

The Role of School Health Centers in Health Care Access and Client Outcomes

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School-based and school-linked health centers (hereafter “school health centers”) represent a model of care that responds to the unique physical and mental health issues of adolescents by offering care in an accessible, youth-friendly environment. Studies have found that access to school health centers increases use of primary care, reduces use of emergency rooms, and results in fewer hospitalizations.^{1–3} School health centers also expand access to and quality of care for underserved adolescents; one study found that school health center users were more likely than were traditional outpatient clients to have received primary and preventive care services despite the fact that they were less likely to be insured.⁴ Furthermore, adolescents with alternate forms of health care report high degrees of comfort-seeking care at school health centers.⁵

Adolescent mental health outcomes have also improved because of school health centers. Studies have shown a significant decline in depression among students who received school health center mental health services⁶ and a reduced likelihood of suicide ideation among students attending schools with school health centers.⁷ Studies have also documented the positive impact of school health centers on reproductive health outcomes,⁸ including improved contraceptive use.⁹

Although research has demonstrated how the school health center model of care can affect health access and outcomes, many studies have been limited by relatively small sample sizes. Collecting uniform outcome data from larger coalitions of school health centers is challenging, given the obstacles of different school districts, community health providers, service structures, and data confidentiality regulations. Our aim was to demonstrate the impact of 12 school health centers on clients’ access to care, satisfaction, and reproductive and mental health outcomes. We incorporated data collection from both client and provider perspectives through a standardized evaluation

Objectives. We describe the impact of school health centers in Alameda County, California, on adolescents’ access to care and their mental and physical health outcomes.

Methods. We used a multimethod evaluation of 12 school health centers to track data on clients (n=7410), services, and provider-reported outcomes; client pre–post surveys (n=286); and student focus groups (n=105 participants).

Results. School health centers were the most commonly reported source of medical (30%), family planning (63%), and counseling (31%) services for clients. Mental health providers reported significant improvements ($P<.05$) from baseline to follow-up in clients’ presenting concerns and resiliency factors. Medical providers and clients also reported general improvements in reproductive health, particularly in the use of birth control other than condoms. Student focus group participants noted that school health centers helped improve access to services students might not seek out otherwise, particularly counseling and family planning services. Furthermore, students noted that they liked school health centers because of their confidentiality, free services, convenience, and youth-friendly staff.

Conclusions. School health centers increase access to care and improve mental health, resiliency, and contraceptive use. (*Am J Public Health.* 2010; 100:1597–1603. doi:10.2105/AJPH.2009.186833)

process that documents services provided, as well as provider assessments of 2 outcome measures that school health centers have been known to affect: reproductive health and mental health.

METHODS

Established in 1996 by the Alameda County (California) Health Care Services Agency, the Alameda County School Health Services Coalition seeks to improve adolescent health by providing base funding and building the capacity of 12 comprehensive school health centers located on 1 middle school and 11 high school campuses, operating in 6 school districts.

The school health centers offer 16 to 40 hours of medical, mental health, and health education services per week, as well as a variety of development programs for youths. School health center staff include physicians, midlevel practitioners, and medical assistants, and mental health providers include clinical

supervisors, therapists, and substance abuse cessation staff. All practitioners provide internal referrals to onsite services, as well as external referrals to community health services. School health center enrollment requires active parental or guardian consent; however, California law allows adolescents to access “sensitive services,” including reproductive health services and alcohol and drug counseling, without parental consent.¹⁰ As a condition of funding, coalition members must provide a minimum level of services at their site and participate in a standardized evaluation.

Since 1997, the University of California, San Francisco, has worked closely with the coalition’s school health centers to develop a set of evaluation indicators, establish common evaluation tools, and collect and analyze data. Results have been used to refine program outcomes and to make programmatic modifications.

Our evaluation study used both qualitative and quantitative methods. First, all school health center providers completed standardized Medical and Health Education Encounter

Forms and Mental Health Encounter Forms to document clients' demographics, the services provided, and clients' outcomes. School health center staff entered this information into Clinical Fusion¹¹ (2001/02–2007/08) or Efforts to Outcomes¹² (2008/09) software. Data were provided to us in a de-identified format and reported in the aggregate. We analyzed provider-reported clinic data from 7410 clients who made 39754 visits in 2008–2009.

To track impact data, mental health providers recorded the status of clients' presenting concerns and resiliency factors on Mental Health Encounter Forms at every visit. This list of presenting concerns and resiliency factors was based on a review of the adolescent mental health and resiliency literature and on feedback from mental health providers at the 12 school health centers. Providers were asked to rate the client on each of these factors, based on their clinical expertise. We examined only the data of clients with at least 3 mental health visits by comparing their "baseline visit" (first mental health visit between July 2008 and March 2009) and their "follow-up visit" (last visit, at least 3 months after the baseline visit). If clients were missing provider-reported data at baseline or follow-up, they were excluded from the analysis. Youths qualifying for inclusion in the sample made an average of 17 visits each (range=4–184; SD=16.2).

During each family planning visit, medical and health education providers used Medical and Health Education Encounter Forms to record data related to clients' reproductive health behaviors. We examined only the data of female clients with at least 3 family planning visits by comparing their "baseline visit" (first visit between July 2008 and March 2009) and their "follow-up visit" (last visit, which occurred at least 3 months after the baseline visit). If clients were missing provider-reported data at baseline or follow-up or if gender was not documented, their data were excluded from the analysis. The average number of visits for clients included in this analysis was 6 (range=2–24 visits; SD=3.2). We also calculated a mean score for these questions by assigning the following values to the response options: never=1, rarely=2, sometimes=3, most times=4, always=5.

A second data collection method was a pre-post client survey, which clients completed at the first visit of the year and at follow-up (2.5 to 4 months later) to assess satisfaction and health outcomes from their perspective. Clients received a \$10 gift card for the follow-up survey. The analysis included 286 matched surveys administered during a 3-year period (n=89 in 2006–2007, n=97 in 2007–2008, and n=100 in 2008–2009). A 3-year data collection period was used to increase the power of the study sample.

We analyzed clinic and client survey data with SAS version 9.2 (SAS Institute, Cary, NC), using descriptive statistics and the χ^2 test or the *t* test for significance. Missing data were excluded from all analyses, unless noted otherwise.

Lastly, focus groups were used to obtain qualitative data. Twelve focus groups were conducted with 105 students. Two gender-specific focus groups, consisting of both school health center users and nonusers, were held at 6 school health centers in May and June 2009. Group sizes ranged from 7 to 12 participants. To recruit participants, school health center staff posted flyers at the school and school health center and made announcements in various group settings. To participate, students were required to submit a consent form signed by both themselves and their parents or guardians. S.S., S.K., and 4 research assistants moderated the groups and took notes. At the completion of each focus group, students received \$20 for their participation. Participants in all groups consented to having the discussions audio-recorded, and the recordings were used to supplement notes taken during the discussions.

During data analysis, notes were reviewed for consistency and clarity, with use of recordings as needed. Data were analyzed by content to identify themes and salient points and to explore relationships among themes.¹³ Themes were summarized and reported based on the number of participants within and across groups that mentioned the topic and how much discussion the topic generated.

RESULTS

The following is a summary of the results from the 3 evaluation data sources: provider-reported

clinical data, pre-post client survey data, and focus group data.

Provider-Reported Clinic Data Findings

The majority of school health center clients were female, and the client population was racially diverse. Insurance status was known and documented for 62% of clients (n=4561), with government and private sources being most common (Table 1).

School health center visits. From the 2006–2007 school year to the 2008–2009 school year, the number of clients increased from 6624 to 7410 and visits increased from 27078 to 39754. On average, clients made 5.4 visits each in the 2008–2009 school year.

In the 2008–2009 school year, 33% of client visits were for medical care (n=13060), 27% (n=10650) for mental health, 25% (n=9904) for first aid, and 15% (n=6107) for group visits. Medical services were defined as triage, comprehensive health assessments, screenings, treatment and management, and referrals to other school health center services and primary care physicians. Mental health services were defined as primary prevention; individual, family, and group therapy; crisis intervention; clinical case management; psychiatric consultation; and linkages to external providers. Group visits primarily consisted of group health education, support groups, peer educator trainings, and ongoing youth leadership and development programs.

Medical services. Of the services received during medical visits in the 2008–2009 school year, 55% (n=11310) were for family planning, 24% (n=4928) were for other medical services (e.g., sports physicals and chronic disease management), and 20% (n=4147) were for health education. During their first medical and health education visits, the vast majority of clients were screened for sexual activity (90%; n=4155), tobacco use (85%; n=3910), marijuana use (80%; n=3716), and feeling unsafe in the school, home, or community (83%; n=3817).

Mental health services. The most common reasons for referrals to mental health services for new or returning clients (n=1239) were for academic performance (33%; n=415), family conflicts (33%; n=403), depression or suicide ideation or attempt (31%; n=378), peer relationships (30%; n=367), anxiety or

TABLE 1—Demographics of Student Clients Using School Health Centers, by Data Source: Alameda County, CA, 2008–2009

	Provider-Reported Clinic Clients, No. or No.(%)	Pre-Post Client Survey Respondents, No. or No. (%)	Focus Group Participants, No. or No. (%)
Sex			
Male	2764 (37)	50 (17)	54 (51)
Female	4636 (63)	236 (83)	51 (49)
Missing data	10 (0)	0 (0)	0 (0)
Total	7410	286	105
Race			
Non-Hispanic African American	2480 (33)	98 (34)	38 (36)
Hispanic	1883 (25)	86 (30)	30 (29)
Asian/Pacific Islander	1152 (16)	47 (16)	21 (20)
Non-Hispanic White	748 (10)	18 (6)	3 (3)
Biracial or multiracial	387 (5)	22 (8)	11 (10)
Other	285 (4)	15 (5)	2 (2)
Missing data	475 (6)	0 (0)	0 (0)
Total	7410	286	105
Client insurance			
Private	1591 (21)	83 (29)	...
Medi-Cal ^a or other government insurance	2141 (29)	54 (19)	...
No insurance	735 (10)	13 (5)	...
Other	95 (1)
Not sure or unknown	2811 (38)	76 (27)	...
Missing data	37 (0)	60 (21)	...
Total	7410	286	...

Note. All data are from 2008/09, except for pre-post client survey data, which are from 2006 through 2009. Ellipses indicate that data are not available.

^aMedi-Cal is California's Medicaid program.

adjustment (i.e., maladaptive reaction to an identifiable stressful life event [23%; n=279]), and anger management (21%; n=260). The most common mental health service provided was individual therapy (38%; n=4393). Other types included intake or assessment (16%; n=1790), collateral contacts with clients' significant support persons (12%; n=1440), and case management or brokerage (11%, n=1256). More than 1 service could be provided per visit, and the type of service was not documented for 499 visits.

Referrals to other needed services after initial service. Of the 1528 clients who received mental health services, 42% (n=643) also received school health center medical services. Of clients whose initial school health center visit was for first aid, 22% (n=487) subsequently returned for a medical, mental health,

or group visit. Of the clients who returned, 50% (n=243) returned for a medical visit, 21% (n=104) for a mental health visit, and 7% (n=34) for a group visit. An additional 22% (n=106) returned for more than 1 type of visit.

Impact on mental health outcomes. Mental health providers reported significant improvements ($P<.05$) from baseline to follow-up in 9 of 12 documented presenting concerns: anxiety or nervousness; depression or sadness; eating disorders; grief, loss, or bereavement; oppositional, defiant behavior, or anger management problems; relationship issues or conflict; self-injury; substance abuse; and suicidal ideation or attempt. The presenting concerns that did not improve significantly over time were identity issues, school behavior or academic performance issues, and posttraumatic stress disorder (Table 2).

Providers also reported significant improvements ($P<.05$) from baseline to follow-up in 3 of 5 documented resiliency factors: expressing feelings and emotions in healthy ways, expressing a sense of hope for one's life or future, and involvement in organized recreational or vocational activities. There were no significant changes in reports of clients being motivated to participate in counseling or of clients attending school regularly and applying themselves (Table 2).

Impact on reproductive health behaviors. Medical and health education providers reported a significant improvement ($P<.001$) from baseline to follow-up in the use of birth control other than condoms (from 14% [n=55] to 40% [n=153] "always" using) among female clients. The mean score for this behavior increased from 1.72 to 2.87 (from "rarely" to "sometimes"). There was also a significant improvement ($P<.001$) from baseline to follow-up in the use of condoms with another form of birth control (from 5% [n=18] to 10% [n=38] "always" using). The mean score for this behavior increased from 1.41 to 1.93 (from approximately "never" to approximately "rarely"). There was a significant decrease ($P<.001$) reported in condom use in the past month (from 35% [n=138] to 25% [n=98] "always" using). The mean score for this behavior declined from 3.5 to 3.08 (from approximately "most times" to approximately "sometimes"; Table 3).

Pre-Post Client Survey Findings

The majority of respondents were female (83%; n=236), which represented a larger percentage than in the overall clinic population (63%; n=4636). Respondents' ethnic backgrounds reflected the general clinic population; however, Hispanics were slightly overrepresented and Whites slightly underrepresented in the survey sample (Table 1).

Usual sources of care. The school health center was the most commonly reported source for medical care (30%; n=84), family planning services (63%; n=177), and counseling (31%; n=85). Other "usual" sources of medical care included Kaiser Permanente, a local health maintenance organization (21%; n=60); doctor's office or community clinic (10%; n=27); and another hospital (10%, n=27). Very few clients (2%; n=7) reported that they did not get medical care when they

TABLE 2—Provider Assessments of Baseline and Follow-Up Mental Health Status of Student Clients Using School Health Centers: Alameda County, CA, 2008–2009

	No.	Baseline Score	Follow-Up Score	P ^a
Presenting concerns^b				
Anxiety or nervousness	376	1.03	0.79	<.001
Depression or sadness	378	1.32	0.99	<.001
Eating disorders	357	0.15	0.07	.002
Grief, loss, or bereavement	374	0.72	0.45	<.001
Identity issues	364	0.29	0.26	.334
Oppositional, defiant behavior, or anger management problems	374	0.75	0.58	<.001
Relationship issues or conflict (family, peers, partners)	383	1.50	1.19	<.001
Posttraumatic stress disorder	363	0.25	0.21	.266
School behavior or academic performance issues	386	1.07	1.04	.638
Self-injury (cutting, pulling out hair, gouging, and so on)	362	0.12	0.04	.003
Substance abuse (alcohol or drugs)	363	0.26	0.19	.046
Suicidal ideation or attempt	361	0.18	0.08	.003
Resiliency factors^c				
Attending school regularly and applying self at school	355	1.55	1.45	.051
Expressing feelings and emotions (sadness, anger, and so on) in healthy ways	356	1.26	1.40	.003
Expressing a sense of hope for his or her life or future	349	1.50	1.62	.008
Involved in organized recreational or vocational activities	349	1.01	1.17	.004
Motivated to participate in counseling for himself or herself	355	1.86	1.83	.447

^aP for difference between baseline and follow-up score (significant at <.05).

^bClient was asked on the day of the visit if he or she had any of the given problems or concerns. Scoring was as follows: no longer a problem or not available=0, somewhat a problem=1, a problem=2, very much a problem=3.

^cClient was asked on the day of the visit if each of the given statements regarding resiliency was true. Scoring was as follows: not true=0, somewhat true=1, true=2, very true=3.

needed it and few (2%; n=5) reported using an emergency room for medical care. However, approximately 1 in 10 clients (11%; n=30) reported that they did not get needed mental health services through any source (Table 4).

Impact on reproductive health behaviors. Most respondents had previously had sexual intercourse at both presurvey (70%; n=193) and postsurvey (74%; n=204). The most commonly reported birth control method by sexually active females at last sexual

encounter was condoms, and use of this method increased significantly ($P<.001$) from presurvey (48%; n=78) to postsurvey (65%; n=105). Reported birth control pill use by females also increased significantly ($P<.001$), from 7% (n=11) to 23% (n=37). Use of other methods, including “no method,” did not change significantly.

Clients’ report of other impacts. Most postsurvey respondents “agreed” or “strongly agreed” that the school health center helped them get information and resources they needed (94%; n=264), get help sooner than they would have otherwise (88%; n=251), and get access to services they would not have received otherwise (80%; n=225). Respondents also reported that the school health center helped them to improve a variety of health behaviors and academic indicators, including using protection more often when they had sex (81%; n=230), eating better or exercising more (60%; n=168), staying in school (59%; n=167), and dealing with stress or anxiety better (59%; n=166; Table 5).

Reasons clients liked school health centers. Respondents reported in the postsurvey that they chose to use the school health center for the following reasons: privacy or confidentiality (62%; n=177), convenient location (56%; n=159), they liked the staff (45%; n=130), free services (45%; n=130), convenient hours (43%; n=122), it was the only place they knew of (10%; n=29), teacher or school staff referrals (7%; n=21), and other reasons, such as proximity or comfort (6%; n=16). Nearly all postsurvey respondents “agreed” or “strongly agreed” that the school health center staff were

TABLE 3—Percentage of Female Student Clients of School Health Centers Using Birth Control at Baseline and Follow-Up, by Type of Birth Control Used: Alameda County, CA, 2008–2009

Past-Month Frequency of Birth Control Use (% of Time)	% Condom Use at Baseline (n=398)	% Condom Use at Follow-Up ^a (n=398)	% Birth Control Other Than Condoms Used at Baseline (n=384)	% Birth Control Other Than Condoms Used at Follow-Up ^a (n=384)	% Both Condoms and Other Form of Birth Control Used at Baseline (n=380)	% Both Condoms and Other Form of Birth Control Used at Follow-Up ^a (n=380)
Always (100%)	35	25	14	40	5	10
Most times (75%)	25	20	1	6	3	8
Sometimes (50%)	16	19	4	4	6	11
Rarely (25%)	5	10	2	3	2	9
Never (0%)	20	26	78	47	85	63

^aSignificant change from baseline to follow-up ($P<.001$).

TABLE 4—Usual Sources of Medical Care, Family Planning Care, and Counseling Care as Self-Reported by Student Clients of School Health Centers: Alameda County, CA, 2006–2009

Usual Source of Care	Clients Reporting Use of Medical Care, No. (%)	Clients Reporting Use of Family Planning, No. (%)	Clients Reporting Use of Counseling, No. (%)
School health center or school nurse	84 (30)	177 (63)	85 (31)
Did not need care	54 (19)	59 (21)	119 (43)
Kaiser Permanente	60 (21)	13 (5)	8 (3)
Doctor's office or community clinic	27 (10)	4 (1)	6 (2)
Another hospital	27 (10)	0 (0)	2 (<1)
Did not know	18 (6)	18 (6)	27 (10)
Did not get the care he/she needed	7 (2)	6 (2)	30 (11)
Emergency room	5 (2)	0 (0)	0 (0)
Planned Parenthood	0 (0)	3 (1)	1 (<1)

people they could go to for advice or information (94%; n=264) and that they were easier to talk to than were other doctors or nurses (89%; n=249).

Student Focus Group Findings

Compared with the ratio in the clinic population, there were more males in the focus group population. Clients' ethnic backgrounds were similar to those of the school health center clients (Table 1).

Reasons students liked school health center services. Participants reported liking the school

health center because it was free, confidential, convenient, and youth-friendly. They appreciated the staff because of their nonjudgmental care, ability to listen, and friendly dispositions. Many participants explained that because the school health center staff members were integrated in the school and were familiar, students might be more comfortable seeking care from the school health center than from another health facility. They felt strongly that school health center services were helpful and facilitated better health care for students.

Suggestions to improve student access. Participants explained that students who did not use the school health center (1) might not think they needed care, (2) received care elsewhere, or (3) did not know about the school health center and the services it offered. Many expressed concern about what other students would think if they saw them going to the school health center. To counter these barriers, participants suggested increased outreach to spread the word about the clinic, and use of more peer-provided services, youth development, and after-school activities to normalize involvement by youths with the school health center.

Suggestions to improve clients' satisfaction. Although participants said that wait times were longer at other clinics and that being able to seek care at school took less time out of their day, they still reported disliking waiting for appointments at the school health center. Additionally, they felt that larger waiting rooms and expanded clinic spaces would increase confidentiality and keep their health concerns more private. Students also wanted longer hours of school health center operation and increased provider availability.

DISCUSSION

Consistent with previous research,^{5,14–16} the Alameda County school health centers were able to overcome traditional barriers to care and serve ethnically and racially diverse clients, groups who experience the greatest likelihood of being uninsured or underinsured and who face the greatest barriers to care. Moreover, the majority of clients were screened for risk factors and received comprehensive primary care, consistent with medical guidelines.¹⁷ Research has shown that most youths generally do not receive screening or preventive counseling at rates consistent with clinical guidelines.^{18–20} Our findings demonstrate that school health centers can provide this necessary care. Additionally, adolescents are best served with improved and coordinated health systems that meet criteria highlighted by the National Academy of Sciences: accessibility, acceptability, appropriateness, effectiveness, and equity.²¹ This study points to the importance of developing systems of care, whether at school or nonschool settings, to improve adolescent health, including

TABLE 5—Impact of Use of School Health Centers as Self-Reported by Student Clients: Alameda County, CA, 2006–2009

Survey Statement ^a	Agree or Strongly Agree With Statement, No. (%)	Disagree or Strongly Disagree With Statement, No. (%)	Do Not Know Agreement or Statement Does Not Apply, No. (%)
Get information and resources I need	264 (94)	8 (3)	8 (3)
Get help sooner than I would otherwise	251 (90)	17 (6)	12 (4)
Use protection (like condoms, birth control) more often when I have sex	230 (81)	14 (5)	39 (14)
Get services I would not get otherwise	225 (80)	39 (14)	19 (7)
Feel safe talking about my problems	212 (75)	26 (9)	43 (15)
Eat better or exercise more	168 (60)	43 (15)	68 (24)
Stay in school	167 (59)	29 (10)	85 (30)
Deal with stress or anxiety better	166 (59)	47 (17)	69 (24)
Improve my grades	131 (47)	63 (22)	87 (31)
Get involved in leadership programs	114 (41)	70 (25)	96 (34)
Use tobacco, alcohol, or drugs less	108 (39)	72 (26)	98 (35)

^aClients were presented with the statement "The school health center has helped me to . . ." and asked to rate their agreement based on the services they had received.

integrated health promotion, disease prevention and management, physical and mental health services, and coordination as a means of eliminating health disparities.

Integration of Medical and Mental Health Services

The integration of physical health and mental health services, as well as overall convenience of location and services provided, enabled students to seek and receive a wide variety of on-site services. The staff's commitment to screen and refer students to available services also ensured that clients' diverse health needs were met. For students who might initially have come for a first-aid visit, school health center staff had the opportunity to actively engage and encourage them to return for subsequent medical, mental health, or group visits.

Meeting Mental Health Needs

We showed that approximately 1 in 10 clients (11%) did not get needed mental health services from any source, despite being registered school health center clients. Although this identifies a need for improvement, national data demonstrate an even higher unmet need. In 2007, among all adolescents with emotional, developmental, or behavior problems who needed mental health services, more than one third (34%) did not receive these services.²² Thus, the Alameda County school health centers were able to fill an important gap in access to mental health services.

Improving Reproductive Health Behaviors

As with previous research showing that school health centers can improve contraceptive use,⁹ the providers in this study reported a significant improvement in the use of birth control other than condoms and in the dual use of condoms and another form of birth control. The significant decrease in provider-reported past-month condom use after the adoption of hormonal methods has also been documented in other research.^{23,24} Additionally, the majority of clients (81%) reported in the client survey that the school health center helped them to use protection more often when they had sexual intercourse, which supports findings from another study that showed that adolescents who

used a school health center were more likely to have received preventive counseling on pregnancy and sexually transmitted infections and were also more likely to report that the care they received was helpful.²⁵

Conflicting Findings on Condom Use

There were conflicting results between the provider- and client-reported condom use data, pointing to the importance of collecting data through a variety of methods to untangle diverse perceptions. These conflicting perceptions may be due to the different time frames that were referenced ("last month" vs "last sexual encounter") or to the client survey's smaller sample size. Linking data from specific clients and providers may also be useful in ensuring that providers and clients are in greater concordance as a symbol of provider–client communication, although this process can be complicated because of confidentiality concerns and consent requirements.

Clients' Perceptions of Confidentiality

Overall, client survey and focus group participants cited confidentiality as a main reason they liked the school health center, which indicates that assurance of confidentiality is a major factor in their decision to pursue school health center services. However, focus group participants also said that they felt that larger waiting rooms and expanded clinic spaces would increase confidentiality. Although most existing clinics face space and funding restrictions, upcoming school health centers should consider this feedback in their planning and design.

Limitations

Our multisite, multimethod, outcomes-based evaluation faced several methodological challenges. First, although we regularly trained providers, not all data fields were consistently completed in the clinic data collection. For example, insurance status was documented for only 62% of clients. In addition, the matched pre–post client surveys represented only a small percentage of the clients served from 2006 to 2009, reflecting the challenges of instituting a client pre–post survey in this setting. Furthermore, 3 years of client survey data were combined to obtain a larger sample

for statistical analysis. Although the respondent demographic profile between years was similar, potential biases exist when 3 years of client survey data are compared with only 1 year of clinic and focus group data.

Moreover, the research study did not have longitudinal data or a comparison group because of a lack of resources; this would have allowed us to better document how school health centers differ from traditional health services for this population. A final limitation was the lack of examination of dosage effects on client outcomes, as well as other potential mitigating or contributing factors. Because of confidentiality policies, the design was not able to link the client survey to the clinic database.

Despite these limitations, we showed that school health centers can provide a variety of health and wellness services to a racially diverse population in a safe, accessible environment where young people spend a great deal of their time. The school health center provider- and client-reported outcome data provide important evidence of the value and impact of school health center services. Furthermore, the use of multiple methods to collect evaluation data allowed us to answer more comprehensively how the school health centers affect youths' access to care and health outcomes.

Conclusions

This study contributes to the field by demonstrating that a multimethod, multisite evaluation can document the impact of school health centers on utilization and self-reported health outcomes, despite variations in sites. Such information can be vital for counties and school districts seeking to understand the value of such services to the system as a whole.

The field of school health center evaluation needs to establish a more standardized set of health services indicators, with a stronger emphasis on health outcomes, to better document the value of this model of care. Although future evaluations will benefit from additional comparison and longitudinal methodological designs, this study contributes to the increasing understanding of the characteristics of effective health care programs that meet the diverse needs of adolescents as

a means of diminishing barriers that contribute to health disparities. ■

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Contributors

S. Soleimanpour directed the study implementation and led the writing. S.P. Geierstanger assisted with study implementation and writing. S. Kaller assisted with data collection and qualitative data analysis. V. McCarter conducted data analysis. C.D. Brindis was the principal investigator, conceptualized the evaluation, and assisted with the writing. All authors helped interpret findings and reviewed drafts of the article.

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Human Participant Protection

This study was reviewed and approved by the University of California, San Francisco Committee on Human Research (approval no. H5352-16443-11B).

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