A Review of School Based Health Centers and their Role in Health Promotion and Prevention

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Table of Contents

List of Figures and Tables

List of Figures

List of Tables

Abstract

School Based Health Centers (SBHCs) are one proposed model to improve the health of children in the United States. However, while there is evidence of their effectiveness in improving individual health outcomes, this paper reviews the current literature on SBHC evaluation and then challenges SBHCs to improve their methodology to measure determinants of health on a broader level using a socio-ecological model. PUBMed, CINAHL, ERIC, and PsycINFO were reviewed for articles related to SBHCs and evaluation. SBHC articles related to student health outcomes and evaluations were then sorted into categories based on their inclusion of determinants or outcomes beyond the individual level of the socio-ecological model. Most of the articles included only individual health measures such as decreased emergency room visits or improved self-reported health status. A few articles included family or community outcomes such as parent knowledge of asthma or teen pregnancy rates, but interventions largely targeted individual determinants of health. Only three articles had any relevance to broader health determinants and none of the articles included a mention of the socio-ecological models or other system models of health. Articles focused on evaluation methodology and other evaluation resources for SBHCs also made few references to including measures of the broader determinants of health in their recommendations. Overall, while SBHCs report health promotion and prevention as a foundation principle, the literature is void of an evaluation of their impact on multiple determinants of health. At the same time, as entities already existing within school and local communities with good community relationships, SBHCs have a unique opportunity to build this literature by expanding their evaluation questions and technique. SBHCs could be an important part of the solution for the fragmented, costly, and ineffective health care system in the United States and a critical bridge between clinical medicine and public health, but they have a burden to demonstrate their ability to do so.

Introduction

While the United States spends the most per capita on health care globally, the actual health status of its citizenry is not first class. The World Health Organization ranked the United States 37th out 150 countries when comparing health status, significantly below many other developed countries that spend far less per capita on health care (WHO, 2000). This health care crisis is particular relevant for children whose rates of chronic health conditions are steadily increasing. A recent report on the results of a million dollar state-wide intervention to combat obesity in Arkansas demonstrated minimal effect on state-wide obesity rates, reminding public health and medical professionals that the fight against chronic disease must be multifaceted, evidence-based and long-term (Ogilvie, 2011). However, in light of the disappointing status of health in the United States, the time is ripe to introduce innovative means to improve health. Healthcare reform initiated by President Obama in 2010 has led to ongoing discussion and hopefully lasting policy changes towards transformation of the US healthcare system. These changes have affected traditional stakeholders in healthcare such as insurance companies and hospitals, but also stakeholders and advocates within public health. For example, the law establishes a National Prevention, Health Promotion and Public Health Council to develop a national strategy for public health and health promotion activities (Kaiser Family Foundation, 2010). In fact, on June 16 2011, President Obama and the Surgeon General released a National Prevention Strategy that intends to make healthy living and disease prevention an everyday, easier lifestyle choice (U.S. Department of Health and Human Services, 2011).

In this midst of this transformative atmosphere, School Based Health Centers (SBHCs) have emerged as a potential leader for improving the health status of children. They have existed since the early 1970s, but there has been a resurgence of interest in these centers that provide

primary care and preventive services to children within the school community context. Indeed, the healthcare reform bill of 2010 included appropriation of 50 million dollars to support the construction of SBHCs with additional funds authorized for operational support of SHBCs (Silberman, Liao, & Ricketts, 2010).

However, the question is whether SBHCs do actually contribute to improved health and wellbeing of children in the US. There is evidence that SBHCs can improve access to care and provide quality primary care services for children (Blacksin, Gall, Feldmand, & Miller, n.d.). Yet, access to care does not guarantee that health status is actually improved. Improving health involves affecting a variety of determinants of health on multiple levels and implementing evidence-based health promotion activities that address these determinants. Thus, the purpose of this paper was to conduct a literature review to evaluate whether the evidence supports the success of SBHC in promoting wellness on multiple levels of the socio-ecological model of health.

Background

The US Health Crisis

The mission of public health as defined by the Institute of Medicine is to promote "what we as a society can do collectively to assure the condition in which people can be healthy" (IOM, 2003, pp xiv). Promoting health should and must go beyond just diagnosis and treatment of disease provided by clinical medicine, but also health promotion and disease prevention. Unfortunately, from their foundational roots, public health and medicine have often separated their practice based on these two distinct goals (Starr, 1984). Public health professionals have provided guidance on disease prevention while clinical medicine has focused on treatment of disease. This differentiation has also affected the way health care funding has developed in the

United States, leading to a much higher expenditure on clinical medicine and disease treatment as opposed to public health efforts on prevention (Starr, 1984; IOM, 2003).

However, as reported by the Institute of Medicine, there are serious failures in the United States healthcare system in the area of health promotion and prevention. For example, even though the United States is the largest spender on health care in the world, statistics in life expectancy, infant mortality, and other chronic diseases such as cancer rank the US much lower than other similar industrialized countries (IOM, 2003; Niles, 2010; WHO, 2000). There are several potential reasons for this discrepancy between spending and health outcomes. As much as 95% of the health care spending is on medical care and technology, while 70% of the mortality reflects behavioral and environmental risk factors/health determinants (IOM, 2003). As noted by the IOM, "health care's structure and incentives are technology and procedure driven and do not support time for the inquiry and reflection, communication, and external relationship building typically needed for effective disease prevention and health promotion." (IOM, 2003, pp. 213)

In particular, health care for children is also falling short in providing preventive care and health promotion services. Preventive services, behavioral health care, and oral health care are the three areas that are least covered by both private and public health insurance (IOM, 2003). Clinical preventive services are listed by the IOM as an area of neglected care. For example, one of out five employer-sponsored plans does not cover childhood immunizations (IOM, 2003). Even when the government mandated that Medicaid increase preventive services for children, states have been slow to implement such a program. In addition, only about one to two thirds of children who do have a screening visit return for the referral visit, negating much of the positive effect from screening (IOM, 2003, pp. 225). Practitioners are not aware of best practice for

preventive services and even when they are, insurance companies do not always cover services recommended by panels such as the The United States Preventative Services Task Force and The Community Guide (IOM, 2003; US Preventative Task Force, n.d.; Center for Disease Control and Prevention [CDC], 2011). Practitioners also may not have adequate skills for applying recommendations in clinical and community settings. In addition, these resources sometimes have limited use with newer interventions and/or health promotion activities because a lack of sufficient evidence may prevent the committee from recommending a particular intervention (and health insurance companies from paying for it) even if it demonstrates promise in health promotion.

Definition of Terms

Many of the terms related to health explored in this paper are widely used but not always clearly defined. It is important to first define terms such as health, wellness, health promotion, and disease prevention before approaching the literature and rhetoric of SBHCs. One well known definition of *health* from the WHO is "a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity" (WHO, 1998, pp. 1). Health is a positive concept that refers not just to a physical state but personal and social resources as well. *Wellness* is a slightly newer term that refers to not only the ability of an individual to realize their full potential as an individual in all areas including physically, spiritually, economically, and psychologically but also as a productive member of society able to complete their expected roles (WHO, n.d.). *Health promotion* refers to "the process of enabling people to increase control over, and to improve, their heath" (WHO, 2009, pp. 1). There are several principles of effective health promotion:

- Health promotion does not focus exclusively on individuals at risk for specific disease but on the population as a whole.
- Health promotion requires a multifaceted approach to affect many determinants of health.
- Health promotion involves diverse tactics and approaches including education, community engagement, and organizational changes.
- Health promotion aims for active public and community participation.
- While health promotion involves stakeholders from the health and social sciences, health professionals, especially primary care providers, have a critical role in health promotion (WHO, 2009).

Finally, *disease prevention* is a term that refers to the prevention of disease through risk factor reduction but also the arrest of disease progression and a reduction of consequences after disease processes have been initiated (WHO, 2009). Public health measures related to disease prevention most often target primary prevention, the prevention of the initial occurrence of disease through reducing risk factors for disease such as promoting weight loss to prevent hypertension, and secondary prevention, the early detection of disease to improve treatment and outcomes such as regular mammograms for breast cancer detection (Turnock, 2009).

Socio-Ecological Model of Health

Another important component of effective public health promotion is an appreciation of determinants of health from a socio-ecological perspective. Much of clinical medicine fails to consider health from a broader socio-ecological perspective and thus does not address the multitude of risk factors to disease, including social determinants of health (WHO, 2008). Schneider (2006) describes the socio-ecological model of health (SEM) to better understand determinants of specific health conditions as well as the levels of influence that health care

providers and others engaged in community health improvement must consider for changing individual and societal behaviors and norms. The intrapersonal or individual level involves the personal attitudes, beliefs, and knowledge of an individual. The second level is interpersonal factors and involves the immediate relationships for an individual such as their family, co-workers, and friends. The third level of influence is institutional factors such as the work or school environment. Since most people spend about half their time at work or in the school environment, this level can have a significant effect on health behaviors. The fourth level encompasses community factors such as community organizations and networks. The final level of influence is the broadest and most wide-reaching, public policy. Public policy factors include societal norms and influences as well as government policies, laws, and regulations.

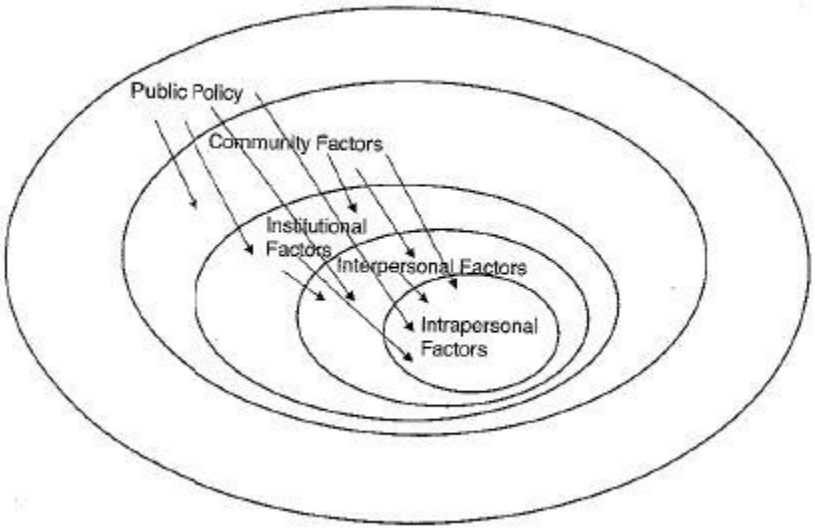

Figure 1 Socio-ecological Model of Health from Schneider (2006)

A specific example of fruit and vegetable consumption as a risk factor for childhood obesity helps to clarify how these levels relate to a specific health risk factor. On an individual level, individual knowledge of fruits and vegetables affects consumption. A person needs to

know how to prepare and cook vegetables to incorporate them into his/her diet. Family dynamics such as whether the family eats together or parent modeling of health eating affect consumption on an interpersonal level (Sharma & Ickes, 2008). The school environment including student norms of fruit and vegetable consumption affects health on an institutional level for children. On a community level, the availability of grocery stores with fresh produce or the social norms related to food choices affect consumption of fruits and vegetables (Sharma & Ickes, 2008). Finally, public policy determinants of health include distribution of resources like funding to build community playgrounds or school policies related to school lunches (Rasmussen et al., 2006). Importantly, each level does not operate independently but affects all other levels to create a broad picture of what influences health behavior in populations.

In general, clinical medicine tends to focus more on the intrapersonal and interpersonal levels of influence when providing health services. For example, a physician would seek to increase individual knowledge through smoking cessation counseling. They may also include a spouse in the conversation to affect the interpersonal level of behavior. However, in order for health professionals to be most effective in changing health behaviors and improving well-being, interventions and behavior must be affected on multiple levels of the socio-ecological model. For example, interventions designed to improve obesity rates must not only address individual behaviors such as consumption of junk food, but also as reviewed above community and public policy factors such as the availability of fresh fruits and vegetables within grocery stores or safe playgrounds and other spaces for physical activity.

One important caution about using the socio-ecological model is that it can appear that the various levels of determinants are well delineated and separate when this is often not the case. Determinants of health are not always clearly defined within one particular level and can

be impacted by multiple levels of the model. In addition, interactions among and within these levels and their association with health are complexly related. It can be difficult particularly in public health interventions to separate the effect of the intervention on the various levels of determinants. The model also has arrows that are only pointing in one direction, but in reality the various levels impact each other in a non-linear, multi-directional way. However, while these limitations should be considered, this model is still an important theoretical foundation for public health interventions.

School Based Health Centers

School Based Health Centers (SBHCs) have been promoted as one way to improve the health of children and communities through provision of clinical services, increased access to care, and health promotion and disease prevention activities. While they are largely based on a clinical model of care, their purpose includes the promotion of health through collaboration with schools, parents, and the community. SBHC proponents argue that because these centers are located within the schools they are in a unique position to address the broad needs of students and their families on a variety of diseases such as obesity, asthma, and mental health issues (NASBHC, 2002; Scudder, Papa, & Brey, 2007). Since the majority of children in the United States do attend school in the public school system regardless of income or insurance status, public schools provide an opportunity to reach a broad audience of children.

According to the National Assembly on School-Based Health Care, SBHCs are "partnerships created by schools and community health organizations to provide on-site medical and mental health services that promote the health and educational success of school-aged children and adolescents" (NASBHC, 2002, paragraph 1). SBHCs do not replace the traditional school nurse, but provide other medical services depending on the needs of the community and

the specific resources and model of the SBHC. Services provided can include: primary care for acute and chronic health conditions, mental health services, substance abuse services, case management, dental health services, nutritional education, reproductive health services, and health education and health promotion (NASBHC, 2002).

SBHCs were started in the 1980s to help overcome barriers to primary care for underserved children and adolescents. Over the next 20 years, SBHC have expanded into 46 states and the District of Columbia to provide services within schools (Lear, 2007) Initially in the 1980s there were about 100 health centers; this number has increased to over 1900 in 2008 (Lear, 2007; Strozer, Juszczak, & Ammerman, 2010). SBHCs are funded by a variety of sources including private and public health insurance reimbursements, federal and state grants, private foundations/grants, and state and local departments of health to name a few primary sources (Storzer et al., 2010). The W.K. Kellogg Foundation and Robert Wood Johnson Foundation are non-profit foundations that have provided significant funding for start-up and study of SBHCs. The W.K. Kellogg Foundation focuses on children through improving education and health while Robert Wood Johnson Foundation promotes innovations to improve the health and health care of all citizens (W.K. Kellogg Foundation, n.d.; Robert Wood Johnson Foundation, 2011). Through their public health focus and funding requirements, both organizations have helped to ensure that SBHCs maintain a community engagement, population focused perspective on health. Reimbursement of services by insurance companies varies greatly and has been historically difficult to obtain for SBHCs (Lear, 2003).

School based health centers have been publishing literature on their accomplishments for decades noting successes in reducing pregnancy rates, improving contraception use, decreasing rates of hospitalization for asthma, and obtaining high levels of student satisfaction with services

(Ricketts & Guernsey, 2006; Lurie, Bauer, & Brady, 2001; Santelli, Kouzis, & Newcomer, 1996). However, health and wellbeing involve more than just individual health outcomes. To improve wellbeing, interventions must affect risk factors on all levels of the socio-ecological model of health as describe above. One way to affect this change is through health promotion activities within the community (WHO, 2009). According the NASBHC, one of the foundational principles and goals of SBHCs is the advancement of health promotion activities through engagement with the school administration, participation in classroom and school-wide health activities that are tailored to the school community, and involving parents and the broader community in these activities (NASBHC, n.d.b). One example of such health promotion activities is a program at a SBHC at Lincoln High School in Colorado that developed a peer-based afterschool program to promote improved nutrition and physical activity (NASBHC, n.d. f). This rhetoric promotes SBHCs as advocates and effective instruments for health promotion within the schools, but the issue explored in this literature review is determining whether SBHCs are truly engaged in health promotion and evaluating their efforts to address the multiple determinants of health and wellness.

Research Methods

A literature search was conducted in the PUBMed, CINAHL, ERIC, and PsycINFO databases. These databases were selected because they are the largest and most comprehensive databases related to medicine, nursing, public health, and education. The key terms for both searches used were "School Based Health Center(s)" and the words evaluation, impact and/or measure(s). The author also searched for "School Based Health Center(s)" and "socio-ecological model" but there were no results noted in any of the databases. The articles were limited to English and peer reviewed journals between 1995 and April 2011. Articles were excluded if

they were not related to student and/or community health outcomes. Thus, articles only focusing on academic outcomes such as absenteeism or drop-out rate were excluded. In addition, articles focusing only on oral health and mental health services were also excluded. Finally, the remaining articles were sorted based on the following categories:

- Category 1 – No specific information and/or data related to evaluation and/or student outcomes. These were initially thought to have relevant information but on closer review had limited value to evaluation of SBHCs and student outcomes.
- Category 2 – Intrapersonal/individual level data related to outcomes, but no to very limited mention of the other levels of socio-ecological model of health (interpersonal, institutional, community, and/or policy level).
- Category 3 – Intrapersonal level data related to outcomes with mention of interpersonal, institutional, community, and/or policy level factors but without specific research methods and/or data noted.
- Category 4 – Data and research methods related to individual and one or more of the other levels of the socio-ecological model.
- Evaluation – These includes articles that did not have specific student outcomes but contained information/recommendations about the evaluation of SBHCs.

It was sometimes difficult to identify the correct category because none of the articles specifically mentioned the socio-ecological model of health. Very few specifically addressed the importance of community and/or policy outcomes in the evaluation of SBHCs. Because the study question relates to SBHC and the socio-ecological model of health, the focus of the review was on articles in category 3 and 4.

While articles related to academic outcomes only were excluded, it is possible to argue that academic outcomes do have a significant effect on community and even policy outcomes of health. Improved academic performance and higher levels of educational attainment are related to improved health and affect more distal risk factors to poor health such as low socio-economic status. SBHCs have been shown to improve academic outcomes and thus could contribute to improving health outcomes in this way. However, this is not a unique contribution of SBHCs to health outcomes so I chose to focus on the specific ways that SBHCs can improve specific health outcomes.

Literature Review Results

The PUBMed search based on the search criteria resulted in 83 articles and the other three databases (ERIC, PsycInfo, and CINAHL) resulted in 103 articles between 1995 and 2011. After reviewing the abstracts and articles to identify repeated articles and excluded articles, a total of 62 articles were identified related to student outcomes and/or evaluation of SBHCs. These articles were then sorted based on the above criteria. Table 1 lists the number of articles identified in each category.

Category	Number of Articles
Category 1	16
Category 2	23
Category 3	17
Category 4	3
Evaluation Articles	3
Total	62

Table 1. Number of Articles in each Literature Review Category

Category 1: No evaluation/impact measures

Category one articles were generally reviews of literature or articles related to SBHCs and student outcomes that after a secondary review did not include outcomes related to student health. These articles also included outcomes related to student services such as student use of services, student opinions of SBHCs, and an analysis of services provided by SBHC (Anglin, Naylor, Kaplan, 1996; Santelli, Kouzis, & Newcomer, 1996; Peak & Houser, 1996). It additional there were several review articles that provided secondary data on student outcomes and SBHCs or case study descriptions of existing programs without research data regarding specific student outcomes (see examples such as Brown & Bolen, 2003; Brown & Bolen, 2007; Pastore & Techow, 2004; Trivette & Thompson-Drew, 2003).

Category 2: Individual outcomes/measures

Category 2 articles were the most numerous type of article related to SBHC evaluation/impact. These articles reviewed the impact of SBHCs on a variety of individual health outcomes related to asthma, contraception use, physical activity, and immunizations. Asthma outcomes mainly focused on individual level data such as knowledge of asthma risk factors or the number of emergency room visits (Webber et al., 2005; Webber et al. 2003). Webber et al. (2003) noted mixed results in their study of SBHCs and asthma. They found that SBHCs decreased inpatient hospitalization rates and absenteeism due to asthma, but did not find a reduction in ER visits indicating that SBHCs must continue to work to improve asthma management (Webber et al., 2003). Other articles focused on measures of health status such as self-reported physical health status or rates of reported health problems and risk-taking behaviors such as use of marijuana or not using contraception during intercourse. One such article by Kisker and Brown (1996) measured the health utilization of the SBHC, student knowledge of health topics such as substance abuse and HIV, and rates of risk taking behavior including

smoking and lack of contraception use among adolescents. Kisker and Brown (1996) noted that students involved in a SBHC did have increased knowledge of health related topics, but SBHC involvement did not significantly decrease high risk behaviors in students. These results are consistent with other reviews that have noted that SBHCs often increase health knowledge, but have mixed results on improvement of individual health outcomes and/or health status (Silberberg & Cantor, 2008).

Category 3: Some mention of interventions on multiple SEM levels

As mentioned above, none of the articles specifically referred to the various levels of intervention as described in a socio-ecological model of health. Thus, the definition of category 3 articles involving the socio-ecological model was fairly broad. Examples of articles in this category included studies measuring parent/family knowledge of asthma management and studies involving broader public health interventions such as immunization campaigns. One such study by Lurie, Bauer, & Brady (2001) explored a school wide asthma intervention throughout a school district that had SBHCs. The intervention provided asthma screening, student and family health education including an environmental factors component, and asthma related curriculum within the classroom. However, while the intervention functioned on intrapersonal, interpersonal, and institutional levels of the social ecological model of health by targeting the student, family, and school community, there was minimal evaluation of outcomes related to these broader ecological levels. Parent knowledge and behavior related to environmental factors was assessed, but there were no other data collected regarding institutional and environmental risk factors or changes in behavior.

Several other studies in this category focused on access to care noting that SBHCs increase access to services and students with SBHCs are more likely to seek preventive care and

well-child care (see Gance-Cleveland & Yousey, 2005; Guo, Wade, Pan & Keller, 2010; Brindis et al., 2003). While access to care is a community and policy level risk factor, these studies did not measure how access to care might impact communities. As reviewed in the background, access to care is certainly important for receiving medical services, but may not be sufficient for actually improving health promotion and prevention (IOM, 2003).

Category 4: Measures/impact on multiple SEM levels

Of the 62 articles reviewed, only three articles qualified to be included in category 4 because they included measures on multiple levels of the socio-ecological model of health. Both Suleiman, Soleimanpour & London (2006) and Soleimanpour et al. (2008) refer to the same program that initiated youth led research and leadership regarding health in SBHCs in California. During the intervention, a youth counsel organized and analyzed student health data within a school with an SBHC and then suggested school wide policy changes regarding health. Case studies of the program showed that youth participation in research did increase social action by the youth in two areas: condom distribution and interventions related to student stress. This program affected individual and interpersonal determinants through peer interactions within the counsel and institutional determinants through health policy changes such as allowing the SBHC to distribute condoms on-site within the school environment (Soleimanpour et al., 2008). A further goal of the program was to increase youth social action not only in the school system but the broader community as well, potentially influencing community and policy levels of the socio-ecological model. However, specific evaluation data related to this community impact were not reported.

The other article in category 4 measured the impact of SBHCs on both individual and school wide health measures. This study by McNall, Lichty, & Mavis (2010) evaluated the

impact of SBHCs on the institutional, school-wide, setting using five primary outcome measures: satisfaction with health, physical discomfort, emotional discomfort, physical activity, and nutrition. However, the study found that there was no significant difference for any of the measures between students who attended a school with a SBHC and those that did not. The study did find that those students who used the SBHC exhibited improved measures over those students who had access but did not use the center, but this evidence joins an inconclusive body of evidence about the effectiveness of SBHCs in improving overall health. The study also points to the importance of SBHC evaluation on why students do or do not use the center and how to improve student and community use of the center to increase the impact of interventions.

Evaluation Articles

The final category of research literature was articles related to SBHC evaluation in general without specific research data. These articles were insightful because they provided an overview of current thoughts on SBHC evaluation. Hackbarth & Gall (2005) provide an overview of the program evaluation processes as it relates to SBHCs. They focus largely on the how and whys of program planning and evaluation including needs assessment, SBHC design planning, and process and outcome evaluation, providing only a few SHBC specific resources. The second article by Nabors (2003) reviewed SBHC evaluation in detail including a theoretical structure for evaluation, examples from the literature of SBHC evaluations, and challenges in SBHC evaluation based on a literature review. Nabors noted evaluations of SBHCs related to service utilization, customer satisfaction, prevention, mental health services, support services, and children with chronic illnesses. She also reviewed the following challenges to SBHC evaluation: involving stakeholders, recruitment, obtaining consent, retention, selecting measures, and clinical significance of outcomes. While these barriers can inhibit a successful evaluation,

Nabors described strategies for every challenge that can improve evaluation efforts. For example, parental participation and consent can be improved by using a community advisory board to review research materials and provide an endorsement of the study to parents and students. Nabors also noted that useful evaluation measures are "underdeveloped" (pp. 317) and challenges SBHC to use evaluation as an opportunity to develop a body of knowledge for outcome measures and SBHC best practice. Overall, Nabors argues that while there is an emerging body of literature on SBHC evaluation, SBHCs need to continue their evaluation efforts to demonstrate the effectiveness and efficiency of SBHCs in providing quality health services to children.

The third article related to evaluation provided a theoretical model for a "wholistic" SBHC evaluation that is whole person focused, looking at the "physical, psychological, social, cultural, environmental, and spiritual" components of health (Shuler, 2000, pp. 348). Shuler (2000) proposed evaluating SBHCs through three main processes (1) the staffing, operations, and evaluation processes of the SBHC, (2) evaluation of progress towards predetermined goals and objectives, and (3) evaluating the scope of services from a holistic lens. Although she includes health promotion and disease prevention activities in her logic model, patient and staff outputs only relate to individual behaviors and activities. While this model may be helpful for SBHCs in expanding and improving their evaluation processes, it does not contribute to the evaluation of SBHCs' work to improve wellness of a population which requires addressing the multiple determinants of health found in the socio-ecological model.

Discussion of Literature Review

Overall, the literature review makes apparent that there are evaluation data related to the individual and intrapersonal effects of SBHCs on behavior and health outcomes. However, even

within the individual level, there are mixed results about the effects of SBHCs on actual health outcomes and behaviors (McNall, Lichty, & Mavis, 2010). There has been minimal consideration of the effect of SBHCs on socio-ecological levels beyond the individual level, and even less collected data. None of the articles related to evaluation of SBHC programs mentioned the socio-ecological model of health, its levels of determinants or any other systems model of health in considering health behavior and outcomes. The three articles that included outcomes related to other levels of the SEM either related to a separate youth led program not directly connected to the SBHC or did not show any significant effect of the SBHC on the general school population. Even the literature on evaluation of SBHCs was very limited in the consideration of ways in which SBHCs could affect broader community or policy level determinants of health.

While the literature on SBHCs does not reflect evidence of health promotion and prevention on a broader ecological level, this does not mean that SBHCs do not have potential for promoting health. Unlike primary care medical offices which often follow an individual medical model of health largely because of the current funding/insurance structure, SBHCs are designed to impact health from a variety of perspectives including providing primary care, health education, and health promotion activities within the school community. Up to 20% of SBHC staff time is spent providing patient, classroom, and group education and collaborating with parents and school staff (Mavis, Pearson, Stewart, & Keefe, 2009). SBHCs are often located within vulnerable populations including both urban and rural populations with limited access to health care resources, minority groups, students with chronic diseases such as asthma, and the un- and under-insured (McNall, Lichty, & Mavis, 2010). Since the majority of children attend school within the public school system, SBHCs have primary access to these populations and opportunities to provide health promotion activities. Finally, because SBHCs are physically

located within the school building, their services, including health promotion activities, are very accessible to students, staff, parents, and other community members.

SBHCs have potential to implement successful health promotion and prevention activities on a population-based level. However, funding both in the clinical and public health arenas is very limited and should be reserved for programs that demonstrate that they are effective and cost-efficient. SBHCs have a burden to study their activities and produce evidence that they do provide effective health promotion activities designed to improve student health and wellbeing. In addition, SBHCs are potentially contributing to the health of school populations but researchers have been limited in their questions and methods to address these broader research questions about determinants and outcomes related to multiple levels of the socio-ecological model of health. SBHCs should include evaluation questions and objectives that address interpersonal, institutional, community, and public policy determinants of health status to build the evidence base about effective SBHC practices.

Program Evaluation

Components of an Evaluation Plan

Evaluation is a critical component to any program plan from the implementing of a specific intervention to the implementing of a broader initiative like the SBHCs. The literature review provides information about SBHCs engagement in the evaluation process particularly on individual level health outcomes. The results of the outcomes evaluation research have been mixed and SBHC should continue to design and implement studies to consider SBHC's role in individual health outcomes. However, SBHCs also need to consider their evaluation technique for indentifying the influence of SBHC on the interpersonal, institutional, community, and public policy determinants of health.

The W.K. Kellogg Foundation and Center for Disease Control and Prevention [CDC] both provide excellent tools for framing evaluations (W.K. Kellogg Foundation, 2004; CDC, 2005). They both suggest similar steps for planning and implementating a program evaluation including: identifying stakeholders and establishing the evaluation team, designing evaluation questions, preparing the budget for evaluation, selecting an evaluator (internal or external), designing data collection methods, gathering credible data, analyzing and interpreting data, communicating and disseminating results, and finally using the results of the evaluation within the program (W.K. Kellogg Foundation, 2004; CDC, 2005). There are two types of evaluations that should be a part of every evaluation plan: process evaluation and outcome evaluation. Process evaluations consider whether the program is being implemented the way it was initially designed. Is the program doing what it was designed to do? Outcome evaluations consider what the program accomplished? What are the goals of the program and did the program achieve them? Were there unintended consequences either positive or negative of the program implementation?

Existing Evaluation Resources for SBHCs

The National Association for School Based Health Centers (NASBHC) has several existing resources for SBHCs related to an evaluation process. One of the newer resources listed under "Evaluation Tools" on their website is an Academic Success Tool Kit that is designed to promote the connection between SBHCs and improved academic performance. This toolkit is not actually an evaluation methodology to help collect or analyze data. Instead, it provides existing data/information for SBHCs to support the connection between these two components (NASBHC, n.d.a). While academic performance is important, this review focuses on the role of SBHCs and health outcomes, so this toolkit will not be reviewed in further detail.

The second evaluation tool, called the "SBHC Report Card," is intended to evaluate the productivity of SBHCs. The report card focuses largely on the productivity of the clinic such as hours worked by staff, the number of visits and diagnoses, and the number of outreach activities including classroom, school-wide, and community presentations (NASBHC, n.d.c; NASBHC, n.d. e). The report card does not assist SBHCs in formulating or answering broader process or outcome evaluation questions. One of the objectives of the productivity report is to connect productivity to outcomes, stating that "improved outcomes can be more impactful than increased encounters" (NASBHC, n.d.e, paragraph 1). However, this tool does not provide any concrete method to measure and connect productivity and outcomes.

A third evaluation tool, which is much more comprehensive, is a guidebook for evaluating school based health centers. This evaluation guide reflects the influence of the CDC and W.K. Kellogg Foundation Evaluation Handbooks and explains six evaluation steps and four major types of evaluation: needs assessment, process evaluation, outcome evaluation, and impact evaluation (Brindis, Kaplan, & Phibbs, n.d.). The 370 page manual provides excellent instructions on how to collect data, determine the best evaluation method, collect and analyze data, and disseminate and act on evaluation findings. The tool also provides sample process, outcome, and impact evaluation goals and objectives.

The final tool from the NASBHC website is a Performance Evaluation for SBHCs which identifies structures, processes, and outcomes for each of the seven principles and goals of SBHCs (NASBHC, n.d.d). These principles are as follows: support the school, respond to the community, focus on the student, deliver comprehensive care, advance health promotion activities, implement effective systems, and provide leadership in adolescent and child health. Each of these principles leads to suggested outcomes for SBHCs such as increased student

knowledge regarding high risk behaviors, increased participation of parents in health promotion activities, high staff and patient satisfaction, increased legislative support of SBHCs, and reduced student absenteeism due to illness.

Recommendations for Evaluation and the Socio-Ecological Model of Health

Each of these evaluation tools and in particular the performance evaluation and evaluation guidebook provide helpful information and suggestions for SBHC evaluation. However, both of these tools do not specifically advocate for evaluation questions and objectives beyond largely individual measures of health and satisfaction. While the stated principles of SBHCs in the performance evaluation include goals related to community engagement, system implementation, leadership, and health promotion, the suggested outcome measures are largely within the individual level of the socio-ecological model of health. Even when a principle could potentially influence institutional or community level determinants, the suggested measures are related mainly to utilization of services at the SBHC and not to measures which would evaluate the impact of the SBHC on community level factors such as engagement or empowerment. For example, one principle and goal for SBHC is that they are able to respond to the community through community needs assessments and engagement (NASBHC, n.d.b; NASBHC, n.d.d). However, when considering the outcomes suggested by the guidelines in light of the socio-ecological model they have very limited impact beyond the individual level. As noted in Table 2 on the following page, the only outcome related to a community level determinant of health is to add a community health care resource, a measure which may or may not actually improve health status. The other evaluation goals and objectives suggested by the SBHC Evaluation Guidelines also do not include measures of health determinants that effectively target other levels of the socio-ecological model.

In order for SBHCs to demonstrate that they can be effective in promoting wellness and influencing health behavior on institutional, community, and policy levels, SBHCs need to begin asking different evaluation questions and determining broader evaluation goals and objectives. Health promotion activities are important but the goals should extend beyond just increasing health knowledge about a particular disease or even changing individual behavior. Health promotion by definition is a population-based approach that includes community engagement and empowerment. Health behavior is also most impacted when health promotion activities and interventions affect multiple levels of the socio-ecological model of health.

Principle: "Responds to the Community"	Outcomes	Relation to the Socio-Ecological Model of Health
Assesses child and adolescent health care needs and available resources in the community through formal evaluation methods.	Improved access to primary care as measured by increased utilization of SBHC services	Individual level: Access to care Community level: Add a community health care resource
Informs the community of student health needs and trends.	Recognition by community of the value of SBHC services in meeting the needs of students and responding to community values	Individual level: Belief and knowledge of SBHC
Solicits community input to address unmet health needs and support the operations of the program.	High parent satisfaction	Individual level: Belief about SBHC
	Improved utilization of other community resources through referrals and/or inter-program collaboration	Individual level: Access to services Community level: Add a community health care resource

Table 2. Example SBHC Outcomes and the Socio-Ecological Model of Health.

First two columns from the SBHC Performance Evaluation Tool (NASBHC, n.d.d, pg. 2)

Recommendation: Theory Based Interventions and Evaluations

One critical recommendation for SBHCs is creating a foundation for evaluation and intervention through existing theories and evidence based practices. In planning interventions there are a number of resources on evidence based health promotion activities for SBHCs. Both the US Preventive Services Task Force and The Community Guide provide recommendations for evidence-based practices on clinical services and community-based preventive interventions respectively (US Preventative Task Force, n.d.; CDC, 2011). SBHCs also have the opportunity to develop the body of literature to support which interventions are both cost-efficient and effective in combating some of the complex health problems facing children such as obesity or hypertension. All health promotion activities should be planned with an evaluative process in mind.

Logic Models as a Tool

One important theory based concept for program evaluation is a logic model. A logic model is a picture of the program plan to help clarify the needs, activities, and ultimate goals of the program. It is a visual of how the program will lead to the intended results and is extremely helpful in planning evaluations. The logic model has six major categories: inputs, activities, outputs, short term effects/outcomes, intermediate effects/outcomes, and long-term effects/outcomes. The CDC Evaluation Handbook (2005) has a helpful sample of the flow of the logic model noted in figure 2 below. Inputs are the required resources for the program including program staff, materials, stakeholder participation, and other expertise required. Activities are the actual activities of the program plan which for SBHCs could include items such as provision of primary care or health education programs. Output are the actual processes delivered to the participants such as the number of health visits made to the SBHC or the number of programs

delivered for parents regarding nutrition and physical activity. Finally, the last three components of the logic model relate to the effects of the program on a short-term (usually 1-3 years), intermediate (3-5 years), and long-term basis (>5 years).

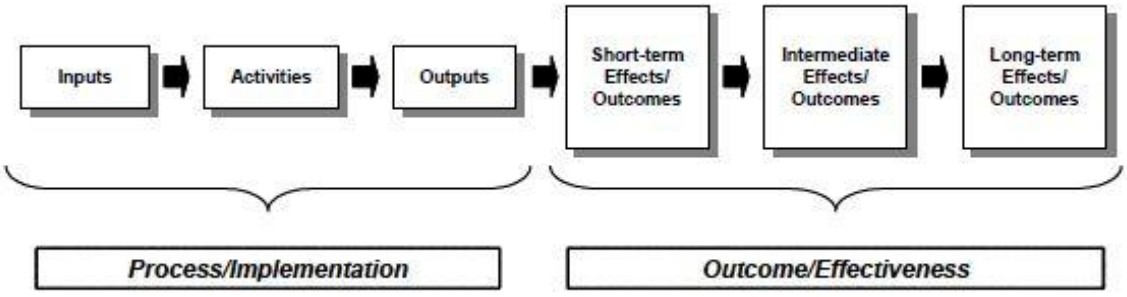

Figure 2. Evaluation Domains from the CDC Introduction to Program Evaluation (CDC, 2005, pp. 40)

Logic Models Specific to SBHCs

SBHCs have been using logic models to describe their programming. Colorado SBHCs have one such example of a logic model, shown in Figure 3, which describes the inputs, outputs, and short-term to long-term outcome for a state wide program to increase the capacity and activity of SBHCs. The logic model has several strengths. It includes many different stakeholders including community partners such as the local health department, youth counsels, and other community service organizations. It also includes evaluation as a specific activity and includes collection of local surveillance and program service data for evaluation. The short-term outcomes include population-focused outcomes such as increased community involvement where SBHCs are located and increased population based health promotion activities. Intermediate and long term goals include measures that are population-based such as reduced rate of sexually transmitted infections or increased seat belt use. However, the logic model outcomes do not address any specific outcomes related to broader community or policy goals

other than those related to funding support of SHBCs. SBHCs need to ensure that they are also looking at outcomes that try to quantify community engagement and capacity building, the strength of social networks, or the development of community policies that promote health. SBHCs do have resources and a strong start for incorporating logic models into their program and evaluations, but they need to continue to use these theories as they expand to aid in considering and documenting r the impact of SBHCs on multiple levels of the socio-ecological model.

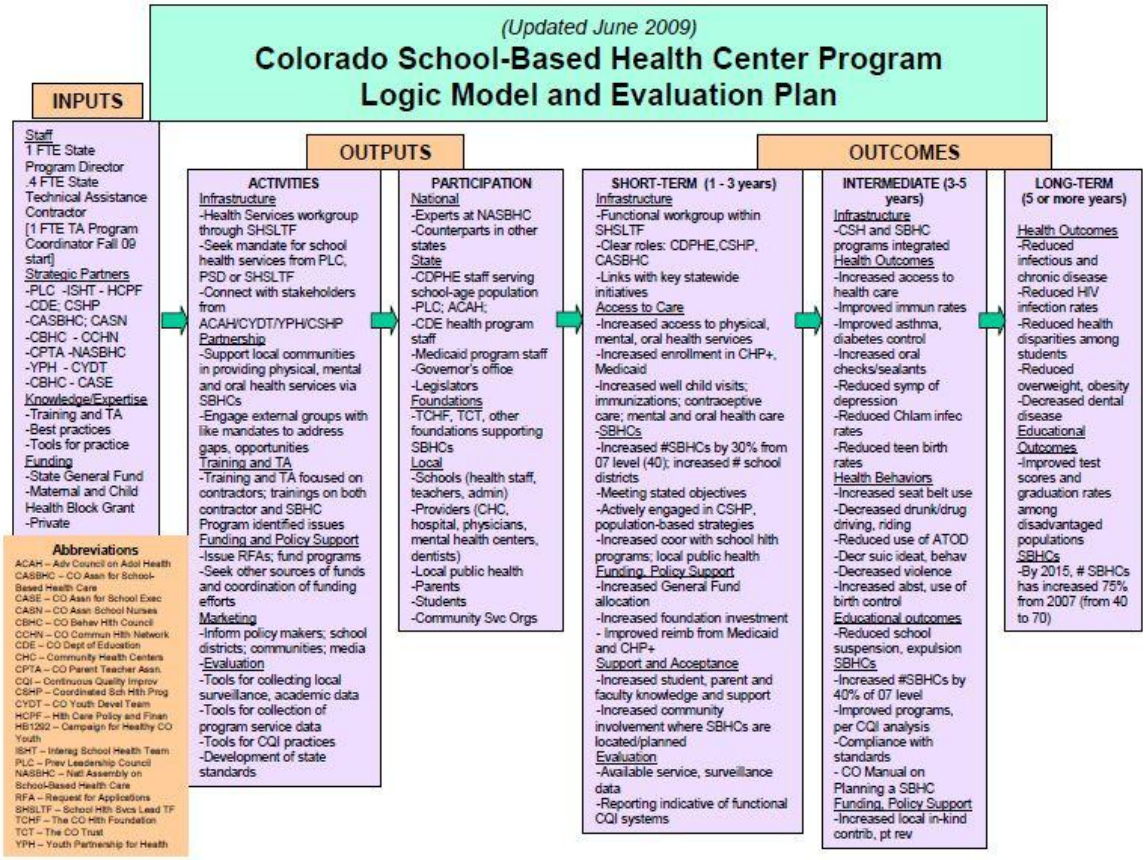

Figure 3. Colorado School Based Health Center Program Logic Model

(Colorado Department of Public Health and Environment, 2009)

Recommendation: Evaluation Questions

Thus, I would suggest that SBHCs reconsider how their evaluation questions and objectives can reflect the socio-ecological perspective of health. While the focus of SBHCs and their goals/objectives should vary based on a community needs assessment, there are some general questions that SBHCs can use as a starting point for evaluation.

Interpersonal Evaluation Questions

- What are the peer and family influences on health attitudes and behaviors? How is the health education provided by the SBHC influencing these relationships?
- How are parent's attitudes about health affected by SBHC activities?
    - What are parents' definitions of health?
    - What family dynamics are promoting health or encouraging unhealthy behaviors?
- Do students who use SBHC refer their peers to SBHC services?
- Do students who attend health education/health promotion activities discuss this information among their peer groups? Within their families?

Institutional Evaluation Questions

- What are the dynamics of the relationships between SBHC staff and school staff including school nurses, teachers, and administrators?
- What policies are in place that affect student health? Has the SBHC suggested changes regarding school policies to create a healthier school environment? Have these suggestions been incorporated?
- How has the SBHC improved school-wide messages regarding health?
- To what extent are health promotion/health education activities reflected in the academic curriculum?

- What school-wide activities are in place that promote health? Are these activities causing changes to student and staff health behaviors?
- Are SBHCs empowering students and staff to revise school policies regarding health? If so, how is this being accomplished?

Community Evaluation Questions

- Are SBHCs increasing access to and use of community resources such as community centers or other health care resources by students, staff, parents, and community members? If so, how is this being accomplished?
- Are SBHCs conducting needs assessments not just within schools but as partners in the community health assessment process of the local community as well? What steps have they taken to improve the identified needs?
- What community stakeholders are involved in the SBHC? How is the SBHC involved in community organization, planning, and health promotion?
- Does the presence of an SBHC influence community norms regarding health and health promotion?
- Do SBHC health promotion strategies include evidence-based practices that affect community level risk factors and determinants?

Public Policy Outcome Evaluation Questions

- What is the role of SHBCs in local, state, and national public policy related to wellness and health promotion?
- What policy changes have occurred because of lobbying by SBHC staff and/or community members influenced by SBHCs.

- How are SBHCs contributing to encouraging leadership by parents, staff, and students in health policy and decision-making?
- Do SBHC health promotion strategies include evidence-based practices that affect policy level risk factors and determinants?

Conclusion

SBHCs promote themselves as a solution for the poor status of health care and even more importantly health in children in the US. SBHCs have demonstrated that they have an interest in incorporating evaluation into their program as evidenced by the resources available on evaluation and the literature that does existing reviewing the impact of SHBCs. However, there is a dearth of literature that evaluates the impact of SBHCs beyond the individual level of health determinants and outcomes. There are still unanswered questions about whether SBHCs are the best use of resources for improving access to care, improving student health, and transforming the health of communities. In order to investigate these issues, SBHCs must improve their evaluation techniques to include broader evaluative questions such as those suggested in this review.

These types of evaluative questions are not easy to operationalize within a community setting. Public health research is inevitably plagued with challenges because of the uncontrolled environment, difficulty quantifying measures such as community engagement, and complex data analysis after complicated and interacting interventions. However, these challenges do not negate the responsibility and urgency with which public health professionals must support their interventions with solid evidence. There are resources and frameworks to help researchers quantify complex interventions. One such framework was suggested by Campbell et al. (2000) to quantify the phases of a complex intervention and clarify the components of an intervention

and a feasible protocol for comparing the intervention with an appropriate control group. Their iterative steps help researchers clarify their study design and questions to improve the quality of research. One challenge for public health research is that evaluation methods are often qualitative in nature making them more expensive and difficult to analyze. However, there are also resources for public health professionals to help combine qualitative and quantitative measures such as quantitative surveys combined with key informant interviews to provide a stronger research picture (Stange et al., 2000).

There is a potential gap between the proposed goal of SBHCs in community engagement and health promotion and the actual practice. Yet, what is even more exciting are the potential opportunities for SBHCs in filling the need for health promotion activities in schools and communities. The health of children in the United States is plagued with increased incidence of chronic diseases and declining physical activity and other health protective activities. In addition, there are additional threats from environmental, psychological, and social concerns. SBHCs are building an increasing base of support from governmental, non-profit, and other health agencies for their role in child and family health. So they could easily expand their influence to impact other broader community concerns such as environmental destruction.

What SBHCs must be willing to do is embrace their potential leadership role in bridging the gap between clinical medicine and public health. A successful leader within an organization must do more than self-promotion, but articulate a vision and inspire people to succeed. A leader must see beyond the current status quo to encourage and promote what the vision can be. As Rowitz (2009) says, "leadership is creativity in action. It is the ability to see the present in terms of the future while maintaining a respect for the past" (pp 5). In the same way, SBHCs must move beyond their role in individual, clinical health care to advance their role as critical

components of population based, health promotion to improve health and wellness in general. SBHCs need to cast a vision for a broader picture of health that integrates excellent clinical medicine with evidence based public health promotion and engagement activities.

New visions and frameworks for combining clinical medicine and public health are particularly urgent and relevant in the climate of the Affordable Care Act and the opportunity to rethink and restructure healthcare in the United States. SBHCs could consider the framework of community oriented primary care (COPC) for insight into further bridging the gap. COPC combines primary care with community assessment, community engagement, and a focus on population based health promotion and prevention (Mullan & Epstein, 2002). For example, the Bolivar County Health Council, which oversaw a group of COPC centers in Mississippi in the 1970s, recognized the role of racial discrimination in poverty and poor health. Through community advocacy and financial pressure, the group stopped racist banking practices such as not giving loans to African Americans or hiring only white tellers (Geiger, 2002). More recent examples of the COPC framework include the Parkside Health System in Dallas, Texas, a high quality healthcare system that has community assessment, prioritization, and engagement as a backbone of the service model. The health system has garnered so much community support that when faced with a significant budget deficit, the community supported an $83 million dollar property tax increase the support the health system (Pickens, Boumbulian, Anderson, Ross, & Phillips, 2002). SBHCs demonstrate similar abilities to garner community support and could be another manifestation of this framework to improve health care in the US.

Another sense in which SBHCs can lead in bridging the gap between medicine and public health is by promoting collaboration within a very fragmented medical system. SBHCs should not and are not intended to compete with existing health care resources such as physician

practices or other community clinics (American Academy of Pediatrics, 2001; NASBHC, 2002). SBHCs complement these practices providing medical care for students who do not have ready access to such services, but even more importantly by creating a potential continuum of health promotion interventions between these practices and the school and community environment. Effective health promotion addressing the multiple determinants of health particularly on the community and policy level cannot happen without collaboration among multiple health care resources within communities. Since SBHCs straddle both clinical medicine and public health principles, they are uniquely able to initiate, develop, and sustain such collaborations and conversations.

New Models of Health and SBHC Practice

Because SBHCs have been on the forefront of designing and implementing models to improve health and health care, there is opportunity for continued exploration of the best way to promote health. One new model, which I am a part of designing, is an Intergenerational Health and Wellness Practice being developed at a charter school in Cleveland, Ohio. The Intergenerational School (TIS) is already an innovative model for excellent education of urban children using a multi-age model of learning (The Intergenerational School, 2010). Located within a poor urban school district, TIS serves many students who have chronic diseases such as obesity and asthma and are at higher risk for ill-health than their suburban counterparts. The goal of the Intergenerational Health and Wellness Practice is to develop a health clinic within TIS that not only provides health for students, but engages the entire school and local community through a life-span model of health.

Already the school has partnered with a local university to develop a community garden to promote healthy eating and the practice aims to extend such activities. A school garden is an

excellent opportunity for an intervention that addresses several levels of the socio-ecological model by providing students with knowledge about fruits and vegetables but also encouraging local community engagement. The garden also practically provides local produce for the students and community at large increasing one important community resource to help combat obesity. In addition, the practice will build on other interventions such conducting health fairs, training nursing and medical students in the principles of community health with hands-on activities, and promoting a health coaching program to train people to help their family and community members with chronic disease management. All of these efforts are targeted not only at TIS students and families but the community as well.

This literature review of SBHCs and their strengths and weaknesses will inform the development of this practice to incorporate community and policy determinants of health within the program planning and evaluation process. One of the first steps in the planning process is to develop a parent survey and incorporate measures of broader determinants of health such as community engagement, social networks, and policy issues of concern to students, parents, and the community. Research methods and outcomes are being developed to determine the effect of the practice and health interventions on individual and community health. For example, a randomized controlled trial combined with qualitative and ethnographic research is being planned to evaluate the school garden. One of the aims of this paper is to provide background and initial guidance for evaluation questions that explore how this practice and the resulting health promotion interventions are impacting determinants on multiple levels of the socio-ecological model.

Another important aspect of the research is measuring the cost-effectiveness of the programming which combines health and education on an intergenerational front. Because the

practice and all of its programming has an intergenerational and health promotion focus, the integration of these services should in theory reduce the cost. Instead of having separate programs for each aspect of health and health promotion, the practice will provide health education to multi-generational families about shared health conditions. In this sense, educators will reduce the time for visits but also increase the social networking strength and capacity of the family because the care will be together and will be integrated with the school's environment and health curricula. Grandparent, parent, and child can reinforce the health messages and encourage each other in the journey to better health.

The Intergenerational Health and Wellness Practice is an opportunity to lead the field of school based health centers towards more innovative and integrative models of health and wellness. It is also an opportunity for me to build on my own leadership skills and public health knowledge to contribute to public health practice and research. As the Registered Nurse at TIS and a member of the practice team, I will ensure that the practice builds on an appropriate community needs assessment, involves community members within and outside of the school itself, determines an evaluative process, based on an agreed upon logic model, that includes broad measures such as those suggested in this paper, and encourages an iterative and innovative process for implementing health promotion activities.

As this review of literature has considered, these are some challenges but more importantly great opportunities for SBHCs and other innovative centers such as the Intergenerational Health and Wellness Practice to be leaders in uniting clinical medicine and public health to increase health promotion and ultimately improve health. The literature demonstrates a void in evaluation resources and studies that show an impact on multi-level determinants of health and wellness. However, SBHCs have a strong history of perseverance,

leadership, and creativity in advocating for school health services. This same passion can be channeled into expanding both the scope of their impact and the evaluative processes to measure such impact to improve health, wellness, and their complex determinants on multiple levels of the socio-ecological model of health.

References

American Academy of Pediatrics. (2001). School Health Centers and Other Integrated School Health Services. *Pediatrics, 107, 1,* 198-201.

Anglin, T.M., Naylor, K.E., and Kaplan, D.W. (1996). Comprehensive school-based health care: high school students' use of medical, mental health, and substance abuse services. *Pediatrics, 97, 3,* 318-330.

Blacksin, B., Gall, G., Feldmand, E. & Miller, E. (n.d.) *NASBHC Position Statement: The Role of School Based Health Centers (SBHCs) in Improving Health Equity and Reducing Health Disparities*. Retrieved June 17, 2011 from http://ww2.nasbhc.org/RoadMap/PUBLIC/Advocacy_healthdisparitiesstatement.pdf

Brindis, C., Kaplan, D.W., and Phibbs, S.L. (n.d.) *A Guidebook for Evaluating School Based Health Centers*. Retrieved May 29, 2011 from http://ww2.nasbhc.org/RoadMap/PlanningandEvaluation/Evaluation/Guidebook%20for%20Evaluating%20SBHCs.pdf

Brindis, C.D., Klein, J., Schlitt, J., Santelli, J., Juszczak, L., and Nystrom, R. School-based health centers: Accessibility and accountability. *Journal of Adolescent Health, 32,* 98-107.

Brown, M.B. and Bolen, L.M. (2007). The School-Based Health Center as a Resource for Prevention and Health Promotion. *Psychology in the Schools, 45, 1,* 28-38.

Brown, M.B. and Bolen, L.M. (2003). Introduction to the special issue: School-based health centers. *Psychology in the Schools, 40, 3,* 245-251.

Campbell, M. Fitzpatrick, R., Haines, A., Kinmonth, A.L., Sandercock, P., Spiegelhalter, D., and Tyrer, P. (2000). Framework for design and evaluation of complex interventions to improve health. *British Medical Journal, 321,* 694-6.

Centers for Disease Control and Prevention [CDC], U.S. Department of Health and Human Services. (2005). *Introduction to Program Evaluation for Public Health Programs: A Self- Study Guide*. Retrieved October 31, 2010 from http://www.cdc.gov/eval/evalguide.pdf

CDC. (2011). *What is the Community Guide?* Retrieved June 13, 2011 from http://www.thecommunityguide.org/index.html

Colorado Department of Public Health and Environment. (2009). *Colorado School-Based Health Center Program Logic Model and Evaluation*. Retrieved June 14, 2011 from http://www.cdphe.state.co.us/ps/school/SBHC%20Logic%20Model%20June%2009.pdf

Gance-Cleveland, B. and Yousey, Y. (2005). Benefits of a school-based health center in a preschool. *Clinical Nursing Research, 14, 4,* 327-342.

Geiger, H.J. (2002). Community-Oriented Primary Care: A Path to Community Development. *American Journal of Public Health, 92, 11,* 1713- 1716.

Guo, J.J., Wade, T.J., Pan, W., and Keller, K.N. (2010). School-based health centers: Cost–benefit analysis and impact on health care disparities. *American Journal of Public Health, 100, 9,* 1617-1623.

Hackbarth, D. and Gall, G.B. (2005). Evaluation of school-based health center programs and services: the whys and hows of demonstrating program effectiveness. *Nurisng Clinics of North America, 40, 4,* 711-724.

Institute of Medicine. (2003). T*he Future of the Public's Health in the 21st Century*. Washington, DC: The National Academies Press.

Kaiser Family Foundation. (2010). *Summary of the New Health Reform Law*. Retrieved June 17, 2011 from http://www.kff.org/healthreform/upload/8061.pdf

Kisker, E.E. and Brown, R.S. (1996) Do school-based health centers improve adolescents' access to health care, health status, and risk-taking behavior? *Journal of Adolescent Health, 18, 5,* 335-343.

Lear, J.G. (2003). School-Based Health Centers: A Long Road to Travel. *Archives of Pediatric and Adolescent Medicine, 157,* 118-9.

Lear, J.G. (2007). Health at School: A Hidden Health Care System Emerges from the Shadows. *Health Affairs, 26, 2,* 409-419.

Lurie, N., Bauer, E.J., and Brady, C. (2001). Asthma outcomes at an inner-city school-based health center. *Journal of School Health, 71, 1,* 9-16.

Mavis, B., Pearson, R., Stewart, G, and Keefe, C. (2009). A work sampling study of provider activities in school-based health centers. *Journal of School Health, 79, 6,* 262–268.

Mullan, F. and Epstein, L. (2002). Community-Oriented Primary Care: New Relevance in a Changing World. *American Journal of Public Health, 92, 11,* 1748-1755.

Nabors, L. (2003). Evaluation in school-based health Centers. *Psychology in the Schools, 40, 3,* 309-320.

National Association of School Based Health Centers [NASBHC]. (2002). *School-Based Health Centers: A National Definition, Position statement of the National Assembly on School Based Health Care*. Retrieved February 10, 2011 from http://ww2.nasbhc.org/RoadMap/PUBLIC/Advocacy_SBHCdefinition.pdf

NASBHC. (n.d.a) *Academic Success Tool Kit*. Retrieved May 29, 2011 from http://www.nasbhc.org/site/c.jsJPKWPFJrH/b.3924465/k.5C23/TA_Academic_Outcomes.htm

NASBHC. (n.d.b). *NASBHC Principles and Goals for School-Based Health Centers.* Retrieved April 11, 2011 from http://www.nasbhc.org/site/c.jsJPKWPFJrH/b.2743459/k.9519/NASBHC_Principles_and_Goals_for_SBHCs.htm

NASBHC. (n.d.c) *Productivity and School-Based Health Centers: The SBHC Report Card.* Retrieved May 28, 2011 from http://www.nasbhc.org/site/c.jsJPKWPFJrH/b.2952683/k.6F36/EQ_Productivity_for_SBHCs.htm

NASBHC. (n.d.d). *School-Based Health Center Performance Evaluation*. Retrieved May 29, 2011 from http://www.nasbhc.org/atf/cf/%7BCD9949F2-2761-42FB-BC7A-CEE165C701D9%7D/EQ_PerformanceEvaluation.pdf

NASBHC. (n.d.e). *School Based Health Center Report Card* [Microsoft Excel Document]. Retrieved April 29, 2011 from http://www.nasbhc.org/atf/cf/%7Bcd9949f2-2761-42fb-bc7a-cee165c701d9%7D/EQ_SBHC%20REPORT%20CARD.XLSX

NASBHC. (n.d. f) *School Based Health Centers and Childhood Obesity*. Retrieved July 1, 2011 from http://www.nasbhc.org/atf/cf/%7BCD9949F2-2761-42FB-BC7A-CEE165C701D9%7D/Advocacy%20fact%20sheet%20obesity.pdf

Niles, N. (2010). *Basics of the U.S. Health Care System*. Sudbury, MA: Jones and Bartlett Publishers.

Ogilvie, J.P. (2011, May 8). Childhood Obesity: Still battling weight in Arkansas. *L.A. Times.* Retrieved May 18, 2011 from http://www.latimes.com/health/la-he-arkansas-weight-20110508,0,5096819.story

Pastore, D.R. and Techow, B. (2004) Adolescent school-based health care: a description of two sites in their 20th year of service. *Mount Sinai Journal of Medicine, 71, 3,* 191-196.

Peak, G.L. and Hauser McKinney, D.L. (1996). Reproductive and sexual health at the school-based/school-linked health center: An analysis of services provided by 180 clinics. *Journal of Adolescent Health, 19, 4,* 276-281.

Pickens, S., Boumbulian, P., Anderson, R.J., Ross, S., and Phillips, S. (2002). Community-Oriented Primary Care in Action: A Dallas Story. *American Journal of Public Health, 92, 11,* 1728-1732.

Rasmussen, M., Krolner, R, Klepp, K.I., Lytle, L., Brug, J., Bere, E., and Due, P. (2006). Determinants of fruit and vegetable consumption among children and adolescents: a

review of the literature. Part I: quantitative studies. *International Journal of Behavioral Nutrition and Physical Activity, 3, 22*. Retrieved July 5, 2011 from http://www.ijbnpa.org/content/3/1/22

Ricketts, S.A. and Guerney, B.P. (2006). School-based health centers and the decline in Black teen fertility during the 1990s in Denver. *American Journal of Public Health, 96, 9,* 1588-1592.

Robert Wood Johnson Foundation. (2011). *Mission and History*. Retrieved June 15, 2011 from http://www.rwjf.org/about/mission.jsp

Rowitz, L. (2009). *Public health leadership*. Sudbury, MA: Jones and Bartlett.

Santelli, J., Kouzis, A., and Newcomer, S. (1996). Student attitudes toward school-based health centers. *Journal of Adolescent Health, 18, 5,* 349-356.

Schneider, M. (2006). *Introduction to public health* (2nd ed.). Sudbury, Mass.: Jones and Bartlett.

Scudder, L., Papa, P., and Brey, L.C. (2007). School-Based Health Centers: A Model for Improving the Health of the Nation's Children. *The Journal for Nurse Practitioners,3, 10,* 713- 720.

Sharma, M., and Ickes, M. J. (2008). Psychosocial Determinants of Childhood and Adolescent Obesity. *Journal of Social, Behavioral, and Health Sciences, 2,* 33-49.

Shuler, P.A. (2000). Evaluating student services provided by school-based health centers: applying the Shuler Nurse Practitioner Practice model. *Journal of School Health, 70, 8,* 348-352.

Silberberg, M. and Cantor, J.C. (2008). Making the Case for School Based Health: Where Do We Stand? *Journal of Health Politics, Policy and Law, 33, 1,* 3-37.

Silberman, P., Liao, C. E., & Ricketts III, T.C. (2010). Understanding Health Reform: A Work in Progress. [Issue Brief]. *North Carolina Medical Journal, 71,* 3, 215-231.

Soleimanpour, S., Brindis, C., Geierstranger, S., Kandawalla, S., and Kurlaender, T. (2008). Incorporating Youth-led community participatory research into school health center programs and policies. *Public Health Reports, 123, 6,* 709-716.

Stange, K., Miller, W.L., Crabtree, B.F., O'Conner, P.J., and Zyzanski, S.J. (1994). Multimethod Approach: Approaches for Integrating Qualitative and Quantitative Methods. *Journal of General Internal Medicine, 9,* 278-282.

Starr, P. (1982). *The Social Transformation of American Medicine*. New York, NY: Perseus Books Group.

Strozer, J., Juszczak, L., & Ammerman, A. (2010). *2007-2008 National School-Based Health Care Census*. Washington, DC: National Assembly on School-Based Health Care.

Suleiman,A.B., Soleimanpour,S., and London,J. Youth action for health through youth-led research. *Journal of Community Practice, 14, 1,* 125-145.

The Intergenerational School. (2010). *Welcome to TIS*. Retrieved June 15, 2011 from http://www.tisonline.org/

Trivette, P.S. and Thompson-Drew, C. (2003). Implementing a school-based health center: The Winston-Salem/Forsyth County experience. *Psychology in the Schools, 40, 3,* 289-296.

Turnock, B.J. (2009) *Public Health: What It Is and How It Works.* Sudbury, Massachusetts: Jones and Bartlett Publishers.

United States Department of Health and Human Services. (2011). *The National Prevention Strategy: America's Plan for Better Health and Wellness*. Retrieved June 17, 2011 from http://www.healthcare.gov/center/councils/nphpphc/strategy/index.html

United States Preventive Services Task Force. (n.d.) *US Preventive Services Task Force*. Retrieved June 11, 2011 from http://www.uspreventiveservicestaskforce.org/

Webber, M.P., Carpiniello, K.E., Oruwariye, T., Lo, Y., Burton, W.B., and Appel, D.K. (2003). Burden of Asthma in Inner-city Elementary Schoolchildren: Do School-Based Health Centers Make a Difference? *Archives of Pediatric Adolescent Medicine, 157,* 125-129.

Webber, M.P., Hoxie, A.M., Odlum, M., Oruwariye, T., Lo, Y., Appel, D. (2005) Impact of asthma intervention in two elementary school-based health centers in the Bronx, New York City. *Pediatric Pulmonology, 40, 6,* 487-493.

W.K. Kellogg Foundation. (2004). *W.K. Kellogg Foundation Evaluation Handbook*. Retrieved November 1, 2010 from http://www.wkkf.org/Pubs/Tools/Evaluation/Pub770.pdf

W.K. Kellogg Foundation. (n.d.). *What We Support*. Retrieved June 1, 2011 from http://www.wkkf.org/what-we-support/what-we-support.aspx

World Health Organization [WHO]. (1998). *Health Promotion Glossary*. Retrieved June 16, 2011 from http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf

WHO. (2000). *The World Health Report- Health Systems: Improving Performance*. Retrieved June 17, 2010 from http://www.who.int/whr/2000/en/whr00_en.pdf

WHO. (2008). *Closing the gap in a generation: Health equity through action on the social determinants of health.* Retrieved June 11, 2011 from http://whqlibdoc.who.int/publications/2008/9789241563703_eng.pdf

WHO. (2009). *Milestones in Health Promotion: Statements from Global Conferences.* Retrieved June 14, 2011 from http://www.who.int/healthpromotion/Milestones_Health_Promotion_05022010.pdf

WHO. (n.d.) *Health Promotion Glossary Update*. Retrieved June 15, 2011 from http://www.who.int/healthpromotion/about/HPR%20Glossary_New%20Terms.pdf