-0.94; P = 0.029) while history of intercourse was associated with

					greater implant acceptability (odds ratio 5.66, 95% CI 1.46-22.0; P = 0.012).
Hoopes et al.	2016	Washington State	Thirty adolescent women aged 14-18 years, diverse in race/ethnicity, and sexual experience.	Interviews were audio-recorded, transcribed, and coded using inductive and deductive coding.	Participants (mean age, 16.2 years; range, 14-18 years) represented a diverse range of racial and/or ethnic identities. Half (15/30) were sexually active and 17% (5/30) reported current or past LARC use. Five themes emerged regarding key factors that influence LARC choice, including: (1) strong preferences about device-specific characteristics; (2) previous exposure to information about LARCs from peers, family members, or health counseling sessions; (3) knowledge gaps about LARC methods that affect informed decision-making; (4) personal circumstances or experiences that motivate a desire for effective and/or long-acting contraception; and (5) environmental constraints and supports that might influence adolescent access to LARCs.
Jozkowski & Crawford	2016	Alabama, Arkansas, Louisiana,	The data discussed in the current article were drawn from a number of sources. Data was reviewed from the following CDC sources: (1)	Drawing on the findings from this broad review and current peer-reviewed scientific	61.2 % of SBHC are prohibited from providing contraceptives to teens. The most

		Oklahoma and Texas	2013 Youth Risk Behavior Surveillance Survey, (2) 2012 School Health Profiles, (3) 2013 State Health Profiles for Alabama, Arkansas, Louisiana, Oklahoma, and Texas, and (4) 2010 National Center for Health Statistics. Data was also reviewed from the Guttmacher Institute's 2014 State Policies on Sex and HIV education, the National Campaign to Prevent Teen and Unplanned Pregnancy's 2012 state-specific rates of teen pregnancy, and the National Assembly on School-Based Health Care's (NASBHC) 2009 census report.	literature, the authors made specific policy recommendations in order to improve the current status of sexual and reproductive health in these five states.	common service provided by SBHC is abstinence-only sex education; 83.6 % of SBHC provide on-site and referral abstinence counseling. The second most common service provided by SBHC is pregnancy testing with 80.5 % of SBHC reporting on-site or referral services for pregnancy testing.
Madkour, Xie & Harville	2016	United States	Data from Waves I and IV of the National Longitudinal Study of Adolescent Health were analyzed. Girls and women who gave birth to singleton live infants after Wave I and before age 20, were still in secondary school while pregnant, and had complete data (N = 402) were included.	Mothers reported infants' the National Longitudinal Study birthweight and gestational age. School administrators reported whether family planning counseling, diagnostic screening (including sexually transmitted diseases [STDs]), STD treatment, and prenatal/postpartum health care were provided on-site at school at Wave I. Multilevel models adjusted for individual and school characteristics were conducted.	Few schools offered reproductive health care services on-site. In multilevel analyses, availability of family planning counseling (Est. β = 0.21, 95% confidence interval [CI] 0.04-0.38 $p < 0.05$) and prenatal/postpartum health care (Est. β = 0.21, 95% CI 0.02-0.40 $p<0.05$) were significantly associated with increased infant birthweight. No services examined were significantly associated with increased gestational age.
McCauley et al.	2014	California	Adolescent females (770), ages 14 to 18	Adolescent females (n 1⁄4 770), ages 14 to 18, seeking services at ten school-based health	Eighteen percent of the sample (n 1⁄4 139) identified as lesbian, bisexual, or questioning (77%

				centers in California completed a computer-assisted survey that served as baseline data for a larger clinical trial. Fisher's Exact or Wald Log-Linear Chi-Square tests were used to assess differences in outcomes of interest by recent ARA, recent non-partner sexual assault, sexual orientation, and sexual contacts (any same-sex contacts vs. opposite sex contacts only). Adjusted logistic regression models were constructed to assess the relationship of violence victimization and sexual orientation/sexual contacts collectively with sexual/behavior risk outcomes.	bisexual); 13% of the sexually active females (n 1⁄4 74) reported any same sex contacts. In bivariate analyses, lesbian/bisexual females were more likely to report recent sexual assault victimization (21% vs. 13%; p 1⁄4 0.02),contraceptive non-use (8% vs. 3%; p 1⁄4 0.01), and STI testing/treatment (16% v 10%; p 1⁄4 0.05). Females who experienced recent ARA were more likely to report all outcomes compared to girls without exposure to ARA. Females who experienced recent sexual assault were more likely to report two or more sex partners in past 3 months, contraceptive non-use, reproductive coercion, and care seeking for STI testing/treatment. In adjusted models, exposure to abuse or sexual victimization remained salient predictors of key outcomes. When controlling for exposure to abuse, lesbian/bisexual females were more likely to report recent anal sex (AOR 1.8, 95% CI 1.002, 3.1), contraceptive non-use (2.9,

					95% CI 1.5, 5.6), and STI testing/treatment (1.8, 95% CI 1.2, 2.7).
Minguez et al.	2015	New York City	2,076 students, 1365 from SHC and 711 from comparison school.	A 64-item paper-and-pencil questionnaire was created that could be completed in one 45-minute class period and modeled after the 2007 NYC Youth Risk Behavior Survey (YRBS). Data were anonymously collected in classrooms, gyms, and auditoriums. The questionnaire was pretested with 14 students from the SHC. All methods used multivariate regression (logistic regression or ordinary least squares regression) to measure statistical differences and adjust for demographic differences (in Latino ethnicity, gender, and sexual experience) between schools. In total, 60 separate multivariate analyses were run.	Students in the SHC were more likely to report receipt of health care provider counseling and classroom education about reproductive health and a willingness to use an SHC for reproductive health services. Use of hormonal contraception measured at various time points (first sex, last sex, and ever used) was greater among students in the SHC. Most of the 12th graders using contraception in the SHC reported receiving contraception through the SHC. Comparing students in the nonintervention school to SHC nonusers to SHC users, stepwise increases were found in receipt of education and provider counseling, willingness to use the SHC, and contraceptive use.
Moore et al.	2016	United States	311 participants	The survey was developed after review of existing surveys on support for sexuality education and sexual health services. The university's Public Opinion Research	Most participants were supportive of offering sexual health services at both middle schools (MS) and high schools (HS): testing for STIs/HIV (61%

				Laboratory used random-digit-dialing to administer the survey to participants (N =311) including residential and cell phone numbers. Chi-square tests were used to examine whether there were differences in support for sexual health services across demographic variables and opinions on sexuality education. T tests were used to examine whether those who supported or opposed each health service had different estimates of the percent of MS and HS students who have had sexual intercourse. Weighted data was used for tests of significance and may result in differences in the numbers between the frequency table and analyses tables.	MS, 76% HS), treatment for STIs/HIV (60% MS, 75% HS), and provision of condoms (44% MS, 63% HS). Analyses showed significant differences in support for sexual health services by a few demographic variables, opinions about sexuality education, and the percentage of students perceived to have had sexual intercourse.
O' Leary et al.	2014	Denver, Colorado	495 adolescent SBHC users and 497 parents of SBHC users	A cross-sectional, mailed survey of a random sample of 495 adolescent SBHC users and 497 parents of SBHC users from 10 SBHCs in Denver, CO from May to October 2012. Eligible adolescents were registered in an SBHC with $1 visit during the 2011 to 2012 school year.	Response rates were 40% (198/495) among adolescents and 36% (181/497) among parents. The top 3 reasons for visits were for illness (78%), vaccines (69%), and sexual health education (63%). Factors reported as very important by 0.75% of parents in the decision to enroll their adolescent in an SBHC included

					clinic offering sick or injury visits, sports physicals, and vaccinations. More than 70% of adolescents gave favorable responses (always or usually, excellent or good) to questions about American Academy of Pediatrics medical home criteria (accessibility, continuity, comprehensiveness, family-centeredness, co-ordination, and compassion). Most parents (83%) reported that they could always or usually trust the SBHC provider to take good care of their child; 82% were satisfied with provider-to-provider communication.
Salerno et al.	2013	Michigan	School wide chlamydia and gonorrhea education and screening was provided to 869 adolescents; 226 males and 282 females 14-20 years (mean age = 17.07) consented to urine screening.	School-wide sexually transmitted infection (STI) screening to identify adolescent high-risk sexual behaviors, STI history/incidence, and presence of chlamydia and gonorrhea, and examines relationships between high-risk behaviors and screening positive for chlamydia and gonorrhea in an alternative high school setting.	A majority (69%) of the adolescents consented to screening: 17.76% (92) had a history of STI; 8.83% (46) tested positive at screening. More females than males tested positive ($p = .001$). Significant relationships existed between history of STIs and ≥ 4 sexual partners ($p = .0022$), no condom use ($p = .06$), and sexual intercourse in last 3 months ($p = .03$)
Serowoky et al.	2015	Midwest United States	Three cohorts (*N*=24) of female teens	The program logic model (PLM) was used as the	¡Cuídate! was executed within an existing school

				systematic approach to plan, implement, and evaluate a sustainable model of sexual health group programing (¡Cuídate!) in a U.S. high school SHC with a large Latino student population.	structure and time constraints, below cost projections, and with high participant retention (95.8%). Three cohorts (N = 24) of female teens demonstrated significant increases in STI or HIV knowledge, self-efficacy, and intention to use condoms ($p<0.01$). Condom use increased post program. No participants initiated sexual behavior, nor were there any reported pregnancies or STIs.
Sisselman et al.	2012	New York City	Fifty-five SBHC providers completed the online survey, covering approximately 65 schools, yielding a 50 percent response rate.	Focus groups were conducted with eight NYC SBHCs to identify programs and services being offered and to elicit information about appropriate survey questions for the entire group of NYC SBHCs. An online survey was developed using feedback from these focus groups. Descriptive statistics were used to report quantitative data because the amount of missing data within the quantitative questions did not allow for more sophisticated analyses. Content analysis, using inductive methods, was used to organize the qualitative data and create meaning	General services provided by the SBHCs include vaccinations and immunizations; student sports physicals; well-child exams; vision screenings; mental health counseling; asthma education and care; obesity education and screening; dental care; treatment for minor illness; and education, prevention, treatment, and screening for sexually transmitted diseases. Results from the current study suggest that SBHCs may have evolved over the last 13 to 14 years and that new, innovative programming, such

				within these qualitative responses.	as peer education regarding reproductive health, may be contributing to lowered teenage pregnancy rates.
Wang et al.	2017	United States	Nine studies met the inclusion criteria, with the majority conducted in the United States of America.	An electronic search was conducted in PubMed using a comprehensive search strategy to identify studies assessing school-based programs that made condoms available to students. A descriptive analysis of key outcome measures were conducted on all included studies. Point estimates or measures of association together with corresponding 95% confidence intervals (CIs) and test statistics were presented for each outcome measure.	Most studies showed that school-based CAPs increased the odds of students obtaining condoms (odds ratios (ORs) for individual studies ranged between 1.81 and 20.28), and reporting condom use (OR 1.36–3.2). Three studies showed that school-based CAPs positively influenced sexual behavior, while no studies reported increase in sexual activity. Findings suggest that school-based CAPs may be an effective strategy for improving condom coverage and promoting positive sexual behaviors.

RESULTS

Of the 18 studies included in this review, 12 were quantitative, 5 were qualitative and 1 included both quantitative and qualitative study designs. Studies were conducted in a number of locations in the U.S, including California (n = 2), New York (n = 5), Washington State (n = 2), Alabama, Arkansas, Louisiana, Oklahoma, and Texas (n = 1), Colorado (n = 1), Michigan (n = 1), Oregon (n = 1), Midwest Region of U.S. (n = 1), the countries of U.S (n = 3), and New Zealand (n = 1). In the majority of studies (n = 11) researchers evaluated services that were offered to all high school students, and 7 studies had female-only samples. The primary outcome of interest in the current review was the promotion of sexual and reproductive health services in SBHCs. Among the 18 studies meeting the inclusion criteria, 13 reported significant positive changes in adolescents' sexual and reproductive health based on services provided by SBHCs. Detailed explanations of findings in the 18 studies can be found in **Table 1**.

CONCLUSION

The major findings of this literature review suggest that communities should garner support for offering sexual and reproductive health services through SBHCs. The findings in this review may assist other communities interested in implementing similar clinics. Such services have potential for positively impacting the sexual and reproductive health of youth.

The challenges that have had an impact on the provision of a full array of sexual and reproductive health services at SBHCs are two-fold. The first involves the politics of adolescents and sex. Critics of SBHCs have argued that by

offering contraceptives, SBHCs undermine parental rights. However, to promote parental support for their programs around contraception and other services, most SBHCs go out of their way to involve parents. All SBHCs require parental consent for primary care, and six in 10 allow parents to restrict children's access to specific services [13] Critics also argue that if SBHCs dispense contraceptives the rates of teen sexual activity will increase. However, there is no evidence that providing teens with contraceptive information, education and services results in increased sexual risk-taking behaviors [13,20].

The second challenge that has had a major impact on the provision of contraceptive services at SBHCs involves funding. Because SBHCs rely on a diverse funding portfolio, careful planning is required to generate enough revenue to match expenses and finding adequate and consistent resources remains a challenge [13]. This can affect many of the services that SBHCs provide, not just contraceptive services, but lack of consistent funding may make expanding the range of reproductive health services even more difficult [13] Also, because SBHCs are guided by policies at multiple levels—from state laws to local school district guidelines to health center policies—political and societal leadership is needed at each level to support the provision of contraceptive services [13].

SBHCs that are motivated to address the sexual and reproductive health needs of the students they serve may need to look to the experiences of more mature centers for a way forward. Interestingly, the older an SBHC is, the more likely it is to offer contraceptive services on-site. About 60% of SBHCs that have been in operation for more than 10 years dispense contraceptives, compared with only 40% of newer centers [4,13]. Public health and children's advocates must recognize that SBHCs are a critical access point to care for adolescents who are most at risk of unintended pregnancy and STIs, and that more must be done to ensure that students' sexual and reproductive health needs are met at SBHCs [13].

IMPLICATIONS FOR SCHOOL HEALTH

SBHCs are typically viewed as a promising way to address teen pregnancy and reach students most at risk of HIV and other STIs. Nationwide, nearly half of high school students have had sex [13,21]. These students require information and services to avoid the negative consequences of sex. From a public health standpoint, students should be given information about and access to contraceptive and STI services before they begin to have sex, so that they are more likely to use protection when they do have sex. Although few younger teens have ever had sex, 20.4% of ninth graders and 57.3% of twelfth graders have had sex in the United States [22].

Over the last several decades, teen pregnancy, birth and abortion rates have declined dramatically in the United States [13,23]. In 2010, the pregnancy rate reached [23] per 1,000 women aged 15-19 [23], its lowest level in approximately 40 years. This is generally due to improved contraceptive use and use of more effective methods [13] even with these trends, however, teen pregnancy still remains a serious public health concern. Each year, nearly 615,000 U.S. women aged 15-19 become pregnant, and 82% report that their pregnancy was unplanned [24]. Furthermore, rates of reported cases of chlamydia are highest among adolescents and young adults aged 15-24 years [25].

SBHCs provide a range of sexual and reproductive health services. However, since the inception of these centers, debates have erupted in communities across the country over whether they should provide contraceptives on-site. At the same time, a number of SBHCs that are committed to sexual and reproductive health are working within their communities to overcome opposition and provide contraceptive care [13].

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