

ORIGINAL RESEARCH

School Health Services for Children with Chronic Health Conditions in California Public Secondary Schools: Findings from the 2018 School Health Profiles Survey

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Abstract

Background: More than 20% of school districts in the United States do not have policies on identification and case management for students with chronic health conditions (CHCs), suggesting that these students' health needs may not be met during the school day. Prior research reports a gap in policy implementation and the actual provision or operationalization of the policy into action. **Significance:** While there is limited research on school health policies, little is known about the actual provision of the services that such policies indicate should be provided. Notably, the actual provision of health services in U.S. schools, particularly regarding CHC management and its association with school nurse employment, is underreported. **Methodology:** Using data from the 2018 School Health Profiles (SHP) Survey, health services including administering daily medication, providing stock rescue medication, providing case management, facilitating community partnering, and providing disease-specific education were examined in California public secondary schools together with school nurse employment. Complex sampling analysis and chi-square statistics were used to examine the statistical associations. **Results:** A significantly greater proportion of schools with a full- or part-time nurse compared with schools with no nurse provided: (1) daily medication administration (82.1% vs. 68.1%; $p = .014$); (2) case management services (75.8% vs. 62.0%; $p = .031$); (3) disease-specific education for parents and families (44.9% vs. 25.7%; $p = .016$); and (4) parent and student connection to health services in the community (83.7% vs. 72.2%; $p = .035$). **Conclusion:** Findings suggest that nationally representative data, such as SHP, contain important information for states to review regarding school health policies and provision of services. Further research needs to expand these findings to better understand school health policy and practice and its alignment with state and federal laws to support all children, especially those with CHCs.

Keywords: child, school health services, school nursing, health policy, chronic diseases

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Introduction

Approximately 25% of all school-aged youth have a chronic health condition (CHC), generally described as one that reduces performance in activities, requires daily medication, includes regular medical intervention, and/or involves nursing and medical care (Bernell & Howard, 2016; Centers for Disease Control and Prevention [CDC], 2019a; Noonan et al., 2020). The presence of health policies concerning CHCs supports a well-defined structure of protection, well-being, and safety for these children and promotes a school atmosphere of nondiscrimination, inclusivity, and equitability in education (Russell et al., 2016; Day et al., 2019).

Of concern is that in 2016, more than 20% of the school districts in the United States did not have policies on identification, instruction, tracking, and/or case management of students with CHCs and disabilities (McCabe et al., 2020). This suggests that students' CHC needs may not be met at school. In addition, when comparing U.S. school districts' CHC policies by region of the U.S. (Northeast, South, Midwest, and West), districts in the Northeast Region had the greatest proportion of such CHC policies, and Western districts reported the least (McCabe et al., 2020). This finding is consistent with additional research that reports that the Western Region of the U.S. has a lower proportion of school health policies than other regions of the country (Demissie & Brener, 2017; Jones et al., 2019; McCabe et al., 2021; Tiu et al., 2019).

Importantly, youth with CHCs often require assistance managing their conditions while in school (CDC, 2019a; Leroy et al., 2017). This assistance is often given by school nurses (CDC, 2016, p. 13) who provide routine and urgent care, care coordination, and case management interventions to keep youth with CHCs safe and healthy (Best et al., 2018; 2020; Lineberry & Ickes, 2015; McCabe et al., 2019; McClanahan & Weismuller, 2015). Thus, because school nurses work in partnership with students, families, school staff, and health care providers to support students' health and academic accomplishments (Leroy et al., 2017), employment policies concerning school nurses are especially relevant for youth with CHCs. Prior research has, in fact, examined national U.S. school district data exploring the association between CHC policies and school nurses' employment policies (McCabe et al., 2020). In U.S. school districts with a full- or part-time school nurse employment policy (52.3% of U.S. school districts in 2016), a significantly greater proportion of districts also had policies on identification, instruction, tracking, and case management of students with CHCs and disabilities (McCabe et al., 2020).

Knowledge about school health services policies is important; however, it is vital to examine the *actual provision* of school health services beyond just the provision of policies (Jameson et al., 2020). Therefore, the purpose of this study was to examine the provision of health services in U.S. schools, primarily for students with CHCs. As the Western Region of the U.S. reports fewer school nurse employment and CHC management policies

than other U.S. regions, and because there are variations in the provision of services within and across states (Chriqui et al., 2019; Knauer et al., 2015), this study focused on the state of California, the largest state in the Western Region of the U.S. We, therefore, examined the extent to which public secondary schools in California employed full- or part-time registered nurses. We note that despite the importance of school nurses in supporting youth with CHCs, we are unaware of published research that systematically examined school nurse employment related to the provision of health services for these youth. Thus, we aimed to compare the provision of health services, primarily for youth with CHCs, among schools that employ a full- or part-time nurse with those that do not. Analyses were conducted using data collected from California public secondary schools, (i.e., schools with one or more of grades 6 through 12), in the 2018 School Health Profiles dataset. We hypothesized that California public secondary schools that employ either a full- or part-time nurse would be more likely to provide health services, particularly those related to CHC management.

Material and methods

The School Health Profiles

Analyses for this study used data from the School Health Profiles (SHP) 2018 School Principal Questionnaire. SHP consists of various surveys measuring school health policies and practices in states, large urban school districts, and territories. These school policies and practices include school health and physical education, bullying and sexual harassment, tobacco use and prevention, nutrition, school-based health services, family and community engagement, and school health coordination (CDC, 2019b). Since 1996, SHP has been conducted biennially by the Centers for Disease Control and Prevention (CDC) with local education and health agencies "to measure progress in the implementation of school policies and practices to help improve the health of school-aged youth" (CDC, 2019b, p. 1).

SHP surveys a sample of secondary schools. In 2018, 43 states, 21 large urban school districts, and 2 territories obtained data from their jurisdictions (CDC, 2019b). Separate surveys from the principal and lead health education teacher at each sampled school were collected via a self-administered paper and pencil or web-based questionnaire. The survey questions differ for the two groups of professionals. This study analyzed data from the principal survey as questions regarding nurse employment and provision of the selected health services were not asked in the lead health educator survey. Survey participation was confidential and voluntary. If at least 70% of the principals and lead health education teachers in the sample completed the questionnaire in participating states, school districts, and territories, the data could be weighted to represent the population (CDC, 2019b). This study will analyze weighted survey data from the California 2018 School Principal Questionnaire.

Sampling, data collection, questionnaire, and response rates

SHP 2018 utilized a random, systematic, probability sampling approach to sample schools that serve students in secondary schools in each jurisdiction. Data from SHP 2018, collected at the school level only, were used in this study's analysis. Therefore, our unit of analysis was the school.

Our analytic focus was on school practices involving health services and family and community involvement. Information about questionnaire development and a print version of its final copy are available online (CDC, 2019a). A total of 373 of 504 (74%) sampled California public secondary schools responded to the school principal questionnaire. The publicly available data were considered exempt from review by the Institutional Review Board at Hunter College.

Study Measures

Our analyses included survey responses ("yes" or "no") from the 2018 California School Principal Questionnaire to two queries: *Is there a full-time registered nurse who provides health services to students at your school?* and *Is there a part-time registered nurse who provides health services to students at your school?* Using responses to these two questions, we created a dichotomous variable that reflected whether or not the school had a full- or part-time nurse. Additionally, to be included in our analyses, school principal respondents must have answered "yes" or "no" to the school's provision of five selected health services regarding CHC management included in SHP 2018. See Table 1 for a description of these services.

Statistical Methods

Analyses used the complex samples module in IBM SPSS 27 with sampling with replacement to account for the complex sampling strategy in SHP 2018. Incorporating the stratification and weighting of schools that the 2018 SHP provided, the software enabled obtaining correct confidence intervals and standard errors, valid point estimates, and testing of hypotheses (West et al., 2018). It also enabled the extrapolation of findings to all public secondary schools in California. Descriptive statistics were computed for individual variables. Chi-square statistics were then examined to determine statistical associations between full- or part-time nurses' employment and provision of CHC services. Statistical significance was set at $p < .05$.

Table 1

Association Between Nurse Employment and Provision of Health Services in California Public Secondary Schools

Services	Total (%)	Has a full or part-time nurse (%)	Has neither a full nor part-time nurse (%)	p-value
Provides daily medication administration for students with CHCs (e.g., asthma, diabetes)	80.3	82.1	68.1	.014*
Provides stock rescue or "as needed" medication for any student experiencing a health emergency (e.g., asthma episode, severe allergic reaction)	71.1	72.8	60.0	.053
Provides case management for students with CHCs (e.g., asthma, diabetes)	74.0	75.8	62.0	.031*
Links parents and families to health services and programs in the community	82.2	83.7	72.2	.035*
Provides disease-specific education for parents and families of students with CHCs (e.g., asthma, diabetes)	42.4	44.9	25.7	.016*

Note. The data were analyzed using Pearson's chi-square test for complex samples.

* $p < .05$.

Results

A total of 373 California public secondary schools responded to the 2018 school principal survey. Of these, 354 (94.9%) responded to whether they had a full- or part-time nurse and whether the school provided five selected health services to students or families. These 354 schools constitute the study sample. Results were extrapolated to the population of public secondary schools in California using complex samples software.

Of all the schools, 86.8% reported having a full- or part-time nurse, and 13.2% reported having neither a full- nor part-time nurse. As can be seen in Table 1, 42.4% of schools reported that they provided disease-specific education for parents and families of students with CHCs such as asthma and diabetes. Most schools reported that they stocked rescue or “as needed” medication for any student experiencing a health emergency (71.1%) and provided case management for students with CHCs (74.0%). Most schools also reported that they provided daily medication administration for students with CHCs (80.3%), and linked parents and families to health services and programs in the community (82.2%).

Regarding students with CHCs such as asthma and diabetes, as can be seen in Table 1, a significantly larger proportion of schools with a full- or part-time nurse than those with neither a full- nor part-time nurse (1) provided daily medication administration (82.1% vs. 68.1%; $p = .014$); (2) provided case management services (75.8% vs. 62.0%; $p = .031$); and (3) provided disease-specific education for parents and families (44.9% vs. 25.7%; $p = .016$). Additionally, a significantly larger proportion of schools with a full- or part-time nurse linked parents and students with health services and programs in the community than schools with neither a full- nor a part-time nurse (83.7% vs. 72.2%; $p = .035$).

Discussion

To our knowledge, this is the first study to systematically examine the employment of school nurses, provision of health services for children with CHCs, and the relationships between the two in California public secondary schools. The current study results indicate that 86.8% of public secondary schools in California, the largest state in the Western Region of the U.S., report employing a full- or part-time nurse, and 13.2% do not. Previous research is consistent with this finding. Willgerodt and colleagues (2018) reported that 16.1% of schools in the Western Region of the U.S. employed neither a full nor part-time nurse. While the proportion of public secondary schools in California that report employing a full or part-time nurse may appear encouraging, prior research has indicated that only a small proportion of these schools (22.4% of California public secondary schools) employed a *full-time* registered school nurse (CDC, 2019b, p. 176). Additionally, in 2018-19, Kids Data (2019) reported that there were 2,566 full-time equivalent school nurses in California translating to approximately one nurse for every 2,400 students. The combination of a small proportion of full-time nurses together with the small number of nurses relative to the number of students emphasizes the reason for concern regarding school nurse employment in California schools. School-level health service data, including the employment of nurses, are important to examine, particularly in California, a state located in a region with limited school nurse employment policies (McCabe

et al., 2020).

Variation in school nurse employment practices may be related to a lack of strategic guidance and resources, which may arise when there are no specific guidelines, practice procedures, or resources (both human and financial). In that case, organizations are left to design policies and procedures independently (Grier & Schaller, 2020; Merlo et al., 2018; Srivastav et al., 2020). The state of California Education Code 49426 Employment of Medical Personnel (1976) has written statutes on credentialing of school nurses and describes the intent of the state legislature to “provide positively” for the health services. Further, the California state legislature indicates that there are “responsibilities” that school nurses may perform in schools, but only “if authorized” by the local governing board. Thus, the language in the statute provides no strategic guidance and stops short of indicating that a school nurse is necessary.

School nurses are acknowledged school health leaders and advocate for health policy with the skills and knowledge to improve student health and academic outcomes (Best et al., 2021; Maughan et al., 2018; Yoder, 2020). However, the school setting is devoted to education. This can pose challenges with school health policy development and implementation of policies into practice, especially as the U.S. Department of Education (2015) describes principals as the “centerpiece” of state policy implementation. Principals are education leaders, and as such, their focus is primarily on academic responsibilities rather than health services. For example, in a study examining principal and teacher knowledge of health policies related to sun safety practices in California schools, only 32.5% of principals and 11.9% of teachers were aware that their school district had a policy on sun protection (Buller et al., 2018). The authors suggest that principals and teachers may be more likely to understand and learn about health policies when it involves their classroom procedures, responsibilities, and curricula. Therefore, it is possible that some health services policies are in place at the state and school level but not implemented, especially if they involve those not typically addressed by principals or teachers.

Consistent with our hypothesis, study results demonstrate that having a full-or part-time nurse employed in a public secondary school in California was positively and statistically significantly associated with the provision of health services, including daily medication administration, case management and education of students with CHCs, as well as linking students and families to health services in the community. Differences between schools that had a full- or part-time nurse and those that did not regarding the provision of stock medication and as-needed medication were close to statistically significant ($p = .053$), suggesting that these differences should also be considered in practice and future research.

Regarding the provision of school health services, our research indicates, for example, that 80.3% of schools with a full or part-time nurse in California provide daily medication administration for students with CHCs (e.g., asthma, diabetes), with a lower proportion of public secondary schools (68.1%) reporting that they offer this health service but do not employ either a full or part-time nurse. This finding suggests that a sizable proportion of students with CHCs in California public secondary schools

with no nurse may not have their health needs met by a licensed health professional regarding receipt of necessary medication. The components involved with medication administration at school include medication orders, documentation regarding administration, appropriate storage and disposal of medication, and proper labeling, suggesting the importance of the involvement of a health professional. In fact, the National Association of School Nurses (NASN) posits that “a registered professional school nurse be responsible for medication administration in the school setting, leading the development of written medication administration policies and procedures that focus on safe and efficient medication administration at school” (NASN, 2017, para. 1). If a school does not have a nurse on-site, we therefore, encourage stakeholders to inquire about who administers insulin to a newly diagnosed student with type 1 diabetes, albuterol to a child with asthma, or Focalin (dexamethylphenidate) to a child with attention deficit hyperactivity disorder.

While our research focused on potential differences in school nurse employment practices and its relationship to the provision of health services in the largest state in the Western Region of the U.S., we recognize that there may be other explanations for these differences. Previous research has suggested that variation in school health policies and practices may be associated with demographics and socioeconomic factors such as poverty, school community locale (e.g., urban, rural, suburban), and school type (elementary, middle, high school) (Emley et al., 2020; McCabe et al., 2020; Searing & Guenette, 2016; Tiu et al., 2019). Cygan et al. (2020) identified school district support and leadership as essential for school health policy implementation. As the health leaders in schools, school nurses are therefore essential in implementing health policies. Leeman et al. (2018) observed that well-designed tools for implementing and applying evidence-based interventions were integral to supporting school health practices. Importantly, all stakeholders and partners must also be involved in both policy implementation and sustainability (McDonnell & Weatherford, 2016; McIsaac et al., 2019).

This study demonstrates that the employment of a school nurse is vital in the provision of health and wellness services for school children. The data also suggest that school nurses may be policy implementation leaders, as schools that employ a full or part-time nurse were statistically significantly more likely to provide these school health services.

Limitations

This research study has a few limitations. First, although the SHP surveys are completed by school principals and lead health education teachers in each sampled school, this study only analyzed data from the principal survey. Questions regarding nurse employment and provision of the selected health services were not asked in the lead health educator survey. Second, because the SHP data were self-reported, principals' responses may have been inflated due to social desirability or sometimes underreport services of which they are unaware. Additionally, SHP data are collected from U.S. public secondary schools and do not represent nonpublic schools. Furthermore, SHP data combine those from middle and high schools, and further research should distinguish between the two. Lastly, generalizability is limited as this research

study only examined one state, California. However, California is the most populous state in the U. S. and has great diversity in having both many urban and rural locations.

Implications for School Health Services

There are several implications from this study for school health service providers in California to consider. For example, the COVID-19 pandemic publicly highlighted the insufficient number of school nurses in California, with many schools reporting that they had either no nurse or had only a part-time nurse who shared time with other schools (Lambert, 2021). The lack of a qualified professional nurse was challenging as schools struggled to meet the recommended health and safety requirements to reopen safely. The school nurse, with expertise in population health, is the qualified professional to advise and lead schools in screening procedures for students and staff related to COVID-19 symptoms, contact tracing, and assessments regarding quarantine and isolation. The classroom teacher or school administrator, with educational preparation versus medical or nursing training, should not be the school professional to assess a cough or sore throat. Unfortunately, it took a pandemic to bring the issue of school health services, nurse employment, and safe staffing to the broader public.

Before and during COVID-19, school nurses were additionally responsible for acute and chronic management of school health issues, coordination of health screenings, and review of annual physical examinations and immunization records. These were all intended to improve the well-being of children and youth. While COVID-19 may have highlighted a school nursing shortage, the California School Nurses Organization and school administrators report that the lack of school nurses is not a new problem (Lambert, 2021). They report that school nursing positions are hard to fill for multiple reasons, including lower wages than those offered by the private sector and the need for school nurses to take additional classes to become credentialed (Lambert, 2021). In addition, California is one of 10 states that do not have a State School Nurse Consultant to monitor federal and state health policies and promote practice implementation in district schools. Some believe that such a person would help California schools operate safely while supporting the school nurse and developing and promoting quality standards for nurses to be liaisons between school health programs, state boards, and legislators (Lambert, 2021).

In consideration of the demands of COVID-19 as well as those of the next public health crisis and acute and chronic condition management, we urge stakeholders in California to complete a health needs assessment of their school communities as soon as possible. School districts should consider staffing and funding for the employment of school nurses to increase the number of health services, particularly for students with CHCs. Consideration ought to be given to the utilization of external funding when budget constraints present challenges to school health policy implementation, especially when a school nurse's salary may compete with other school funding priorities. Strong consideration should also be given to the creation and development of a school health leadership team that are influential in health practices change, offer education to school staff and the school community,

and conducts evaluations and feedback of school health services. In addition, strong school-community partnerships should be developed to strengthen school health policies, implement those policies, and explore support through financial and human resources. We also urge not only California, but all states to consider sustainability regarding the costs and benefits of school health services policies and practices. Finally, all states should review and utilize nationally representative data, such as SHP, to understand what policies and programs exist in their states and consider how to facilitate their implementation into practice.

Conclusions

Transparency for all stakeholders involved in school health services should not only center around medication administration at school but must address all health services intended to improve the well-being of youth. This includes the development of policies and procedures that address state and federal laws, state nurse practice acts, and evidence-based information. Further studies need to consider the complexity of factors associated with school health policy implementation and include the school nurse as a policy actor in that research.

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