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Assessing the Effect of School-Based Health Centers on Achievement of National Performance Measures

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Abstract

BACKGROUND: We assess the impact of School-Based Health Centers (SBHCs) on National Performance Measures (NPMs) related to health care access and utilization among Medicaid-insured youth in Delaware.

METHODS: Our retrospective analysis of Delaware's SBHC program data linked with Medicaid claims during 2014–2016 for 13 to 18-year-olds assessed achievement of NPMs and use of mental health services using propensity scores. We estimated crude and adjusted prevalence ratios (APR) for SBHC-enrolled compared with non-enrolled youth.

RESULTS: Students enrolled in SBHCs had more health care visits (M = 8.7; 95% CI: 7.9–9.5) compared with non-SBHC-enrolled youth (M = 4.5; 95% CI: 4.3–4.7). Compared with non-SBHC, those enrolled in SBHCs were more likely to receive: well-child visits (APR = 1.2; 95% CI: 1.1–1.3); annual risk assessment (APR = 11.0; 95% CI: 6.9–17.5); BMI screening (APR = 5.6; 95% CI: 3.3–9.4); nutrition counseling (APR = 4.1; 95% CI: 2.8–6.0); physical activity counseling (APR = 6.3; 95% CI: 4.2–9.4); STIs and chlamydia screening (APR = 1.9; 95% CI: 1.3–2.8); mental health visits (APR = 2.6; 95% CI: 2.2–3.1).

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Human Subjects Approval Statement

The evaluation was deemed public health practice and exempt from review by Delaware Department of Health and Social Services, Division of Public Health.

Conflict of Interest

The authors claim no conflict of interest.

CONCLUSIONS: We found that among Medicaid-insured youth, those enrolled in SBHCs vs not enrolled in SBHCs had greater health care utilization as evident from NPMs and mental health services.

Keywords

evaluation; public health; mental health; school health services; child and adolescent health

Beginning in 2014, health insurance coverage among the US population increased;[1] however, having health insurance does not necessarily imply access to and/or use of health services. Children who, for a variety of reasons, may not otherwise access the health care system may access important health services through School-Based Health Centers (SBHCs). SBHCs within schools or at off-site locations benefit children and adolescents' physical, psychosocial, and emotional needs by providing access to health services.[2] The Community Preventive Services Task Force (CPSTF) recommends that SBHCs be implemented and maintained in all communities with an emphasis on low-income communities, "based on sufficient evidence of effectiveness in improving educational and health outcomes."[3,4]

The National School-Based Health Alliance (NSBHA) counts 2584 SBHCs in the United States.[5] In Delaware, SBHCs are operated under statutory regulations 18 Del. C. §3365 and 3517G and are defined as "a health care clinic located in or near a school facility… and is recognized by the State pursuant to relevant regulations and law."[6] Services offered in Delaware SBHCs include comprehensive health assessments, diagnosis and treatment of minor, acute, and chronic medical conditions, nutrition consultation and education, referrals to and follow-up for specialty care, oral and vision health services, mental health, and substance use disorder assessments; crisis intervention and counseling, and referrals to community support programs. Additionally, and supported by statute, Delaware SBHCs must promote that students obtain all required or recommended vaccinations either on site or through referral. Diagnosis and treatment of sexually transmitted infections, reproductive health counseling, provision of birth control, and HIV testing and counseling may be provided by an SBHC subject to the approval of the school board governing the SBHC. There are approximately 225 public schools in 19 public school districts[7] and 31 SBHCs are operated by 5 medical providers in Delaware. Delaware SBHCs, commonly known as wellness centers, serve children and adolescents who attend these schools and who have returned a signed parental consent form.[8] The SBHCs are located in the school building and at a minimum staffed with a licensed mental health counselor, a nurse practitioner or a physician assistant, a registered dietitian (on rotation) and an administrative assistant with oversight by a Medical Director. Approximately, 40% of Delaware public school students are eligible for a free or subsidized lunch; by district 15–60% of students are eligible. Because of the link between low income and poor access to health care, the presence of SBHCs in Delaware school districts provides an opportunity to examine the impact of SBHCs on children's achievement of nationally recommended health services for economically disadvantaged students.

Evidence of SBHC Effectiveness and Analytic Framework

In a comprehensive systematic review of the effectiveness of SBHCs on health and educational outcomes, Knopf et al. noted that SBHCs were associated with educational benefits such as fewer suspensions, lower rates of recidivism, higher grade point averages, and increased grade promotion. In addition, the authors found that students enrolled in SBHCs had higher rates of recommended immunizations and other preventive services.[9] Regarding health outcomes, Knopf et al. noted that students enrolled in SBHCs had fewer asthma symptoms and asthmatic-related incidents and substantial reductions in emergency department visits and hospitalizations for all conditions; yet the effect of an SBHC on a student's self-reported health and mental health status was small.[9] Ran et al. (2016) suggest that "from a societal perspective the total annual benefit per SBHC ranged from $15,028 to $912,878," while Medicaid savings ranged from $30 to $960 per visit.[4] Furthermore, recent evidence suggests that SBHCs reduce student barriers to mental health services.[10,11]

Despite the evidence that SBHCs improve health outcomes and reduce health care costs, a systematic review also found insufficient evidence to quantify the impact of SBHCs on health-related behaviors among adolescents (eg, smoking, substance use, nutrition, physical activity, and contraceptive use among male adolescents).[12] This review also noted methodological and logistical challenges to evaluate SBHC effectiveness.[12]

Knopf et al. provide an analytic framework for examining the impact of SBHCs with hypothesized pathways that include intermediate outcomes, recommendation outcome, and additional benefits.[9] According to them, SBHCs may improve health outcomes through several pathways, "… increased access to and satisfaction with health-related services are expected to increase receipt of recommended services that lead to early detection and treatment or prevention of disease… . Overall, SBHCs are expected to improve the health prospects of low-income and racial and ethnic minority students." (p. 116). These outcomes include: (a) intermediate health outcome, (b) recommendation outcomes, (c) additional benefits/potential harms/disparities. The intermediate health outcomes include health education (eg, nutrition, sexual behavior, physical activity, mental health), patient comfort and satisfaction, increased access to services (eg, medical, mental health, dental, and social). The recommendation outcomes include increased use of preventive services, reduced risk behavior, reduced teen births, increased or earlier treatment of infectious diseases, dental health, mental health, increased proportion with medical home, reduced misuse of health care, reduced morbidity and mortality, improved health of low income and minority students, increased school achievement, and health equity. Additional benefits may include reduced transportation cost, reduced parental health care time, and decreased fragmentation of care.[9]

To document SBHC performance nationwide, NSBHA adopted a set of core clinical performance measures that align with national child quality best practices, including the Agency for health care Research and Quality's Children's Health Insurance Program Reauthorization Act's (CHIPRA) Core Set of Children's Health Care Quality Measures and the National Committee for Quality Assurance's Healthcare Effectiveness Data and Information Set (HEDIS) standards. These 5 national performance measures (NPMs) are: (a)

annual well-child visit, (b) annual risk assessment, (c) body mass index (BMI) assessment and nutrition and physical activity counseling, (d) depression screening and follow-up plan for a positive screen, and (e) chlamydia screening. These measures are also consistent with the American Academy of Pediatrics (AAP) recommended measures for adolescent health.[11] In addition to these NPMs, we also assessed students' use of mental health services.

We used Knopf et al.'s analytic framework to assess the effect of SBHCs on intermediate health outcomes (ie, NPMs) at a population level for all Medicaid-insured students enrolled in SBHCs as compared with Medicaid-insured non-SBHC-enrolled youth in Delaware. Our primary research question was—among Medicaid-insured youth what is the effect of SBHC enrollment on achievement of National Performance Measures (NPMs) and use of mental health services? We hypothesized that health care visits vis-à-vis utilization as measured using NPMs would be higher among Medicaid SBHC enrolled youth in comparison to non-SBHC youth in Medicaid.

METHODS

Study Design and Sample

We used a retrospective cohort of 13- to 18-year-old Delaware youth who had Medicaid claims and who were either enrolled or not enrolled in an SBHC during the 2014 through 2016 school years. During 2014–2016, 29 out of 31 public high schools in Delaware had an SBHC. We obtained SBHC enrollment data from the centralized database available at the time of the study. Schools in Delaware began reporting data to this centralized system during 2014–2015, and by 2016, 100% of the schools with SBHCs in DE were reporting. The SBHC enrollment data containing students' enrollment information (such as name, date of birth, sex, insurance, date of enrollment, visit dates) were linked to Delaware 2014–2016 Medicaid claims data for 13- to 18-year-olds. Our analytic sample was comprised of 38,547 records, of which 3450 were Medicaid-insured students enrolled in SBHCs, and 35,097 were non-SBHC youth in Medicaid.

Because enrollment in SBHCs is voluntary, self-selecting into SBHCs introduces potential selection bias. To reduce the threat of selection bias, we used propensity score analyses based on Neyman-Rubin's counterfactual framework.[13–15] Counterfactuals are potential outcomes that happen in the absence of cause.[13–15] For SBHC enrolled youth a counterfactual is the potential outcome under the control condition (ie, non-enrolled SBHC), and for non-enrolled youth, the potential outcome is under the intervention/treatment condition (ie, had enrolled in SBHC).[13–15] Propensity scores are the conditional probabilities of assignment to a particular intervention/treatment (ie, participating in SBHC) given a vector of observed covariates.[16] We utilized inverse probability of treatment weighting (IPTW), which is one among several techniques available for propensity scoring in quasi-experimental and observational studies.[17–25] We used multivariate propensity score weighting as it reduces the potential loss of participants by using weights in a weighted regression of the outcome on treatment and covariates and does not resample the data.[17–25] In essence, it creates a synthetic sample in which treatment assignment is independent of the

observed covariates, allowing IPTW to provide an unbiased estimate of average treatment effects.[17–19,22–26]

Measures

Our intervention/treatment variable of interest was a dichotomous measure (ie, yes/no) of SBHC enrollment status among Medicaid-insured youth. Our primary outcome variable of interest was students' health care use as measured by NPMs using Medicaid claims during 2014–2016. The NPMs were assessed using International Classification of Diseases Ninth and Tenth Revision Clinical Modification (ICD-9-CM and ICD-10-CM) and Current Procedural Terminology (CPT) codes available in the Medicaid claims data. Table 1 provides the details of the NPMs and associated ICD-9-CM and ICD-10-CM and CPT codes. In addition to these NPMs, we also assessed students' use of mental health services as it is well documented that SBHCs increase mental health care service use in a convenient and confidential setting.[10,11]

"Sports physicals" (ie, V70.3 and/or Z02.5, see Table 1) are not typically coded as well-child visits; however, we included these 2 additional codes in capturing well-child visits because Delaware SBHC providers routinely used the codes for sports physical as a means to provide routine screening, assessments, and referral.

Our covariates included service year (ie, year of claim), age at the time of health care use (ie, visit), gender measured as a dichotomous variable (male/female), race and ethnicity defined as non-Hispanic (NH) white, NH-black, and other race and ethnicities that included Hispanics. We used Federal Office of Rural Health Policy (FORHP) zip code crosswalk from Health Resources and Services Administration (HRSA) to categorize geographic location of residence for Medicaid-insured youth as a dichotomous measure (urban/rural).

Data Analysis

We first calculated propensity weights as the inverse of propensity score[17–25] using multivariable model logistic regression with SBHC enrollment status as our outcome. We used age, gender, race and/or ethnicity, geographic location of residence (ie, urban or rural), and service year (ie, year of claim 2014, 2015, or 2016), and 2 interaction terms: age and gender as well as service year and race/ethnicity as covariates. The model specification for the propensity score was based on whether a covariate was associated with treatment selection (ie, SBHC enrollment status), as well as the outcome measures and recommended strategies for inclusion of covariates based on propensity score literature.[13–26] Standardized differences (reported as absolute value) before and after weighting were used to assess the reduction in bias.[24,25] The standardized difference compares the difference in means and/or proportions in units of the pooled standard deviation and are not influenced by sample size and are used to compare balance in measured variables between "treated" (ie, intervention—SBHC) and "control" subjects (ie, non-intervention—non-SBHC). It is reported in percentage and therefore, a standardized difference in excess of 10% may be indicative of meaningful imbalance in covariates between treated and control subjects.[24,25]

We used independent t-tests for continuous measures and chi-square tests for dichotomous and categorical variables to assess differences in Medicaid-insured SBHC youth and non-

SBHC youth in Medicaid. We estimated crude (CPR) and adjusted prevalence ratios (APR) with 95% confidence intervals (95% CI) using IPTW as a weight variable. Models were adjusted for year of claim, age, gender, race and ethnicity, and geographic location of residence with robust standard errors using exchangeable correlation. All analyses were conducted in 2019 using SAS v9.4 (SAS Institute, Inc., Cary, NC, USA) using 2-sided statistical tests and a 5% type I error rate.

RESULTS

Table 2 provides descriptive statistics (eg, counts, percentages, means, standard deviations) for Medicaid-insured SBHC-enrolled and Medicaid-insured non-SBHC youth. Except for age, there were significant differences between the SBHC and non-SBHC groups. For instance, among Medicaid-insured non-SBHC youth, there was a lower percentage of females, lower percentage of non-Hispanic black, and a lower percentage of youth in rural areas as compared with Medicaid-insured SBHC-enrolled group. Although there were significant differences in service year, the difference was an artifact of the number of schools reporting data into the centralized database. Figure 1 displays the bias between the 2 groups, as measured through standardized differences, before and after propensity weighting. The absolute standardized differences reduced bias by more than 95%.

Propensity score weighted results indicated that Medicaid-insured SBHC-enrolled youth had more office visits (M = 8.7; 95%CI: 7.9–9.5) as compared with Medicaid-insured non-SBHC youth (M = 4.5; 95% CI: 4.3–4.7). As shown in Table 3, after adjusting for covariates, Medicaid-insured SBHC-enrolled youth as compared to Medicaid-insured non-SBHC youth were more likely to receive a well-child visit (APR = 1.2; 95% CI: 1.1–1.3); more likely to have an annual risk assessment (APR = 11.0; 95% CI: 6.9–17.5); more likely to be screened for BMI (APR = 5.6; 95% CI: 3.3–9.4); more likely to receive nutrition counseling (APR = 4.1; 95% CI: 2.8–6.0); more likely to receive physical activity counseling (APR = 6.3; 95% CI: 4.2–9.4); more likely to be screened for STIs and chlamydia (APR = 1.9; 95% CI: 1.3–2.8); and more likely to receive a mental health visit (APR = 2.6; 95% CI: 2.2–3.1). Our analysis did not identify any claims containing the recommended ICD-9-CM and ICD-10-CM codes for the depression screening NPM, and we therefore were not able to assess the differences between SBHC and non-SBHC enrolled students on this measure.

DISCUSSION

As noted previously, NSBHA adopted a set of core clinical performance measures that align with national child quality best practices in developing the NPMs. The importance of these 5 NPMs: (1) annual well-child visit, (2) annual risk assessment, (3) BMI assessment and nutrition and physical activity counseling, (4) depression screening and follow-up plan for a positive screen, and (5) chlamydia screening cannot be understated given the disparities.[27–30]

Our population-based study examined NPMs and mental health visits among socioeconomically dis-advantaged group as our primary research question was—among

Medicaid-insured youth what is the effect of SBHC enrollment on achievement of National Performance Measures (NPMs) and use of mental health services? By examining potential intermediate health outcomes identified in Knopf et al.'s analytical framework, our study found that among Medicaid-insured youth aged 13–18 years in Delaware, those enrolled in SBHCs were more likely than non-SBHC enrolled youth to have higher numbers of well-child visits, annual risk assessments, BMI screenings, nutrition counseling, physical activity counseling, STI and chlamydia screening, and mental health visits. An important premise of the conceptual framework is that low-income school-age youth are more likely to access SBHC services.[9–11] The effects for annual risk assessment, BMI screening, nutrition counseling, and physical activity counseling among Medicaid-insured SBHC enrolled youth suggest that SBHCs can be an effective population-based strategy to increase screening and assessments in low-income students associated with improvements in overall health. While risk assessment, screening for BMI, nutritional and physical activity counseling is important, it is perhaps equally important to ensure access to mental health services in this vulnerable population. Although depression screening is part of the NPM, we did not find the ICD codes (ie, G8431-positive screen, G8510-negative screen) in our dataset. We did, however, find a 3-fold increase in receiving mental health visits among Medicaid-insured SBHC enrolled youth. Our results are consistent with Bains et al.[10] who suggest that "SBHCs provide much needed access to students with mental health issues" and in a confidential setting.[10,11,31]

Our study has several notable strengths. Our study is population-based and perhaps the first to examine NPMs and mental health services at a state-level to evaluate outcomes related to SBHCs. Unlike many states, Delaware SBHCs can be proposed by any public or charter school and as such the resources are available to all high schools in Delaware. Except for 2 high schools, all high schools at the time of the study had an SBHC. This provided us with an excellent case study to assess intermediate outcomes at the state-level. Second, our study was restricted to the Medicaid-insured population, a proxy for low socioeconomic status, to better understand the impact of SBHCs on the achievement of NPMs as per NSBHA, and CPSTF recommendations for low-income students. Third, we linked SBHC enrollment data to Medicaid claims and used IPTW described earlier to minimize self-selection bias. Finally, rather than rely on survey and self-report measures, we used Medicaid incurred claims and actual visit codes and CPT codes to assess health care utilization.

Limitations

Despite its strengths, the study had some limitations. First, while IPTW reduces bias, it only does so for what is measured. Class rosters for all schools cannot be obtained due to restrictions posed by the Family Educational Rights and Privacy Act (FERPA) and were not available for this study; hence, it was not possible to ascertain if all Medicaid-insured non-SBHC youth were students. Despite this limitation, our study utilized a sub-population of low-income youth (ie, Medicaid-insured) that accounted for age, gender, race and ethnicity, and geographic location that are possible sources of confounding based on the findings from previous evaluation studies.[3,8–10] Other variables such as baseline morbidity for SBHC-enrolled students, Medicaid plan details, family structure and/or household characteristics, and provider details could have strengthened the estimation of propensity scores. However,

the results from the standardized difference before and after weighting suggested the group imbalance was negligible. Second, the limited availability of measures described above and other fidelity measures of how each SBHC operates also pose challenges in measuring any residual confounding not available in our dataset. We expect that this would likely only impact the effect size and not the overall hypothesized direction of higher utilization among SBHC students. Finally, it is well known that claims data are prone to coding variation and errors; as such it is difficult to ascertain the extent of bias in Medicaid data. This was particularly true for the NPM specific to depression, as the recommended ICD-9-CM/ICD-10-CM codes did not yield any results.

Conclusions

School-based Health Centers provide much needed health services in setting that are often easy for students to access. Our study is the first to assess the effect of SBHCs on several NPMs at a population-level. Barring the limitations noted above, we found promising evidence that SBHCs improve health care utilization vis-à-vis access as measured through NSBHA's NPMs and mental health visits, which may lead to improved health outcomes. We found that Medicaid-insured SBHC-enrolled students used nationally recommended health services more than non-SBHC enrolled youth, as measured through NSBHA's NPMs. Future studies could utilize the NPMs to further assess the effect of SBHCs on outcomes such as morbidity and lowering health care costs.

IMPLICATIONS FOR SCHOOL HEALTH AND EQUITY

School-based health centers in Delaware and in the nation may provide much needed medical care in a convenient and confidential setting to economically disadvantaged youth, youth in rural areas, race and ethnic minorities, those disproportionately burdened by chronic health conditions, and those who have limited access to health care services. Given that many SBHCs rely on grant and/or state-funded initiatives, Gregg et al.[32] suggest that SBHCs under certain conditions can be recognized as patient-centered medical homes (PCMH). Their analyses suggest that 29% of SBHCs are PCMH. However, provision of primary care services rests on the assumption that students utilize these services.

Our population-based study, suggests that Medicaid-insured SBHC-enrolled youth had achieved higher National Performance Measures and higher utilization for mental health visits when compared to Medicaid-insured non-enrolled SBHC youth. Our population-based study supports the role SBHCs among Medicaid-insured SBHC-enrolled youth. Future studies should examine statewide effects of SBHC-enrolled and non-enrolled youth in the general population specific to health outcomes, NPMs, and mental health visits.

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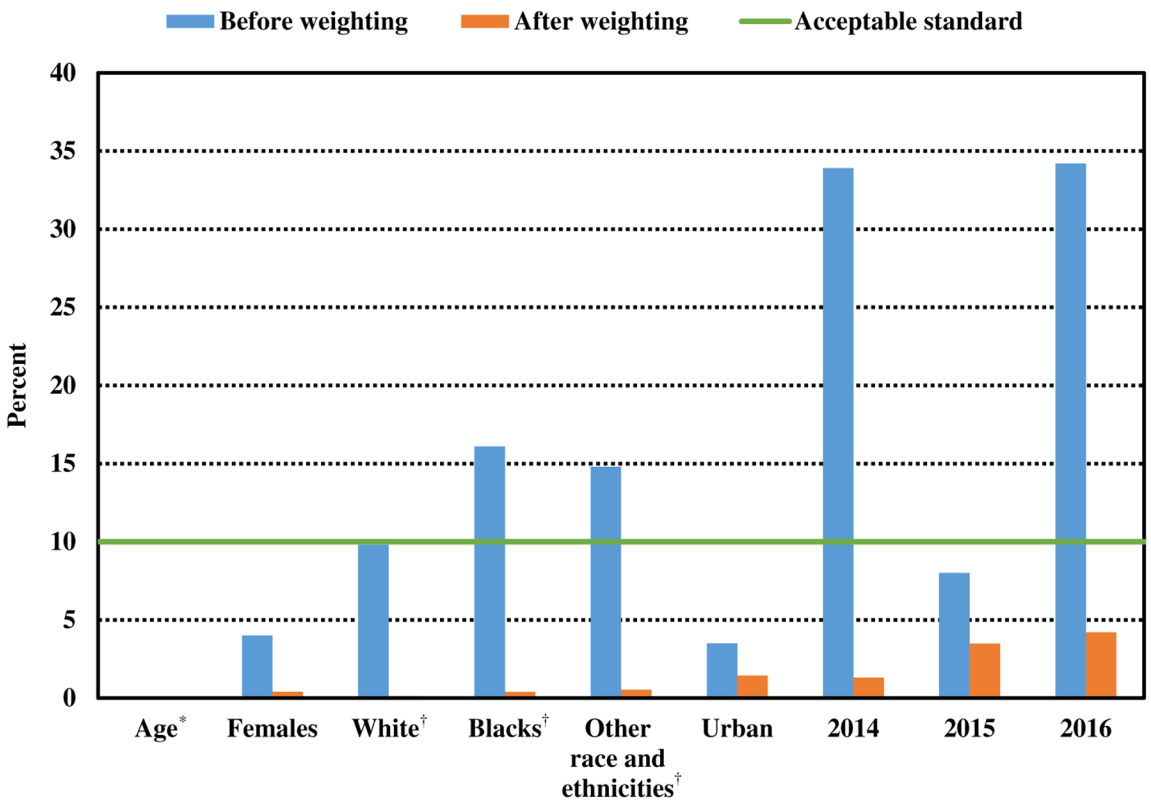

Figure 1.

Standardized Differences between Medicaid-insured School-Based Health Centers (SBHC)-enrolled Students and Medicaid-insured non-SBHC Youth before and after Propensity Weighting, in Delaware, 2014–2016

Standardized difference compares the difference in means and/or proportions in units of the pooled standard deviation and are not influenced by sample size and are used to compare balance in measured variables between “treated” (ie, intervention—SBHC) and “control” subjects (ie, non-intervention—non-SBHC). It is reported in percentage and therefore, a standardized difference in excess of 10% may be indicative of meaningful imbalance in covariates between treated and control subjects.

*No differences in age.

†White (non-Hispanic), black (non-Hispanic), other race, and ethnicities include Hispanics.

Table 1.

National Performance Measure (NPM) Indicators and Corresponding International Classification of Diseases, 9th and 10th Revision, Clinical Modification (ICD-9-CM/ICD-10-CM) and Current Procedural Terminology (CPT) codes

	Codes		
National Performance Measure (NPM)*	**CPT**	**ICD-9-CM**	**ICD-10-CM**
1. Well-child visits	99381, 99382, 99383, 99384, 99385	V20.2, V70.0, V70.3‡, V70.5, V70.6, V70.8, V70.9	Z00.00, Z00.01, Z00.121, Z00.129, Z00.05, Z00.8, Z02.0, Z02.1, Z02.2, Z02.3, Z02.4, Z02.5*, Z02.6, Z02.71, Z02.79, Z02.81, Z02.82, Z02.83, Z02.89, Z02.9
2. Annual risk assessment	99420, 96127	V82.9, V79.8	Z13.9, Z13.4
3. Body mass index (BMI) screening		V85.51, V85.52, V85.53, V85.54	Z68.51 Z68.52 Z68.53, Z68.54
4. Nutrition counseling	97802, 97803, 97804, 99401, 99402, 99403	V65.3	Z71.3
5. Physical activity counseling		V65.41	Z71.82, Z71.89
6. Depression screening	99420, 3725F G8431 (positive screen), G8510 (negative screen)	V79.0	Z13.89
7. Sexually transmitted infections (STI) and chlamydia screening		V73.98, V73.88	Z11.3, Z11.8
Mental health visits for depression, anxiety, and adjustment disorders†		309.0, 309.1, 309.24, 309.28, 296.20, 296.32, 300.02, 309.4.	F43.21, F43.22, F43.23, F32.9, F33.1, F41.1, F43.25, F41.9.

*Measures 1–7 are National Performance Measures from School-Based Health Alliance for SBHCs version as revised on 01/2017.

†Mental health assessment was added for purposes of this study.

‡Sports physicals.

Table 2.

Characteristics of Medicaid-Insured School-Based Health Center (SBHC) Enrolled Students and Medicaid-Insured Non-SBHC Youth in Delaware, 2014–2016

	Intervention/Exposure (N = 38,547)	
Characteristics of Medicaid Insured Youth	**SBHC Enrolled (N = 3450)**	**Non-SBHC (N = 35,097)**
Age (SD)	15.6 (±1.7)	15.6 (±1.9)
Gender*		
Females	1846 (53.5%)	18,082 (51.5%)
Males	1604 (46.5%)	17,005 (48.5%)
Race and ethnicity***		
White (non-Hispanic)	1656 (48.0%)	18,552 (52.9%)
Black (non-Hispanic)	1678 (48.6%)	14,238 (40.6%)
Other race and ethnicity (includes Hispanics)	116 (3.4%)	2307 (6.6%)
Geographic location*		
Urban	2856 (82.8%)	29,530 (84.1%)
Rural	594 (17.2%)	5567 (15.9%)
Year† of claim***		
2014	451 (13.1%)	9276 (26.4%)
2015	767 (22.2%)	8986 (25.6%)
2016‡	2232 (64.7%)	16,835 (48%)

*p < .05.

**p < .01.

***p < .001.

Age is represented as mean ± SD, while dichotomous and categorical variables are represented as n (%). Independent *t*-tests for continuous measures and chi-square tests for dichotomous and categorical variables.

†Unique Medicaid office visit claims for 2014–2016 for 13–18 years of age.

‡The differences in the claim years were an artifact of onboarding into the centralized database. Schools in Delaware began reporting data to this centralized system during 2014–2015, and by 2016, 100% of the schools with SBHCs in DE were reporting.

Table 3.

National Performance Measures and Mental Health Visits, for Medicaid-Insured SBHC Enrolled Students and Medicaid-Insured Non-SBHCs Youth in Delaware, 2014–2016

Primary Outcomes	Crude Prevalence Ratio (95% CI)	Adjusted Prevalence Ratio (95% CI)
National performance measures		
1. Well-child visits	1.2 (1.2–1.3)	1.2 (1.1–1.3)
2. Annual risk assessments	9.9 (7.2–13.8)	11.0 (6.9–17.5)
3. BMI screening	5.6 (4.1−7.6)	5.6 (3.3–9.4)
4. Nutrition counseling	3.9 (3.2–4.8)	4.1 (2.8–6.0)
5. Physical activity counseling	6.4 (4.9–8.4)	6.3 (4.2–9.4)
6. Depression screening *	#N/A	#N/A
7. STIs and chlamydia	1.9 (1.5–2.3)	1.9 (1.3–2.8)
Mental health visits	2.6 (2.4–2.8)	2.6 (2.2–3.1)

Crude Prevalence Ratio (cPR) with 95% CIs. Adjusted Prevalence Ratio (aPR) models include propensity weights with covariates year of claim, age, gender, race and ethnicity, and geographic location. Adjusted models are estimated with robust standard errors using exchangeable correlation with 95% CIs.

* No ICD codes present and hence not estimated.