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Review article

Measuring Success: Evaluation Designs and Approaches to Assessing the Impact of School-Based Health Centers

Melina Bersamin, Ph.D. [a,*], Samantha Garbers, Ph.D. [b], Melanie A. Gold, D.O. [b,c,d], Jennifer Heitel, M.P.H. [b], Kathryn Martin, M.P.H. [b], Deborah A. Fisher, Ph.D. [e], and John Santelli, M.D., M.P.H. [b]

[a] *Prevention Research Center, Pacific Institute for Research and Evaluation, Oakland, California*
[b] *Heilbrunn Department of Population & Family Health, Columbia University Mailman School of Public Health, New York, New York*
[c] *Department of Pediatrics, Columbia University Medical Center, New York, New York*
[d] *School Based Health Centers, New York-Presbyterian Hospital, New York, New York*
[e] *Pacific Institute for Research and Evaluation, Calverton, Maryland*

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A B S T R A C T

Since the founding of the first school-based health centers (SBHCs) >45 years ago, researchers have attempted to measure their impact on child and adolescent physical and mental health and academic outcomes.

A review of the literature finds that SBHC evaluation studies have been diverse, encompassing different outcomes and varying target populations, study periods, methodological designs, and scales.

A complex picture emerges of the impact of SBHCs on health outcomes, which may be a function of the specific health outcomes examined, the health needs of specific communities and schools, the characteristics of the individuals assessed, and/or the specific constellation of SBHC services. SBHC evaluations face numerous challenges that affect the interpretation of evaluation findings, including maturation, self-selection, low statistical power, and displacement effects.

Using novel approaches such as implementing a multipronged approach to maximize participation, entering-class proxy-baseline design, propensity score methods, data set linkage, and multisite collaboration may mitigate documented challenges in SBHC evaluation.

IMPLICATIONS AND CONTRIBUTION

Gaps in the evidence base of SBHCs' impact may reflect methodologic challenges in evaluating SBHCs. With the ultimate goal of improving the rigor of SBHC outcomes evaluation, we review these challenges and their implications, and, using examples from the recent literature, identify a methodological approach to address each one.

Background: History of School-Based Health Centers

Since the founding of the first school-based health centers (SBHCs) >45 years ago, researchers have attempted to measure their impact on child and adolescent physical and mental health and academic outcomes [1]. The focus of the current article is three fold: First, to provide a brief overview of SBHCs; second, to identify methodological challenges when evaluating SBHCs; and finally, to describe new approaches to designing impact evaluations that can mitigate these methodological challenges. We summarize innovative methodologies that practitioners, researchers, and funders can use to support rigorous evaluations of SBHCs' impact.

SBHCs are defined as health centers located in schools or on school grounds that provide acute, primary, and preventive health care [2–4]. Depending on resources, health needs, state laws, and other school-level and community factors [5,6], SBHCs

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* Address correspondence to: Melina Bersamin, Ph.D., Prevention Research Center, 180 Grand Ave., Suite 1200, Oakland, CA 94706.
E-mail address: mbersamin@prev.org (M. Bersamin).

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may provide immunizations; testing and treatment of sexually transmitted infections; contraception, pregnancy testing, prenatal care; mental health assessment and treatment; crisis intervention and referrals; substance abuse counseling; health education; and dental care. Services are often rendered by a multidisciplinary team that may include physicians, nurse practitioners, physician assistants, school nurses, health educators, dentists, and mental health providers. SBHCs also vary significantly in their hours of operation, with some open a few hours a week and others open for the full school day, weekends, and/or through the summer [2,3,7].

There has been tremendous growth in the establishment of SBHCs across the USA, with a >10-fold increase in the number of SBHCs in the past 20+ years, from 150 in 1989 to 1,930 in 2011 [8]. SBHCs are distributed widely but unevenly in 46 of the 50 states, including 232 in New York, 224 in Florida, 172 in California, and 87 in Louisiana. Over half (54%) of SBHCs are located in urban areas, 28% are in rural areas, and 18% are located in suburban areas [2,8].

Conceptually, SBHCs have the potential to improve physical and mental health as well as academic outcomes. Embedded within schools—the only public institution with the capacity to reach most of the youth—SBHCs have the ability to provide services to most children and adolescents [9]. SBHCs are designed to provide youth-friendly services and to reduce barriers associated with accessing services (e.g., finances, inconvenient hours, transportation) [10]. They have the capacity to teach young people when and how to access health care and to modify attitudes and behaviors regarding such care. SBHCs also have the ability to provide youth with medical, mental health, and dental services to which they might otherwise not have access. Ultimately, healthy children and adolescents are better able to focus and learn which may improve academic outcomes [11].

SBHC Research: Scope of the Evidence Base

In an era of increasing accountability, there has been interest by researchers, administrators, and funders in examining the impact of SBHCs on multiple health and academic outcomes. A review of the literature finds that SBHC evaluation studies have been diverse, encompassing different outcomes and varying target populations, study periods, methodological designs, and scales (see Figure 1). Note that studies addressing SBHC cost or cost-effectiveness are beyond the scope of this report.

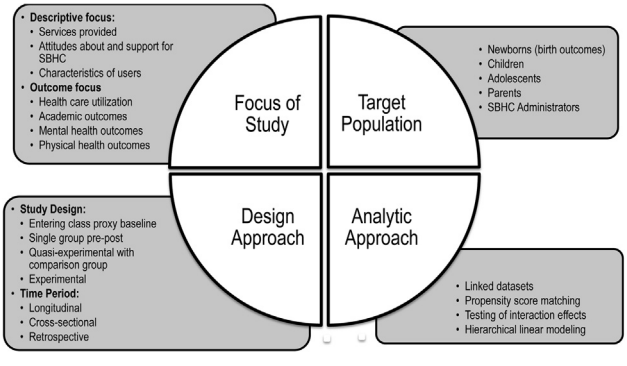

Figure 1. Scope of SBHC evaluation literature: Focus, target population, design, and analytic approach.

SBHC evaluations examining health care utilization have demonstrated impact on the use of health services, including increased health maintenance visits as well as reduced emergency department visits and hospitalizations. Other evaluations of SBHCs' behavioral health impact have reported lower rates of suicidality and depression, increased physical activity, increased hormonal contraception use, increased likelihood of having been screened for a sexually transmitted infection including HIV, lower pregnancy rates and, among teen parents who used SBHCs, higher newborn birth weights [12–21]. Some studies have also found that access to SBHCs is associated with positive academic outcomes, including increased attendance and grade point average and reduced rate of dropout [22–24].

A recent systematic review of SBHCs' impact by the Community Preventive Service Task Force of the Centers for Disease Control and Prevention [25] echoed the positive findings regarding the effect of SBHCs on health and academic outcomes but also identified gaps in evidence. The review cited several health outcomes for which evidence was insufficient, including impact on: risk-taking behaviors (e.g., smoking, substance use, nutrition, and physical activity), contraceptive use among male adolescents, and pregnancy complications among female adolescents [26]. In another recent systematic review of SBHCs' impact on sexual, reproductive, and mental health [27], of the 27 studies included from 1990 to 2012, only three were categorized as examining outcomes beyond health care utilization or behavioral health risks, and each found positive impacts of SBHCs for only a subset of the primary outcomes studied or some of the subgroups studied [17,20,28]. Although this review did not include published studies before 1990 [29] or after March 2012 [30,31] as well as several studies published during the period covered by their review [19,23,32], it did demonstrate the limited data available on SBHCs' reproductive and mental health outcomes.

Thus, a complex picture emerges of the impact of SBHCs on health outcomes. Impact may be a function of the specific health outcomes examined, the health needs of specific communities and schools, and/or the specific constellation of SBHC services offered. Moreover, the strength of the effect may vary depending on the population in question: males; rural; undocumented; minorities; lesbian, gay, bisexual and transgender youth; and younger or older students. Untangling mechanisms of impact is necessary to ensure that effective models are put into practice to support positive health outcomes among children and adolescents.

Challenges With SBHC Evaluation

The lack of consistent findings may reflect real limitations in SBHCs' capacity to change health care outcomes. They may also reflect methodological and logistical challenges inherent in conducting research in schools. The challenges of evaluating SBHCs are well documented [1,28,33–36] and include, but are not limited to, the following:

(1) Selection bias—Selection bias in an evaluation may obscure or exaggerate the measured impact of an SBHC. Selection bias operates on multiple levels: The processes by which students enroll in particular schools (often a function of neighborhood segregation by race/ethnicity and socioeconomic status), systematic differences between students who do and do not use SBHC services, differential attrition