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ORIGINAL PAPER

Academic, Psychosocial, and Demographic Correlates of School-Based Health Center Utilization: Patterns by Service Type

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Abstract

Background Despite the promise of school-based health centers (SBHCs) as crucial source of mental health care for youth, accumulated literature describing how SBHCs are typically arranged, patterns of service utilization, and, ultimately, effects of services delivered through SBHCs is limited.

Objective This study's aim was as disentangle the types of services provided into determine unique predictors of service use with the overall goals of making an incremental step towards understanding SBHC intervention effects and implementation challenges.

Method This study used student-level administrative and survey data to examine academic, psychosocial, and demographic correlates of SBHC utilization by type of service (i.e., medical services, general counseling, and behavioral health counseling). The sample includes all students from one high school with a SBHC in a large urban district (n = 658). Logistic regression models were used to identify factors that uniquely contributed to service use.

Results The strongest predictors of SBHC utilization overall were race, special education participation, and GPA. With regard to behavioral health services, demographic background (i.e. Black and Latino), special education participation, and violence victimization or perpetration predicted use. With regard to general counseling, being female was the strongest predictor of service use. For medical services, age and special education participation predicted use.

Conclusion Heterogeneous student characteristics (e.g., demographic, academic, and psychosocial) are related to utilization of school-based health and mental health services. Future research must address the student characteristics that predict service use in order to minimize selection bias which may skew the results intended to document the impact of SBHCs on student outcomes.

Keywords School-based mental health · Behavioral health · Service utilization · Race

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Introduction

The onset of mental disorders usually occurs during adolescence, making this developmental period a critical time for preventing and addressing youth mental health needs (Merikangas et al. 2010). Although over 18 million children and adolescents experience mental health problems, only a third of those youth receive treatment (Merikangas et al. 2011). Youth of color are significantly less likely to access and receive mental health care compared to their white peers despite similar levels of need for services (Cauce et al. 2002; Cook et al. 2013; Garland et al. 2005; Snowden and Yamada 2005). These findings are troubling given that research consistently indicates that unmet mental health needs are contributors to school drop-out, violence victimization and perpetration, delinquency, and suicide (Breslau et al. 2005; Costello et al. 2006; Kessler et al. 2012).

Health and mental health services provided within school-based health centers (SBHC) constitute an important mechanism to improve access to and utilization of mental health services, especially for underserved populations of youth, including students who are from low socioeconomic and racial/ethnic minority backgrounds (Allison et al. 2007; Brindis et al. 2003; Juszczak et al. 2003; Soleimanpour et al. 2010). SBHCs are poised to play key roles in facilitating access to care for these groups because they are convenient, youth friendly, and eliminate structural barriers to service use such as transportation and cost (Allison et al. 2007; Amaral et al. 2011; Juszczak et al. 2003).

Despite the promise of SBHCs as crucial source of mental health care for youth, accumulated literature describing how SBHCs are typically arranged, patterns of service utilization, and, ultimately, effects of services delivered through SBHCs is limited. One source of limitations relate to methodological issues, including a predominance of samples including only users of services, unitary conceptualization of service use (i.e. use versus non-use) ((Bersamin et al. 2016; Keeton et al. 2012), and limited coverage of the range of factors that may shape service use, including both socio-demographic factors, academic characteristics, and mental health need (Langer et al. 2015).

Another set of limitations emerge because of the intervention itself. SBHCs include a variety of service types and configurations, potential service users, and potential outcome domains (Brindis et al. 2003; Geierstanger et al. 2004; Soleimanpour et al. 2010). Although many argue that these sources of variation hamper understanding of the effects SBHC services on outcomes (Bersamin et al. 2016; Geierstanger et al. 2004), there is emerging consensus that too little attention has been paid to the unique contextual characteristics of service delivery within school settings, including consideration of the (1) multiple forms and dynamics of service delivery that potentially take place and (2) characteristics of service users (Atkins et al. 2015). Insufficient attention to such factors hampers efforts to determine efficient and effective service delivery strategies in school contexts and subsequent implementation of such strategies (Atkins et al. 2010).

Capitalizing on insights from general framework comparing mental service delivery across school and community settings positing that student demographic, academic, and mental health needs shape service utilization (Langer et al. 2015), the current study, draws on a unique linkage of three data sources (administrative service utilization, administrative education archives, and student survey data), among all students in the study high school (i.e., including both students who both use and do not use services). Because this study limits the impact of school contextual differences by confining the study population to a single school it allows for a clarification of the general approach of the intervention.

Use of these data allowed for unique analysis of the relationship between student socio-demographic background, academic performance indicators, and psycho-social distress and type of SBHC services used (medical services, general counseling, and behavioral health counseling). Based on prior research, it was expected that SBHC users would be characterized by higher levels of socio-demographic vulnerability, poorer academic performance, and higher psycho-social distress than students who did not use services.

Contextual Variation in SBHCs

A key concern of prior SBHC research is the underlying structure and organization of health and mental health services in schools. This literature shows that SBHCs are a complex intervention, including a variety of service types and configurations, potential service users, and potential outcome domains (Brindis et al. 2003; Geierstanger et al. 2004; Soleimanpour et al. 2010). Keeton et al. (2012, p. 133) define SBHC service configurations to include the following components: (1) location in schools or on school grounds, (2) efforts to fully integrate into the school culture, (3) provision of comprehensive services to meet the physical and behavioral health needs of youth, (4) utilization of multidisciplinary teams of providers (e.g., nurses, physicians, social workers, substance abuse counselors), (5) offering of clinical services through qualified health and mental health care providers, (6) addressing of parental consent requirements for children to receive services, and (7) oversight by advisory boards, often populated by both school and community stakeholders. It is unclear what proportion of SBHCs fully possess all of these components, but 94% of SBHCs are located on school campuses, 86% employ multidisciplinary teams of providers, and 71% provide comprehensive services including health and mental health services (Lofink et al. 2013). Approximately 29% of SBHCs provide primary care health services only, 33% of SBHCs provide primary care and mental health care, and about 37% of SBHCs provide primary care and mental health plus additional services (e.g., health education, oral health, social services, and/or nutrition (Lofink et al. 2013).

SBHC Service Utilization

Prior research considers the aggregate differences between students in schools that provide SBHC services versus schools that do not. It also considers some explorations of differences between students who use and do not use services (Amaral et al. 2011; Anyon et al. 2013a; Brindis et al. 2003). Not surprisingly, findings suggest that schools are a unique host setting that can constrain the nature of services offered as well as shape intervention effects (Stone et al. 2009, 2013; Strolin-Goltzman 2010).

Although SBHCs, in general, are an important source of care for traditionally underserved student populations, students who utilize SBHC services may differ from those who do not, particularly in terms of demographic characteristics, including markers related to access to care, help-seeking behaviors, need for services (e.g., mental health problems, risk-taking behaviors), and prior academic prior performance (Allison et al. 2007; Amaral et al. 2011; Mason-Jones et al. 2012). Studies find significant differences between users and non-users by race such that Black and Latino students appear more likely to use services, whereas Asian students are less likely to use services (Amaral et al. 2011; Anyon et al. 2013a, b; Anyon and Stone 2012; Walker et al. 2010). Several studies have found that females are more likely to access services (Adelman et al. 1993; Amaral et al. 2011;

Pastore et al. 1998; Soleimanpour et al. 2010). SBHC users are also less likely to be insured (Allison et al. 2007; Brindis et al. 1995).

Research also reveals differences in academic performance between users and non-users of SBHCs. In a descriptive study of more than 5000 students at high schools with SBHCs, students who utilized services reported poorer grades than students who did not use services (Amaral et al. 2011). Another longitudinal study, which utilized propensity score methods to control for differences between SBHC users and non-users, found SBHC service users had significantly lower grades and attendance (Walker et al. 2010). Additional research has noted demographic differences between SBHC users and nonusers related to special education placement (Daly et al. 2014; Walker et al. 2010).

Although the evidence is mixed, SBHC users and non-users also report differences in health and mental health needs. Several studies find no differences in health and mental health needs between users and non-users of SBHCs (Parasuraman and Shi 2014; Strolin-Goltzman et al. 2014), whereas other studies found significant differences (Amaral et al. 2011; Anyon et al. 2013a). In a study of four schools with SBHCs in Northern California, students who frequently reported depression and trouble sleeping were the students who were most likely to seek services compared to students who reported those symptoms less frequently (Amaral et al. 2011). Additionally, SBHC users reported significantly more suicidal ideation in the previous 12 months compared to nonusers and were 52% more likely to use services (Amaral et al. 2011). SBHC users in this study also reported significantly more relationship problems and substance use problems.

In response to these important sources of variation at both school- and service user-levels, there have been several calls for better definition of specific SBHC interventions and who uptakes them (Bersamin et al. 2016; Geierstanger et al. 2004). These calls urge a move away from binary measures of service use (e.g., global measures of service use versus non-use) and underline the importance of multi-faceted data sources that include student services records (versus reliance only on self-report of use), simultaneous measurement of both student health and mental health attributes and academic characteristics, as well as samples that are inclusive of both users and non-users.

In summary, prior research generates critical insights relevant to current programs of research related the SBHC effects. First, SBHCs encompass a wide variety of programs and services making it difficult to ascertain the specific nature of the intervention provided (Amaral et al. 2011; Bersamin et al. 2016; Keeton et al. 2012). This suggests that an important next step is to move away from unitary or global measures of SBHC utilization. Second, it underscores the importance of carefully considering how students select into specific SBHC services in order to more carefully estimate the impact of those services. Finally, it anticipates that school contextual factors are important to consider when interpreting SBHC impacts (Geierstanger et al. 2004).

Although various studies attempt to singularly address these challenges, no study fully integrates these important prior insights into a single study. The current study takes an important step in responding to challenges identified across related literatures related to SBHCs and their effects. First, this study capitalizes upon a unique opportunity link three secondary data sources (administrative service utilization, education data, and student survey data), to obtain detailed student-level service utilization information for students who used SBHC services, as well as, student self-reports on indicators of current psychosocial distress, and school administrative demographic background and academic performance records for all students in the study high school. Second, this data set allowed for unique analysis of the type of SBHC services used (medical services, general counseling, and behavioral health counseling). Third, this study limits the impact of school contextual

differences by confining the study population to a single school, enabling clarification of the general approach of the intervention. To date, research has neither (1) disentangled the types of services offered in SBHCs to determine unique predictors of various types of services, such as behavioral health versus medical services nor (2) simultaneously considered relationships between socio-demographic, academic, and psychosocial distress factors and service utilization. We hypothesize that indicators listed here differentially predict the types of SBHC services that are used by students. Better understanding of service utilization patterns has great potential to inform the design of such programming and can help clarify the nature of intervention effects as well as potential implementation challenges (Bersamin et al. 2016; Geierstanger et al. 2004).

Method

Study Context

The current study uses data from a single high school within a northern California school district. All high schools in the district have an on-site center that is staffed by a core set of personnel who provide a comprehensive array of school-based student health and mental health services at various levels of prevention and treatment. The main services provided included general counseling, behavioral health counseling, and medical services. During the 2012–2013, the school surveyed all students, using a modified version of the California Healthy Kids survey, about their psycho-social characteristics and school experiences.

Data Sources and Sample

Data Sources

Three data sources were merged together using student-level identifiers to create the dataset used for this study. The first data source included detailed administrative data on student-level service utilization for students who used SBHC services. The second was student responses to an epidemiological survey, the California Healthy Kids Survey (CHKS), of protective factors and health risk behaviors, administered to all students at the high school. The CHKS includes indicators of current psycho-social distress and school context. Extensive psychometric analysis of the has demonstrated that the secondary school scales exhibit evidence of good internal consistency ($\alpha > 0.70$), construct validity, and measurement equivalence across racial groups; the authors conclude that the survey is "appropriate as an epidemiological tool" to assess general prevalence rates of risk and resilient behavior" (Hanson and Kim 2007, p. 11). The survey yielded an 88% response rate. The third data source was archival educational records provided by the school district. These included indicators of academic performance and socio-demographic characteristics for all students enrolled in the high school during the year of interest.

Sample

The overall sample was racially, ethnically and socioeconomically diverse (see Table 1). More than half of the sample identified as Asian, 17% identified as Hispanic or Latino, and 13% of the students identified as Black. More than 60% of the sample qualified for free

Table 1 Descriptive and bivariate results of SBHC utilization by type of service

Variable	All students (n = 658) (%)	Never used (n = 370) (%)	Any use[a] (n = 288)		Behavioral health counseling[a] (n = 64)		General counseling[a] (n = 129)		Medical[a] (n = 139)	
			%	OR	%	OR	%	OR	%	OR
Asian	52.7	63.8	38.5	0.356***	40.6	0.39***	40.3	0.38***	38.9	0.36***
Black	12.9	6.8	20.8	3.63***	23.4	4.22***	23.3	4.18***	21.6	3.80***
Latino	17.2	10.8	25.4	2.80***	28.1	3.23***	27.9	3.19***	21.6	2.27*
Other	4.9	4.9	4.9	0.999	3.1	0.63	1.6	0.38	3.6	0.73
White	4.4	3.2	5.9	1.87	4.7	1.47	4.7	1.46	8.6	2.82*
Female	50.2	46.8	54.5	1.36*	67.2	2.33**	67.4	2.36***	57.6	1.54*
Not living with both parents	45.4	37.6	55.6	2.08***	57.8	2.28**	61.2	2.63***	57.6	2.25***
Free and reduced lunch	61.7	61.1	62.5	1.06	67.2	1.30	63.6	1.11	64.0	1.13
Special education	9.4	4.1	16.3	4.62***	15.6	4.38**	9.3	2.43*	23	7.08***
Not English proficient	9.6	7.0	12.9	1.95*	10.9	1.62	9.3	1.36	14.4	2.22*
Any early substance use	27.4	26.0	30.6	1.18	32.8	1.39	34.9	1.53	25.1	0.96
Sad/depressed	26.7	21.3	35.0	1.99***	48.9	3.53***	40.2	2.48**	37.0	2.16**
Suicidal ideation	16.6	13.6	21.3	1.73*	35.7	3.53***	21.4	1.73	23.9	1.99*
	Mean (SD)	Mean (SD)	Mean (SD)	Cohen's D	Mean (SD)	Cohen's D	Mean (SD)	Cohen's D	Mean (SD)	Cohen's D
Age	15.9 (1.2)	16.0 (1.2)	15.8 (1.2)	−0.17	15.9 (1.2)	−0.08	16.0 (1.2)	0.00	15.6 (1.1)***	−0.34
Previous year GPA	2.9 (.86)	3.2 (.73)	2.6 (.89)***	−0.75	2.7 (.93) *	−0.66	2.6 (.93)***	−0.76	2.6 (.85)***	−0.78
Previous year Tardies	15.2 (20.3)	10.4 (15.0)	21.6 (24.1)***	0.57	24.2 (26.9) *	0.80	24.0 (28.1)***	0.71	20.1 (22.5)**	0.56
Previous year absences	3.0 (5.0)	1.9 (3.0)	4.4 (7.0)***	0.49	4.2 (6.0)***	0.64	4.7 (5.4)***	0.74	4.6 (5.8)***	0.68
Perceptions of school climate	2.7 (.71)	2.8 (.66)	2.7 (.77)*	−0.14	2.7 (.75)	−0.15	2.6 (.82)	−0.28	2.6 (.81)*	−0.28
Violence perpetration	0.15 (.32)	0.12 (.31)	0.20 (.35)*	0.24	0.14 (.30)	0.06	0.25 (.42)**	0.38	0.17 (.29)	0.16
Violence victimization	0.26 (.44)	0.22 (.42)	0.32 (.47)*	0.23	0.43 (.54)**	0.48	0.37 (.54)	0.33	0.32 (.48)	0.23
Current substance use	0.09 (.27)	0.06 (.19)	0.13 (.35)**	0.26	0.09 (.25)	0.15	0.15 (.34)**	0.38	0.11 (.35)	0.21

Table 1 (continued)

	Mean (SD)	Mean (SD)	Mean (SD)	Cohen's D	Mean (SD)	Cohen's D	Mean (SD)	Cohen's D	Mean (SD)	Cohen's D
Problems w alcohol or drugs	0.34 (1.2)	0.21 (.79)	0.54 (1.6)**	0.27	0.76 (2.0)***	0.52	0.64 (1.6)***	0.41	0.51 (1.7)*	0.27
Experience w alcohol or drugs	0.30 (1.2)	0.18 (.87)	0.49 (1.5)**	0.26	0.84 (2.3)**	0.55	0.61 (1.8)**	0.36	0.46 (1.4)*	0.27

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

[a]Compared to never used services

or reduced lunch. Twenty-six percent of the sample reported depression and about 17% reported suicidal ideation.

Dependent Variables

SBHC Utilization

Student-level service utilization was based on provider-reported service use documentation in the SBHC record. The study measured service utilization in two ways, including a dichotomous variable indicating any use over the time period, and three, non-mutually exclusive, dichotomous variables indicating whether the student received three core services (i.e., medical services, general counseling, and/or behavioral health counseling). Medical services include first aid and other medical services or referrals to services outside the school (e.g., reproductive health) provided by a school nurse. Two types of counseling services are provided: behavioral health counseling with a licensed clinician and general counseling with non-licensed clinicians. Behavioral health counseling with licensed clinicians is provided by clinicians who work in the SBHC full time but that are hired by one community-based agency that provides clinical supervision, rather than the school district. General counseling with non-licensed clinicians can include several SBHC employees, such as social workers, and non-licensed clinicians, or external behavioral health providers brought into the schools to provide specialized services or groups.

Independent Variables

Demographic Characteristics

This study included indicators of the following background characteristics from students' educational records: student age, whether the student was female (versus male), student racial background (Latino versus not Latino, African-American versus not African-American, White versus not White, other race versus not other race, and Asian versus not Asian), living situation (whether a student lived with both parents or not), and whether or not in the student was enrolled in the free/reduced lunch program.

Academic Characteristics

Prior School Performance and Academic Characteristics Previous year (2011–2012 school year) attendance was measured using total number of missed school days and total number of tardies in a student's record from the previous school year. In addition, we included the average of first and second semester grade point averages from the 2011–2012 school year. Finally, we included dichotomous indicators of whether the student participated in special education services and whether the student was identified as proficient in English.

Perception of the Learning Environment Given that school contextual features have been implicated as a correlate of service utilization, ten items were summed and averaged to create a scale that measures the students' perceptions of the learning environment at their school (e.g., "Adults at this school treat all students with respect; This school promotes academic success for all students; etc.). Likert scale responses ranged from

strongly disagree to strongly agree. The scale ranged from 1 to 5. Prior research found that this group of items was internally consistent (α = 0.93) and did not vary by sample (e.g., gender, grade, or school) (WestEd 2011).

Indicators of Psycho-Social Distress

Internalizing Problems The study used student responses to the following items as indicators of sadness/depression and suicidal ideation: "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more that you stopped doing some of your usual activities?" "During the past 12 months, did you ever seriously consider attempting suicide?" Responses were yes or no.

Early Substance Use Students were classified as either reporting early alcohol and substance use at least 1 year before their current age (coded 1), or no early drug and alcohol use (coded 0).

Current Substance Use The current substance use scale summed and averaged 15 items to measure tobacco, alcohol, or other drug use in the past 30 days. The responses ranged from 0 to 5 (0 = 0 days, 1 = 1 day, 2 = 2 days, 3 = 3–9 days, 4 = 10–19 days, and 5 = 20–30 days). Prior research found that this group of items was internally consistent (α = 0.91) and did not vary by sample (e.g., gender, grade, or school) (WestEd 2011).

Experience with Substance Use The experiences with substance use scale was measured based on a summed composite of students' responses (response categories ranged from (0 = 0 days, 1 = 1 day, 2 = 2 days, 3 = 3–9 days, 4 = 10–19 days, and 5 = 20–30 days) to 15 items tapping substance use: "On how many days did you: Use alcohol or drugs a lot more than you intended, spoke with someone about reducing or stopping use, etc."). No studies have analyzed the psychometric properties of this scale, but it is feasible that this item assesses more detailed experiences with substance use, which may be related to service need (Anyon 2012; Anyon et al. 2013a). The Cronbach's alpha for this scale based on the current sample was (α = 0.79).

Problems Related to Substance Use To develop "problems related to substance use" scale 11 items were combined into a summed composite (e.g., "Has the use of alcohol, marijuana, or other drugs caused you any of the following problems?" emotions, nerves, or mental health; get into trouble or have problems with the police; get into trouble at school, etc.). No studies have analyzed the psychometric properties of this scale, but it is feasible that this item assesses issues related to substance use, which may be related to service need (Anyon 2012; Anyon et al. 2013a). The Cronbach's alpha for this scale based on the current sample was (α = 0.83).

Violence Perpetration Seven items were summed to create a scale to measure violence perpetration in the past 12 months (e.g., been in a physical fight; damaged school property on purpose; etc.) Response categories ranged from 0 to 3 (0 = 0 times, 1 = 1 time, 2 = 2–3 times, 3 = 4 or more times). Prior research found that this group of items was internally consistent (α = 0.71) and did not vary by sample (e.g., gender, grade, or school) (WestEd 2011).

Violence Victimization Eleven items were summed to create a scale that assessed victimization, harassment, and bullying in the past 12 months (e.g., "how many times on school property have you been pushed, shoved, slapped, hit; been afraid of being beat up, etc."). Responses ranged from 0 to 3 (0 = 0 times, 1 = 1 time, 2 = 2–3 times, 3 = 4 or more times). Prior research has found that this group of items was internally consistent ($\alpha = 0.81$) and did not vary by sample (e.g., gender, grade, or school) (WestEd 2011).

Analytic Approach

Bivariate analysis (Chi square and T-tests) and multivariate logistic regression were used to estimate the relationships between student level variables and indicators of service utilization.

Missing Data

In total, twelve percent of students did not complete the survey. Analysis of this pattern of non-response suggested that a significant proportion of this non-response was due to randomly skipped questions. In short, the non-response was not due to absence from survey administration, but due to non-response within the survey and did not differ by student background characteristics. We were also able to make use of administrative records to investigate this and we did not find any differences between groups. Because these item level responses could be assumed to be missing at random, we used information from other known survey items to create a predicted item response via regression estimates. Those predicted scores were used in the analysis given that no differences were observed in results between analyses that utilized versus did not utilize imputation. Following Allison (2002), dichotomized flags (indicating missing data versus not on a given variable) were utilized to retain data for 9th graders (who did not have prior year school performance data), as well as for other variables from the CHKS survey data to retain missing data.

Results

Descriptive and Bivariate Analysis Results

Table 1 provides a summary of bivariate relationships between demographic characteristics, academic indicators, and psychosocial risk and protective factors, and SBHC service use by type. Differences between users of SBHCs and non-users are related to race, special education eligibility, English proficiency, depressive symptoms, previous year GPA and attendance, violence victimization and perpetration, and substance use. Users and non-users of SBHCs did not differ by age or free and reduced price lunch status. Previous year GPA and attendance was the most consistent difference between users and non-users of all types of SBHC services.

Table 2 Correlates of SBHC utilization by any use and type of services used

Model	Any use (n = 288)	Behavioral health counseling (n = 64)	General counseling (n = 129)	Medical services (n = 139)
	OR (SE)	OR (SE)	OR (SE)	OR (SE)
	(1)	(2)	(3)	(4)
Demographics				
Race (ref group = Asian)				
Black	2.50 (0.81)**	4.07 (2.24)*	2.59 (1.03)*	2.23(0.95)
Latino	1.98 (0.56)*	2.64 (1.25)*	2.03 (0.73)*	1.28 (0.52)
White	1.69 (0.78)	2.96 (2.48)	1.96(1.26)	2.53 (1.39)
Other race	1.09 (0.45)	1.03 (0.87)	0.26(0.22)	0.87(0.52)
Age	0.91 (0.07)	1.00 (0.16)	1.05(0.11)	0.73 (0.08)**
Free and reduced lunch status	1.07 (0.21)	1.32 (0.47)	0.96(0.25)	1.359(0.35)
Female (ref group = male)	1.37 (0.27)	1.74 (0.63)	2.56 (0.69)***	1.65(0.44)
Not English proficient (ref group = English proficient)	1.47 (0.49)	1.48 (0.98)	1.63(0.77)	1.71(0.70)
Not living w both parents[a] (ref group = living with both parents)	1.03 (0.22)	1.00 (0.39)	1.21(0.35)	1.19(0.34)
Academic characteristics				
Special education	3.34 (1.17)***	3.34 (1.96)*	1.28(0.65)	4.29 (1.71)***
11/12 GPA	0.66 (0.11)*	1.08 (0.32)	0.75(0.17)	0.71 (0.15)
11/12 absences	1.05 (0.03)	1.03 (0.04)	1.05(0.04)	1.06(0.03)
11/12 tardiness	1.01 (0.01)	1.02 (0.01)	1.01(0.01)	1.00(0.01)
Perceptions of school climate[a]	1.02 (0.16)	1.00 (0.32)	1.03(0.23)	0.79 (0.17)
Indicators of psycho-social distress				
Sadness/depression[a]	1.60 (0.43)	2.36 (1.12)	1.79(0.65)	1.53 (0.54)
Suicidal ideation[a]	1.36 (0.41)	2.39 (1.20)	1.10(0.46)	1.35(0.52)

Table 2 (continued)

Model	Any use (n = 288)	Behavioral health counseling (n = 64)	General counseling (n = 129)	Medical services (n = 139)
	OR (SE)	OR (SE)	OR (SE)	OR (SE)
	(1)	(2)	(3)	(4)
Early substance use[a]	0.97 (0.24)	1.30 (0.60)	1.28(0.42)	0.73 (0.25)
Problems with alcohol or drugs[a]	1.05 (0.16)	1.35 (0.38)	1.03(0.22)	1.13 (0.23)
Experiences with w alcohol or drugs[a]	1.06 (0.14)	1.16 (0.24)	0.97(0.17)	1.17 (0.20)
Current substance use[a]	1.18 (0.62)	0.27 (0.37)	1.53(1.09)	0.73(0.56)
Violence perpetration[a]	0.81 (0.34)	0.11 (0.12)*	1.12(0.61)	1.08(0.58)
Violence victimization[a]	1.58(0.45)	2.81 (1.44)*	1.68(0.61)	1.31(0.51)
Constant	1.6 (2.41)	0.01(0.02)	0.03(0.05)	50.06 (102.3)
N	658	434	499	509
Pseudo R-squared	0.17	0.25	0.21	0.15

Exponentiated coefficients; Standard errors in parentheses

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

[a]Missing flags were included in the analysis but removed from the table

Multivariate Results Related to Service Utilization

Table 2 simultaneously considers the relationship between student demographic, academic performance and psycho-social characteristics and any use of school-based services and type of service. African American and Latino students were more likely to use any services. This general pattern held only for behavioral health and general counseling, but not for medical services. In addition, special education participation was associated with greater levels of any utilization, behavioral health, and medical service utilization. Interestingly, only two indicators of student psycho-social distress—violence victimization and perpetration—were related to receipt of behavioral health services.

Discussion

This study confirmed that students within one school who use SBHC services differ in important ways from students who do not use services as a function of demographic characteristics, psychosocial risk and protective factors, and academic needs. In addition, differential patterns of student characteristics are associated with use of specific services. Multivariate analysis found race (being Black or Latino) and special education participation to be the most consistent predictors of any SBHC service use, which is similar to previous research (Amaral et al. 2011; Anyon et al. 2013a, b; Walker et al. 2010). Although the likelihood of White students' service use compared to that of Asian students' was not statistically significant, youth from Black and Latino racial groups were significantly more likely than Asian students to report using services for all service types, except medical services. SBHC users were also more likely to have lower grades and to be participating in special education services, which was also consistent with previous research (Daly et al. 2014; Walker et al. 2010). Contrary to previous research, however, we only found an association between indicators of psychosocial distress and behavioral health counseling (Anyon et al. 2013a). These findings suggest that other factors related to race, beyond epidemiologically defined "need," may be contributing to patterns of service use.

Our findings suggest that controlling for differences in characteristics that select students into specific types of services, beyond demographic characteristics, is warranted and provides specific empirical evidence that is consistent with calls to move away from unitary or global measures of service utilization (Geierstanger et al. 2004). Results suggest that these unitary measures obscure important differences within users. It also suggests that previous efforts to estimate selection into treatment considering only student demographic and school performance characteristics may not be sufficient to adjust for differences between users and non-users (see Bersamin et al. 2016).

Our findings related to behavioral health need-related correlates of SBHC use raise interesting questions. In contrast to community-based settings, where youth most often enter services because of their parents' initiative, teachers and administrators serve as the primary referral sources for SBHC services (Foster et al. 2005; Srebnik et al. 1996). Referrals often determine who is served by SBHC because youth rarely seek help based on their own initiative (Jonson-Reid et al. 2004). Parents, adolescents, and school staff members often have different views of student behaviors and likely have different motivations for encouraging youth to seek mental health services, so it follows that referral and help-seeking patterns might be different in SBHCs than in community-based mental health services

(Anyon et al. 2013b; Guo et al. 2013). These unique service dynamics must be considered in light of a growing body of empirical literature that has established school staff members' perceptions of students' mental health concerns are often racially and culturally biased. School staff members tend to initiate referrals in response to disruptive behavior, learning difficulties, and truancy, not the full range of problems that constitute need for health services (Guo et al. 2013; Jonson-Reid et al. 2004). It is, thus, essential that SBHCs systematically document reasons for student referrals to SBHC services to inform a better understanding of the range of reasons why teachers and other school staff refer students to services in school settings.

Limitations and Directions for Future Research

This study found a variety of differences between students who used SBHC services and students who do not use SBHC services. However, in the absence of available diagnostic measures of health or mental health service need, student self-report measures were used as indicators of psycho-social distress. Future research should incorporate standardized and diagnostic measures of service need.

In addition, this study was unable to ascertain students' pathways and engagement in services. Research has demonstrated that students have multiple ways of accessing SBHC services (Amaral et al. 2011; Guo et al. 2013). Referral indicators were not available because this particular SBHC does not keep systematic records of student referrals. Therefore, student referral source and reasons may be key variables that select students into SBHC services. More research on the role of referrals is warranted and would likely complement information gained from diagnostic measures of need. The cross-sectional design of the study is a further limitation in understanding the full pattern of service use over a student's academic career.

Further, the procedures used to assign students to service categories (i.e., medical, general counseling, behavioral counseling) are often defined by the availability of SBHC staff. Fine grained information about SBHC personnel was not available in these service utilization records. Although data informative of overall SBHC service configuration is not regularly captured in service utilization data, this information would be useful to collect and include in future analyses.

The generalizability of these results is limited given that only one school was included in the study, however these service use patterns are representative of district-wide SBHC utilization (Anyon et al. 2013a, b, 2014). Services delivered in this high school are similar to the services provided through SBHCs at 15 high schools in the district, whose most utilized services include behavioral health counseling, general counseling, medical and nursing services. In addition, service utilization patterns by school are similar by percentage of student population who use services similar as well as demographic characteristics (e.g., gender, race, etc.). Although it was helpful to constrain the variability of school context to better understand the service use patterns by student characteristics, student psychosocial distress, and service type, this approach is also likely to have limited the generalizability of the study. Previous research on all 15 SBHCs in this district found that outcomes (e.g., school-based assets, grades, attendance) related to services use varied by school (Stone et al. 2013). On the other hand, scholars increasingly acknowledge understanding within school service configurations provide much needed to local, indigenous school mental health and related resources. This finding suggests that future SBHC research should both

attend to within school and across school variation in service provision and utilization (Atkins et al. 2010).

Despite these important limitations, this study moved beyond single sources (e.g., student survey data) to multiple data sources to better understand factors contributing to service utilization. In addition, this study answered calls in the literature to unpack the types of services included in SBHCs and found that students also differ depending on the type of services used (Bersamin et al. 2016). This study also added additional findings that race is a significant predictor of SBHC service utilization. Additional research is needed to understand which factors contribute to racial disproportionality in school-based service utilization.

Conclusion

Although attending to these prior limitations is important to appropriately targeting SBHC services, future studies must also attend to unique characteristics of services in order to minimize sources of selection bias when estimating the impact of SBHCs on student outcomes. Given documented differences between students who use and do not use services, current efforts to measure student outcomes related to SBHCs usually focus on methods or statistical techniques that control for these potential sources of selection bias (Daly et al. 2014; Pullmann et al. 2013; Stone et al. 2013). Recent studies of SBHCs have utilized propensity score matching to create comparison groups of matched students who did not use SBHC services (Daly et al. 2014; Stone et al. 2013; Walker et al. 2010). Scholars in this area emphasize gaining understanding of how students or schools select into services and urge for more rigorous innovation in design to generate robust estimates of effects. Although these selection issues are applicable to all outcome domains, significant barriers to the collection of and linkage of SBHC service and utilization data and educational data cannot be overemphasized, ranging from significant financial constraints as well as federal and school district regulations regarding privacy of student data (Geierstanger et al. 2004; Keeton et al. 2012).

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This study was approved by the [removed for peer review] for the Protection of Human Subjects (Protocol: 2012-12-4884).

Informed Consent Parents were notified about the administration of the California Healthy Kids Survey at their child's school and were invited to return an opt-out form in the event that they did not want their child to participate in the survey. All data was delivered to the researcher in a deidentified format.

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