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A Quality Improvement School Nurse Self-Assessment Tool For School Nursing Practice

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A QUALITY IMPROVEMENT SCHOOL NURSE SELF-ASSESSMENT TOOL
FOR SCHOOL NURSING PRACTICE

Submitted to the Faculty
Yale University School of Nursing

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Nursing Practice

Monica Chan

March 28, 2019

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This DNP Project is accepted in partial fulfillment of the requirements for the degree Doctor of Nursing Practice.

Alison Moriarty Daley, PhD, APRN, PPCNP-BC, FAAN

Date

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Abstract

School nurses play a critical role in promoting student health and supporting academic success. The goal of this project was to develop a school nurse self-assessment tool (SN-SAT) for school nurses to evaluate their school nursing practice. The self-assessment tool was constructed based on the Framework for 21st Century School Nursing Practice. A panel of school nurse experts (n=5) was asked to rate the tool on two dimensions, Importance and Relevance, on a Likert Scale for the selected chronic health condition asthma. Content Validity Indexes for each item (I-CVI), and for the overall scale (S-CVI), were computed. The final SN-SAT consisted of 51 items that yielded overall S-CVI scores of 0.99 for both Importance and Relevance, respectively, after the second round of review. The self-assessment process will allow school nurses to enhance their quality of practice by identifying the gaps in practice, improving student health outcomes, and facilitating learning.

Keywords: 21st Century Framework, asthma, program evaluation, quality improvement, school nursing, self-assessment

A Quality Improvement School Nurse Self-Assessment Tool for School Nursing Practice

The National Association of School Nurses' (NASN, 2016b) Framework for 21st Century School Nursing Practice highlights Quality Improvement (QI) as an essential element in guiding school nursing practice (SNP). The Health Resources and Services Administration defines QI as a “systematic and continuous action that leads to measurable improvement in healthcare services and health status of targeted patient groups” (U.S. Department of Health and Human Services, 2011, p. 1). The objective of QI is to establish benchmarks to measure the standard of practice, in order to ensure the quality of health services delivered. Conducting periodic and ongoing evaluations of SNP bridges the gap between what is recommended and what is done. The findings of these evaluations can be used to identify the strengths and weaknesses of school health services for strategic planning, decision-making, and resource allocation. Ultimately, shifting the focus toward QI has the potential to help strengthen the nation's school health services and help to achieve Healthy People 2020's school-specific goals to improve student academic performance.

Statement of the Problem

School health services play a critical role in supporting student health and well-being to facilitate student achievement (American Academy of Pediatrics, 2016). Currently, there are no governmental regulations or external certifying agencies to evaluate the quality of school health services, despite findings showing that the accreditation process has helped to improve the quality of healthcare delivery and development of a stronger QI culture in healthcare facilities (CDC, 2016a). The 2012 School Health Policies and Practice Study survey indicated that only

55.4% of districts in the U.S. evaluated school health services programs (Centers for Disease Control and Prevention [CDC], 2013).

The CDC's (2017b) School Health Index: Self-Assessment and Planning Guide is a systematic self-assessment process which allows schools to identify gaps, formulate improvement plans, initiate positive changes to set up priority, and enhance school health programs. The self-assessment tool helps to measure some aspects of school health programs. Florida, Vermont, and Virginia have developed their own school health assessment tools, however, these tools vary considerably in terms of what is included in the measurements (Safe and Healthy School Florida, 2019; Vermont Department of Health, 2017; Virginia Department of Education, 2013; Virginia Department of Education, n.d.). Prior to the development of a school nurse Self-Evaluation Form in Virginia, school administrators used teacher or clerical staff evaluation forms to evaluate school nurse performance (Southall et al., 2017). The lack of a standardized evaluation tool impedes the QI process and makes comparison of practice standards at the regional and national levels impossible (Izumi, 2012). As school health services evolve to face the challenging health needs of students, efforts to formally assess school nursing practice is imperative to ensuring safe and healthy learning environments.

Significance of Addressing the Problem

The objective of this project is to develop a school nurse self-assessment tool (SN-SAT) to improve SNP. The self-assessment process aligns with a set of aims of improving health care quality defined by the National Academy of Medicine (NAM, 2001), and facilitates evidence-based practice. The NAM's Six Aims for Improvement include providing "safe, effective, patient-centered, timely, efficient, and equitable care" shown in Figure 1 (NAM, 2001, p. 3). The QI

initiatives will benefit all the stakeholders, foster the professionalism of school nurses, and ultimately, ensure to the highest standard of care delivered to our students.

Background

School Health Services and the History of School Nursing

Health and education have been intertwined ever since the first school nurse, Lina Rogers, was tasked with containing communicable diseases and improving attendance in New York City public schools in 1902 (NASN, 2018). Rogers successfully incorporated public health strategies into school health services to dramatically reduce absenteeism. Over the next several years, more states established school nursing programs to improve student health and reduce absenteeism. Moreover, it was recognized that school was an ideal place to access students for administering vaccination to control communicable diseases during that period of time, and the New York State passed legislation in 1913 requiring the Department of Education to be responsible for student health services (Buser, 1980). The New York State legislation required medical inspection for all students in the public school system, and also hired registered nurses to provide school health services to promote student health and well-being (as cited in Buser, 1980).

The role of school nurse expanded significantly over the years, from actively applying community health principles to reduce absenteeism due to communicable diseases in the 1900s, to managing complex, physical, and mental health problems among children in a diverse population in the 21st century (NASN, 2018). Today, school nurses, in collaboration with healthcare providers and other community agencies, deliver comprehensive care coordination to address students health needs.

Factors Impacting the Quality of School Health Services

The lack of standardized regulations on school nurse educational requirements, as well as variances in school nurse coverage across the nation, pose a threat to the quality of school health services as increasing numbers of students with complex healthcare needs attend school.

School nurse educational standards. There are great differences and a lack of conformity in educational requirements for school nurses. Willgerodt, Brock, and Maughan (2018) found that roughly 23.5% of respondents in the U.S. public schools held an associate degree in nursing, 53.0% held a baccalaureate degree in nursing, 13.1% held a master's degree in nursing, and 10.4% held other degrees. The NASN's (2016a) position statement on the education, licensure, and certification of school nurses, asserts the minimum requirement for an entry-level school nurse should be a registered nurse with a bachelor's degree in nursing. A baccalaureate degree in nursing provides nurses with additional coursework in community health, nursing research, leadership, management, and humanity courses, such as psychology or philosophy that prepares them for better patient care (American Association of Colleges of Nursing, 2017). Despite growing evidence suggesting that higher education for school nurses is critical to meet the challenges related to an evolving healthcare environment and a positive correlation between organizations with a higher percentage of nurses with a baccalaureate degree in nursing and improved patient outcomes, most states do not have mandated school nurse educational requirements (Praeger & Zimmerman, 2009; Robert Johnson Wood Foundation, 2013).

School nurse coverage and workload. NASN (2015b) issued a position statement on school staffing and advocated for a "registered professional school nurse" to meet the daily student health and safety needs. Additionally, the American Academy of Nursing supports a full-

time school nurse at every school to meet the health needs of students in the policy belief (American Academy of Nursing, 2018). Finally, the American Academy of Pediatrics Council on School Health (2016) also supports a full-time school nurse in every school in the nation. Despite professional organizations support for access to a full-time school nurse in every school, there is no national mandate for school districts to employ school nurses, leading to significant differences in school nurse coverage and workload across the nation.

Lack of legal mandate for school nurse. A more recent CDC (2017c) survey indicates that only about one-third of districts required a full-time school nurse in each school, and the percentage of school districts that require registered nurse licensure for newly hired school nurses decreased from 95.6% in 2000 to 79% in 2016. Willgerodt et al. (2018) reported that there was no paid nursing support in 18.1% of the U.S. public schools, and about 55.9% of school nurse respondents covered two or more schools. Additionally, only 26 out of 50 states mandated the employment of school nurses, and those required to identify and track acute illnesses and chronic health conditions, had better school nurse-to-student ratios (Maughan, 2009; Praeger & Zimmerman, 2009). Maughan (2009) further explained that state employment laws for school nurses were often not clearly written, and therefore subject to local school district interpretation. Additionally, the laws, where present, were not strictly enforced, and the penalty associated with not following the laws was often less than the cost of hiring a school nurse (Maughan, 2009).

Danghry and Engelke (2018) used other method to determine school nurse staffing by examining the students' health conditions, social determinants of health, and the number of students required specialized healthcare procedures during school hours. The study concluded that there was a significant increase in students receiving case management to meet chronic disease self-management goals, such as using an inhaler properly and correctly counting

carbohydrates when more school nurses were assigned in high-need schools (Danghtry, & Engelke, 2018).

The benefits of having a dedicated school nurse at a single site are well-documented. Kruger, Toker, Radjenovic, Comeaux, and Macha (2009) reported that school nurses were more knowledgeable about individual student health needs when they were assigned to children with special healthcare needs at only one school. School nurses had more opportunities to communicate with parents and healthcare providers of these children, and made more-frequent referrals to physicians and community agencies to improve health outcomes than school nurses assigned to multiple schools. On the contrary, lack of time related to a heavy workload or covering multiple school sites can put students at risk when the quality of nursing care is impacted. School nurses assigned to multiple school sites were more likely to report medication errors because they simply could not oversee safe medication administration (Maughan, McCarthy, Hein, Perkhounkova, & Kelly, 2018).

Lack of qualified school nurses. The lack of qualified staffing in nursing poses a threat in today's healthcare system (Izumi, 2012). School nurses face significant challenges in addressing the health needs of children with special healthcare needs (CSHCN) because of the poor school nurse staffing in schools. Baker, Hebbeler, Davis-Alldritt, Anderson, and Knauer (2015) reported that only 26% of school nurse respondents were "very confident" or "extremely confident" that they could provide school health services to meet the needs of CSHCN, 42% of school nurse respondents were "pretty confident", while the rest of school nurse respondents stated that they were "only slightly confident" or "not at all sure." Similarly, Kruger et al. (2009) raised concerns about the school nurse's ability to meet the demands of CSHCN due to the

variation in educational preparation, lack of pediatric experience, inadequate orientation programs, and lack of continued education.

Some districts may hire a licensed vocational nurse or unlicensed assistive personnel (UAP) to assist with tasks or as an alternative to hiring school nurses. School nurses train UAPs to perform specialized physical health care services that can include administering medications, performing gastrostomy tube feeding, and providing tracheostomy care, as permitted by the individual state nurse practice act. With a more limited scope of practice, vocational nurses and UAPs can simply complete tasks since neither possess the expert clinical assessment skills, knowledge, and theory, of the baccalaureate prepared school nurse. In fact, UAPs had a higher average number of medication errors compared to school nurses (Maughan et al., 2018).

When a school nurse is not present, school administrators, staff, and teachers can spend significant time away from their own duties addressing student health issues, raising concerns about safety, and allocation of time and resources (Dobuzinskis, & Bernstein, 2019). Teachers expressed losing daily instructional time when they had to manage students health needs. A two-year survey showed that teachers spent an average of 80 minutes in Year 1, and 46 minutes in Year 2 on the day of survey (Hills, & Hollin, 2012). In another study, Baisch and colleagues (2011) reported that principals and assistant principals spent a mean of 68 minutes per day managing student health issues, while teachers and clerical staff spent 26 minutes and 63 minutes per day, respectively, when there was no school nurse available. It was also documented that the administrators, teachers, and clerical staff only spent a mean of 11 minutes, 6 minutes, and 17 minutes respectively with the presence of a school nurse. As a result, a school could potential save \$133,174 annually with the saving of staff time (Baisch et al., 2011).

School Nurse Contributions to Students with Chronic Health Conditions

The Education for All Handicapped Children Act (1975), now known as the Individuals with Disabilities Education Act (2004), requires free and appropriate education for all students with disabilities. The legislation has had a profound impact on the education and healthcare system which requires schools to meet health and educational needs of all students as chronic health conditions affect nearly 25% of adolescents in the nation (CDC, 2016b). It is also reported that students with chronic health conditions, such as asthma, diabetes, and epilepsy, have an estimated additional annual medical cost per student of \$1,377.60, \$6,702.30, and \$9,103.25, respectively (Miller, 2016). School nurses utilize the nursing process to perform ongoing assessments, develop individualized healthcare plans, participate in Individualized Education Plan assessments, implement interventions, and evaluate health outcomes (NASN, 2018). Through delivery of a broad range of services, school nurses manage potentially life-threatening conditions, such as asthma and food allergies, and provide care coordination for students with chronic illnesses, such as diabetes and epilepsy.

Asthma. Asthma is a chronic condition that affects nearly one in 12 children under the age of 18 (CDC, 2018). This condition is often challenging for school nurses to manage due to barriers such as time, communication, and lack of equipment (Quaranta & Spencer, 2016). Despite these challenges, there is evidence that school nurses can have a positive impact on health outcomes for students with asthma (Cicutto et al., 2018). Providing case management and care coordination, delivering direct care, teaching asthma education, and collaborating with community agencies successfully promoted asthma self-management among adolescents and resulted in improved student health outcomes (Hennessy-Harstad, 2013). After completing the school nurse-led Building Bridges for Asthma Care Program, there were increases in the number

of participants who completed a School Asthma Action Plan from 62.0% to 84.8%, used a quick-relief inhaler at school from 58.4% to 78.7%, implemented a Home Asthma Action/Treatment Plan from 41.6% to 61.2%, and demonstrated improved inhaler technique (Cicutto et al., 2018). School nurses not only helped students, but also empowered parents to manage asthma at home, by reducing triggers and supporting their children, resulting in achieving better asthma control and improving health outcomes (Hennessy-Harstad, 2013).

Diabetes Mellitus. Diabetes is one of the most common chronic health conditions that school nurses address, affecting nearly 132,000 people under the age of 18 (CDC, 2017b). The goals of diabetes management for school age children are to maintain normal blood glucose level, prevent complications, provide health education to student, families and school staff, empower diabetes self-management, and facilitate socialization. Foley, Dunbar, and Clancy (2013) reported the collaborative efforts between school nurse, pediatric endocrine team, student, and family made a positive impact on students' diabetic outcomes. The participants' hemoglobin A1c, a blood test to measure blood glucose level over the past three months, was reduced by 36%. School nurses had more interaction with students than healthcare providers at school, which allowed school nurses to build a close relationship with students and their families to improve communication to improve health outcomes.

Seizure Disorders. The prevalence of seizure disorders among children aged 0-17 is 0.6% in the U.S. (CDC, 2017a). Students with a seizure disorders were likely to utilize special education services, have difficulties in school, and have activity limitations compared with students with other medical conditions (CDC, 2017a). Brook, Hiltz, Kopplin, and Lindeke (2015) illustrated the effectiveness of “train the trainer” method to enhance school nurses’ confidence in seizure management. School nurses were able to implement seizure management

guidelines which included Individualized Healthcare Plan and Emergency Action Plan. During the study period, nearly 88% of the students with newly diagnosed seizure disorders had a seizure care plan which exceeded the project goal of 80%. Moreover, school nurse-led staff training raised seizure awareness, improved understanding of students health needs, and gained knowledge and skills on seizure management among school staff.

Absenteeism

It is estimated that nearly 4% of students missed more than 10 school days from illness or injury between 2013-2015 (CDC, 2017c). School attendance is vital for students to be academically successful, and school nurses play a vital role in assuring that children attend school regularly. Multiple studies have found that students were released home frequently after evaluation for illness or injury by unlicensed school staff (Hill, & Hollin, 2012; Pennington, & Delancey, 2008; Szeffler et al., 2018). A recent study by Szeffler et al. (2018) demonstrated that case management provided by school nurses resulted in 22% reduction in absenteeism among students with asthma who participated in the Building Bridges Program. Furthermore, 31.9% of the students who joined the Building Bridges Program missed more than 10% school days, compared to 45.5% of the students who were not in the same program. Pennington and Delancey (2008) also studied the difference between the number of students sent home early due to illness who were evaluated by school staff and the number of students sent home who were evaluated by school nurses. Unlicensed school staff sent 18% of students home after evaluation for illness or injury, compared to 5% of students evaluated by school nurses. Additionally, Hills and Hollin (2012) reported similar findings among elementary school students who could have returned to the classroom if school nurses were available to evaluate them, but instead were sent home early.

Theoretical Framework

The Model for Improvement is a framework for "developing, testing, implementing, and spreading changes that result in improvement" (Langley et al, 2009).¹ It is ideal for school nurses to apply this model, as it provides guidance for self-assessment that facilitates the QI process.

The Model for Improvement consists of two parts. The first part asks three questions: "What are we trying to accomplish? How will we know that change is an improvement? What changes can we make that will result in improvement?" (Langley et al., 2009).¹ First, it is critical to engage the right people who share the same vision on the team to establish the aims once the problems are identified. The goals should be clearly defined, and the aim statements should be specific, realistic, measurable, and time sensitive. Next, the improvement measurements need to be established to determine if changes actually lead to improvement. Finally, an improvement plan is tested in order to achieve the goals (Institute for Healthcare Improvement [IHI], n.d.).

The second part of the Model for Improvement is the Plan-Do-Study-Act cycle, which involves ongoing efforts to improve quality (IHI, n.d.). In the first "Plan" phase, well-defined goals for improvement need to be established. Then, the team needs to decide what needs to be changed and what are the predicted outcomes. Finally, change plans need to be formulated. (IHI, n.d.). During the next phase, "Do", the developed plans are executed on a smaller scale to minimize risks and ensure success. The progress is carefully tracked and monitored to determine if the implemented changes actually lead to improvement (IHI, n.d.). In the "Study" phase, data is collected and analyzed, and the results are compared to the prediction. New knowledge is generated for future improvement (IHI, n.d.). In the "Act" phase, positive changes can be implemented at a larger scale based on the results. During this phase, goals and plans can be adjusted and refined accordingly, and the next cycle of evaluation begins (IHI, n.d.).

Self-Assessment

The self-assessment process is used for “identifying learning needs, improving performance, appraising performance, and reinforcing skills” (Bose, Oliveras, & Edson, 2001, p. 7). It is a low-cost and valid method for adult learners to achieve greater ownership of the evaluation process (Bose et al., 2001). Southall and colleagues (2017) examined the use of the self-assessment process based on the *School Nursing: Scope and Standard of Practice* among school nurses in Virginia and demonstrated the success of utilizing self-assessment process. The results indicated that 82% of the school nurse respondents perceived the Self-Evaluation Form developed was helpful, and 53% of school nurse respondents stated that the Self-Evaluation Form was simple to use. School nurses, as a result, were able to successfully reflect on their practice, recognize achievements, and develop an improvement plan to meet high standards of care. This project adopted the self-assessment method to create SN-SAT, based on the Framework for 21st Century of School Nursing Practice, to promote evidence-based practice and achieve QI goals in school setting.

Methods

The development of the SN-SAT consisted of an extensive literature review, QI tool development, and a rigorous two-round expert panel review process to validate the tool. This project used the content validation method described by Polit and Beck (2017).

Literature Review

A comprehensive literature review was conducted to identify and extract publications on the history of school health services, school nurse educational background and staffing, school nurse contributions, QI theoretical frameworks, and self-assessment tools. Multiple electronic databases, including the Cumulative Index to Nursing and Allied Health Literature, Education

Resource Information Center, and Medline, as well as key websites, were used for this review of academic literature published from 2009 through 2019. Keywords and phrases used were: “absenteeism”, “assessment tool”, “asthma”, “chronic health conditions”, “model for improvement”, “program evaluation”, “quality assurance”, “quality improvement”, “school health program”, “school health services”, and “school nurse”. Articles utilized focused on school-aged children in the U.S., while those related to school-based health clinics and non-English language publications were excluded. Academic publications published prior to 2009 were included only if they added pertinent evidence.

Development of the Quality Improvement SN-SAT

The SN-SAT was based on the five domains of the Framework for 21st Century School Nursing Practice: Care Coordination, Community/Public Health, Leadership, Quality Improvement, and Standard of Practice (NASN, 2016b). It was developed in three phases: a) identifying the content domain, b) generating items, and c) constructing the tool (Figure 2). The common chronic health condition of asthma was selected as the central concept because it affects almost six million children in the nation (CDC, 2018).

The initial version of the SN-SAT consisted of 171 items relating to each of the domains of the Framework for 21st Century School Nursing Practice which included: Care Coordination n=56, Community/Public Health n=52, Leadership n=25, Quality Improvement n=20, and Standard of Practice n=18. Knowing that many items could be dropped after several rounds of review, a large pool of items were initially developed (Polit & Beck, 2017). Having a sizable number of items in the preliminary tool enhances the internal consistency of the tool (Polit & Beck, 2017). The content was organized by domain in a table for content validation by experts.

Validation of the SN-SAT

The objective of tool validation was to determine if the SN-SAT represented the content domain adequately and facilitated the school nurse self-assessment process to improve SNP. Five experts were recruited for the first round, and three experts from the same pool were recruited for the second round. The expert selection criteria were based on key characteristics of professional expertise on the topic, recognition in the nursing profession, scholarship, being independent of the project and each other, and responsiveness to requests for participation (Lazenby, Dixon, Coviello, & McCorkle, 2014). A diverse group of experts from various positions and backgrounds provides a wide range of perspectives during the validation process. The panel consisted of a nursing researcher, faculty members from School Nurse Credentialing Program, a school health services coordinator, a front-line school nurse, and a nursing educator. All experts had at least 15 years of diverse nursing and school nursing background and experience, as well as advanced degrees, including a MEd, DNP, and PhD.

Procedure

An “Expert Rating Form” was created for experts to appraise each item on two dimensions: Importance and Relevance for the chronic health condition asthma. Items were arranged by domain and a four point Likert Scale, with scores of 1=not important/relevant, 2=somewhat important/relevant, 3=moderate important/relevant, and 4=very important/relevant, were assigned (Lazenby et al., 2014). A section for reviewer comments was also included. Background information and the purpose of the project were explained to the experts and written instructions on how to rate the tool were provided upon confirmation of participation. The tool was sent to experts via email with a three-week deadline. A reminder message was sent the participants if no responses were received by the deadline.

Data Analysis

A Content Validity Index (CVI) on each item-level (I-CVI) and the overall scale-level Content Validity Index (S-CVI) were calculated. To obtain the percentage in agreement, the I-CVI was calculated as the number of experts rated an item at either 3 (moderate important/relevant) or 4 (very important/relevant) on a four-point scale, divided by the total number of experts. According to Polit and Beck (2017), an item was validated and retained in the final tool if the I-CVI score was higher than 0.78. The overall score, S-CVI, was calculated by averaging I-CVI scores, and S-CVI of 0.90 or above was considered valid (Polit & Beck, 2017). A second round of expert panel review for each item would have been necessary if the threshold of S-CVI score was not met in the first round.

Statement Related to Human Subjects

After completing the university Institutional Review Board Checklist, it was determined that this project did not require Institutional Review Board approval as it was comprised of a comprehensive literature review that facilitated the creation of a tool for school nurses to perform QI in schools, and an expert panel review for content validity.

Results

First Round of Content Validation

The initial version of SN-SAT with 171 items was sent to five experts via email in August 2018. The preliminary I-CVI and S-CVI were not calculated due to the missing results from one rater. Instead, the first round served as an information gathering process, as all experts provided invaluable feedback and comments that guided the direction of further tool development. Important feedback included why certain items were not relevant, how the items should be reworded, and ideas about how to improve usability of the tool. One reviewer

indicated that the time to complete the survey was quite long. The consistency of the tool was reviewed as the original tool included very specific items in certain areas, but more general items in the other domains. Finally, repetitive items, due to overlapping concepts of the Framework for 21st Century School Nursing Practice, were noted and elements were placed into the most appropriate domain.

Second Round of Content Validation

The revised tool consisted of 51 items: Care Coordination (n=12), Community/Public Health (n=10), Leadership (n=13), Quality Improvement (n=8), and Standard of Practice (n=8). Three experts who participated in the first round were recruited to join the second round content validation process in October 2018. The process for review was the same as the first round, and all three experts completed the review process independently and returned responses.

The I-CVI was calculated for all the items and the scores ranged from 0.67 to 1.0 in both Importance and Relevance. One item in Community/Public Health domain yielded an I-CVI of 1.0 in the Importance dimension, but 0.67 in Relevance. That item was subsequently reworded to improve the clarity, based on the expert's comments, and was retained in the final tool. Another item in the Standard of Practice domain was rated as Unimportant/Irrelevant, with an I-CVI of 0.67, and was excluded from the final tool. Two items were placed into different domains, as deemed more appropriate by the experts. "I apply the nursing process and use NASN evidence-based clinical guidelines for asthma management in school," in the Care Coordination domain was moved into the Standard of Practice domain. Another item was revised and split into two separate items to enhance clarity. Additionally, two similar items were combined to make the tool more concise. The overall S-CVI scores for Importance and Relevance were 0.99 and 0.99, respectively, after the second round of review (Table 1), which exceeded the minimum threshold

for a valid tool of 0.90. The final SN-SAT (Appendix) consisted of 51 items in five domains: Care Coordination (n=10), Community/Public Health (n=11), Leadership (n=12), Quality Improvement (n=10), and Standard of Practice (n=8).

Discussion

School nurses play a critical role in promoting student health and supporting academic success. Unfortunately, there are neither regulatory nor accreditation bodies to oversee school health services. Additionally, there are no existing QI tools specifically based on the Framework for 21st Century School Nursing Practice, for school nurses to achieve QI objectives. A tool such as the SN-SAT is essential for school nurses to address the quality of school nursing practice and achieve the highest standard of care. The SN-SAT was constructed based on an extensive literature review, and the tool was validated by a panel of experts after two rounds of review. The validated SN-SAT tool is easy to use, takes approximately 20 minutes to complete, eliminates the barriers of lacking a standardized evaluation tool, provides for evidence-based practice, and facilitates the independent QI process. Through the self-assessment process, school nurses can reflect on their practice to find areas for improvement, develop goals and plans, and make necessary changes. The self-assessment process translates evidence into practice, and leads to an advancement in SNP. Self-assessment also serves as a learning opportunity for professional growth and development.

It is important to note the limitations of this project. First, the I-CVI and S-CVI were not calculated in the first round of review due to an incomplete response received. Second, only five experts in round one, and three experts in round two, participated in the tool validation process. The small number of expert reviewers may have limited the comments and feedback, and increased the probability of obtaining agreement by chance. A large number of experts could be

used in a future study to ensure feedback from different perspectives for tool development.

Third, respondent bias may have been introduced when experts provided their personal opinion during the content validation process since it was a subjective review. Fourth, the tool has not yet been administered to a larger sample for field testing to demonstrate its usefulness and effectiveness to achieve the goals of QI in the clinical setting. Data collected after field testing will guide future tool revision to meet QI objectives. Finally, the detailed instructions on how to use the self-assessment tool and how to use the findings to improve school nursing practice need to be established in the next step.

There have been limited studies examining how QI in school nursing makes a positive impact on student health outcomes. Thus, future study of what barriers school nurses encounter to engaging in QI activities is essential to determine the best strategies to implement continuous QI projects. Finally, research on the relationship between the quality of school nursing practice and student health outcomes and academic success is critical to generating new knowledge and promoting evidence-based practice.

Implications for School Nurse Practice

The development of the SN-SAT was aimed at examining and enhancing school nursing practice to improve student health outcomes and reduce absenteeism. Ongoing QI activities create a culture of striving for clinical excellence that aligns with an organization's mission, vision, and core values. By continuously monitoring, tracking, and collecting meaningful data on the quality of school nurse practice, school nurses can identify gaps and determine future research priorities. Evidence generated from self-assessment can shape healthcare policies at the system level, such as advocating for a full-time school nurse in every school and supporting NASN's guidelines on the minimum education recommendations for entry-level school nurses.

By engaging in the advocacy process, school nurses can significantly impact the delivery of healthcare in educational settings (Healthy Schools Campaign, n.d.). QI plays a significant role in improving SNP to meet the highest standard of care in order to achieve the NAM's Six Aims.

Conclusion

There is a critical need for high quality SNP to meet the complex health needs of students in 21st Century. Effective school health services and dedicated school nurses are vital to student academic success. The self-assessment process, facilitated by the SN-SAT, will allow school nurses to transform SNP by bridging gaps in practice, improving student health outcomes and enabling student learning.

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Footnotes

¹From *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*, by Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP, 2009, San Francisco: Jossey-Bass Publishers. Copyright by the Wiley Books. Adapted with permission.

Table 1

I-CVI and S-CVI Scores in the Second Round Expert Panel Review

Domain	Item	Importance	Relevance
		I-CVI	I-CVI
Care Coordination	12	1.00	1.00
Community/Public Health	10	1.00	0.97
Leadership	13	1.00	1.00
Quality Improvement	8	1.00	1.00
Standard of Practice	8	0.96	0.96
Overall Score S-CVI		0.99	0.99

Figure 1. Six Aims for Improvement

Safe	avoiding injuries to patients from the care that is intended to help them
Effective	providing services based on scientific knowledge to all who could benefit, and refraining from providing services to those not likely to benefit
Patient-centered	providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions
Timely	reducing waits and sometimes harmful delays for both those who receive and those who give care
Efficient	avoiding waste, including waste of equipment, supplies, ideas, and energy
Equitable	providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status

Figure 1. National Academy of Medicine: Six Aims for Improvement. Adapted from “Crossing the Quality Chasm: A New Health System for the 21st Century,” by the National Academy of Medicine, 2001, p. 3.

Figure 2. Steps of creating School Nurse Self-Assessment Tool

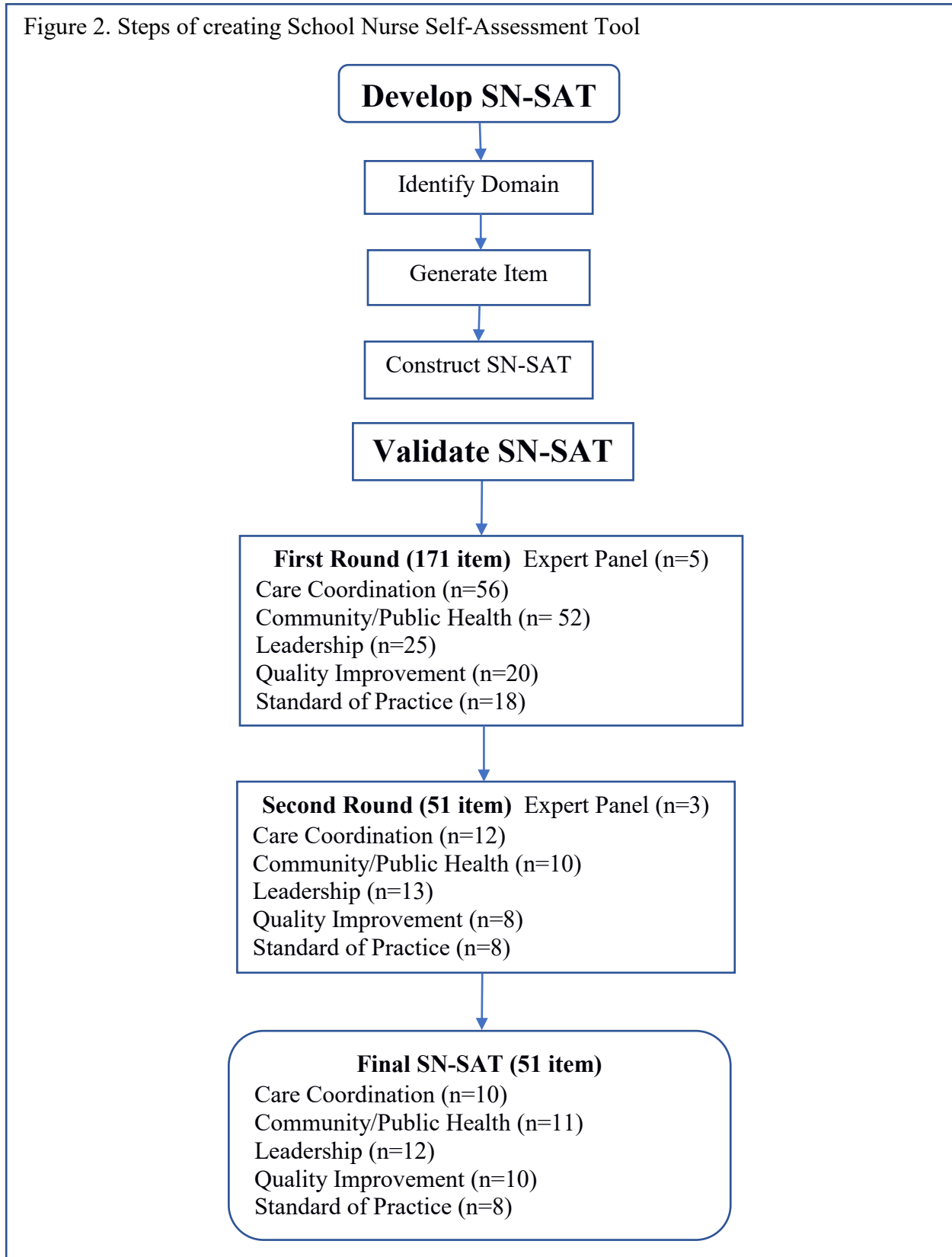


Figure 2. Steps of creating School Nurse Self-Assessment Tool

Appendix

School Nurse Self-Assessment Tool for School Nursing Practice (Asthma)

<p style="text-align: center;">Instructions</p> <p><i>The School Nurse Self-Assessment Tool is developed based on the Framework for 21st Century School Nursing Practice. The goal of self-assessment is to identify strength and weakness of current practice for quality improv</i></p>	Always	Often	Sometimes	Not at All	N/A
CARE COORDINATION					
I communicate with healthcare providers about student healthcare needs, and obtain a current medication order/Asthma Action Plan (AAP) annually or as needed.					
I deliver direct healthcare services and coordinate student-centered care to achieve optimal health.					
I collaborate with interdisciplinary teams (school staff, healthcare providers, and community agencies) to develop Individualized Healthcare Plan (IHP), Emergency Action Plan (EAP), Section 504 accommodation plans, and/or Individualized Education Plan goals, if appropriate, to meet student healthcare and academic needs.					
I provide asthma education and communicate student healthcare needs to school staff (e.g. administrators, teachers, psychologists, counselors, coaches, nutritionists, bus drivers, and other school personnel).					
I train, monitor, and supervise Unlicensed Assistive Personnel (UAP) to implement the AAP and EAP safely as per state nursing delegation regulations when the professional school nurse is not available.					
I empower the student and family to identify their strengths, develop IHP goals, and build coping strategies to improve asthma self-management as age and developmentally appropriate.					
I facilitate asthma education to the student and family by using diverse strategies based on developmental levels and learning styles.					
I provide educational materials at an appropriate reading level in the parent’s/guardian’s first language.					
I review the discharge summary from ER/hospitalization visit to ensure a safe return to school.					
I prepare the student for a smooth transition between schools or next stage of life after graduation to ensure his/her healthcare needs are being met.					
COMMUNITY/PUBLIC HEALTH					
I conduct school-wide asthma needs assessment to identify barriers, environmental triggers, resources, and opportunities for asthma management.					
I assist the student and family to overcome access barriers (e.g., healthcare providers, medical supplies, and insurance coverage).					

I address social determinants of health (e.g., food, housing, health literacy, and transportation) to promote health equity.					
I improve school health services to achieve Healthy People 2020 asthma-related goals (e.g., reduce asthma deaths, ER visits, hospitalizations, missed school days, activity limitations, and increase the proportion receiving formal asthma education and appropriate asthma care).					
I identify students with undiagnosed asthma by reviewing data from a variety of sources (e.g., attendance, information from teacher/coach about activity limitations/PE participation, and health assessment questionnaire), and making referrals to healthcare providers.					
I recommend that the student and family receive influenza vaccination with his/her healthcare providers.					
I promote an asthma-friendly school environment by following the Environmental Protection Agency (EPA)'s recommendations (e.g., bus idling and cleaning products guidelines) to reduce indoor and outdoor asthma triggers.					
I partner with local community agencies to promote asthma prevention programs to achieve population health.					
I recognize the impact of personal attitudes, values, and beliefs on student health outcomes.					
I embrace the student's and family's diverse cultural backgrounds, and provide culturally congruent care.					
I use a medically trained translator, who is not a family member, to communicate effectively with the family if needed.					
LEADERSHIP					
I update my knowledge on current national, state, and local healthcare/education reform, and understand how they impact asthma management in school.					
I contact my local representatives advocating for changes that will improve asthma prevention and management program.					
I participate in organizational strategic planning for improving asthma management, and take into account how policies and my actions may impact educational activities and priorities.					
I play an active role in developing and implementing evidence-based policies and procedures (e.g., UAP delegation, electronic health record, and asthma friendly school environment).					
I advocate student access to the professional school nurse and trained staff in school and during school-sponsored events.					
I expand my knowledge and skills by seeking professional growth and development activities to achieve yearly goals.					
I establish a positive professional image (e.g., dress and communicate professionally).					
I state my license/credentials in oral and written communication so that others know my level of expertise.					
I stay current on evidence-based school health delivery model that enhance student health and academic outcomes.					
I advocate for various school health funding and reimbursement sources (including Medicaid) that would improve access to school nurse to address student healthcare needs.					

I utilize technology to manage the school health program as appropriate.					
I am an active member of a professional organization (e.g., state school nurse organization and NASN).					
QUALITY IMPROVEMENT					
I utilize quality improvement (QI) process to improve the quality of school healthcare services.					
I collect, document, and analyze student health data (e.g., school nurse office visit logs, use of medications, ER visits, hospitalization, and absenteeism) to determine school nurse interventions on asthma trends.					
I know the number of students with asthma in my school and how the numbers have changed over the year.					
I review the local, state, and national data on asthma trends and benchmark the data with my school.					
I evaluate the effectiveness of the school-wide and individual student asthma management program and its impact on student health and academic outcomes.					
I understand the significance of uniform data collection.					
I participate in the <i>National School Health Data Initiative: Every Student Counts!</i>					
I partner/am willing to partner with experienced researchers to engage in research to increase evidence-based practice.					
I share and disseminate my knowledge and research appropriately at local, state, and national level. This includes following the Institutional Review Board review process as needed.					
My organization evaluates clinical competency for school nurses and school personnel annually.					
STANDARD OF PRACTICE					
I comply with the <i>Code of Ethics for Nurses with Interpretive Statements</i> (ANA) and the <i>Code of Ethics for School Nurses</i> (NASN).					
I use <i>School Nursing: Scope and Standards of Practice</i> (NASN) to guide my clinical practice.					
I adhere and refer to my state's <i>Nurse Practice Act</i> , especially on UAP delegation.					
I use NASN evidence-based clinical guidelines for asthma management in school.					
I utilize critical thinking skills, clinical judgment, and the nursing process to solve problems that arise.					
I translate evidence-based research into practice (e.g., include evidence-based references in IHP, EAP, and other professional documents) to improve health outcomes and reduce healthcare cost.					
I protect the student's rights to confidentiality by complying with the federal HIPAA and FERPA regulations and district policy.					
I maintain therapeutic relationships with the student, family, providers, and school personnel.					