

Assessing School-Based Oral Health Interprofessionalism through Public School Nurse Perceptions

Joni Dunmyer Nelson PhD, MS *Department of Stomatology, Division of Population Oral Health, Medical University of South Carolina*

Abigail Kelly MS *Department of Stomatology, Division of Population Oral Health, Medical University of South Carolina*

Raymond Lala DDS, FACD *South Carolina Department of Health & Environmental Control, Division of Oral Health*

Amy Martin DrPH, MSPH *Department of Stomatology, Division of Population Oral Health, Medical University of South Carolina*

Abstract

INTRODUCTION The need for oral health resources in the school setting is an integral part of the overall health of students. Studies have shown that not only do school nurses encounter dental emergencies in students, but they encounter children in pain more frequently than not due to oral cavity issues. Therefore, this study sought to examine the current knowledge and accessibility of oral health resources for nurses serving school-aged children.

METHODS Guided by an ecological framework, this study surveyed South Carolina school nurses (n= 42) about their access to oral health resources, knowledge of their students' dental health status and unmet needs, and challenges associated with receiving dental care.

RESULTS Two-thirds of school nurses saw urgent dental cases at least once a semester. Three quarters of the school nurses made referrals to a dentist at least once a semester. Half of the school nurses offered an annual dental screening. As a part of continuing dental care, referral completion for school-aged children was a challenge due to social determinants.

DISCUSSION This study directly aligns with the forthcoming 2020 Surgeon General Report on Oral Health, which includes a section on 'Oral Health Integration, Workforce and Practice'. This study reveals how school nurses are on the forefront of addressing children's health needs and their ability to contribute to the integrated oral healthcare workforce.

CONCLUSION Overall, a need exists to continue to elevate school nurses as interprofessional oral health practice champions to improve the oral health of children in South Carolina public schools.

Received: 09/17/2020 Accepted: 02/26/2021

© 2021 Dunmyer Nelson, et al. This open access article is distributed under a Creative Commons Attribution License, which allows unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Implications for Interprofessional Practice

- Quality improvement opportunities for school nurses could include the following: 1) continuing education on oral health 2) providing oral health education to their students 3) strategies to increase parent involvement for their child's preventive dental care.
- Fostering nurse-parent relationships will support the ability to educate parents and families around the importance of oral health and identify specific barriers faced by parents to receive dental care.
- Oral health outcomes for school-aged children can be impacted by improving school nurses' efficacy in the 4 key oral health interprofessional practices established by Health Resources and Services Administration, including: conducting the oral health basic screening survey for public health surveillance, oral health hygiene education, triaging dental care emergencies, and facilitating dental care referrals.
- Successful interprofessional oral health practice will require a focus on the systems in place to support referral management for urgent dental cases from school-based settings.

Introduction

South Carolina operates a statewide telehealth program that delivers virtual primary care services in the state's public schools where school nurses are essential partners. As the state explores how to facilitate the integration of oral health interprofessional practice into the statewide telehealth program, a contemporary understanding of school nurse experiences and issues around oral health management are essential. Therefore, this study seeks to examine the current knowledge and accessibility of oral health resources for nurses serving school-aged children.

Literature Review

Children with poorer oral health status are more likely to experience dental pain, perform poorly in school and have more absences (Jackson et al., 2011). Dental care is the most prevalent unmet health need in children with wide disparities existing in oral health and access to care (Mouradian, Wehr, & Crall, 2000). School nurses are often the first responders to dental emergencies. Unmet dental needs are one of the most common reasons students present with pain to school nurses. (Choi et al., 2012; Meadow & Edelstein, 1981). School nurses encounter a cadre of challenges, such as pain, infection, loose and missing teeth due to tooth decay, when addressing unmet oral health issues (ASTDD, 2017; Buerlein, 2010).

Methods

Our study was guided by the Fisher-Owens framework, which states that a complex interplay of causal factors can influence child oral health (Fisher-Owens et al., 2007). There are multiple factors that contribute to child oral health outcomes, including intrapersonal, interpersonal, institutional/organizational, community, and environmental factors (McLeroy et al., 1988). School nurses can act as champions within the school-based setting with the opportunity to impact preventive oral health services and dental care access (Albert, McManus, & Mitchell, 2005; Gargano, Mason, & Northridge, 2019). We conducted a formative evaluation using a survey to examine the community level of influence by exploring perspectives of school-based nurses (McLeroy et al., 1988; Meadow & Edelstein, 1981; Mouradian, Wehr & Crall, 2000). We created a 21-item survey that collected data about school nurses' knowledge of oral health and accessibility to dental care resources for their students. We solicited participation on our survey from all school nurses ($n=89$) who serve schools ($n=82$) that participate in the statewide school-based telehealth program. Participation was voluntary, yielding a convenience cohort of survey respondents for analytical purposes. Responses were collected via REDCap, (Harris et al., 2009) a secure web application for building and managing online surveys and databases. The data was compiled and simple descriptive analyses were run using SAS (version 9.4). All open-ended questions were analyzed for thematic analysis (Patton, 2014).

Results

A total of 42 nurses participated in the survey and an overall response rate of 47% was achieved. Responses from 12 of the 15 participating counties were collected. Participating nurses represented 11 rural and 31 urban schools. (See Figure 1. Counties of Surveyed Schools). School nurses self-identified their tenure, which ranged from less than 5 years to more than 10 years, with the many respondents serving in their role for more than 10 years (41%) (See Table 1. School-based Oral Health Survey and Descriptive Outcomes). The majority of school nurses described their dental services as being delivered in the school setting using portable equipment (69%). (See Table 1. School-based Oral Health Survey and Descriptive Outcomes). A higher percentage (85%) of school nurses responded that someone other than themselves provided preventive dental services at their school, in comparison to the 15% who provided preventive dental services directly. When asked how frequently the outside dental provider visited their schools, numbers trended towards less often with 46% once a year to, 3% as needed. (See Table 1. School-based Oral Health Survey and Descriptive Outcomes). However, when asked about the delivery of yearly dental screenings only half of the schools (51%) provided an annual dental screening, based on the recommended guidelines provided by SC Department of Health and Environmental Control. The school nurses revealed the frequency of urgent dental cases and the

occurrences of dental referrals. Two-thirds of the school nurses reported they experience urgent dental cases at least once a semester and 79% of nurses reported they made referrals to a dentist at least once a semester (See Table 1. School-based Oral Health Survey and Descriptive Outcomes).

School nurses identified key challenges they face when making dental referrals, including: lack of patient follow-up, missed appointments, lack of transportation, inability to reach parents, no ability to pay for care, and the parent's primary language not being English (See Figure 2. Challenges of Referring to Dentists). Of these challenges, the most common theme among nurse perspectives revolved around parent contact and the inability to reach parents. Challenges that were repeatedly problematized were frequently changing phone numbers and numbers that are disconnected, making it difficult to reach out when an urgent dental case arises. We surveyed respondents about their needs for resources and technical assistance to improve the oral health of their students. School nurses revealed that areas with the highest need were providing oral health education to students (55%), providing continuing education for school nurses (55%) and assisting with conducting school-wide screenings (52.5%). These responses identified key areas of support needed to improve their student's oral health access and family oral health literacy.

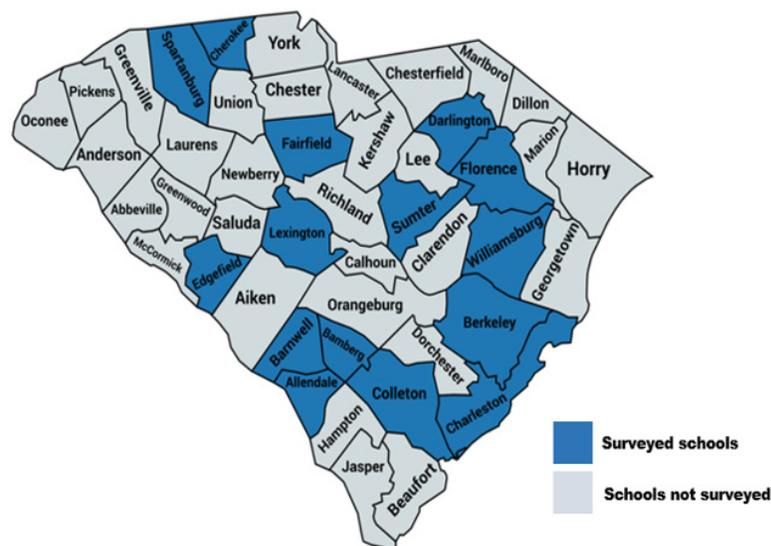


Figure 1. *Counties of Surveyed Schools*

Survey item aim	Survey item	Definition	Percentage (n =42)
Geographic context	School Name	Open ended	
	School District		
Knowledge and Experience	How long have you been a school nurse?	• Less than 5 years	38%
		• 5 - 10 years	21%
		• >10 years	41%
Oral health services access	Does anyone, other than the school nurse, provide preventive dental services at your school?	• Yes	85%
		• No	15%
Oral health services access	What is the name of the dentist, dental service company, or person who comes to your school?	Open ended	
Oral health services access	How often does the dental professional named above visit your school?	• Once a year	46%
		• Once a semester	23%
		• Once a quarter	14%
		• Once a month	14%
		• As needed or requested by the school or school district	3%
Oral health services access	What preventive services does the dental professional provide? (Check all that apply)	• Topical fluoride such as varnish (not including rinse)	69%
		• Sealants	66%
		• Visual dental screenings	71%
		• Dental cleanings	91%
		• I do not know what services are provided	38%
Oral health services access	What treatment services do they provide? (Check all that apply)	• Radiographs (X-rays)	46%
		• Fill cavities	57%
		• Extractions	23%
		• I do not know	46%
Oral health services access	Where do they provide dental services? (Check all that apply)	• School (using portable equipment)	69%
		• School (using on site dental office)	0%
		• Mobile unit such as RV or bus	33%
		• Dental office (off school grounds)	2%
		• None of the above	0%
		• I do not know	0%
Oral health services access	Does your school offer an annual dental screening, based on the recommended guidelines provided by SC Department of Health and Environmental Control?	• Yes	51%
		• No	49%
Oral health services access	Do you have a list of dentists to whom you routinely refer children who do NOT already have a regular dentist?	• Yes	57%
		• No	43%
Oral health services access	Among the dentists who accept the referred children (who do not have a regular dentist), does one or more accept the following types of payments? (Check all that apply)	• Medicaid	55%
		• Uninsured	14%
		• I don't know	58%
Oral health service needs	Please list any additional comments or considerations you may have	Open ended	

Oral health service needs	How often do you see urgent dental cases?	● Once per month	10%
		● More than once a month	10%
		● Once a semester	48%
		● Never	12%
		● I do not know	20%
Oral health service needs	When making referrals to a dentist, how often do you encounter any of the following challenges?	● Not able to get in touch with parents	See Figure 2. Challenges of Referring to Dentists
		● Parents' primary language is not English	
		● Lack of parent follow-up or missed appointments	
		● Not able to get dentist to accept the referrals	
		● Lack of transportation	
		● No ability to pay for care	
		● Not able to find a dentist who care for children with special healthcare needs	
		● Not able to find a dentist who care for children aged 5 years and younger	
Oral health service needs	Please check all the areas with which you would like assistance	● Assist with conducting school-wide screenings	Open Ended
		● Providing continuing education for school nurses	
		● Identifying dentists who provide presentations in your school	
		● Provide oral health education to students	
		● Assist school nurses with making referrals to dentists and ensuring follow-up	
		● Identify local oral health partnerships that will improve access to dental care for students	
		● Develop and maintain a community-specific oral health resource directory	
		● I do not need assistance	
		● Other	
		Oral health service needs	

Table 1. School-based Oral Health Survey Items and Descriptive Outcomes

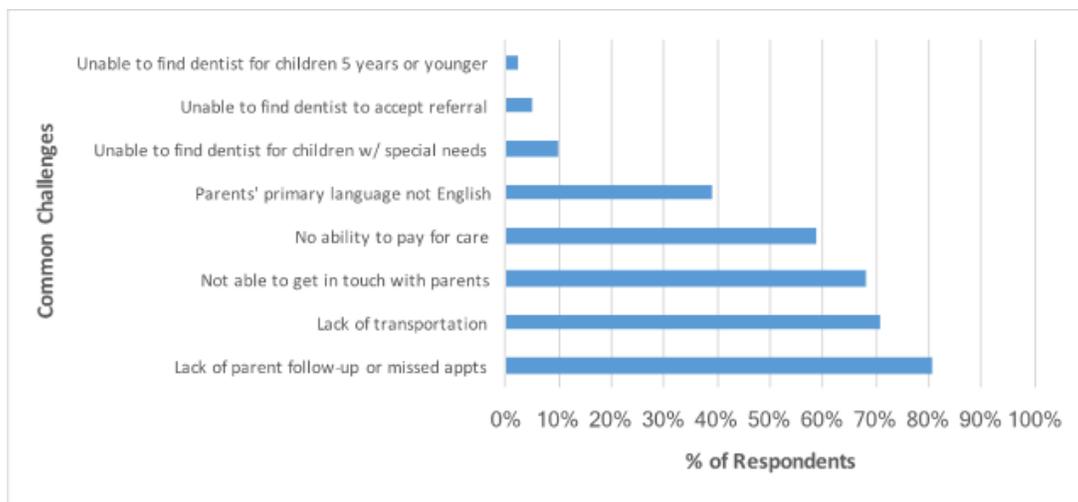


Figure 2. Challenges of Referring to Dentists

Discussion

It has been 20 years since the last Surgeon General Report on Oral Health, which outlined the importance of care integration to reduce oral health disparities (Satcher, 2000). Following this recommendation, two Institute of Medicine reports (2011) affirmed the need for interprofessional practice, especially for underserved communities. In 2014, the Health Resources and Services Administration's report on oral health integration in primary care practice provided a blueprint for transforming health care through core clinical competencies for oral health and interprofessional implementation strategies (HRSA, 2014). These interprofessional strategies were defined by existing frontline primary care health professionals (e.g., nurse practitioners, school nurses, physicians, and physician assistants) to collaboratively work together to incorporate 4 key oral health interprofessional practices including: 1) oral health risk assessments, 2) preventive clinical care, 3) patient education, and 4) referral management (HRSA, 2014). School nurses can operationally conduct all 4 key oral health interprofessional practices respectively, through conducting the oral health basic screening survey for public health surveillance, oral health hygiene education, triaging dental care emergencies, and dental care referrals. The timeliness of this study is in direct alignment with the forthcoming 2020 Surgeon General Report on Oral Health, which includes a section on 'Oral Health Integration, Workforce and Practice' (NIDCR, 2019). Furthermore, the oral health interprofessional practice of school nurses are essential in Title I schools which tend to be located in communities that are rural, have high poverty-levels, or designated as Dental Health Professional Shortage Areas (DOE, 2014; NIDCR, 2019). It is imperative that state public health programs and departments of education support school nurses in the development of oral health interprofessional practice competencies, especially those serving Title I schools, as they bridge access to dental care gaps in their communities. This study reveals school nurses are on the forefront of addressing children's health needs. They have direct access to identifying consequences of poor oral health and should be further equipped as a contributor to the integrated care workforce, which can be prioritized to impede persistent effects of oral health disparities.

Given the nation's aggressive approach to reduce the spread of coronavirus disease 19 (COVID-19), the importance of oral health prevention is critical. As society returns to a 'new normal' concerns for COVID-19 will remain a topic of scrutiny, including the transmission of viral particles aerosolized by coughing, sneezing, or dental care. Based on ADA's statement in their 'Breaking Down Barriers to Oral Health for All Americans' report, school nurses are key in oral health prevention by "recognizing and assessing oral health conditions, offering guidance on disease prevention (especially to parents), providing basic preventive services and referring to dentists for complete examinations" (ADA, 2011). Furthermore, the literature demonstrates that through school interventions, oral health can be greatly improved and the number of dental emergencies can be reduced when the intervention emphasizes parent and school nurse engagement (ASTDD, 2017; Saied-Moallemi et al., 2009, Tetuan et al., 2005). Fostering this nurse-parent relationship will support the ability to educate parents and families around the importance of oral health and identify specific barriers faced by parents to receive dental care. This study was not without limitations. Given the descriptive nature of the study, only broad and overarching conclusions were derived. To further evaluate the needs of school-nurses for oral health prevention, a more comprehensive national sample should be obtained. This evaluation should be built on hypothesis-driven comparisons to identify if widespread trends exist and need to be addressed on a larger level.

Conclusion

Quality improvement opportunities for school nurses should include the following: 1) continuing education on oral health 2) providing oral health education to their students 3) strategies to increase parent involvement for their child's preventive dental care. Future exploration should focus on the systems in place to support referral management for urgent dental cases from school-based settings. Partnerships with local caregivers to build a community-based support system could improve referrals as well as oral health management in the schools. These partnerships could facilitate relationships and create better access to preventive care and dental emergencies. Fostering the nurse-parent relationships are crucial, this could lead to the avoidance of urgent dental cases and increasing parental involve-

ment in their child's preventive dental care. Overall, a need exists to continue to elevate school nurses as interprofessional oral health practice champions to improve the oral health of school-aged children.

Declaration of Interest

The authors report no declarations of interest. The authors alone are responsible for writing the content of this paper.

References

- Albert, D. A., McManus, J. M., & Mitchell, D. A. (2005). Models for delivering school-based dental care. *Journal of School Health, 75*(5), 157-161.
- American Dental Association. (2011). Breaking down barriers to oral health for all Americans: the role of workforce. *Journal of the California Dental Association, 39*(7), 491.
- Association of State and Territorial Dental Directors (ASTDD) School and Adolescent Oral Health and Best Practices Committees. Best practice approach: improving children's oral health through the whole school, whole community, whole child model [monograph on the Internet]. Reno, NV: Association of State and Territorial Dental Directors; 2017 March 21. 26 p.
- Buerlein, J. (2010). Promoting children's oral health: a role for school nurses in prevention, education, and coordination. *NASN school nurse, 25*(1), 26-29. <https://doi.org/10.1177/1942602X09353053>
- Choi, D., Badner, V. M., Yeroshalmi, F., Margulis, K. S., Dougherty, N. J., & Kreiner-Litt, G. (2012). Dental trauma management by New York City school nurses. *Journal of Dentistry for Children, 79*(2), 74-78.
- Fisher-Owens, S. A., Gansky, S. A., Platt, L. J., Weintraub, J. A., Soobader, M. J., Bramlett, M. D., & Newacheck, P. W. (2007). Influences on children's oral health: a conceptual model. *Pediatrics, 120*(3), e510-e520. <https://doi.org/10.1542/peds.2006-3084>
- Gargano, L., Mason, M. K., & Northridge, M. E. (2019). Advancing Oral Health Equity Through School-Based Oral Health Programs: An Ecological Model and Review. *Frontiers in Public Health, 7*, 359.
- Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of biomedical informatics, 42*(2), 377-381. <https://doi.org/10.1016/j.jbi.2008.08.010>
- Jackson, S. L., Vann Jr, W. F., Kotch, J. B., Pahel, B. T., & Lee, J. Y. (2011). Impact of poor oral health on children's school attendance and performance. *American journal of public health, 101*(10), 1900-1906. <https://doi.org/10.2105/AJPH.2010.200915>
- Meadow, D., & Edelstein, B. (1981). An evaluation of the management of dental emergencies by the school nurse. *Pediatr Dent, 3*(4), 325-328.
- McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health education quarterly, 15*(4), 351-377. <https://doi.org/10.1177/109019818801500401>
- Mouradian, W. E., Wehr, E., & Crall, J. J. (2000). Disparities in children's oral health and access to dental care. *Jama, 284*(20), 2625-2631. <https://doi.org/10.1001/jama.284.20.2625>
- Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice*. Sage Publications.
- Satcher, D. S. (2000). Surgeon General's report on oral health. *Public Health Reports, 115*(5), 489. <https://doi.org/10.1093/phr/115.5.489>
- Tetuan, T. M., McGlasson, D., & Meyer, I. (2005). Oral health screening using a caries detection device. *The Journal of School Nursing, 21*(5), 299-306. <https://doi.org/10.1177/10598405050210050901>
- U.S. Department of Education (DOE). (2014). Improving basic programs operated by local educational agencies (Title I, Part A). Retrieved from <https://www2.ed.gov/programs/titleiparta/index.html> on November 30, 2020.
- U.S. Department of Health and Human Services. Health Resources and Services Administration (HRSA). (2014). Integration of Oral Health and Primary Care Practice. <https://www.hrsa.gov/sites/default/files/oralhealth/integrationoforalhealth.pdf> on May 20, 2020.
- U.S. Department of Health and Human Services. National Institute of Dental and Craniofacial Research (NIDCR). (2019). 2020 Surgeon General's Report Oral Health in America: Advances and Challenges. Retrieved from https://www.nidcr.nih.gov/sites/default/files/2019-08/SurgeonGeneralsReport-2020_IADR_June%202019-508.pdf on September 20, 2020.

Corresponding Author

Joni D. Nelson, PhD, MS

1173 Ashley Avenue – Basic Science Building Room
127, Charleston, SC 29425

nelsonjd@muscedu