

Implications Of Nurse-Led Immunization Programs For Public Health

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Abstract

School nurses are healthcare professionals that are educated in medicine and work in both the school and healthcare industries. Their goal is to provide a healthy environment for teachers and students in the school setting [1-3]. School nurses have a crucial role in enhancing the health and overall well-being of children and teenagers. They do this by offering health promotion, health counseling, referring to other sources of assistance, giving active treatment, education, family support, coordinating care, and collaborating with many agencies [1,4–6]. School nurses possess a diverse array of tasks and responsibilities that include three fundamental components of school health: 1) health literacy, 2) medical care, and 3) health promotion [7–9]. The three domains of school nursing are mutually supportive in their aim to create a health-promoting environment in schools, but they vary in their methods and tactics to accomplish this objective. The goal of health literacy is to empower students and instructors to locate, comprehend, assess, and use health information for making health-related choices, with the objective of preserving or enhancing health and quality of life [10,11].

1. Introduction

Health literacy is an educational approach aimed at acquiring knowledge. Health promotion and medical health care both include medically focused treatments, however they vary in their perspectives on health issues. Medical health care in schools adopts a pathogenetic view. The primary objective is to evaluate the potential hazards associated with the advancement of illnesses and the effectiveness of targeted

therapies in educational settings. Health promotion in schools, conversely, advocates for a salutogenic approach. The primary emphasis is placed on the advancement and sustenance of well-being in individuals who are in the stage of childhood and adolescence. This may be accomplished by implementing strategies to enhance resources in schools, encouraging healthy behaviors such as engaging in sports and maintaining a nutritious diet, and providing preventative care services, such as coordinating care via school nurses [11,12]. The three components of school health are indistinguishable from one another.

The majority of worldwide research on school nurse interventions focusing on the three dimensions of school health has been undertaken in Anglo-Saxon nations [13–15], which were the first to adopt the concept of school nurses. Several studies assess interventions led by school nurses and measure the impact on different outcomes. These outcomes include the number of days missed due to medical conditions [13,16], health risk factors like obesity [17,18] and cigarette consumption [19,20], children with asthma symptoms [21,22], mental health conditions [23,24], the management of chronic diseases [3,25], and the prevention of various forms of child abuse [26–28]. In addition to improving the health of students, the assistance offered by the school nurse may alleviate the challenges faced by instructors when dealing with these issues in the classroom [29-31].

The significance of the school nurse became more evident when the COVID-19 epidemic emerged, bringing up new health-related difficulties for both students and instructors. A recent study conducted a thorough analysis of the function of school nurses and their significant contribution, specifically in determining the prudence of school closures vs keeping them operational [32]. Furthermore, the studies also examined how their work may contribute to reducing the overall risk within the community [33] by enhancing hygienic practices [34] and implementing efficient vaccination programs [35].

In addition to the previously indicated health advantages, research has quantified the economic savings in healthcare for society as a whole [36,37] via the inclusion of school nurses in primary and secondary schools. According to Wang and Vernon-Smiley [38], their approach in the US saves \$2.20 for every dollar invested in only one year. Binder [36]

examined the potential for increased follow-up expenses resulting from inadequate parental health awareness, limited social integration, and an increasing proportion of children with chronic health conditions, compared to the costs of investing in preventive.

Although there is a substantial amount of study on school nursing, it is evident that despite the plethora of material, there is no definitive scientific consensus on the usefulness of school nurses. Researchers [20,21] have consistently questioned the insufficient methodological rigor and subsequent absence of reliable, significant study results about the efficacy of school nurses. The primary criticisms are on the absence of evidence-based, quantitative data obtained via randomized controlled trial designs and the predominance of descriptive research types [39].

There is a pressing need to acknowledge and respond to the growing and outspoken criticism of research conducted by school nurses, as well as to systematize the assortment of research results. Therefore, we did a comprehensive analysis of evaluations, which is the inaugural endeavor in the field of school nurse research. This research addresses the problem of low study quality by implementing rigorous methodological criteria for both reviews and primary investigations. Our goal is to establish scientific guidelines to guarantee the clinical validity of school nurse effectiveness.

We want to thoroughly evaluate the present status of the relevant literature by using strict and reliable quality standards. We selected and modified well-established quality evaluation techniques, namely AMSTAR-2 and GRADE recommendations, to suit our specific objectives. These tools are well regarded by researchers and address the critiques directed against school nursing research. This study will examine studies that adhere to recognized methodological principles in order to draw valid findings about treatments and relevant health outcome.

2. Physical well-being

Within the vast array of research, there are many noteworthy findings that need attention. A randomized controlled trial (RCT) research [40] with a low risk of bias shown that the presence of a school nurse considerably decreased the number of days a student was missing, resulting in an average reduction of two days per year compared to the control group

without a school nurse. Other studies investigating school attendance were deemed less credible owing to notable constraints, such as a high risk of bias (RoB).

3. Asthma

Most school nurse research focuses on therapies linked to asthma, with a few yielding significant outcomes. The analyzed outcome variables exhibit significant variation, which hinders the comparability of the findings. Research groups often investigate multiple outcomes, including the quality of life, school absenteeism, asthma knowledge, severity of asthma symptoms, academic achievements, individualized goals [25], impairments and inspiratory flow rate, asthma control, symptom-free days, medication, health-care utilization, pulmonary function, and clinic process improvements [41-46]. Although there is a notable diversity in asthma research, including different health outcomes, demographics, and kinds of therapies, a considerable number of studies exhibit excellent quality with little constraints.

A research with high dependability (low risk of bias) shown that administering preventative asthma medication to 530 students led to a noteworthy decrease in symptoms when compared to the control group. Furthermore, the youngsters saw a decrease in nocturnal symptoms and reliance on rescue medicine, resulting in increased tranquility [47]. A further trial shown that the use of inhaled corticosteroids (ICS) delivered by nurses led to a significant decrease in functional limits, better adaptation to family life, and improved sleep when compared to the control group [48]. The findings of the study examining the impact of asthma case management on medically disadvantaged inner-city children indicate that the intervention group had a lower rate of school absence compared to the control group. In addition, they had a notable reduction in the number of trips to the emergency department and a decrease in the number of days spent in the hospital. A replication and further investigation in the second year similarly showed sustained and noteworthy improvements [49].

4. Excessive weight or obesity

When evaluating the efficacy of obesity prevention research run by school nurses, it was found that 4 references with minimal risk of bias were very important. All studies had the characteristic that the BMI score was a primary outcome

measure, however, the strategies used to decrease the BMI score varied. One strategy included implementing educational programs on nutrition, creating a healthier environment with nutritious meals and increased physical activity, and implementing screening methods [17,50]. However, the findings did not demonstrate any apparent benefits for the children in the intervention group. Despite seeing minor decreases in BMI, the implementation of educational and environmental measures did not have any significant impact on BMI when compared to the control group. Another strategy was providing comprehensive health information to teachers and offering dietary counseling to parents [51]. The study's risk of bias was uncertain since it lacked blinding and failed to sufficiently control confounding variables, which may have compromised the reliability of the findings.

Nevertheless, the findings indicated that obese children saw a substantial decrease in weight after duration of two years in comparison to the group that did not get any intervention. The school grades of both groups declined; however, the decline was less severe in the experimental group. In a third intervention undertaken in 2013 and duplicated three years later [52,53], computerized cognitive behavioral counseling and an after-school physical activity program were used. Aside from BMI levels, the study also assessed factors such as food, physical activity, sedentary behavior, self-efficacy, and perceived obstacles. The results indicated that there were no statistically significant changes in BMI, body fat, and waist circumference as compared to the control schools. An alternative perspective on obesity prevention is promoting higher levels of physical activity. A research examined the effects of a Kids N Fitness intervention, which included 45-minute physical activity sessions, nutrition education, and wellness activities [54]. Children were requested to fill up a questionnaire on their dietary habits, and measurements of their body proportions were gathered. The research exhibited little bias and the findings demonstrated that the intervention, administered by school nurses, had a noteworthy effect on BMI, sedentary behavior in males, and enhanced physical activity behavior in girls.

5. Diabetes

When evaluating the impact of school nurse-led interventions for managing diabetes, two references with a low and uncertain risk of bias was found to be significant. A research

used the hemoglobin A1c (HbA1c) value as a metric for assessing long-term glycemic management [55,56]. The findings indicated that regular monthly videoconferences with the school nurse, the kid, and the diabetes team resulted in significant improvements during the first 6-month period. Nevertheless, no more noteworthy improvements were seen beyond the 6-month milestone [57]. In the second trial, the experimental and control groups were compared by measuring and comparing their blood glucose levels, HbA1c, and BMI. The study findings indicated that the HbA1c level did not change in the control group, but it was notably reduced in the intervention group. Both groups did not exhibit a substantial change in BMI. Additional health outcomes, including teasing and bullying, resilience, and hyperactivity and peer difficulties, were deemed unreliable owing to inherent constraints [58-60].

6. Sexually transmitted infections

Research organizations focused on studying sexually transmitted infection (STI) prevention strategies consistently uses educational programs for students as their primary intervention. The surveys assess outcomes pertaining to knowledge, beliefs, and behavioral intentions [61,62]. Although there was little follow-up, both trials demonstrated substantial improvements in knowledge, attitudes, and beliefs when compared to the control group.

7. Immunization

All research on vaccination used immunization rates as a metric to evaluate the effectiveness. The study treatments varied from the distribution of information pamphlets [35] to the implementation of educational programs and the provision of free vaccination programmes [63]. The findings indicated that all of these interventions led to an increase in immunization rates in the studies conducted.

8. Tobacco consumption through inhalation of smoke

An authoritative research on smoking cessation shown that providing comprehensive education to teachers and school nurses had a substantial effect on reducing smoking rates among school children [19]. Previous research investigating smoking behaviors used self-reported questionnaires, which have a tendency to result in distortion [64].

9. Mental health

Multiple studies have investigated the effects of school nurse-led interventions on mental health. Out of all the studies examined, only two were deemed sufficient for evaluating the efficacy of school nurse-led programs, while the other ones exhibited constraints that may compromise the accuracy of the findings.

One research investigated the effects of a computerized cognitive therapy (cCBT) intervention on anxiety [14], while the other study assessed the effects of screening and coping skill treatments on depressive symptoms [65]. The Anxiety Scale (SCAS) and the Strengths and Difficulties Questionnaire (SDQ) were used to evaluate anxiety. The findings indicated a significant decrease in the overall rate of anxiety in children after the cCBT intervention [14]. The research used the Reynolds Adolescent Depression Scale (RADs) and the Jalowiec Coping Scale (JCS) to assess depression and coping abilities. However, due to the small sample size of only 40 participants, the possibility of bias in the study is uncertain [65]. However, the findings from the RADs indicated that almost 87% of the students in the intervention group saw a decrease in depressive symptoms, whereas the students in the control group had a drop of just 60%.

10. Summary

The importance of school nurses in enhancing the well-being of children with asthma and diabetes is evident. The efficacy of school nurses in addressing obesity remains uncertain, necessitating more decisive study. The study of the overviews indicates that the quality of the included main studies is subpar, with a limited number of randomized controlled trials (RCT) and observational studies (Obs). The assessment of the main studies indicates that factors such as blood glucose levels or the categorization of asthma contributed to improved outcomes in terms of quality. The acquisition of this information is very beneficial for policy makers and scientists.

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