Promoting Health Equity through Education Programs and Policies: School-Based Health Centers

Summary Evidence Table – Effectiveness Review

Author & Year (Linked studies, if any) **Study Design (Design Quality)** **Quality of Execution**	**Target Population** **Study Groups** **Population characteristics**	**Location (urbanicity)** **SBHC or SLHC** **Intervention (Services offered; staffing; year established)** **Comparison** **Study period**	**Outcome(s)**	**Baseline or Comparison Population (%)**	**Follow-up or Intervention Population (%)**	**Effect Size (95% Confidence Interval)***	**Summary**
Allison 07 Cross sectional Good (1 limitation) Exposure (1): not clear if "other users" who used the community clinic also went to SBHC school, therefore exposing self to SBHC but not using it	High school students Intervention: Students who had access to, and used an SBHC during the study period; n=790 Control: Students who used another DH safety net provider, but did not use an SBHC; n=925 Sex (%female) : Intervention: 61.4% Control group: 66.4% Mean age (years): Intervention group: 15.6; control group: 15.5 Race/Ethnicity (%): Intervention:	Denver, CO (urban) SBHC Services offered: Primary care + mental health; immunizations, referrals to specialty services, after-hours telephone advice, urgent care and emergency services in Denver Health (DH) system; pregnancy testing, diagnosis, and treatment of STIs, family planning and birth control counseling (referral for prenatal care and contraception); SBHCs bill students' insurance if possible, but do not require a copayment or out-of-pocket payment from the student or family. Staffing: NR; in general, study states SBHC are staffed by health care professionals such as nurses, NPs, physicians Year established: NR Comparison: 9 DH community clinics; primary care and preventive services, including	Receipt of ≥1 HepB when needed (%): Receipt of Td when needed (%): Receipt of flu shot among asthmatics (%): Urgent care/ED use (%):†	Community users:20.1% Community users: 21.5% Community users:18.0% Community users: 33.8%	SBHC users: 46.2% SBHC users: 33.2% SBHC users: 45.1% SBHC users: 17.0%	Absolute difference 26.1(15.3, 36.9) 11.7 (5.5, 17.9) 27.1 (14.1, 40.0) Relative Percent difference: -39.8 (-50.9, -27.1)	Findings from this study suggest SBHCs are an effective way to improve access to care and quality of care for underserved adolescents

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	Black=19.5; Latino=69.5; White=6.7; Other = 4.3 Control: Black=23.2%; Latino=68.3%; White=6.0%; Other = 2.5% SES: SBHCs existed in 7 of 11 DPS targeting racial/ethnic minorities and/or low-income; 63% of services offered by DH are provided to those uninsured or insured by Medicaid	contraception management, obstetric services, and access to after-hours services, as described above. Some community clinics also provide specialty services, including mental health care. Insured patients are often required to provide a copayment, depending on type of insurance, uninsured patients pay out of pocket based on a sliding scale system. The SBHCs and community clinics use the same immunization schedule and follow the same DH immunization protocol. 8/1/02-7/31/03					
Barnet 03/04 Cross sectional Fair (2 limitations) Confounding (1): 23% of sample received care at ≥2 sites	Teens who delivered in Baltimore during study period Intervention: Students who used high school-based CAPP; n=108	Baltimore, MD (urban) SBHC Services offered: Primary including comprehensive adolescent pregnancy program (CAPP included prenatal, delivery, and postpartum care to students, family planning services, primary care to infants	Screened/counseled for consistent condom use (%): Screened/counseled for depression/suicide (%):	Community users:15.0% Community users:7.0%	SBHC users: 52.0% SBHC users: 74.0%	Absolute difference: 37.0 pct pts (26.7, 47.3) 67 pct pts (58.2, 75.8)	Teens who received prenatal care in a school-based CAPP were more likely to receive screening and counseling and less likely to have negative pregnancy outcomes or dropout compared with teens receiving care at a hospital-

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and were counted w/the prenatal site they visited most Other bias (1): possible comprehensiveness of care was affected by poor documentation on medical records	Control: Students who used hospital-based CAPP; n=282 Sex: 100% female Mean age (years): Intervention group: 15.1; Control group: 16.2 Race/Ethnicity (%): Intervention: Black: 97.0%; Control: Black: 90.0%; SES: Median household income: Intervention: $21,474 Control: $18,840	and children, episodic care, case management, nutrition education, parenting education, and mental health services) Staffing: Family physicians (faculty and residents); social worker, part-time psychiatrist, medical assistant, health educator, receptionist Year established: NR Comparison: University of Maryland hospital-based CAPP offered specialized services (services not reported); staffed by OB/GYN NPs or nurse midwives 7/95-8/97	Low birth weight (%): Preterm labor (%): Prenatal care timing (gestation month of initiation): Dropout rate (%):	Community users:12.0% Community users:4.0% Community users: 3.6 months Community users: 27.5	SBHC users: 5.0% SBHC users: 5.0% SBHC users: 4.2 months SBHC users: 19.5	Relative % difference: 58.3%; (-82.7, 0.5) 25.0% (-54.1, 240.3) 16.7%; p=0.002 -29.1% (-53.8, 8.7)	based CAPP
Berg 79 (Edwards 77) Cross sectional	Teenage girls who received prenatal care at MIC's clinics	St. Paul, MN (urban – intervention group) SBHC	Gestational month of first prenatal visit:	Community users: 4.9 month	SBHC users: 3.4 month	Relative % difference: -30.6%	This study finds positive outcomes for pregnant teens receiving prenatal care by an interdisciplinary

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Good (2 limitation) Other bias (2): intervention group from inner city, control included individuals from the suburbs as well as city Small sample size (72)	Intervention: users Teenage girls who received prenatal care at SBHC-based MIC's; n=36 Control: users Teenage girls who received prenatal care at hospital-based MIC's; n=36 Sex: 100% female Mean age (years): Intervention group: 16.4; Control group: 16.1 Race/Ethnicity (%): entire sample : Native American: 5.6 Hispanic: 19.4 Black: 44.4 Caucasian: 30.6 SES: NR	Services offered: primary care including prenatal care; specifically the study looks at the SBHC-based St. Paul Maternal and Infant Care (MIC) Project which includes family planning counseling, education, referral, daycare for children of registered students STI testing and treatment, pregnancy testing, Pap smears, immunization and personal counseling and referral. Staffing: Family planning nurse clinician (clinic leader), social worker and clinic attendant ; other staff available weekly for appointments (a physician, pediatric nurse associate, nutritionist, and maternity nurse clinician). Other staff, including an obstetrician, a nutritionist and a dental hygienist, were available on a weekly basis Year established: April 1973 Comparison: Hospital-based MIC included prenatal care from a multidisciplinary health care team 1973-76	12 or more prenatal visits (%): Low birth weight (%):	Community users:33.3% Community users:13.9%	SBHC users: 58.3% SBHC users: 5.5%	75.1% (2.2%, 200.0%) -60.4% (-91.8%, 92.0%)	team within a public school setting.

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Britto 01 (Klosterman 00) Before/after w/comparison group Good (1 limitation) Sampling (1): low participation rate (42% of eligible students completed surveys)	Middle and high school students Intervention: Students in schools with enhanced health services; n=1377 Control: students in schools without enhanced health services; n=992 Sex (%female): Intervention: 55.1% Control: 56.1% Mean age (years): Intervention: 15.0 Control: 15.0 Race/Ethnicity (%): Intervention: Black=33.9 White=60.7; Other=5.4 Control: Black=56.3 White=35.9; Other=7.8	Cincinnati, OH and surrounding area (mixed – urban and suburban or rural) Hybrid Services offered: primary care + mental health + social services including substance abuse prevention, tutoring, after school arts and sports, home visits to families with chronic absenteeism and enhanced school health services. As part of the Child First Plan, an average of 43 programs were implemented at each school by the end of the second year. Staffing: Nurse practitioner, 2 RNs Year established: 1 year Comparison: non-SBHC school April or May 1998 and 1999	ER use in past yr (%): Excellent health (%): Any chronic illness (%):‡	SBHC: 33.1 Non-SBHC:29.7 SBHC:28.5 Non-SBHC:31.2 SBHC: 65.6 Non-SBHC:64.8	SBHC: 31.2 Non-SBHC:31.5 SBHC:24.9 Non-SBHC:29.0 SBHC: 66.5 Non-SBHC:65.8	Relative % difference: -11.1% (-21.0%, 0%) -6.0% -0.2%	Results suggest SBHCs may meet unmet health needs for adolescents with poor health status.

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	SES for sample: % on reduced/free school lunch=65.0% Median family income: $6930 to $31101						
Bureau of Primary Healthcare/Lewin 1997 Before-After with comparison and cross sectional Fair (2 Limitations) Confounding (1): Did not adequately control for differences between users and nonusers Sampling (1): Comparison site sampling is not based on any	Elementary, middle and high school aged-youth Intervention: SBHC users and SBHC school Control: SBHC nonusers and Non-SBHC schools Mean Age: NR Sex (% Female) Intervention (SBHC): 52% Race/Ethnicity: Mixed Health Insurance: NR; SES: NR	Nationwide (Mixed) SBHC Services offered: Programs were aggressive in conducting health screening and providing a broad range of preventive services. Others were overwhelmed with demand for acute care. Seven grantees provided heavily utilized dental programs. Six developed extensive mental health programs. Five developed programs designed to meet the reproductive health needs of children in middle and high school. Health education programs were implemented gradually over the course of the year (table 24 gives an overview of program emphasis) Staffing:	ER Use (%):‡ Physical health problems (%): Mental health Problems (%):‡	Elementary school Control: 35.0 Middle/high control: 40.5 Elementary school intervention: 26.0 Control: 20.0 Middle/high Intervention: 51.0 control: 42.0	Elementary school Intervention: 26.0 Middle/high intervention: 46.0 Elementary school Intervention: 21.0 Control: 22.0 Middle/high Intervention: 58.0 control: 52.0	Adjusted relative % difference: 28.6% (-0.4, 64.4) 24.5% (-3.1%, 59.4%) 26.6% -8.2%	Evidence was favorable for emergency room utilization among middle/high school students. Evidence was mixed for physical health and mental health.

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objective measures		NR; study notes that some of the grantees that became operational in the 1994-95 school year were able to provide a full range of services by the end of the school year, but some were only partially staffed Hours/time of operation: NR Years established/fully operational before study period: Roughly 1 year	Usual Source of medical care (%):‡ Usual Source of dental care (%):‡	Elementary school Intervention: 67.0 Control: 75.0 Middle/high Intervention: 74.0 control: 70.0 Elementary school Before: 47.0 Elementary school Before: 54.0 Middle/high: Before: 79.0	Elementary school Intervention: 82.0 Control: 66.0 Middle/high Intervention: 69.0 control: 75.0 Elementary school After: 51.0 Elementary school After: 59.0 Middle/high After: 76.0	12.9% (1.8%, 21.1% -13.0% (-24.6%, 0.4%) 18.7% (2.5%, 36.3%) 14.4% (-2.6%, 31.0%) -2.4% (-8.7%, 4.0%)	

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Denny 12 Cross sectional Fair (2 limitations) Description (1): no description of intervention and limited description of study population Measurement of Outcome (1): Survey not described so we don't know reliability and validity	High school students Intervention: student at school with SBHC Control: students at school without SBHC Total population n: 9107 Sex (%female): NR Mean age: NR Race/ethnicity: NR SES: NR	New Zealand (mixed) School-based Services offered: NR Staffing: NR, although study asks school administrators about the number of health practitioners (nurses and doctors) as part of results 3 yrs operational: NR Comparison: schools without SBHC 2007	Consistent contraception use: Involvement in pregnancy (had pregnancy or got someone pregnant):	Non-SBHC: Not reported (NR) Non-SBHC: NR	SBHC: NR SBHC: NR	Narrative findings (AOR, 95% CI): In schools with >10 nursing and doctor hours per week per 100 students, sexually active student had higher odds of reporting consistent contraception use than sexually active students in schools with no school-based health services (AOR: 2.7; 95% CI: 1.03, 7.09) In schools with . 10 nursing and doctor hours per week per 100 students, sexually active student had one third the odds of	This study reports an association between the availability of school-based health services, in terms of hours of nursing and doctor time per 100 students, and pregnancy outcomes among high school students.

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						reporting involvement with pregnancy than sexually active students in schools with no school-based health services (AOR: 0.34; 95% CI: 0.11, 0.99)	
Edwards 77 (Berg 79) Single group before-after Fair (3 limitations) Measurement of Outcomes (1): does not describe source of outcome data were (assume school and clinic records) Data analysis (1): no data analysis	Pregnant teenage girls Intervention: pregnant students who used SBHC and were followed throughout their pregnancy; n=38 Control: NA Sex (% female): 100% Mean age: 16.1 Race/ethnicity: 1973: Minority race: 40%	St Paul, MN (urban) SBHC Services offered: primary care including prenatal care; specifically the study looks at the SBHC-based St. Paul Maternal and Infant Care (MIC) Project which includes family planning counseling, education, referral, daycare for children of registered students STI testing and treatment, pregnancy testing, Pap smears, immunization and personal counseling and referral. Staffing: Family planning nurse clinician (clinic leader), social worker and clinic attendant; other staff available once a week	Postpartum high school non-completion rate: Received prenatal care (%): Fertility rate per 1000 female students:	Before: 45.0% Before: 5.0% Before: 80.0%	After:10.0% After:92.0% After:36.0%	Relative % difference: 77.8% 1740% -55.0%	Study demonstrates that this SBHC is effective in reducing high school non-completion and improving pregnancy outcomes for pregnant teens

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Confounding (1): did not control for any covariates	White: 60% SES: NR	for appointments (a physician, pediatric nurse associate, nutritionist, and maternity nurse clinician). Other staff, including an obstetrician, a nutritionist and a dental hygienist, were available on a weekly basis Year established: April 1973 Comparison: NA (pre-SBHC) 1972-76					
Edwards (2005) Before/after with comparison Fair (3 limitations) Sampling (1): nonrandom, school selected based on overweight and obesity at the school Follow-up (1): 39.4% of those invited completed baseline and follow up;	Overweight 8th graders Intervention: student at school with SBHC (n= 28 baseline) Control: students at school without SBHC (baseline not reported; 13 completed) Sex (%female): NR Mean age: NR; all were 8th graders	Baton Rouge, LA (urban) SBHC Services offered: SBHC: preventive and acute care services Weight management program: food and fitness 101 met for 1.5 hrs every other day for school yr; each class consisted of warm-up and stretching, 25 mins of aerobic activities, cool-down followed by interactive classroom activities designed to increase nutritional education; participants given pedometers to earn incentives for mileage walked outside of class time; classes were taught by LSU	Mean BMI (weight/height; not explicit about which units they used):	Intervention: 30.5 Control: 33.7	Intervention: 33.7 Control: 34.4	Relative % difference: -1.4%	Study demonstrates lack of support potential of a weight loss/exercise intervention implemented in SBHC in public school setting for low-income African American children

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46.4% of those who agreed to be in the intervention completed baseline and follow up Other bias(1): small sample size (27 completed study)	Race/ethnicity: Intervention: Black: 99.0%; White: 1% Control: study reports this group is similar to the intervention school SES: Low-income	agricultural center employees and SBHC staff training sessions were held for SBHC staff Years established/fully operational before study period: NR Comparison: Students attending school without SBHC Data collected in 1 year period					
Ethier 11 Cross sectional Fair (3 Limitations) Description (1): SBHC not well described Sampling (1): Low response rate Other (1): Did not address/control for differential	Sexually active high school aged youth Intervention: Sexually active students in one of 12 study schools with SBHCs Control: Sexually active students without access to SBHC Total sample n = 2603	Los Angeles (urban) SBHC Services offered: NR; study mentions access to reproductive health care Staffing: NR Years established/fully operational: NR Comparison: Students attending schools without SBHCs Data collected Spring 2005	Screened for STI (%): Used condom at last intercourse (%):† Used hormonal contraceptive at last intercourse (%):† Used emergency contraception at	19.3 Males: 74.3 Females: 12.4 Females:	25.9 Males: 71.1 Females: 18.1 Females:	Relative % change: 34.3% Adjusted Relative Change: -3.1% (-10.8%, 3.7%) 54.9% (20.4%, 96.8%)	Although access to an on-site clinic does not seem to lead to increases in all types of reproductive care in the population as a whole, sexually active females from inner-city areas with high rates of teen births and STIs are more likely to have received more specific care and to have used hormonal contraceptives if their school has an SBHC.

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targeting or access between male and female students; potential service barriers for males	Sex (% female): 52.8% Age (mean in years): Intervention: 16.7 years Control: 16.8 Race/Ethnicity: Intervention: Black=12.8 Hispanic=78.2; White:=1.0; Other=8.2 Control: Black=14.2 Hispanic=75.6; White:=3.3; Other=13.7 SES: NR		last intercourse%:†	1.8	3.8	105.9% (7.8%, 298.9%)	
Federico 10 Cross sectional Good (0 limitations)	Teens 12-18 Intervention: students whose primary care thru SHBC n=8217 Control: students whose primary care thru CHC n=9123	Denver, CO (urban) SBHC Services offered: NR, only describes immunizations; SBHCs is a part of the Denver Health, health care system Staffing: NR	Childhood vaccines: Completion of Hep B series (%): Completion of Hep A series (%):	CHC users: 83.9% CHC users: 50.3%	SBHC users: 92.8% SBHC users: 54.3%	Absolute difference: 8.9 (8.0, 9.9) 4.0 (2.5, 5.5)	Children and adolescents who used SBHCs and CHCs in the same health delivery system and who initiated a vaccine series were more likely to complete the series if they primarily used SBHCs as opposed to primarily using CHCs.

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	Sex (% female): Intervention: 52.0 Control: 57.0 Mean age (years): Total sample: 14.9 Race/ethnicity (%) Intervention: Black=11.8 Hispanic=71.7; White:=8.3; Other=8.3 Control: Black=19.5 Hispanic=64.2; White:=8.8; Other=7.5 SES: Insurance status Intervention: Insured, 50.46% Uninsured, 43.00% Unknown, 6.54% Control: Insured, 94.22% Uninsured, 3.01% Unknown, 2.77%	Year established: NR Comparison: community health centers (CHC) (services not described); CHCs are a part of the Denver Health, health care system August 1, 2006 to July 31, 2008	Completion of Td series (%): Completion of Tdap series (%): Completion of MMR series (%): Completion of IPV series (%): Completion of varicella series (%): Pre-teen and teen vaccines Completion of MCV4 series (%):	CHC users: 53.4% CHC users: 61.7% CHC users: 82.9% CHC users: 84.9% CHC users: 12.9% CHC users: 61.1% CHC users: 18.1% CHC users: 12.1%	SBHC users: 49.1% SBHC users: 71.1% SBHC users: 89.2% SBHC users: 94.8% SBHC users: 19.7% SBHC users: 64.1% SBHC users: 17.2% SBHC users: 18.1%	-4.3 (-5.8, -2.8) 9.4 (8.1, 10.9) 6.3 (5.3, 7.4) 9.9 (9.0, 10.8) 6.8 (5.7, 7.9) 3.0 (1.6, 4.5) -0.9 (-2.1, 0.2) 6.0 (4.9, 7.0)	

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Foy 09 Single group before-after Fair (2 limitations) Measurement of Outcomes (1): reliability of surveys not reported Data analysis (1): no data analysis	1st graders Intervention: First graders in a school district with SBHCs; Year 1: n=1407 Year 4: n=1390 Control: NA Sex (% female): NR Mean age: NR, but all were first graders Race/ethnicity: NR for just 1st graders, but for the entire school district: 28% Asian; 21% Black; 27% Hispanic; 13% Caucasian; 11% other SES: Insurance status: 99% [covered by Child Health and Disability Program	Vallejo, CA (urban) SBHC (though school enrollment was not to use the center) Services offered: primary care including physical examinations, immunizations, treatment of minor illnesses and injuries, laboratory tests and referrals for dental, optometric and specialty medical services. Staffing: Vallejo City Unified School District certified pediatric nurse practitioner and supported by one bilingual medical assistant (supervised by the pediatric faculty of the Touro University College of Osteopathic Medicine) Year established: 2004 Comparison: NA (pre-SBHC) 2004-2008	1st graders excluded from school due to lack of state mandated physical examination (%):	2004-05: 29.0	2007-08: 7%	Relative % change: -74.1%	Results show a marked decrease (75.9%) in first grade exclusion rates due to lack of a state-mandated physical examination

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	(CHDP) (income <200% of federal poverty level) or have no coverage at all]						
Gance-Cleveland 05: Cross sectional Fair (2 limitations) Data analysis (1): no adjustment for baseline differences between groups Confounding (1): possible cross over between groups	Preschoolers Intervention: preschoolers with access to SBHC; n=130 Control: preschoolers without access to SBHC; n=131 Sex (% female): NR Mean age (years): Intervention: 4.32 Control: 4.18 2 Race/ethnicity (%) Hispanic: 61% White: 30% Asian: 5% Back: 2% Control: NR SES:	Suburban Colorado (suburban) SBHC Services offered: primary health care, including well-child care, minor acute illness care, immunizations, mental health services, and assistance with enrolling in low-cost insurance such as Child Health Plan Plus or Medicaid	Any ED visits (%): Any Hospitalization (%): Mental health morbidity composite score (% 1-4 occurrence):	Non-SBHC: 26.0% Non-SBHC: 6.1% Non-SBHC: 24.7%	SBHC: 18.4% SBHC: 0.8% SBHC: 16.9%	Relative % difference: -29.2% (-55.5%, 12.5%) -86.9% (-98.3%, -0.3%) -31.6% (-59.3%, 11.1%)	Access to SBHCs is associated with improved access to both physical and mental health care.

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	Significantly more parents of children without access to an SBHC reported receiving public assistance (p = .003) and were on the free- or reduced-lunch program (p = .000). Also more single-parent families, and parents reported lower educational goals for children in the group without access. No significant differences in the level of acculturation between the groups were found (p = .159)						
Gibson 13 Before-after w/comparison Good (0 limitations)	High school aged youth Intervention: students at schools w/SBHC; n=1,365	Manhattan and the Bronx, NY (urban) SBHC Services offered: primary care including reproductive health	Health provider discussed sex at last routine physical (%):	Intervention: 31.0 Control: 37.0	Intervention: 56.0 Control: 45.0	Absolute difference: 17.0%	Students at the SHC school were more likely to report having a regular healthcare provider

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	Control: students at schools w/out SBHC; n=711 Sex (% female): Intervention: 47.0 Control: 38.0 Mean age (years): NR Race/ethnicity (%) Intervention: Hispanic=88.0; Control: Hispanic=68.0; SES: NR but implied that both schools are relatively low SES	services, and classroom education, annual health assessments, clinical counseling, diagnosis and treatment for acute illness, vaccinations, management of chronic illness, and co-management of illness for students with an identified community provider Staffing: 2 health educators, 2-to-3 full time adolescent-medicine-trained physicians or nurse practitioners and two full time mental health providers, trained either in social work or psychology. Year established: 1995 SBHC established Comparison: schools without SBHCs (Non-SBHCs) September to October 2009 school year	Health provider discussed birth control at last routine physical (%): Has regular doctor (usual source of care)(%):	Intervention: 9.0 Control:11.0 Intervention:70.0 Control: 75.0	Intervention: 30.0 Control:16.0 Intervention: 87.0 Control: 76.0	16.0% Relative % difference: 22.7%	
Guo 05 Before-after w/comparison Good (0 limitations)	Children grade k-8 enrolled in OH Medicaid or state Chip programs Intervention: Medicaid/CHIP users with access	Cincinnati, OH (urban) SBHC Services offered: primary care including acute care, health exams and health screening, and mental health services dental	Rate of hospitalization:†	NR	NR	Relative % difference: -70.6% (-88.1%, -35.1%)	The risk of hospitalization and ED visits for children with asthma decreased significantly with SBHC programs.

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	to SBHC (7 schools; n=196 Control: Medicaid/CHIP users without access to SBHC (6 schools); n=77 Sex (% female): Intervention: 38.3 Control: 52.0 Mean age (years): Intervention: 8.3 Control: 8.2 Race/ethnicity (%) Intervention: Black:40.3; White: 59.2; Other: 0.5; Control:: Black:45.4; White: 48.1; Other: 6.5; SES: NR but implied that both groups are relatively low SES (100% Medicaid/CHIP)	services health education, behavioral risk reduction activities, reproductive health care, and a variety of other services Staffing: At least one nurse practitioner and one part-time medical doctor. Each SBHC was typically staffed by 1 nurse practitioner and 1 nurse technician. A part-time pediatrician was present in some schools. A licensed mental health therapist was in service in some schools 1 or more days per week. Year established: 2000 Comparison: non-SBHC schools Sept 1st, 1997 - February 28, 2003	Rate of ED visits:†	NR	NR	-25.1% (-40.6%, -5.6%)	

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
Guo 08 Before-after w/comparison Good (0 limitations)	Children grade k-8 enrolled in OH Medicaid or state Chip programs Intervention: Medicaid/CHIP users with access to SBHC (includes SBHC users and nonusers); n=70 Control: Medicaid/CHIP users without access to SBHC; n=39 Sex (% female): Intervention: SBHC user: 24.0 SBHC non-user:31.0 Control: 33.0 Mean age (years): Intervention: SBHC user: 11.3	Cincinnati, OH (urban) SBHC Services offered: primary care including acute care, health exams and health screening, + mental health services (more specifically 4 provided mental health and psychiatric referrals, 3 provided behavior and mental health assessments and crisis intervention, and 2 provided individual counseling and had an on-site social worker or counselor + dental services + health education, +behavioral risk reduction activities+reproductive health care, and a variety of other services Staffing: At least one nurse practitioner and one part-time medical doctor. Each SBHC was typically staffed by 1 nurse practitioner and 1 nurse technician. A part-time	Student reported Psychosocial Health Related Quality of Life (HRQOL): Student reported Physical HRQOL:	NR NR	NR NR	Narrative findings: Compared with SBHC users, students in schools without SBHCs score 6.0 points less (in the favorable direction out of 100) Compared with SBHC users, nonusers in schools with SBHCs score 4.4 points less (in the favorable direction out of 100) Compared with SBHC users, students in	SBHC programs increase the proportion of students who receive mental health services and may improve pediatric HRQOL.

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	SBHC non-user:10.6 Control: 10.0 Race/ethnicity (%) Intervention: SBHC user: Black: 64.0; SBHC non-user: Black: 62.0 Control:Black:45.4; SES: NR but implied that both groups are relatively low SES (100% Medicaid/CHIP)	pediatrician was present in some schools. A licensed mental health therapist was in service in some schools 1 or more days per week. Year established: 2000 Comparison: Non-SBHC schools Sept 1st 1997 - May 31st, 2003				schools without SBHCs score 8.0 points less (in the favorable direction out of 100); P<.05 Compared with SBHC users, nonusers in schools with SBHCs score 2.1 points less (in the favorable direction out of 100)	
Hutchinson 2012 Cross sectional Good (1 limitation) Description (1): describes SBHC, but unclear if services described are	High school students Intervention: high school students in SBHC schools; n=1003 Control: High school students in schools without SBHC; n=991	New Orleans, LA (urban) Services offered: Unclear if these services are specific to the SBHCs in this study: primary care including treatment for chronic and acute conditions, vaccinations, comprehensive physicals, + behavioral (mental) health counseling and treatment, + other services that enhance	Ever had sex (%):†	Baseline Females: 48.9 Males: 74.3	Follow-up Females: 48.9 Males: 60.0	Relative % difference: -16.0% (-26.1%, 4.1%) -12.0% (-20.0%, -3.2%)	Evidence presented here supports the hypothesis that SBHCs in New Orleans can serve as a valuable conduit for ensuring access by adolescents to essential health services, thereby increasing the likelihood that they will remain in school,

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
specific to the SBHCs in this study	Sex (% female): Intervention: 69.1 Control: 70.1 Mean age (years): Intervention: 16.2 Control: 16.1 Race/ethnicity (%) Intervention: 85.5% Black; 1.1% Hispanic, 1.8% White; 8.8% Asian; 2.5% Native American; 0.3% Pacific Islander Control: 94.6% Black; 2.2% Hispanic; 0.3% White; 1.8% Native American; 0.9% Asian 0.1% Pacific Islander SES: Total sample: 66.0% received free lunch; 1.2% reported chronic hunger due to	student and classroom productivity. Staffing: Generally staffed by a part-time physician, a nurse practitioner, a registered nurse, a social worker, a data coordinator, and in some cases, drug and alcohol counselors Year established: 2006 Comparison: schools without SBHCs April to May of 2009	Contraceptive use (%):† Ever drank alcohol (%): Ever smoked cigarettes (%): Ever used marijuana (%): Feeling sadness (%): Suicide planning (%): ED utilization (%): Have a healthcare home (%): Exercise ≥4 days per wk (%):	Females: 34.0 Males: 74.3 70.5 6.6 38.3 26.9% 9.7% 35.1% 71.8% 49.2	Females: 30.4 Males: 74.3 60.1 9.1 28.0 29.3% 8.0% 30.0% 71.7% 37.6	-8.5% (-22.9%, 8.5%) -6.2%(-22.1%, 13.0%) -14.8% +37.9% -26.9% +8.9% -17.5% -14.5% (-25.5%, -1.9%) -1.8% (-7.6%, 4.3%) Propensity match score: 1.2 pct pts	be more productive in school, and make successful transitions to adulthood. Findings suggest SBHCs are effective in decreasing the likelihood that adolescents will engage in risky behaviors such as early sex, substance use, or violence.

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	food shortages at home						
Juszczak 03 Linked to Kaplan 98, Kaplan 99 Cross sectional Fair (3 limitations) Sampling (1): know nothing about non CHN users Measurement of outcome (1): data source not necessarily reliable (especially for CHN data); No attempt made to measure coder reliability at time of data extraction (potential underreporting	Teens who used the CHN Intervention: students at 3 schools w/SBHC; n=226 Control: students at schools w/out SBHC and used CHN; n=44 Sex (% female): Intervention: 69.5 Control: 59.0 Mean age (years): total sample: 16.7 Race/ethnicity (%) Intervention: Intervention: Hispanic: 64.5; African-American: 20; white or other: 15.5;	Denver, CO (urban) SBHC Services offered: primary care + mental health including physical examinations, immunizations, acute and episodic care, referral services, laboratory testing, management of stable chronic conditions, reproductive health care, including gynecologic examinations, pregnancy testing, and diagnosis and treatment of STI, including testing and counseling for HIV. Mental health services included substance abuse services and group and individual counseling. Social services included identification of basic needs and referrals for food, shelter, clothing, legal and employment services, and public assistance. note – no fees were charged for care	Had ED visit (%):	CHN: NR	SBHC: NR	Relative % difference: -75.0%	This study provides support for SBHC's ability to attract harder-to-reach populations (particularly minorities and males) and to increase use of health services;

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
of risk in control groups because of less reliable medical record reporting) Confounding (1): did not control for presence for chronic or other conditions or demographics	Control: Hispanic: 70; African-American: 14; white or other: 16; SES: insurance status: Intervention: 79.7% self-pay; 20.4% Medicaid Control: 61.2% self-pay; 38.8% Medicaid	Staffing: pediatric nurse practitioner or physician assistant supervised by a physician, clinical social worker, and substance abuse counselor Year established: 1988 (1 year) Comparison: Non-SBHC-based community health network (CHN) clinics, clinic services not described June 1989-August 1993					
Kaplan 98 Cross sectional Good (1 limitation) Confounding (1): The study did not control for student level covariates (differences in demographics between intervention and control), or site-	High school students Intervention: SBHC users at 1 of 3 high schools with SBHC and had KPC; Control: Community users without access to SBHC Total population n=342 Sex (% female):	Denver, CO (Urban) SBHC Services offered: Broad array of basic primary physical and mental health services and social services including health screening, psychosocial histories, immunizations, and health guidance; diagnosis and treatment of acute illnesses and injuries; acute management of chronic conditions, such as asthma, diabetes, and epilepsy (the management of chronic conditions is usually coordinated	Any ED use (%): Screening for emotional health (%): Screening for sexual activity:	Community users: 55.5% Community users: 2.9% Community users: 30.5%	SBHC users: 36.6% SBHC users:47.9% SBHC users: 61.2%	Relative % difference: -34.1% (-47.8%, -16.8%) Absolute change (95% CI): 45.0 pct pts (36 pct pts, 54 pct pts)	School-based health centers provide comprehensive health supervision and primary health and mental health care and reduce after-hours (emergency or urgent) visits for insured high school students.

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
level covariate, relying on matching procedures;	Total population: 56.7% Mean age (years): NR Race/ethnicity (%): NR SES: NR	with the student's medical home; gynecological examinations; pregnancy testing; and diagnosis and treatment of ISTIs, including HIV testing and counseling; and crisis intervention, substance abuse services, health education Staffing: Pediatric nurse practitioner or physician assistant, clinical social worker, and substance abuse counselor, all with additional training in working with adolescents. Year established: April 1988, fully operational by 1990-91 Comparison: schools without SBHC; students had to be enrolled in Denver HMO—Kaiser Permanente of Colorado (KPC) August 1, 1990 to June 7, 1993	Screening for STI risk (%): Screening for Tobacco use (%): Screening for Violence (%):	Community users: 11.5% Community users: 17.2% Community users: 0.2%	SBHC users:54.5% SBHC users:47.1% SBHC users: 43.0%	30.7pct pts (21.0 pct pts, 40.4 pct pts) 43.0 pct pts (33.6 pct pts, 52.4 pct pts) 29.9 pct pts (20.3pct pts, 39.5pct pts) 42.8% (34.0 pct pts, 51.6 pct pts	
Kaplan 99 Cross sectional Good (1 limitation) Confounding (1): Sex not controlled for or	Elementary school children Intervention: students in school with SBHC; n=570 Control: students in school without SBHC; n=440	Denver, CO (Urban) SBHC Services offered: Primary care+ mental health services +dental Staffing: All staff are bilingual: Physician assistant; physician; Master's prepared licensed	Any ED visit since school year began (%):†	Non-SBHC: 13.0	SBHC: 7.2	Relative % difference : -33.8 (-56.6%, -1%)	Independent of insurance status and other confounding variables, underserved minority children with SBHC access have better health care access and use than children without SBHC access,:

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
included as covariate	Sex (% female): NR Mean age (years): NR Race/ethnicity (%) Total study population: 93% Hispanic, 4% white and 3% American Indian, African American, or Asian. SES:% free or reduced priced lunch SBHC = 89% Non-SBHC = 86%	professional counselor; community outreach worker; health technician ; Year established: 1994 (study reports SBHC was established 2 years before the study) Comparison: schools without SBHC; 1996-1997 academic year					
Kerns 11 Before-after w/comparison Fair (2 limitations) Sampling (1): representativeness of sample is suspect due to exclusion of	High school students in an urban school district Intervention: students who used the SBHC; n=1754 Control: students at the same school(s) who did	NR (setting described as urban) SBHC Services offered: primary care including immunizations, well-child examinations, management of chronic conditions, reproductive health/family planning, and minor acute care; mental health services including individual counseling. All services focus on prevention, with routine	Time to non-graduation (calculated as # of semesters between 1st t semester of freshman year and the semester of non-graduation, defined as being expelled,	Nonusers: NR	Users: NR	Relative % difference: Low use of SBHC associated with a 33% decreased likelihood of non-completion Moderate use of SBHC	This study found an association between low to moderate SBHC use and reductions in dropout for high school students in an urban school district, especially for students at higher risk for dropout.

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
some students – native Americans, and those without GPA data Follow up (1): 22% loss to follow up	not use the SBHC; n=1580 Sex (% female): Non-Users: 35.0 Low SBHC use: 46.0 Moderate SBHC use: 68.0 High SBHC use: 82.0 Mean age (years): NR Race/ethnicity (%) Non-Users: -Asian 25% -African American 19% -Hispanic 10% -American Indian 2% -White 43% Low SBHC use: -Asian 23% -African American 24% -Hispanic 10% -American Indian 3%	risk assessments of student users and an emphasis on identifying nonacademic barriers to success in school. Staffing: midlevel medical provider, a masters-prepared mental health counselor, and a clinic coordinator. Year established: NR Comparison: students who did not use the SBHC 2005 (first semester, freshman year) to 2009 (end of school year, senior year)	attaining maximum age without graduation):			associated with 32% decrease in non-completion	

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	-White 40% Moderate SBHC use: -Asian 22% -African American 27% -Hispanic 14% -American Indian 3% -White 34% High SBHC use: -Asian 15% -African American 43% -Hispanic 12% -American Indian 2% -White 29% SES: % eligible for free or reduced price lunch: Non-Users: 42% Low SBHC use: 46% Moderate SBHC use: 54% High SBHC use: 61%						

Author & Year (Linked studies, if any) **Study Design (Design Quality)** **Quality of Execution**	**Target Population** **Study Groups** **Population characteristics**	**Location (urbanicity)** **SBHC or SLHC** **Intervention (Services offered; staffing; year established)** **Comparison** **Study period**	**Outcome(s)**	**Baseline or Comparison Population (%)**	**Follow-up or Intervention Population (%)**	**Effect Size (95% Confidence Interval)***	**Summary**
Key 2002 Before-after w/comparison Good (1 limitation) Description (1): Intervention services offered and hours of operation, in particular, are inadequately described.	High school student in urban setting Intervention: students enrolled in SBHC; n=68 Control: students at the same school but not enrolled in SBHC; n=102 Sex (% female): SBHC enrollees: 56.0 Non-enrollees: 59.0 Mean age (years): SBHC enrollees: 15.9 Non-enrollees: 16.1 Race/ethnicity (%) SBHC enrollees: 98% Black Non-enrollees: 97% Black SES:	NR (urban) SBHC Services offered: not described Staffing: NR Year established: 1994-1995 school year Comparison: students at the same school but not enrolled in SBHC 1993-1994 to 1996-1997 school years	Average # of ER visits:	Enrollee:1.0 Nonenrollee: 0.8	Enrollee:0.6 Nonenrollee: 0.4	Relative % difference: -20.0%	Significant reduction in ED utilization in SBC patients is confirmed in this study. Although there was a decrease in the ED visit rate in both the SBHC enrollees and the comparison control group, this change was significant only in the SBHC enrollees.

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	Overall, school had a lower socioeconomic status (80% free or reduced lunch eligible); Insurance coverage (%): Medicaid: 55.0 Uninsured: 40.0 Private: 5.0						
Kirby 89/91 Cross sectional and before/after Good (1 limitation) Confounding (1): Secular trends or maturation effects cannot be controlled	Low income high school students Intervention: high school students enrolled in schools with SBHC; n=6900 Control: high school students enrolled in schools without SBHC; Total study population n=6900 Sex (% female): SBHC users: 49.0 Nonusers: 48%	Gary Indiana; Muskegon Michigan; Jackson Mississippi; West Dallas Texas Quincy Florida; San Francisco California (mixed) SBHC (technically, Quincy SBHC was moved 100 yards off campus) Services offered: All provide primary care, pregnancy testing/counseling, contraceptive counseling, and sports/health examinations. Some clinics provided contraceptive vouchers (1- Musekgon) and dispensation (3-Jackson, Dallas, Quincy), dental (1- Dallas), infant day care (1-Jackson).	Mean # ED admissions in past year: Ever smoked (%):‡ Ever drank (%):‡ Ever do illegal drugs (%):‡ Used hormonal contraceptive at last intercourse (%):‡ Used condom at last intercourse (%):‡	Non-SBHC:0.45 Non-SBHC:11.0 Non-SBHC:39.5 Non-SBHC: 7.0 Females Non-SBHC: 28.0 Males Non-SBHC: 40.0	SBHC:0.47 SBHC:6.5 SBHC:34.0 SBHC: 4.5 Females SBHC: 33.0 Males SBHC: 50.5	Relative % difference: 4.4% -40.9% -13.9% -35.7% 17.9% 26.3%	Results indicate that the impact of a school clinic on any one outcome variable was related to the staff and programs available in that clinic. There was a pattern of greater impact when greater resources were available

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	Mean age (years): NR Race/ethnicity (%) Total population: 75.3% Black; 8.9% Hispanic; 2.7% White; 10.0% Asian; 3.1% Other SES: all clinics served low income populations	Staffing: All clinics had at least a part time physician and nurse practitioner. Some clinics also had a nurse, nurse assistant, secretary/receptionist, social worker, health educator, dentist, dental hygienist, and nutritionist Year established: Muskegon-1981 Gary- 1981; Jackson-1979; Dallas-1970; Quincy-1986; San Francisco-1985 Comparison: for Gary, Dallas, Jackson, and Muskegon – schools without SBHC; NA for Quincy and San Francisco (before/after) 1984/1985 to 1988/1989	Ever pregnant (%):‡ Ever caused pregnancy (%):‡	Females Non-SBHC: Males Non-SBHC:7.0	Females SBHC Males SBHC: 9.0	31.8% 28.6%	
Kirby 93 Before-After Fair (2 limitations) Data analysis (1): No statistical methods were used to ensure comparability of	Female high school students Intervention: After SBHC, n=NR Control: Before SBHC, n=NR Sex (% female): 100 Mean age (years):	St. Paul, MN SBHC Services offered: Primary care, typically included physical examinations, care for illness and minor injuries, immunizations, nutrition and weight counseling, psychological counseling for personal problems, testing and treatment	Birth rates (weighted birthrates per 1000 students):	Before: 22.0	After: 29.0	Relative % change: 31.8% (-11.6, 31.2%)	SBHCs in St. Paul did not significantly reduce birthrates. The statistically significant increases in birthrates after the clinics opened should not be attributed to the opening of the clinics as this increase only occurred at 1 school and there were changes in the

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
the pre/post groups. Confounding (1): does not control for secular trends	NR Race/Ethnicity (% minority) Before = 21% After = 28% SES: NR	for STIs, reproductive health and family planning services Staffing: team typically included a part-time physician, family planning nurse practitioner, social worker, medical assistant and health educator. Year established: 3 in 1976, 1 each in 182 and 83 Comparison: NA, before/after comparison 1971-1972 to 1986-1987 school years					school's demographics over time.
Kisker 96 Before-after w/comparison Fair (4 limitations): Description (1): poor description of population Sampling (1): participation rate for intervention group is 45% and 66% for control	Low SES high school students in the US Intervention: students in schools with SBHCs; n=3050 Control: students in schools without SBHCS; n=859 Sex (% female): NR Mean age (years):	Multi-site, US (urban) SBHC Services offered: 23 SBHCs offered similar set of medical services and all but 2 sites offered psychosocial services; services included treatment and referral for acute illnesses, injuries, pregnancy, and sexually transmitted diseases; routine screenings and preventive care. Some offered dental care, acquired immune deficiency syndrome (AIDS) testing, prenatal care, allergy care, and	Average # of emergency room visits in past year: Drank alcohol in past month (%): Smoked cigarettes in past month (%):	SBHC: 0.28 Non-SBHC: 0.42 SBHC: 36.0 Non-SBHC: 38.0 SBHC: 9.0 Non-SBHC: 16.0	SBHC: 0.45 Non-SBHC: 0.49 SBHC: 41.0 Non-SBHC: 47.0 SBHC: 15.0 Non-SBHC: 21.0	Relative % difference: 37.8% -7.9% 27.0%	School-based health centers can increase students' access to health-related services, but more intensive or different services are needed if they are to significantly reduce risk-taking behaviors

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
Measurement of Exposure (1): was not measured or verified in primary analysis for control group Other (1): 2 survey modes used: in school and telephone; different survey methods might produce different responses	NR Race/ethnicity (%) NR SES: assume majority low SES based on RWY RWJ mission Insurance coverage at follow-up: No insurance: 30% Private insurance: 22% Medicaid: 20% HMO: 9% Don't know: 19%	hearing screening. With respect to birth control services, all provided on-site consultation; for contraceptives, 4 dispensed, 7 prescribed, and 13 referred adolescents to other health care providers Staffing: full-time nurse practitioner or physician assistant, supported by a full-time receptionist and a medical aide, registered nurse, or licensed practical nurse. These full-time staff members were complemented by part-time staff, including a physician, licensed clinical social worker, and health educator. Some health centers had part-time specialists for drug abuse or nutrition counseling Year established: NR Comparison: Nationally representative sample of schools without RWJ Foundation-sponsored SBHC Approximately 3 years (Summer of 1989 to spring of normal graduation year)	Smoked marijuana in past month (%): Used contraception consistently last month (%): Sexual intercourse in past month (%): Ever pregnant (%):	SBHC: 5.0 Non-SBHC: 7.0 SBHC: 43.0 Non-SBHC: 47.0 SBHC: 18.0 Non-SBHC: 23.0 SBHC: 5.0 Non-SBHC: 3.0	SBHC: 11.0 Non-SBHC: 10.0 SBHC: 60.0 Non-SBHC: 55.0 SBHC: 44.0 Non-SBHC: 47.0 SBHC: 25.0 Non-SBHC: 25.0	54.0% 19.2% 19.6% -40.0%	

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
Klein 07 Cross Sectional Fair (3 limitations) Sampling (1): Overall response rates are low: 21.3% Exposure (1): exposure to SBHC is unclear Confounding (1): Some students were interviewed by phone while others were given mailed survey; different survey methods might produce different responses	Students in SBHC high schools with BCBSRR Intervention: students w/BCBSRR who used SBHC; n=75 Control: BCBSRR Blue Cross Blue Shield of the Rochester users (commercial (n=195) and Medicaid users (n=104) Sex (% female): Intervention: 60.0 Control: commercial (49.2); Medicaid (64.7) Mean age (years): Intervention: 17.0 Control: commercial (16.2); Medicaid: 16.5) Race/ethnicity (%):	Rochester NY (urban) School-based Services offered: Primary + acute care, unclear regarding mental health care, contraceptive counseling and other reproductive health services Staffing: pediatrician/medical director, nurse practitioners, clinical social workers, and a school health aide. Year established: NR Comparison: Blue Cross Blue Shield of the Rochester Region (BCBSRR) users	Smoked daily in past 30 days (%): Had ≥1 drink in past 30 days: Had ≥5 drinks in a row in past 30 days: Used condom at last intercourse (%): Ever had sex (%): Screening or counseling for violence prevention (%): Screening or counseling for pregnancy and STIs (%): Screening or counseling for feeling sad or hopeless (%):	Community users: 14.3 Community users: 29.1 Community users: 42.0 Community users: 73.2 Community users: 37.1 Community users: 30.1 Community users: 48.5 Community users: 18.1	SBHC users: 17.3 SBHC users: 24.3 SBHC users: 20.8 SBHC users: 70.6 SBHC users: 68.0 SBHC users: 38.7 SBHC users: 68.0 SBHC users: 26.7	Relative % difference: 21.0% -16.5% -50.5% -3.6% 83.2% Absolute pct pt change 8.6% 19.5% 8.6%	SBHC use was effective in increasing receipt of screening or counseling for pregnancy and STIs, violence prevention, and feelings of hopelessness among SBHC users

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	Intervention: 18.7% white; 45.3% black; 20% Hispanic; 16% other Control: commercial: 85.5% white; 6.2% black; 2.6% Hispanic; 5.7% other Medicaid: 40.4% white 28.3% black; 16.2% Hispanic; 15.2% other SES: NR, although Medicaid population and high percentage of minority may indicate relatively low SES		Screening or counseling for smoking (%):	Community users: 49.8	SBHC users: 50.0	0.2%	
Klostermann 00 (Britto 01) Single group before/after Fair (2 limitations)	Students in schools with Child first Plan Intervention: students in schools after SBHC	Hamilton County, OH (urban) Hybrid (direct care services are provided on school grounds but the main goal is to refer students and establish health care relationships with a primary care provider)	Immunizations in compliance (%):	Before: 67.0	After: 89.0	Absolute change: 22.0 pct pts	SBHC was effective in increasing immunization compliance for elementary-aged youth

Author & Year (Linked studies, if any) **Study Design (Design Quality)** **Quality of Execution**	**Target Population** **Study Groups** **Population characteristics**	**Location (urbanicity)** **SBHC or SLHC** **Intervention (Services offered; staffing; year established)** **Comparison** **Study period**	**Outcome(s)**	**Baseline or Comparison Population (%)**	**Follow-up or Intervention Population (%)**	**Effect Size (95% Confidence Interval)***	**Summary**
Description (1): broad description of schools but nothing about study population Data analysis (1): no data analysis	implementation; n=NR Control: students in the same schools before SBHC implementation; n=NR Sex (% female): NR Mean age (years): NR Race/ethnicity (%): NR SES: Median income of zip codes in which most students live ranges from $6930 to $3110; 65% of students eligible for reduced-fee school lunch	Services offered: primary care + mental health + social services; services include acute and chronic illness assessment, physical exams, referrals to other community health providers for treatment, mental health assessment. Staffing: two school nurses, one pediatric nurse practitioner, and a pediatrician available for collaboration with the nurse practitioner Year established: NR Comparison: NA, before/after implementation					
Lurie 01 Single group before/after	Asthmatic children Intervention: asthmatic students in school	Minneapolis, MN (urban) SBHC	# of days and nights in last 4 weeks w/asthma symptoms:	Before: 4.8	After: 3.1	Relative % difference: -36.4%	The study found dramatic improvements in the asthma management practices of asthmatic

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Fair (3 limitations) Follow up (1): 57% attrition rate Confounding (1): did not adjust for seasonality Other (1): Small sample size	after SBHC implementation Control: asthmatic students in school before SBHC implementation Total study population n=67 Sex (% female): Before: 45.0% Mean age (years): NR Race/ethnicity (%): 68.0% Black; 5.0% Hispanic; 10.0% White; 2.0% Asian; 15.0% Other SES: Insurance status: 9% self-pay; 61% Medicaid; 21% private; 9% other government	Services offered: Only asthma services are described: asthmatic children were identified and a symptom control plan was developed for children without a plan, and each child received a written plan that included, among other topics, use of rescue medications. A pediatric pulmonologist provided volunteer consultative support and was on-site once a month to provide services. Subsequent patient contact was individualized based on need, and ranged from minimum to daily during asthma exacerbations. Staffing: Nurse practitioner, case manager, health educator, and medical assistant. Pediatric pulmonologist (once/month). Health center staff conducted in service trainings about asthma to teachers and staff. Year established: 1996 Comparison: NA, before/after implementation	ER visit for asthma in past 12 months (%): Hospitalized with asthma in past 12 months: Regular place of care (%):	Before: 35.6 Before: 14.9 Before: 97	After: 33.3 After: 3.0 After: 94	-6.5% -79.9% -3.1%	children and their families, as well as significant increases in the use of outpatient care and decreases in hospitalization due to asthma.
McCord 93 Cross-sectional	Alternative school students	Greensboro, NC (urban) SBHC				Adjusted relative % difference:	This study suggests that the greater students' exposure to

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Fair (2 limitations) Description (1): intervention not well described Confounding (1): Selection bias is likely	Intervention: students at alternative school who used the SBHC; n=159 Control: students at the alternative school who did not use the SBHC (includes those who registered but did not use the SBHC n=30, and those not registered , n=133) Sex (% female): Total for school: 53.0% Mean age (years): NR Race/ethnicity (%): 84.0% Black, 13.0% White SES: Most are economically disadvantaged	Services offered: Presume primary care; not clear if mental health and social services are offered. Staffing: NR Year established: 1986 (clinic had been established 4 years prior to study) Comparison: same schools but students are not users of the SBHC	High school non-completion rate (%):‡ Promotion rate (%):	SBHC nonuser: 72.1 Black male SBHC nonuser: 77.0% Black female SBHC nonuser: 70.5% White male SBHC nonuser: 66.0% White female SBHC nonuser: 75.0% Black male nonusers: 25.5% Black female SBHC nonuser: 8.5%	SBHC user: 52.0 Black male SBHC user: 39.0% Black female SBHC user: 53.0% White male SBHC user: 72.0% White female SBHC user: 77.0% Black male SBHC user: 54.0% Black female SBHC user: 24.0%	-27.9 -49.4% -24.8% 16.1% 2.7% 111.8% 182.4%	the clinic (i.e., actual visits to the clinic), the stronger all relationships between clinic use and graduation of promotion; particularly among black males and females

Author & Year (Linked studies, if any) **Study Design (Design Quality)** **Quality of Execution**	**Target Population** **Study Groups** **Population characteristics**	**Location (urbanicity)** **SBHC or SLHC** **Intervention (Services offered; staffing; year established)** **Comparison** **Study period**	**Outcome(s)**	**Baseline or Comparison Population (%)**	**Follow-up or Intervention Population (%)**	**Effect Size (95% Confidence Interval)***	**Summary**
McNall 10 Cross-sectional Fair (4 limitations) Description (1): SBHC is not well described Outcome measurement (1): Weak, subjective outcome measures Sampling (1): Only 26% of eligible participants participated in the study. Other (1): Demographic differences not controlled	Middle and high school aged youth Intervention: middle (MS) and high (HS) school students at 11 schools (7 MS and 9 HS) with SBHCs (user and non-users) in Michigan: 5 Established (E SBHC): n=267 6 Implementation (I SBHC): n=248 Control (n=229): middle MS and high schoolHS students at 5 comparison sites (2 MS, 3 HS) that did not have SBHCs	Michigan (Mixed) SBHC Services offered: mention participation in health education campaigns in the discussion; otherwise not reported Staffing: NR Hours/time of operation: NR Years established/fully operational before study period: 5 sites (2 MS, 3 HS) contained well-established SBHCs (i.e., centers that had been in operation for at least 6 years at time 1); 6 sites (3 MS and 3 HS) contained newly implemented SBHCs (i.e., centers that had been in operation for less than 1 year at time 1, called 'implementation' sites)	Physical discomfort (%):‡ Emotional discomfort (%):‡	Non-SBHC: 1.65 Non-SBHC: 1.75	SBHC: 1.66 SBHC: 1.77	Adjusted relative % change: 0.6 -4.6	Overall, the study found that SBHC use was associated with positive self-reported health outcomes for middle and high school students; no difference by type of SBHC site (implementation or established site)

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Ricketts 06 Before/after w/comparison 1Good (1 limitation) Data analysis (1): paper reports seniors were excluded from analyses; not clear if they were inadvertently included in the numerator or denominator	Black female teens Intervention: black female students attending 1 of 7 high schools with SBHC, Control: black female students who attended schools without access to SBHC, Total sample size = 932 Sex (% female): 100% Mean age (years): NR Race/ethnicity (%): 100% Black	Denver, CO (urban) SBHC Services offered: primary care + mental health + health promotion programming; services include substance abuse services health maintenance exams, with health screening, psychosocial histories, and counseling for behavioral risk reduction; immunizations; diagnosis and treatment of acute illnesses and injuries; acute management of chronic conditions; pregnancy testing; abstinence and birth control counseling; gynecologic exams; diagnosis and treatment of sexually transmitted disease (STI) Staffing: NR Year established: NR Comparison: no access to SBHC SES: NR, although study notes that SBHCs are placed in schools that consider financial need. 1990-1997	Fertility rates (# births from birth certificate data / # female youths from school enrollment data):	SBHC: 160 Non-SBHC:96	SBHC: 38 Non-SBHC:38	Relative % difference: -40.0%	Study reports significantly greater decline in fertility rates among Black female teens in schools with SBHCs than in schools without, strongly suggesting that attending to the health needs of students resulted in a radically lowered risk of pregnancy and birth for those students.

Author & Year (Linked studies, if any) **Study Design (Design Quality)** **Quality of Execution**	**Target Population** **Study Groups** **Population characteristics**	**Location (urbanicity)** **SBHC or SLHC** **Intervention (Services offered; staffing; year established)** **Comparison** **Study period**	**Outcome(s)**	**Baseline or Comparison Population (%)**	**Follow-up or Intervention Population (%)**	**Effect Size (95% Confidence Interval)***	**Summary**
Robinson 03 Before/after w/comparison Good (0 limitations)	Black students at low-SES Intervention: 9th and 11th graders in schools with SBHC; 598 Control: 9th and 11th graders in schools without SBHC Note: Ninth grade taken as before exposure datapoint ; 598 Sex (% female): 55.5% Mean age (years): NR Race/ethnicity (%) 100% Black SES: majority of the sample was economically disadvantaged, with 84% coming from families with	7 Midwestern inner-city public high schools (urban) SBHC Services offered: primary care + health education, services include school-wide prevention/education groups, as well as school-wide special assemblies and health fairs, range of preventive and ameliorative health services, physical examinations and immunizations are performed by appointment, as are nonemergency health care, counseling alcohol and drug prevention and rehabilitation services are provided in the form of classroom-based preventive health education and individual counseling. Staffing: Physician specializing in adolescent medicine, a nurse practitioner, a social worker, a medical assistant, and a health educator Year establish: not explicitly reported, the SBHCs had been in operation for more than a decade	# days in past month drank alcohol: # days in past month smoked marijuana: # days in past month smoked cigarettes:	SBHC: 1.2 Non-SBHC: 1.5 SBHC: 1.4 Non-SBHC: 1.9 SBHC: 1.0 Non-SBHC: 1.2	SBHC: 1.4 Non-SBHC: 1.9 SBHC: 1.2 Non-SBHC: 3.3 SBHC: 10.7 Non-SBHC: 1.8	Relative % difference: -7.9 -73.2% -53.3%	SBHC exposure was associated with decreased rates of cigarette smoking and marijuana use although support was not obtained for the ability of SBHC exposure to significantly decrease the rates of alcohol consumption within the sample studied; alcohol consumption did decrease relative to the comparison group

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	one or more indicators of poverty.	Comparison: students attending schools without SBHC					
Sanford 01 Single group before/after Fair (2 limitations) Follow up (1): likely same group of students not followed over time Confounding (1): Confounders were not controlled	Elementary school students Intervention: All students attending the elementary school after implementation of SBHC Control: All students attending the elementary school before implementation of SBHC Sample size not reported Sex (% female): NR Mean age (years): NR Race/ethnicity (%)	Durham, NC (urban) SBHC Services offered: Wellness Center augments services of the school's assigned public health nurse; Staffing: Various consultants including a social worker, dietician, psychologist, psychiatrist, and local dentist are available to help children in high-risk categories. The Center's consultants represent a wide variety of services. The nutritionist, a staff member of the local health department, visits the center one morning a week. She provides nutrition counseling, monitors select students' weights, teaches nutrition classes, and monitors students who are following special diets. Year established: 1996	End-of-grade academic proficiency tests in reading (%): End-of-grade academic proficiency tests in math (%):	Before:42.0% Before:40.4%	After:54.2% After:66.4%	Relative % difference: 29.0% 64.4%	Findings suggest SBHCs are part of the answer to quality, accessible preventive and acute health care as well as being associated with improved academic outcomes among elementary school students

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	African American: 82.3%, White: 7.8% Latino, biracial, or Asian: 9.9% SES: 95% of students Received free/reduced-cost breakfast and lunch	Comparison: NA (pre-intervention) Study period: 1996/1997-1999/2000					
Santelli 96 Cross-Sectional Good (1 limitation) Other (1): Demographic differences are not controlled	Middle and high school aged students Intervention (n=2001): Students attending SBHC schools (9 SBHC schools- 4 middle, 5 high schools) Control (n=1257): Students attending non-SBHC schools (4 Non-SBHC schools- 2 middle and 2 high schools)	Baltimore, MD (Urban) SBHC Services offered: Treatment for acute and chronic health care problems, comprehensive adolescent health assessments, sports physicals, reproductive health care, and mental health services. Part-time and referral services included nutrition consultation, dental care, and drug treatment and counseling. The health centers have provided reproductive health services, including the on-site provision of contraceptives and condoms, since September 1990. At schools with a SBHC, school nursing functions were	Counseling for personal/emotional problems (%): At least 1 ED visit (%): Hospitalization (%):	Non-SBHC: 15% Non-SBHC: 39% Non-SBHC: 22%	SBHC: 18% SBHC: 37% SBHC: 18%	Absolute difference: 3pct pts (3.0, 5.6 pct pts) Relative difference: -14.3% (-27%, -0.6%) 16.3% (-28.7%, -1.6%)	These data provide evidence that school health centers in Baltimore are associated with the use of certain primary health services and the lower use of the ER and hospitalization. The effect of the health center on ER use was limited to those who had been in a SBHC school for at least 1 year. These differences were not explained by differences in reported health problems. There appeared to be no association with

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	Average age: approximately 14.5 years old Sex: 54% female Race/Ethnicity: Majority African American (71%) SES: 58.5% eligible for free/reduced price lunch	integrated into the school health center. All students with health concerns reported initially to the school nurse for triage. SBHC non-enrollees and SBHC enrollees with minor problems were seen by the school nurse. Staffing: Core staffing included a full-time school nurse, nurse practitioner or physician assistant, health aide, medical office assistant, and a full-time or part-time mental health professional. Hours/time of operation: Baltimore County Health Dept (BCHD) implemented SBHCs (7 out of 9) were open during school hours, immediately after school, and 1 day per week during the summer. Nighttime and weekend telephone consultation was added in 1992 (after the data collection period) Years established/fully operational before study period: BCHD SBHCs established aprrox 6 years before study period. Study period: May 1991					school absence related to illness

Author & Year (Linked studies, if any) **Study Design (Design Quality)** **Quality of Execution**	**Target Population** **Study Groups** **Population characteristics**	**Location (urbanicity)** **SBHC or SLHC** **Intervention (Services offered; staffing; year established)** **Comparison** **Study period**	**Outcome(s)**	**Baseline or Comparison Population (%)**	**Follow-up or Intervention Population (%)**	**Effect Size (95% Confidence Interval)***	**Summary**
Setzer 92 Cross-sectional Good (1 limitation) Confounding (1): Possible crossover between intervention and control groups	Adolescent mothers Intervention: n=174 (SBHC – received school-based prenatal care) Control: n=165l (received prenatal care at Maternal Health and Family Planning Program (MHFPP)) Mean Age Intervention: 16 Control: 17 Sex (% Female) Intervention: 100% Control: 100% Race/Ethnicity: Intervention: Black: 75.0%; Hispanic: 24%; White (and other): 1%	Dallas, Tx (Urban) SBHC Services offered: primary care to adolescents, including preventive and health maintenance services, family planning services, sports physicals, and episodic, non-emergency acute care. West Dallas Youth Clinic (WDYC) services to pregnant and parenting adolescents include pregnancy and STI testing, ob screening, nutrition counseling, and WIC nutritional supplements, prenatal care, participation in a parenting education program, postpartum family planning referrals, and some primary care services Staffing: NR Hours/time of operation: NR Years established/fully operational before study period: 1970 Note: in 1969, Dallas Independent School District (DISD) established 3 West Dallas clinics which provided physical, behavioral, and dental health	Dropped out of School (%): Mean number of prenatal visits: Pregnancy complications Preeclampsia (%): Hypertension (%): Anemia (%): Returned for postpartum visit (%):	Community care user: 50.3 6.5 6.0 23 38 67	SBHC user: 57.5 9.5 15.0 5 67 79	Relative difference: 14.3% (-6.0%, 39.4%) 46.2% 150.0% -78.3% 76.3% 17.9%	Findings suggest a comprehensive school-based clinic can potentially improve negative health outcomes associated with adolescent pregnancy by providing accessible prenatal and postpartum care and other supportive services. However, this alone may not be enough to encourage adolescents to avoid having another baby or to remain in or return to school

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	Control: Black: 49%; Hispanic: 46%; White (and other): 4% Health Insurance: NR; SES: NR	services to the community – info from DISD study) Study Period: collected data from date of indexed birth (as early as 1/86) to Jan. 1, 1988					
Silberberg 08 Cross sectional Fair (2 limitations) Outcome measurement (1): Parental (third party) assessment of child health Confounding (1): No control for baseline health differences between SBHC and Non-SBHC schools	Elementary and middle school aged students Intervention n=323: students who attend an SBHC school Control n=155: students who attend a matched, non-SBHC school Age: Majority of students are between 6 and 9 years old. Sex (% female): SBHC: 49.2% Non-SBHC: 43.9% Race/Ethnicity:	Newark, NJ (Urban) Services offered: NPs provided primary and preventive health services--physical exams, follow-up medical care, treatment of minor illness, chronic care management, immunizations, and nutritional counseling. Clinic participants were also provided with some free prescription medications. Social work services, dental services, health education are also provided Staffing: Full-time pediatric nurse practitioner, social worker, an administrative assistant. A program director, a psychiatrist, and a dentist employed by the program's hospital partner provided administration and oversight to the clinics. Hours/time of operation: NR	Child has source of usual medical care(%): Child has usual source of dental care (%): Child has usual source of mental health care (%): Any ED visits during study period (%): Any hospital inpatient stays during study period (%):	Non-SBHC: 87.7 Non-SBHC: 78.6 Non-SBHC: 60.0 Non-SBHC: 26.5 Non-SBHC: 2.9	SBHC: 89.4 SBHC: 80.3 SBHC: 64.4 SBHC: 23.2 SBHC: 3.4	Relative % difference: 1.9% (-4.9%, 9.3%) 2.2% (-7.4%, 12.7%) 7.3% (-7.8%, 25.0%) -12.5% (-37.0%, 21.6%) 17.2%	1) Most students use SBHCS as a substitute for, rather than to augment, community care (i.e., SBHCs became these students medical home) 2) No statistically significant impact on ER visits 3) Magnitude of favorable effects for increased utilization was relatively small (around 8 pct pts). 4) No differences between clinic and nonclinic schools on common measures of access to care or health status.

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	Majority African American SES: (Family income before taxes) SBHC: <10k: 43.4% 10k-25k: 29.7 ≥25k+: 25.3 Non-SBHC: <10k: 44% 10-25k: 26.1% ≥25k: 25k+: 29.9% (government assistance received): SBHC: 44.8% Non-SBHC: 37.5%	Years established/fully operational before study period: In general, Newark clinics were first established in 1997. The study period was 2001. It is unclear how long the two clinics had been fully operational at the study, presumably 1-4 years. Comparison school had full-time nurse and periodic visits from district funded physicians who performed well-child exams. Study Period: Telephone interviews were completed in April 2001. Field staff visited homes of individuals without telephone numbers in May and June of 2001.					
Smith 11 Cross sectional Good (1 limitation) Data analysis (1): no statistical test to asses	Sexually active females Interventions: sexually active female students who used SBHC w/onsite contraceptive distribution; n=79	Houston, TX (urban) Services offered: primary care, including gynecological and nutritional, on-site contraception dispensing, and mental health services; Staffing: NR Year established: 3 years	Pregnancy rate entire sample: Pregnancy rate, among those w/no prior pregnancy:	SBHC w/offsite distribution: 20.0% SBHC w/offsite distribution: 21.6%	SBHC w/onsite distribution: 6.0% SBHC w/onsite distribution: 4.7%	Relative % difference: -70.0% -78.2%	The school clinic with on-site distribution of contraception had a significantly lower pregnancy rate than the school clinic with off-site contraceptive services. The pregnancy rate was also significantly lower for students without a prior history of

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comparability of groups	Control: sexually active female students who used SBHC w/offsite contraceptive distribution; n=40 Sex (% female): Total sample: 100% Mean age (years): Intervention: 17.5 Control: 17.5 Race/ethnicity (%) Intervention: 77% Hispanic Control: 887% Hispanic SES: % participate in free or reduced price lunch: >80% among students who attend both school clinics. Insurance Status: Majority had no private health	Comparison: school w/an SBHC but provides off-site contraceptive distribution 9/2008-12/2009 (sampling frame) to 3/31/2010					pregnancy in the school with a referral policy.

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	insurance coverage						
Strolin-Goltzman 14 Cross sectional Fair (3 limitations) Description (1): No description of intervention Sampling (1): No description of sampling methods Confounding (1): Confounding not statistically assessed; researchers simply reported that there are no differences in background characteristics.	School age children Intervention: SBHC users Control: nonusers at the same schools Total sample n: Total: 793; Elementary school: 233 Middle school: 110 High school: 450 Sex (% female): SBHC users: 49.0 Nonusers: 48% Mean age (years): NR Race/ethnicity (%) SBHC users: 59.2% Hispanic; 20.5% Black;	NYC, NY (urban) SBHC Services offered: NR Staffing: NR Year established: NR Comparison: students at SBHC schools who did not use SBHC Not clear	Promoted to next grade level (%): Grade point average (out of 100):	Nonusers: 83.0% Nonusers: 70.7%	Users: 90.0% Users:73.2%	Relative % difference: 8.4%; p<0.01 3.5%; p<0.01	Users were significantly more likely to be promoted to the next grade while having a GPA that was approximately two points higher than that of nonusers, after controlling for potentially confounding variables, such as English-language learner, IEP, race, and sex

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	5.1% White; 6.6% Asian; 1.3% Native American; 5.1% Other Nonusers: 62.2% Hispanic; 18.2% Black; 8.9% White; 3.0% Asian; 0.7% Native American; 3.8% Other SES: NR						
Taylor Cross-sectional Fair (2 limitations) Sampling (1): Intervention group selected from inner-city, control group selected from wider area, including suburbs	High school- aged female students who received prenatal care Study groups/Sample size: users of a Maternal and Infant Care program (MIC) Intervention (school-based MIC) N= 53 Control (hospital-based MIC): N=53	St. Paul, MN SBHC Services offered: comprehensive adolescent health services including prenatal care ; Students may come to the clinic at any time for family planning counseling, education, referral, daycare for children of registered students STI testing and treatment, pregnancy testing, Pap smears, immunization and personal counseling and referral. Specific appointment times are given for physicals and other medical examinations.	Registered for prenatal care at 1st trimester (%): % Low Birth Weight (<2500g):	Non-SBHC: 43.4% Non-SBHC: 13.2%	SBHC: 58.5% SBHC: 11.3%	Relative difference: 34.8% -14.4%	Findings confirm that public high school is a useful location for adolescent prenatal health services

Author & Year (Linked studies, if any) **Study Design (Design Quality)** **Quality of Execution**	**Target Population** **Study Groups** **Population characteristics**	**Location (urbanicity)** **SBHC or SLHC** **Intervention (Services offered; staffing; year established)** **Comparison** **Study period**	**Outcome(s)**	**Baseline or Comparison Population (%)**	**Follow-up or Intervention Population (%)**	**Effect Size (95% Confidence Interval)***	**Summary**
Confounding (1): Not controlled		Staffing: core staff of family planning nurse clinician (clinic leader), social worker and clinic attendant were available to teen patients daily during school hours for "drop in" consultations, while other staff members were available weekly for scheduled appointments (A physician, along with a pediatric nurse associate, nutritionist, and maternity nurse clinician spend part time in the school). Services of a dental hygienist and health educator were also available Hours/time of operation: every morning 5 days a week during the school year Years established/fully operational before study period: 3 years					
Wade 05 Before-After with comparison Good (1 limitation)	Elementary and middle school students Intervention-Students in SBHC schools (combined	Ohio and Kentucky (mixed, half sites are urban, half are rural) SBHC Services offered: Preventive care, mental health services, vision, pharmacy	Morbidity/Health-related quality of life (PedsQL4.0 score, transformed on a scale from 0 to 100):	SBHC: 75.5 Non-SBHC: 78.2	SBHC: 77.7 Non-SBHC:77.0	Relative % change: 0.54%	Among the outcomes of interest (health related quality of life, schools absences, and access to care), the effects identified were generally in the hypothesized

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
Follow-up: Attrition rates are high (41% year 1 to year 2, 27% from year 2 to year 3). Total attrition from year 1 to year 3 longitudinal sample = 56.8%)	users and nonusers combineddata) Control: Students in schools without SBHCs Mean Age (baseline): 8.41 yrs old Sex (% female - baseline): 46.6% Race/Ethnicity (Baseline): African-American: 18.3% White: 77.9% Other (included students of Native American, Asian, or multi-racial descent as well as students who entered "other"): 3.8% Insurance Status: no insurance: 6.5% Public: 28.8%	Study Period: 3 years (began in 2000-2001) survey data taken once each study year from 2000-2003	ED utilization Usual place of care	SBHC: 29.1 Non-SBHC: 33.0 SBHC: 96.9 Non-SBHC: 99.2	SBHC:33.9 Non-SBHC: 29.5 SBHC: 96.7 Non-SBHC: 98.0	30.4% 1.0% (-1.6%, 3.7%)	direction. However, the overall strength of most of the relationships was modest and many were not significant.

Author & Year (Linked studies, if any) Study Design (Design Quality) Quality of Execution	Target Population Study Groups Population characteristics	Location (urbanicity) SBHC or SLHC Intervention (Services offered; staffing; year established) Comparison Study period	Outcome(s)	Baseline or Comparison Population (%)	Follow-up or Intervention Population (%)	Effect Size (95% Confidence Interval)*	Summary
	Private insurance: 63.9% Unknown: 0.8%						
Walker 09 Before/after w/comparison Good (1 limitation) Confounding (1): students who use service have greater needs than nonusers, but confounding not controlled.	High school students Intervention: Used the SBHC in first semester; n= not reported Control: Did not use SBHC during the study period; n= not reported Sex (% female): Intervention: 60.9 Control: 38.3 Mean age (years): Not reported, all were in 9th grade at baseline Race/ethnicity (%) Intervention: 40.4% Black; 11.0% Hispanic, 31.0% White;	Seattle, WA (urban) SBHC Services offered: primary care including checkup, contraceptive counseling, acute illness vaccinations; mental health services including drop in crisis intervention, individual counseling, family therapy, and pharmaceutical management Staffing: NP or physician assistant, masters-level MH counselor, and a patient care coordinator. Year established: NR Comparison: students at SBHC schools who did not use SBHC	GPA (on 4.0 scale):	SBHC users: 2.5 Non-users: 2.9	SBHC users: 2.6 Non-users: 2.9	Relative % difference: 4.7%	SBHC use was associated with academic improvements over time for a high-risk group of users.

Author & Year (Linked studies, if any) **Study Design (Design Quality)** **Quality of Execution**	**Target Population** **Study Groups** **Population characteristics**	**Location (urbanicity)** **SBHC or SLHC** **Intervention (Services offered; staffing; year established)** **Comparison** **Study period**	**Outcome(s)**	**Baseline or Comparison Population (%)**	**Follow-up or Intervention Population (%)**	**Effect Size (95% Confidence Interval)***	**Summary**
	14.4% Asian; 3.4% Native American; Control: 19.5% Black; 9.5% Hispanic; 42.3% White; 2.5% Native American; 26.3% Asian SES: % receiving free lunch: Intervention: SBHC users: 44.9% SBHC non-users: 28.2%						
Warren 00 Before/after w/comparison Fair (2 limitations) Confounding (1): SBHC is part of a larger intervention (School-based Youth Services	High school students attending "at-risk" schools Intervention: students at schools with SBHC who used SBHC during study period Control: students at schools with SBHC who did not	Six sites across New Jersey (mixed) SBHC (note – 1 SBHC conducted most activities offsite) Services offered: Specific core services include individual and family counseling; primary and preventive health services; drug and alcohol abuse counseling; employment counseling, training, and placement; recreation; violence prevention activities,	Depression symptoms (%): Smoked in past 2 months (%): Drank beer/wine in past 2 months (%): User: 35.0	User: 20.0 Nonuser: 20.3 User: 30.8 Nonuser: 23.2 User: 37.2 Nonuser: 36.7	User: 15.5 Nonuser: 17.8 User: 32.7 Nonuser: 34.5 User: 39.2 Nonuser: 43.5 User: 38.0	Relative % difference: -11.6% -28.6% -11.1%	Of the 45 variables studied, SBYSP users showed either greater gains or smaller declines that were statistically significant than their peers in 14 areas: educational aspirations, academic credits earned, trouble sleeping, feelings of unhappiness, sadness or depression, worrying "too much,"

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(SBYSP) initiative);the effects of the SBHC components cannot be assessed separately; Other (1): some services (e.g., sex-ed classes, school-wide health promotion) are received by both users and nonusers. Nonusers may have benefited directly or indirectly by virtue of the SBHC being in their schools	use SBHC during the study period	mental health services included crisis intervention to ongoing counseling; staff conducted special workshops on mental health issues for students and faculty; reproductive health services include info on methods to prevent pregnancy, access to reproductive health services directly or via referrals; additional activities offered via the larger intervention Staffing: NR- 4/6 sites employed a certified substance abuse counselor Year established: the larger intervention was established in 1988 Comparison: students at SBHC schools who did not use SBHC Summer 1996-Nov. 1998	Drank liquor in past 2 months (%): Smoked marijuana in past 2 months (%): Used illegal drugs in past 2 months (%): Ever had sex (%): Always used contraception or condoms (%): GPA (on 4.0 scale): Suspension rate:	Nonuser: 24.0 User: 19.7 Nonuser: 10.1 User: 4.0 Nonuser: 1.5 User: 30.9 Nonuser: 23.0 User: 62.3 Nonuser:58.8 Users: 2.6 Nonusers: 3.2 Users: 6.3 Nonusers: 3.1	Nonuser: 32.3 User: 24.0 Nonuser: 20.8 User: 6.4 Nonuser: 5.4 User: 58.3 Nonuser: 43.0 User: 44.0 Nonuser: 52.7 Users: 2.7 Nonusers: 3.1 Users: 16.8 Nonusers: 11.6	-19.3% -40.8% -55.6% 0.9% -21.2% 7.2% -28.7%	feelings of anger and destructiveness, suicidal thoughts, use of contraceptives to prevent pregnancy, use of condoms to prevent STIs, smoking, engagement in deliberate property damage, and access to peer and family support

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Webber 03 Cross-sectional Fair (2 limitations) Measurement of outcome (1): most outcomes measured via survey which was not tested for reliability or validity Confounding (1): confounding not assessed in background asthma severity	Elementary school-age children Intervention: students at 4 schools with SBHC; n=645 Control: students at 2 schools without SBHC; n=304 Sex (% female): SBHC: 46.8 Non-SBHC: 45.1 Mean age (years): 5-9 yrs old SBHC: 79.8% Non-SBHC: 78.9% Race/ethnicity (%) SBHC: 59.3% Hispanic; 16.9% Black; 5.1% White; 6.6% Asian; 1.3% Native American; 8.1% NR; 15.7%Other	The Bronx, NY (urban) SBHC Services offered: primary care including health education; only asthma services were described Staffing: pediatrician or nurse practitioner during the school day with backup services after hours provided by 2 community health centers Year established: NR Comparison :2 non-SBHC schools	ED visit in past year (%) Hospitalization in past year (%) Asthma-related morbidity (%):	Non-SBHC:44.4% Non-SBHC:17.1% Non-SBHC:72.6%	SBHC:47.0% SBHC:10.5% SBHC:71.2%	Relative % difference: 5.9 (-8.9%, 23.0%) -38.6% (-56.1%, -14.2%) -2.7% (-10.1%, 6.5%)	Access to SBHCs was associated with a reduction in the rate of hospitalization. No impact on ED use, asthma related morbidity.

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	Non-SBHC: 59.2% Hispanic; 19.7% Black; 8.9% White; 3.0% Asian; 0.7% Native American; 5.6% NR; 15.5% Other SES: Insurance status: SBHC: 87.6% with insurance Non-SBHC: 87.2% with insurance						
Weist 93 Before/after w/comparison Fair (2 limitations) Confounding (1): not assessed Other (1): Small sample size	High school students Intervention: Enrollees in SBHC who had been referred for MH treatment by staff; n=39 Control: Enrollees in the Health Clinic who received at least one general health service; n=34	Baltimore, MD (Urban) SBHC Services offered: laboratory screening (e.g., for pregnancy, sexually transmitted diseases), treatment of acute illnesses and injuries, and referral to local physicians and hospitals for more intensive medical problems Staffing: Licensed clinical psychologist, nurse practitioner, physician assistant	Mental Health Morbidity: Composite score for anger: Composite score for anxiety: Composite score for depression: Composite score for self-concept:	 SBHC: 13.5 Non-SBHC: 12.4 SBHC: 20.3 Non-SBHC: 17.8 SBHC: 22.0 Non-SBHC: 18.2 SBHC: 30.2 Non-SBHC: 32.9	 SBHC: 13.2 Non-SBHC: 12.4 SBHC: 18.1 Non-SBHC: 17.0 SBHC: 20.3 Non-SBHC: 18.6 SBHC: 32.9 Non-SBHC: 33.5	Relative % change: -2.2% -6.6% -9.7 (p<0.05) 7.0 (p<0.05)	Compared to students who received no mental health services during the 1992-93 academic year, users showed significant declines in depression, and improvements in self-concept from pre to post intervention. In addition, users had nonsignificant declines in anxiety and anger following participation in therapy.

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	Sex (% female): Intervention: 74.4 Control: 52.9 Mean age (years): Intervention: 16.0 Control: 16.7 Race/ethnicity (%) Intervention: 31.0% Black; 8.0% White; Control: 32.0% Black; 2.0% White; SES: Not reported	Hours/time of operation: NR Years established/fully operational before study period: NR Study period: October 1, 1992 – April 30, 1993					
Young 01 Single group Before-After Fair (1 limitations) Confounding (1): not assessed	Elementary school students Intervention: students at school one year before and one year during SBHC implementation: not reported: N=216 Control: N/A	Location undisclosed (Urban-inner city) SBHC Services offered: The SBHC at the elementary school operates a comprehensive medical, mental health, and dental health model. Nurse visits (first aid, lice, etc), acute medical visits, asthma visits, mental health, and dental health visits. ADHD evaluations	Emergency department visits: # Non-urgent visits. #Urgent visits	Before: 18.0 Before: 44.0	After: 26.0 After: 27.0	Relative % change: -40.9%; p< 0.03 +50.0%; p>0.05	Implementation of an elementary SBHC resulted in statistically significant decrease (p<0.03) in non-urgent emergency department visits and decrease in urgent emergency department visits

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	Age: 5-12 years old Sex: Not reported Race/Ethnicity: 60% BalckBlack; 40% White SES: 95% received free or reduced price lunch Insurance status: 55% Medicaid 40% Uninsured 5% Private	and multidisciplinary student staff meetings are a regular part of the SBHC services. Staffing: 1.0 FTE nurse director, 0.5 FTE pediatric nurse practitioner, 1 .O FTE clerical/home visitor, 0.5 FTE mental health counselor, and 0.1 FTE pediatrician/medical director. Dentist not mentioned, despite the availability of dental care. Hours/time of operation: The SBHC was open on all school days, and access was available by phone or at the local health department primary care center at other times. Years established/fully operational before study period: SBHC established in January of 1996. Study period is Jan 1995- Jan 1997.					
Zimmer-Gembeck 97 Cross-sectional	High school aged students Intervention: students with	Oregon (Mixed, 76% of 50 SBHCs are located in rural areas) SBHC	Immunizations (%):	Non-SBHC: 34.0%	SBHC: 43.0%	Absolute difference: 9.0 pct pts	Students with access to SBHCs were slightly less likely to have received care for a checkup or sports

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Fair (2 limitations) Description (1): SBHC is not well described Confounding: Confounding is uncontrolled in most analyses	direct access to an SBHC (by virtue of attending an SBHC school or being able to use a neighboring SBHC) Control: Students without access to SBHCs. Age: All students are in grades 9-12. 58% of participants were in the 9th or 10th grade. Sex: Roughly equal proportions of male: female (6953:7039) Race/Ethnicity: White is the majority. Unclear if this is the case for SBHC students. SES: Mixed, presumably SBHC students are of	Services offered: NR Staffing: NR Hours/time of operation: NR Years established/fully operational before study period: NR Study Period: Survey conducted in 1995.	STI (%): Personal/emotional problems (%): Received birth control or condom (%):	Non-SBHC: 5.0% Non-SBHC: 10.0% Non-SBHC: 15.0%	SBHC: 8.0% SBHC: 12.0% Non-SBHC: 22.0%	Relative % difference: +60.0% 20.0% 46.7%	physical, but more likely to have received care for immunizations, personal emotional problems, birth control, and STI

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	relatively lower SES but this is not explicitly stated.						
Zimmer-Gembeck01 Before—after Good (1 limitation) Description (1): Intervention is not well described	Sexually active females with at least one family planning visit in a school year before or after the intervention Intervention: Sexually active females who used SBHC family planning services after on-site dispensation (n = 355) Control: Sexually active female users of SBHC family planning services before on-site dispensation (n = 378)	Northwest (Urban) SBHC Services offered: NR outside of family planning services which are minimally described. Staffing: NR Hours/time of operation: NR Years established/fully operational before study period: NR	Time to initiation of hormonal contraception: Consistent selection of hormonal contraceptive (%):	Before: 59.0 Before: 38.0	After: 72.0 After: 47.0	Relative % difference: -30.5% 22.0%	Among females who receive more than one family planning visit at SBHCs and who choose hormonal contraceptives at least one time during family planning care, on-site dispensing of hormonal contraceptives in SBHCs is associated with earlier selection of hormonal contraceptives and a longer period of selection of hormonal contraceptives after accessing family planning care.

* Confidence Intervals were calculated when data were available

† Community Guide (CG) staff converted odds ratio or adjusted odds ratio to relative % difference

‡ Calculated by CG staff