Discover Public Health

REVIEW Open Access

School health services from a global perspective: models, systemic challenges, and policies

Muhammet Fatih Doğan[1*]

*Correspondence:
Muhammet Fatih Doğan
mfdogan@gmail.com
[1]Yildiz Technical University, İstanbul, Turkey

Abstract
This meta-synthesis provides a comprehensive examination of the historical development, theoretical frameworks, and practical challenges associated with School Health Services (SHSs). Research indicates that SHSs have undergone a significant paradigm shift, moving from a reactive disease-management model to a proactive, salutogenic approach that holistically promotes health. Central to this modern system is the school nurse, whose role has expanded from providing clinical care to advocating for public health. However, the study demonstrates that a significant barrier constrains the potential of this ideal model, conceptualised here as "systemic burden". Inadequate funding, chronic staff shortages, and mounting administrative responsibilities hinder school nurses' preventive work, confining them to a reactive role and creating a significant disparity between policy and practice. A comparative analysis of different national models substantiates that the efficacy of SHSs is directly correlated with the investment and resource allocation dedicated to the system. Consequently, an effective SHSs programme is not a luxury but a strategic investment in a nation's educational and health infrastructure. Its success depends on a system that is empowered, adequately staffed, and sustainably funded to enable school nurses to fulfil their role comprehensively.

Keywords School health services, School nursing, Systemic burden, Public health, Meta-synthesis

1 Introduction: the primacy of health in education

Education and health are inextricably linked. The foundational principle that health is a prerequisite for effective learning underpins this report. Schools, where children and adolescents spend a significant portion of their time, represent a critical setting for public health interventions [2, 3, 18, 20]. An effective school health programme is widely regarded as one of the most cost-effective investments a country can make, as it simultaneously improves both educational and health outcomes [3]. Research has demonstrated that School Health Services (SHSs) can enhance academic performance, improve school attendance, and reduce dropout rates [4, 24]. Therefore, schools must be viewed not only

© The Author(s) 2026. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/.

as centres for the transmission of knowledge but also as foundational institutions for cultivating healthy future generations.

On a global scale, schools offer a compelling mechanism for reaching population groups, particularly adolescents, who traditionally have limited access to health facilities [10]. This platform has the potential to mitigate health inequities by providing free, accessible care to all students, regardless of their socioeconomic background [2]. By creating a level playing field in access to healthcare, SHSs enable vulnerable students, in particular, to benefit more fully from existing educational investments [10]. These services support a positive school experience, which is a significant determinant of the quality of life for children and young people and plays a pivotal role in promoting the equality of health opportunities [2].

The role of SHSs has been redefined, particularly in the context of the global crisis precipitated by the COVID-19 pandemic. The pandemic has demonstrated that schools not only serve as academic learning spaces but also serve as strategic "control points" in protecting public health. Studies conducted during this period emphasise that SHSs should no longer be viewed merely as a mechanism for responding to emergencies but should be recognised as a fundamental component of educational infrastructure that enhances the resilience of education systems [28]. In this context, the new global standards published by the World Health Organisation (WHO) and UNESCO in 2021 position SHSs not as a collection of fragmented projects but as an integral and continuous component of the "whole school approach" [56].

Furthermore, current research draws attention to the unprecedented mental health crisis experienced by school-aged children and adolescents and to the key role that school nurses assume in the management of this crisis. In addition to traditional physical ailments, the increase in anxiety, depression, and behavioural problems has transformed school nursing from a clinical service to a psychosocial support mechanism [29]. Evidence-based data support the view that nurse-led interventions are a cost-effective means of strengthening students' mental well-being and reducing risky behaviours; this underscores the need to expand the scope of SHSs within the framework of "new morbidities" [24].

Finally, the role of SHSs in addressing health inequalities has been addressed more robustly in recent studies through the perspective of "social justice". In particular, in disadvantaged regions and low-income countries, schools remain the only point where children can access health services. Current studies indicate that an effective school health system functions as a vital "buffer mechanism" to close health gaps created by socioeconomic determinants (e.g., poverty, malnutrition) [31]. Consequently, modern school health policies aim not only to treat illnesses but also, through the health-promoting schools approach, to create an equal starting point for all students [28].

1.1 Rationale of the research

Although SHSs occupy a significant place in the literature, most existing research focuses on practices within specific national contexts (e.g., CSH models in the USA or resource constraints in Nigeria) or on the management of specific diseases, such as asthma and obesity. A review of the literature reveals a limited number of comparative studies that address the historical transformation, theoretical frameworks, and practical field challenges of SHSs within a holistic global framework. In particular, there is a

distinct need for synthesis studies that discuss the challenges faced by developed and developing countries (for example, "new morbidities" in the USA versus the "double burden of disease" in India and Nigeria) on the same analytical plane and identify the common "systemic" barriers between these differing contexts.

Furthermore, while the current literature contains comprehensive theoretical discussions of "what SHSs ought to be" (ideal models such as WSCC), studies that explain why these models cannot be fully realised in practice remain insufficient. Most studies define the problems experienced by school nurses at an operational level, such as "time constraints" or "staff shortages", yet fail to consolidate these issues under a broader theoretical concept, such as "systemic burden". The lack of qualitative syntheses that thoroughly scrutinise the causes of the chasm between the "salutogenic" vision in policy documents and the "reactive" (pathogenic) reality in schools makes it difficult for policymakers to develop evidence-based strategies.

In this context, this research aims to fill this gap in the literature by going beyond a meta-analysis that merely aggregates quantitative data, employing a "meta-synthesis" methodology to reinterpret qualitative findings. By presenting the global landscape of the SHS, the shifting role of school nurses, and the systemic barriers that hinder service delivery through an integrated perspective, this study aims to make a theoretical contribution to the academic literature and to develop strategic recommendations to bridge the gap between policy and practice.

1.2 Research questions

Within the scope of the research, the specific questions addressed are listed below:

- Historical evolution: How have SHSs evolved historically, and which paradigmatic shifts (from a pathogenic to a salutogenic approach) have they undergone?
- Models and Frameworks: What are the dominant theoretical models (e.g., CSH, WSCC) and structural frameworks utilised in the delivery of SHSs on a global scale?
- The Role of the Nurse: How are the shifting roles, responsibilities, and competencies of the school nurse defined within the modern school health system?
- Systemic challenges: What are the systemic barriers ('systemic burden') and practical challenges that hinder the implementation of SHSs at an ideal level?
- Policy and Practice Gap: How do discrepancies between policy and practice manifest when different national models (the USA, the UK, Japan, Nigeria and India) are compared?

2 Method

2.1 Research model

This study employed a meta-synthesis methodology, which aims to integrate and reinterpret findings from qualitative research within a specific field. A meta-synthesis is "an interpretive integration of the findings of qualitative studies that focus on a particular phenomenon", and its purpose is not merely to summarise or aggregate findings but also to transform them, thereby generating a new conceptualisation [49]. Unlike meta-analysis, which aggregates quantitative data, meta-synthesis synthesis involves themes, concepts, and metaphors rather than statistical data. The primary objective of this method is to produce a more comprehensive, theoretical, and holistic understanding that individual studies cannot offer alone [36]. This approach enables the consolidation of disparate,

fragmented qualitative findings on a research topic, ultimately leading to the development of a new model or theory with greater explanatory power.

The meta-synthesis process comprises several systematic steps. First, a comprehensive literature search was conducted in line with the research question, using predefined inclusion and exclusion criteria to identify relevant qualitative studies. The methodological quality of the selected studies was subsequently rigorously appraised to ensure the credibility of the research. During the analysis phase, the original findings (themes, key concepts, etc.) from each study were carefully extracted and documented. In this process, the approach of "comparing and relating the key metaphors, themes, and concepts of the studies" was adopted to understand how the findings from different studies spoke to one another, thereby creating a new interpretive framework [41]. This comparative and interpretive analysis yielded higher-order themes and a new, synthesised line of argument that transcends the findings of individual studies and offers a deeper understanding of the research phenomenon.

2.2 Data collection and study selection

A comprehensive literature search was conducted for this meta-synthesis study. The data collection process aimed to identify qualitative studies and policy documents that best reflect the historical evolution, current models, and systemic challenges encountered in SHSs. The screening process was conducted via PubMed, ERIC, Scopus, Web of Science, and Google Scholar. The search strategy employed the keywords "school health services", "school nursing", "student well-being", "comprehensive school health models", and "public health in schools", along with their various combinations.

During the screening, particular care was taken to ensure an equitable distribution of studies across both developed (the USA, the UK, Japan) and developing (Nigeria, India) nations. Accordingly, 450 records ($n = 450$) were initially identified. After removing duplicates and overlapping studies, the remaining 180 items ($n = 180$) were appraised against the inclusion and exclusion criteria, yielding a final corpus of 45 studies ($n = 45$). Table 1 below shows the flow of the study selection process according to the PRISMA standard.

In selecting studies, consistent with the nature of the research question, the focus was on sources that examine the subject's conceptual and systemic dimensions in depth rather than on statistical aggregates. Accordingly, the established inclusion and exclusion criteria are presented below:

Table 1 PRISMA flow table of study selection

Phase	Description	Number of records (*n*)
Identification	Records identified through database searching (PubMed, ERIC, Scopus, etc.)	$n = 450$
Screening	Records remaining after removing duplicates and overlapping studies	$n = 180$
Eligibility	Full-text articles appraised against inclusion and exclusion criteria	$n = 180$
Excluded	Articles excluded based on methodology, scope, or lack of qualitative depth	$n = 135$
Included	Final corpus of studies included in the qualitative meta-synthesis	$n = 45$

2.3 Inclusion criteria

- Scope: Studies directly addressing the organisation of SHSs, the role of the school nurse, impacts on student health, or national school health policies.
- Publication type: Original research articles published in peer-reviewed journals; reports from international organisations such as the World Health Organisation (WHO) and the CDC; official policy documents; and legal texts (e.g., legislative bills, court rulings).
- Methodology: In alignment with the meta-synthesis method, qualitative or mixed-methods studies and theoretical reviews examining school health experiences, perceptions, and systemic processes are needed.
- Language and time: Primary sources were published in the English language. To demonstrate the historical transformation of SHSs (the transition from a pathogenic to a salutogenic approach), the date range was kept flexible; however, emphasis was placed on studies from the last 20 years that reflect the current 'systemic burden.'

2.4 Exclusion criteria

- Paediatric clinical trials or pharmaceutical trials were conducted independently of the school setting.
- Medical studies focusing solely on the pathophysiology of a specific disease, unrelated to the education system or public health policies.
- Studies where the full text was inaccessible or whose opinions had not undergone peer review (excluding official reports within the scope of gray literature) were excluded.
- Purely quantitative data sets that present data solely in statistical form and do not offer an opportunity for qualitative interpretation or thematic analysis.

2.5 Data analysis process

During the data analysis process, a 'Thematic Data Extraction Matrix' structured around the research questions was developed. This matrix was established on four principal axes: (1) the school health paradigm (pathogenic/salutogenic), (2) nursing roles and competencies, (3) systemic burden, and (4) environmental determinants. Data obtained from each study were mapped onto this matrix, followed by a cross-study analysis to synthesise recurring metaphors and higher-order themes. In this context, Tables 2 and 3, and 4 below present the meta-synthesis data extraction forms utilised in the research.

3 Findings

3.1 The evolution and core objectives of SHSs

The origins of SHSs can be traced to the early 20th century, where the primary objective was to manage prevalent communicable diseases and reduce the associated student absenteeism [10, 11, 20, 54]. During this initial period, the school nurse's role was to treat minor illnesses and injuries, provide health education, and offer follow-up care and home instruction to ensure that children remained well enough to attend school [11]. This reactive model, in line with the shift of healthcare services from home to hospitals, gradually evolved into a more proactive "nurse-teacher" role with an emphasis on health education [10, 11]. Today, SHSs have evolved into a holistic approach that encompasses

Table 2 Study identity and context form

Field	Description/data
Study ID	(e.g., M1, M2…)
Reference	(Author, Year, Title)
Country/region	(e.g., USA, Nigeria, UK, Japan)
Study type	(Qualitative Research, Policy Analysis, Theoretical Review, Legal Text)
Target audience	(School Nurses, Students, Policymakers)

Table 3 Thematic data extraction form

Theme/category	Data extraction questions and keywords
1. Health paradigm	How does the study define the health service? Key Concepts: Pathogenic (disease-oriented), Salutogenic (health-promoting), Reactive, Proactive.
2. Role of the nurse	What is the job description of a nurse? Key Concepts: Clinical expert, Educator, Advocate, First aid, Mental health support.
3. Systemic burden	What factors hinder the nurse from fulfilling their ideal role? Key Concepts: Staff shortages, Insufficient funding, Administrative workload, "Fighting fires" metaphor.
4. Model Utilised	Which structural framework is used? Models: Traditional 3-Component, CSH (CDC), WSCC, Yogo Teacher (Japan), National Policy.
5. School environment	What are the findings regarding the physical and psychosocial environment? Factors: Water, Sanitation and Hygiene (WASH), Safety, Peer bullying, Sick Bay equipment/facilities.
6. Outcomes and impact	What is the impact of the service on the student? Outcomes: Absenteeism, Academic achievement, Health literacy, Health Equity.

Table 4 Synthesis and interpretation

Dimension of analysis	Researcher notes
Key metaphors	Striking metaphors used in the study (e.g., "Fighting fires", "Safe harbour", "Investment not a luxury")
Relationship with other studies	How does this study speak to others? (e.g., Similarity between resource scarcity in Nigeria and funding cuts in the UK)
Second-order construct	How does this finding fit under the higher-order theme of "Systemic Burden" or "Role Conflict"?

the physical, mental, emotional, and social dimensions of health [3, 54]. It is, however, a reality that many existing SHSs remain constrained by historical traditions rather than adapting to modern priorities [10].

This historical development mirrors a broader paradigm shift in public health: a transition from a pathogenic (disease-fighting) to a salutogenic (health-promoting) approach. Initially, services focused on preventing the exclusion of "diseased children" from school [10, 54], a classic pathogenic model aimed at eliminating a specific negative (illness). In contrast, contemporary models in countries such as the United Kingdom focus on "well-being and prevention" and "empowerment" [14]. This aligns with a salutogenic framework, which seeks to understand and promote the factors that support human health and well-being. The emphasis on issues such as mental health, nutrition, and a positive psychosocial environment further highlights this shift towards the active promotion of health beyond the mere absence of disease [3, 15, 48]. This change implies that the success metrics for SHSs have also evolved. Success is no longer measured solely by reductions in absenteeism but rather by more complex, holistic indicators such as improved quality of life, resilience, health literacy, and academic achievement [2, 17].

3.2 Core objectives: primary prevention, health equity, and early intervention

The fundamental objectives of modern SHSs are to promote healthy development, prevent communicable diseases, provide emergency care, detect and treat impairments at an early stage, and create a healthy school environment [54]. These services are considered vital tools for providing primary prevention for children and adolescents and for achieving universal health coverage [2, 10, 18]. The principal aim is to identify health problems at an early stage, provide timely support [12, 21], and ensure equitable access to care for all children [2]. In this way, health services play a significant role in addressing social inequality and ensuring that every child is healthy and ready to learn [2].

There is compelling evidence demonstrating the tangible benefits of SHSs. Studies have shown that school nurses have a significant positive effect on student outcomes, including academic achievement, attendance, and behaviour [24, 25]. In particular, effective school nurse interventions have been associated with improved management of chronic conditions such as asthma and diabetes, resulting in reduced hospitalisations and emergency department visits [17, 24]. Furthermore, investing in school nurses is economically beneficial, as it is correlated with lower overall community healthcare costs [2, 17]. These services not only improve the health of individual students but also help create a healthier school community and, consequently, a healthier society.

3.3 Dominant school health frameworks and models

The delivery of SHSs is based on various structural models that have evolved and been adapted to different educational and health systems. These models provide frameworks that define the scope, organisation, and stakeholder involvement in services.

3.3.1 The traditional three-component model

The traditional model, which underpins school health programmes and emerged in the early 1900s, comprises three main components: health services, health education/instruction, and a healthy school environment [3, 5, 7]. This model served as a starting point for the more complex and comprehensive frameworks that were subsequently developed. Health services encompass the assessment of students' health status and response to emergencies; health education promotes healthy behaviours; and a healthy school environment aims to ensure that the physical and psychosocial environment is safe and supportive.

The coordinated school health (CSH) model (US CDC) Developed in the 1980s by the United States Centers for Disease Control and Prevention (CDC), the Coordinated School Health (CSH) model significantly expanded the scope of the traditional school health model. This model consists of eight interactive components that aim to systematically coordinate all health-related activities within the school [30, 42, 48].

1. Health education: A planned, sequential curriculum from K-12 (kindergarten to the end of secondary school) that addresses physical, mental, emotional, and social health.
2. Physical education and physical activity: A comprehensive programme including physical education classes and other activity opportunities throughout the school day.
3. Health services: Preventive services, emergency care, and management of chronic conditions provided by qualified professionals.

4. Nutrition services: Access to nutritious meals and a learning environment for healthy eating.
5. Counselling, psychological, and social services: Support for mental, emotional, and social health.
6. Healthy and safe school environment: The physical and psychosocial climate of the school.
7. Health promotion for staff: Opportunities for school staff to maintain a healthy lifestyle, encouraging them to be role models.
8. Family and community involvement: An integrated approach that involves parents and community resources in the process.

The whole school, whole community, whole child (WSCC) model The WSCC model is considered an evolution of the CSH framework. This model places the child at the centre, emphasising the synergistic relationship between learning and health. The child's surroundings constitute components of a healthy school and a wider community, thereby promoting a more integrated and collaborative approach [32, 52]. The WSCC emphasises that health is not only an individual matter but also a shared responsibility among the school, family, and community.

International variations: These foundational models have been adapted to the cultural and structural needs of different countries. For example, Nigeria's national school health policy has adopted a five-component model: Healthy School Environment, School Feeding Services, Skills-Based Health Education, SHSs, and School, Home, and Community Relationships. This illustrates how core concepts can be reshaped in different contexts and tailored to local priorities.

3.4 Professional standards, competencies, and training in school nursing

School nursing is a specialised area of practice that requires a unique body of knowledge, skills, and responsibilities. Consequently, various educational requirements, certification standards, and professional practice frameworks have been developed worldwide to ensure the quality and consistency of the profession.

3.4.1 Global variations in education and certification requirements

The global standards for school nurse qualifications vary. The basic requirement is typically a registered nurse (RN) licence. However, leading professional organisations, such as the National Association of School Nurses (NASN) in the United States, recommend a minimum Bachelor of Science in Nursing (BSN) degree [38, 39]. Speciality certification requirements vary significantly across states and countries [32]. Some jurisdictions require completion of specific coursework, a set number of clinical hours, and the passage of a certification examination. These differences illustrate the challenges in standardising school nursing practices globally.

3.4.2 The NASN framework for 21st century school nursing

The authoritative standards set by the NASN in the US provide a comprehensive framework for competent practice. This framework clearly defines the roles and responsibilities of school nurses, establishing a basis for measuring the quality of practice. The framework is divided into two main categories:

- Standards of Practice: These standards are based on the nursing process and consist of six steps: assessment, diagnosis, outcome identification, planning, implementation (which includes care coordination and health teaching), and evaluation [37, 50]. These standards guide nurses in providing systematic, evidence-based care to students and the school community.
- Standards of Professional Performance: These standards describe the professional behaviours of a school nurse and include ethics, advocacy, respectful and equitable practice, communication, collaboration, leadership, education, scholarly inquiry, quality of practice, professional practice evaluation, resource management, and environmental health [37, 50]. These standards require nurses not only to be clinically competent but also to be ethical, collaborative, and leading professionals.

3.4.3 Ethical and legal obligation

Strict ethical principles and legal regulations govern the practice of school nursing. Ethical principles, such as confidentiality (protected by laws such as the HIPAA and FERPA in the U.S.), professional boundaries, and advocacy, form the foundation of nurses' practices [37, 47]. Legal obligations also play a significant role. For example, the Individuals with Disabilities Education Act (IDEA) in the U.S. mandates the provision of necessary health services to ensure that students with disabilities can access education. This means that the school nurse has a legal responsibility to ensure that the educational rights of students with special needs are protected.

3.5 The school nurse: clinical expert, educator, and advocate

The school nurse is a multifaceted and critical professional at the heart of the modern SHSs system. Their role extends far beyond simple first aid, combining clinical care, public health, education, and advocacy.

3.5.1 Defining the scope of practice for the modern school nurse

School nurses are specialised nursing professionals who integrate health and education to improve the well-being and academic success of students [23, 37]. Their practice is autonomous, and owing to the complexity of student needs, they require at least a bachelor's degree [38, 39]. These professionals are the primary healthcare providers who ensure that students are healthy, safe, and ready to learn [24].

3.5.2 Clinical and care coordination responsibilities

The direct care functions of the school nurse involve managing a mini-clinic within the school setting [16, 17, 23, 24, 26, 37, 40, 43–45, 52]:

- Assessment and Triage: Conducting health assessments; performing screenings for vision, hearing, and growth deviations.
- First Aid and Emergency Care: Responding to injuries and acute illnesses.
- Chronic disease management: Developing care plans and providing support for students with conditions such as asthma, diabetes, and epilepsy. These interventions have been proven to improve health outcomes.
- Medication administration: Ensuring safe and accurate administration of medications during the school day.

- Care coordination: Care coordination acts as a liaison between the school, home, and community healthcare providers to ensure continuity of care.

3.5.3 Public health functions

In addition to individual care, the school nurse is responsible for the health of the entire school population [2, 16, 20, 24, 26, 40, 43, 46, 47, 54] (Scottish Government 2012):

- Health Promotion and Education: Educating students, staff, and families on topics such as hygiene, nutrition, and disease prevention.
- Disease Prevention and Control: Managing immunisation compliance and conducting surveillance for communicable diseases.
- Advocacy: Advocating for students' health needs, safe school environments, and policies that support well-being.

3.5.4 The expanding role in mental and behavioural health support

The role of school nurses in addressing mental health issues is becoming increasingly critical. They are uniquely positioned to identify emerging problems, provide initial support, and deliver evidence-based interventions such as cognitive behavioural therapy (CBT) for anxiety [6, 15, 23, 51]. Students report a high level of trust in school nurses for confidential health matters [15].

3.5.5 The conceptualisation of "systemic burden": a multidimensional framework

While the literature often treats barriers to SHSs as isolated issues, this meta-synthesis identifies a cohesive phenomenon conceptualised here as "Systemic Burden". This construct is defined not merely by the absence of resources but also by the structural intensity of demands relative to the available capacity, which forces the SHS paradigm to regress from "prevention" to "crisis management". To operationalise this concept for future research and policy analysis, "systemic burden" is deconstructed into three distinct, interacting dimensions:

1. Resource-Based Burden (Infrastructural Deficits) This dimension represents the tangible gap between student population needs and available physical/human capital.

    - Chronic Understaffing: The primary driver of this burden is the high nurse-to-student ratio, which dilutes the quality of care. In extreme cases, such as in Nigeria, the total absence of qualified medical personnel places the entire burden on untrained teachers.
    - Infrastructural Inadequacy: In developing contexts, this burden encompasses the lack of "survival" infrastructure, such as water, sanitation, and hygiene (WASH) facilities and basic sick bay equipment.
    - Fiscal Instability: The lack of sustainable, ring-fenced funding creates a precarious environment where services are liable to be cut, as observed in the UK's funding reductions.

2. Administrative Burden (Role Displacement) This dimension refers to the nonclinical tasks that displace professional nursing time, creating a "functional unavailability" of the nurse even when they are physically present.

- Bureaucratic Overload: Research indicates that school nurses spend a disproportionate amount of time (approx. 22–24%) on documentation and administrative tasks rather than direct student care.
- Role Ambiguity: The lack of clear job descriptions often leads to nurses being assigned nonhealth-related school duties, preventing them from focusing on their core public health mandates.

3. Structural Burden (Paradigm Friction) This dimension describes the invisible pressure exerted by the system's design, which inherently prioritises acute response over long-term prevention.

- The "Firefighting" Trap: The sheer volume of acute incidents (injuries, acute illness) forces nurses into a reactive posture, metaphorically described as "fighting fires". This structural pressure makes salutogenic, time-intensive interventions (e.g., mental health counselling) operationally impossible.
- Policy–Practice Disconnect: Even when national policies (such as the WSCC) are robust, the lack of integration mechanisms at the school level creates a burden where practitioners are held responsible for outcomes they are not empowered to achieve.

3.6 The healthy school environment: infrastructure and resources

Student health is closely linked not only to the direct health services they receive but also to the physical and psychosocial environments in which they live. A healthy school environment is a fundamental component that supports learning, prevents illness, and enhances overall well-being.

3.6.1 The school health office/sick bay

The school health office, or sick bay, should be more than a place for ill children to rest; it is a clinical space. The essential features of an ideal health room include at least two beds, toilet and bathroom facilities, safe water, a refrigerator for medications, a regular supply of drugs and consumables, sterilisation equipment, and a method for the safe disposal of medical waste [44]. The maintenance and management of this room are among the core responsibilities of SHSs. It is a central unit where emergency interventions are performed, students with chronic conditions are monitored, and health counselling is provided.

3.6.2 Environmental health and safety

A school's physical environment directly impacts student health. Poor environmental conditions can cause or exacerbate illnesses, leading to absenteeism and reduced academic achievement [3, 55]. The key factors to consider include the following [3, 55, 58–61]:

- Water, sanitation, and hygiene (WASH): Access to functional toilets, safe drinking water, and handwashing facilities with soap is a basic necessity. A lack of these facilities poses a significant public health risk, particularly in developing countries, and contributes to the spread of diseases such as diarrhea.
- Injury prevention: Defective equipment, improperly designed playgrounds, and unsafe school furniture are significant risk factors for student injuries. Research

indicates that injuries occur most frequently in playgrounds, classrooms, and corridors.

- Building quality: Adequate ventilation, lighting, and acoustics are essential for students' well-being and concentration. Inadequate lighting can cause eye strain and headaches, whereas high noise levels can impair performance and encourage aggression.

3.6.3 The psychosocial environment

In addition to the physical environment, the school's psychosocial climate is critical to student health. This refers to a school culture that is free from bullying, promotes positive relationships, and supports mental and emotional well-being [3, 43, 48]. An environment where students feel safe, valued, and supported provides the foundation for learning and healthy development.

3.7 Global perspectives: a comparative analysis of national systems

The structure and effectiveness of SHSs vary significantly across countries, depending on their governance, funding, and cultural priorities. This section presents a detailed comparison of five different national models, examining how these systemic differences shape the SHS. In this context, these five national models have been identified and exemplified to provide a general perspective on different levels of economic development, social and cultural structures, and conjunctures.

3.7.1 United States: a decentralised, coordinated model

The U.S. system is characterised by the influential CSH and WSCC frameworks promoted by the CDC [30, 42, 48]. However, implementation is highly decentralised, with significant variation across states and school districts, resulting in inconsistencies in service delivery. Professional standards are influenced primarily by the NASN [37, 39, 50]. Innovative approaches, such as telehealth and mobile clinics, are also being implemented to improve access for vulnerable populations. The strength of this model lies in its flexibility, whereas its weakness is the inequity in service quality.

3.7.2 United Kingdom: a public health-focused, NHS-integrated approach

The UK model is driven by public health policy and is integrated with the National Health Service (NHS) [14, 21, 43]. School nurses are typically specialist community public health nurses (SCPHNs) who lead teams delivering the "4-5-6 model," which focuses on universal services, targeted interventions, and addressing health inequalities [14]. Key priorities include mental health, safeguarding, obesity, and sexual health [14]. However, the system has faced challenges, such as funding cuts, since the devolution of services to local authorities.

3.7.3 Japan: the unique role of the educator-health professional ('Yogo' teacher)

Japan's system is unique and legally mandated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) within the education sector. Instead of a school nurse, every primary and secondary school has a full-time, specially licenced "Yogo teacher." This role combines health services (first aid, health counselling, management of the sick bay) with formal health education, deeply integrating health into the school's

educational mission. This education-focused model provides universal coverage and a strong systemic foundation.

3.7.4 Nigeria: systemic challenges and resource scarcity

Nigeria exemplifies the challenges faced by many low- and middle-income countries. However, a national school health policy exists [26, 53], and a lack of funding, personnel, and infrastructure severely hampers its implementation. Studies reveal a near-total absence of school nurses and doctors in public primary schools, a severe lack of basic equipment such as first aid kits [53], and dangerously unsanitary school environments with inadequate water and sanitation [55, 58–61]. This situation creates a profound gap between policy and practice.

3.7.5 India: transition from fragmented initiatives to a comprehensive health and well-being model

The modern history of SHSs in India began to take shape with the launch of the Integrated Child Development Services (ICDS) in the 1970s, with a primary focus on combating malnutrition [4]. Having remained limited to "mid-day meal programmes" and periodic health screenings for many years, this structure underwent a significant transformation in 2013 with the initiation of the Rashtriya Bal Swasthya Karyakram (RBSK) programme. The RBSK aims to establish a comprehensive early detection and intervention system for children aged 0–18 years, utilising the "4D" approach, which comprises defects at birth, diseases, deficiencies, and developmental delays [27, 34]. However, the literature indicates that services during this period often remained fragmented, with gaps between health education services and treatment services [19].

In recent years, India has undergone its most radical overhaul of the school health paradigm to date, implementing the "School Health & Wellness Programme" (SHWP) under the Ayushman Bharat initiative launched in 2018. This new model aims to evolve toward the "health-promoting schools" concept, moving away from the traditional approach that focuses solely on disease screening [22, 34]. The most innovative aspect of the model is the designation of two teachers in every school as "Health and Wellness Ambassadors" and the active role of students as "Health Messengers". While international reviews praise the holistic nature of this initiative, they emphasise that a significant "implementation gap" persists between policy and practice on the ground, given India's massive student population and resource constraints [8, 27].

3.8 Global challenges in SHSs

The literature from the USA and the UK emphasises that the fundamental challenge in SHSs is the fragmented nature of services and the impact of funding cuts. While the number of school nurses is decreasing in these countries, students' chronic conditions and, particularly, mental health problems are increasing; services often remain focused on "crisis management", and a sufficient budget cannot be allocated to preventative health services [13, 33]. In contrast, Japan presents a more systematic and holistic approach with legally mandated annual health checks and "Shokuiku" (food and nutrition education) [35]. However, Japanese literature also notes that although the system is highly successful in terms of physical health, it struggles to manage increasing psychological issues such as peer bullying, academic pressure, and school refusal (futoko),

and there are deficiencies in the integration of the current system with mental health services.

Research conducted in Nigeria and India indicates that the barriers hindering SHSs lie in a different dimension from those in developed countries, namely, at the level of "basic living necessities". The literature from these countries highlights that the most significant challenge is the lack of physical infrastructure in schools (water, sanitation, and hygiene [WASH]) [57]. In Nigeria and India, school health programmes must combat malnutrition, anaemia, and infectious diseases [1]. Furthermore, owing to a shortage of qualified health personnel and difficulties accessing rural areas, national health policies on paper are often not effectively implemented in schools, and services are neither sustainable nor regular [27].

Modern Morbidities and Double Burden. When the five countries are evaluated together, the literature reveals an "epidemiological divide". While developed countries such as the USA, the UK, and Japan struggle with lifestyle-related "new morbidities", such as obesity and mental health, India and Nigeria face a "double burden of disease" [9]. In other words, these developing countries are dealing with unresolved infectious diseases and malnutrition while beginning to face chronic issues caused by globalisation, such as obesity and diabetes. Consequently, while challenges in developed countries focus on improving service quality, those in Nigeria and India focus on ensuring service availability and accessibility [3].

4 Discussion

This meta-synthesis critically examines the global trajectory of SHSs, moving beyond descriptive analysis to identify structural paradoxes inherent in the system. The findings suggest that while the theoretical paradigm of SHSs has successfully transitioned from a reactive, pathogenic model to a proactive, salutogenic framework aligned with the "Whole School, Whole Community, Whole Child" (WSCC) approach, the operational reality remains heavily constrained. This study argues that the disconnect between the "ideal" policies promoted by international bodies [56] and the "actual" practices in schools is not merely a resource issue. However, a structural phenomenon is conceptualised here as a "systemic burden".

4.1 The paradox of policy versus practice: the "systemic burden"

The literature consistently highlights a dichotomy: policies advocate holistic prevention, yet practitioners are compelled to engage in crisis management. While the WSCC and CSH models position the school nurse as a public health leader, the synthesis reveals that administrative overload and staff shortages effectively deprofessionalise this role, reducing it to basic first aid. This "systemic burden" creates a vicious cycle where the preventive potential of SHSs—such as managing "new morbidities" such as mental health and obesity"—is stifled by the immediate demands of acute care. Unlike previous studies that attributed this solely to funding cuts [13], this analysis suggests that failure is rooted in the design of educational systems that view health services as auxiliary rather than foundational. Consequently, the "implementation gap" observed in both the UK and India demonstrates that, without structural integration, even robust policies such as Ayushman Bharat and the Healthy Child Program struggle to penetrate the school level effectively.

4.2 Global asymmetries: "new morbidities" vs. "survival needs"

A critical synthesis of the data reveals a stark "epidemiological divide" that challenges the application of a "one-size-fits-all" global model. In developed contexts (the USA, the UK, Japan), the SHSs are pivoting to address the "new morbidities" of the 21st century, specifically the mental health crisis and lifestyle diseases. Here, the school nurse serves as a psychosocial buffer. Conversely, in developing contexts such as Nigeria and India, the "double burden of disease" persists; schools must simultaneously combat malnutrition and infectious diseases while lacking basic "survival" infrastructure, such as WASH (water, sanitation, and hygiene). This contrast implies that while global standards [56] are necessary, they must be sufficiently flexible to prioritise infrastructure investment in the Global South before complex psychosocial interventions can be sustainable.

4.3 The school nurse as a catalyst for social justice

The findings reposition the school nurse not only as a clinician but also as an agent of social justice. The literature confirms that for vulnerable populations, the school nurse is often the sole point of access to the healthcare system, serving as a critical "buffer mechanism" against health inequities. However, the "systemic burden" threatens the function of equity. When nurse-to-student ratios dilute the quality of care, as seen in the comparison between well-resourced environments and those relying on teachers for health tasks (e.g., Nigeria), the system inadvertently exacerbates the very inequalities it aims to reduce. Therefore, empowering the school nursing workforce is not a sectoral preference but a prerequisite for achieving health equity.

4.4 Strategic alignment with sustainable development goals (SDGs)

Finally, this study synthesises the evidence to argue that SHSs are the operational link between SDG 3 (Health) and SDG 4 (Education). The mutual reinforcement between health and learning is well documented; however, this study highlights that the "systemic burden" disrupts this link. An effective SHSs is a cost-effective investment that yields long-term economic returns by improving academic attainment and reducing future healthcare costs. The transition from "medical inspection" to "health promotion" represents a shift towards viewing students as human capital to be nurtured rather than patients to be treated. Thus, overcoming the systemic barriers identified in this study is essential for nations seeking to meet the targets of the 2030 Agenda.

5 Conclusion

This meta-synthesis revealed that SHSs have evolved from a narrow focus on combating infectious diseases to a comprehensive public health model targeting students' holistic well-being (physical, mental, and social). This modern approach focuses on core objectives, including health promotion, disease prevention, and ensuring health equity. Central to this system is the school nurse, whose role has expanded from providing clinical care to advocating for public health.

However, the research demonstrates that the potential of this ideal model is constrained by a significant barrier, identified as "systemic burden". Inadequate funding, chronic staff shortages, and mounting administrative responsibilities hinder school nurses' proactive and preventive work, often trapping them in a reactive role. This undermines the most fundamental benefits of the SHSs and creates a severe inconsistency

between policy and practice. Examples from different countries have shown that the effectiveness of SHSs is directly linked to a nation's investment, resource allocation, and policy priorities for the system.

Ultimately, an effective school health programme is not merely about assigning a nurse to a school. Success depends on a well-funded, adequately staffed, and holistically supported system that enables nurses to fulfil their professional roles fully. Therefore, SHSs must be regarded as integral to education and health systems and prioritised as a strategic area of investment to cultivate healthy generations.

5.1 Recommendations

On the basis of the findings of this study, the following recommendations are offered to policymakers, school administrators, and researchers to strengthen SHSs and enhance their effectiveness:

5.1.1 Recommendations at the policy level

1. Mandatory and Sustainable Funding: Governments should move SHSs from being an optional service to being a legally secured, mandatory, and sustainable line item in both education and health budgets.
2. National Staff Standards: Every country should establish evidence-based and mandatory minimum school nurse-to-student ratios, which are determined according to the needs of the student population. These ratios reduce the 'systemic burden' and allow nurses to focus on preventative services.
3. Integration of Education and Health Policies: SHSs should be integrated into the core policy frameworks of not only the Ministry of Health but also the Ministry of National Education. School accreditation standards should include an effective SHSs programme as a criterion.

5.1.2 Recommendations at the implementation and school levels

1. Clarification of Role Definition: School administrations must clarify the job descriptions of school nurses and protect them from administrative duties outside their professional scope. It should be ensured that they can dedicate the majority of their time to direct student care and public health activities.
2. Continuous professional development: School nurses should be provided with regular and funded professional development opportunities, particularly in areas of growing need, such as mental health, chronic disease management, and crisis intervention.
3. Use of Technology: The integration of technological innovations such as telehealth applications, electronic health record systems, and mobile health screening tools into SHSs should be encouraged to improve the quality and efficiency of care.

5.1.3 Recommendations for future research

1. Cost-Effectiveness Analyses: Comprehensive cost-effectiveness analyses should be conducted to demonstrate how effective SHSs programs reduce long-term healthcare expenditures and increase academic achievement. Such studies would provide policymakers with concrete data.

2. Comparative Model Research: International research should be conducted to compare the outcomes of different SHSs models, such as Japan's "Yogo teacher" model, with more common nurse-led models. This could help identify the most effective models for different sociocultural contexts.
3. Longitudinal impact studies: Longitudinal studies should be designed to track the health and academic outcomes of students over many years in schools with varying levels of SHSs provision (e.g., those with a full-time nurse, a part-time nurse, and no nurse).

Author contributions
M.F.D. Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing.

Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Received: 8 October 2025 / Accepted: 3 March 2026
Published online: 14 March 2026

References

1. Adebayo AM, Onadeko MO. Knowledge of School Health Programme among Public Primary School Teachers in Oyo State, South-West Nigeria: A Rural-Urban Comparative Study. Afr J Reprod Health. 2015;19(3):55–60.
2. Allensworth DD, Kolbe LJ. The comprehensive school health program: Exploring an expanded concept. J Sch Health. 1987;57(10):409–12. https://doi.org/10.1111/j.1746-1561.1987.tb03183.x.
3. Baltag V, Pachyna A, Hall J. Global overview of school health services: Data from 102 countries. Health Behav Policy Rev. 2015;2(4):268–83. https://doi.org/10.14485/HBPR.2.4.4.
4. Baru RV. School health services in India: the social and economic contexts. SAGE; 2008.
5. Bastos JL. Personal hygiene practices. In Gellman MD, Turner JR, editors. Encyclopedia of behavioral medicine. Springer; 2013. pp. 1435–1436. https://doi.org/10.1007/978-1-4419-1005-9_1153.
6. Begum M, Alam FS, Hossain MT, Hasan AHM. Knowledge and practice of personal hygiene among the high school students in a rural area of Mymensingh, Bangladesh. Community Based Med J. 2022;11(2). https://doi.org/10.3329/cbmj.v11i2.61283.
7. Bejster M, Cygan H, Stock J, Ashworth J. Engaging the School Community in a Nutrition and Physical Activity Program: The Role of the 21st-Century School Nurse. NASN School Nurse. 2020;35(5):260–5. https://doi.org/10.1177/1942602X20912747.
8. Bhatia V, Panda M. Indian health budget 2023 allocation: navigating the framework and dynamics of policy implementation. Indian J Econ Finance. 2024;4(2). https://doi.org/10.2139/ssrn.5025685.
9. Bundy DAP, de Silva N, Horton S, Jamison DT, Patton GC, editors. Child and adolescent health and development. Disease control priorities. Volume 8, 3rd ed. The World Bank; 2018.
10. Cedar Rapids Community School Dist. v. Garret F. ex rel. Charlene F., 526 U S 66. 1999. https://www.law.cornell.edu/supct/html/96-1793.ZO.html.
11. Chabo JR, Ejemot-Nwadiaro RI. An assessment of the level of provision of school health services in selected secondary schools in Calabar Municipality, Cross River State, Nigeria. Greener J Biomedical Health Sci. 2019;4(1):1–10. https://doi.org/10.15580/GJBHS.2019.1.030518033.
12. Chowdhury D, Chakraborty A, Minz S, Muliyil D, Lahiri A. Janani Shishu Suraksha Karyakram services utilization among rural mothers: community perspective from southern areas of West Bengal. Int J Community Med Public Health. 2018;5(10):4427–32. https://doi.org/10.18203/2394-6040.ijcmph20183988.
13. Council on School Health et al. Role of the school nurse in providing school health services. Pediatrics. 2016;137(6):e20160852. https://doi.org/10.1542/peds.2016-0852.
14. Development Initiatives. 2021 Global Nutrition Report: the state of global nutrition. 2021. https://globalnutritionreport.org/reports/2021-global-nutrition-report/.
15. Development Initiatives. Country nutrition profiles. 2021. https://globalnutritionreport.org/resources/nutrition-profiles/.
16. Federal Ministry of Health, Nigeria. National Health Promotion Policy. 2006. https://faolex.fao.org/docs/pdf/nig229323.pdf.

17. Felicia Agbor D, Ben I, E., Peniel L. Knowledge and practice of personal hygiene among urban and rural dwellers in Central Cross River State, Nigeria. Inter-Disciplinary J Sci Educ. 2021;3(1):64–71.
18. Fleming J, Boeck T. Involving children and young people in health and social care research. Archives Disease Child Routledge. 2012. https://doi.org/10.4324/9780203116319.
19. Garg S, Bebarta KK, Tripathi N. Performance of India's national publicly funded health insurance scheme, Pradhan Mantri Jan Arogaya Yojana (PMJAY), in improving access and financial protection for hospital care: findings from household surveys in Chhattisgarh state. BMC Public Health. 2020;20:949. https://doi.org/10.1186/s12889-020-09107-4.
20. Gilbert A, Maheux B, Frappier JY, Haley N. Adolescent care. Part 1: are family physicians caring for adolescents' mental health? Can family physician Medecin de famille canadien. 2006;52(11):1440–1.
21. Gillespie S, van den Bold M, Hodge J. Stories of change in nutrition: a tool pool (IFPRI Discussion Paper 1494). International Food Policy Research Institute. 2015. https://ebrary.ifpri.org/digital/collection/p15738coll2/id/130077.
22. Government of India. Operational Guidelines on School Health Programme under Ayushman Bharat. 2018.
23. Greenhill ED. Perceptions of the school nurse's role. J Sch Health. 1979;49(7):368–71. https://doi.org/10.1111/j.1746-1561.1979.tb08093.x.
24. Haruna J, Unoki T, Nagano N, Kamishima S, Kuribara T. Effectiveness of nurse-led interventions for the prevention of mental health issues in patients leaving intensive care: a systematic review. Healthcare. 2022;10(9). https://doi.org/10.3390/healthcare10091716.
25. Hawkes C, Ruel MT, Salm L, Sinclair B, Branca F. Double-duty actions: Seizing programme and policy opportunities to address malnutrition in all its forms. Lancet. 2020;395(10218):142–55. https://doi.org/10.1016/S0140-6736(19)32506-1.
26. Igudia EO, Agbonifoh JA, Omobude-Idiado SN. Sanitation practices among university of Benin undergraduate students. J Health Educ Res Dev. 2019;7(3):1–6. https://www.hilarispublisher.com/open-access/sanitation-practices-among-university-of-benin-undergraduate-students-nigeria.pdf.
27. Jakasania A, Lahariya C, Pandya C, Raut AV, Sharma R, Mundra KS, Kapoor A, Khajuria JP, S., Gupta SS. School Health Services in India: Status, Challenges and the Way Forward. Indian J Pediatr. 2023;90(Suppl 1):116–24. https://doi.org/10.1007/s12098-023-04852-x.
28. Jourdan D, Gray NJ, Barry MM, Caffe S, Cornu C, Diagne F, Hage E, Farmer F, Slade MY, Marmot S, M., Sawyer SM. Supporting every school to become a foundation for healthy lives. Lancet Child Adolesc health. 2021;5(4):295–303. https://doi.org/10.1016/S2352-4642(20)30316-3.
29. Kaskoun J, McCabe E. Perceptions of school nurses in addressing student mental health concerns: An integrative review. J School Nurs. 2022;38(1):35–47. https://doi.org/10.1177/10598405211046223.
30. Kuponiyi OT, Amoran OE, Kuponiyi OT. School health services and its practice among public and private primary schools in Western Nigeria. BMC Res Notes. 2016;9:203. https://doi.org/10.1186/s13104-016-2006-6.
31. Lee A, Lo A, Li Q, Keung V, Kwong A. Health promoting schools: An update. Appl Health Econ Health Policy. 2020;18(5):605–23. https://doi.org/10.1007/s40258-020-00575-8.
32. Lucas AO, Gilles HM. A short textbook of public health medicine for the tropics. CRC; 2002.
33. McKinley Yoder C. School nurses and student academic outcomes: an integrative review. J School Nurs. 2019;36(1). https://doi.org/10.1177/1059840518824397.
34. Ministry of Health & Family Welfare. Rashtriya Bal Swasthya Karyakram (RBSK) Guidelines. 2013.
35. Miyoshi M, Tsuboyama-Kasaoka N, Nishi N. School-based Shokuiku program in Japan: application to nutrition education in Asian countries. Asia Pac J Clin Nutr. 2012;21(1):159–62.
36. Mohammed MA, Moles RJ, Chen TF. Meta-synthesis of qualitative research: the challenges and opportunities. Int J Clin Pharm. 2016;38(3):695–704. https://doi.org/10.1007/s11096-016-0289-2.
37. Moronkola OA. School health programme. Royal People (Nigeria) Ltd; 2012.
38. Morse BL, Anderson L, Combe LG, Delack S, Ondeck L, Homme C. U.S. school nursing job analysis. J School Nurs. 2022;38(2):126–37. https://doi.org/10.1177/1059840520930075.
39. National Association of School Nurses. Education, licensure, and certification of school nurses. 2021. https://www.nasn.org/nasn-resources/professional-practice-documents/position-statements/ps-education.
40. National Association of School Nurses. School nursing: Scope and standards of practice (4th ed.). 2022. https://www.nasn.org/nasn-resources/bookstore/scope-standards-bookstore.
41. Noblit GW, Hare RD. Meta-ethnography: synthesizing qualitative studies. Sage; 1988.
42. Nwazunku AA, Ede AO, Orji SM, Alugbala NA, Nwaoma IE, Mbaegbu NO. Assessment of water, sanitation and hygiene practices among households in owerri West Local Government Area, Imo State, Nigeria. J Biomedical Invest. 2022. https://doi.org/10.1155/2022/9492629.
43. Nwonye EA, Okonkwo CC, Nwankwo AU. Personal hygiene practices among primary school pupils in Delta North Senatorial District of Delta State, Nigeria. Nigerian J Health Promotion. 2022;15(1):1–10. https://journals.aphriapub.com/index.php/NJHP/article/view/2708.
44. Ogbe JO, Nwajei SD. Perceived teachers' awareness of safety and disaster prevention measures in schools in Ethiope-East local government. Nigerian School Health J. 2004;16(1,2):55-62.
45. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaff JM, Akl EA, Brennan SE, Chou R, Glanville J, Grimshaw JM, Hróbjartsson A, Lalu MM, Li T, Loder EW, Mayo-Wilson E, McDonald S, Moher D. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. https://doi.org/10.1136/bmj.n71.
46. Public Health England. Best start in life and beyond: improving public health outcomes for children, young people and families. 2016. https://dera.ioe.ac.uk/31241/1/best_start_in_life_and_beyond_commissioning_guidance_1.pdf.
47. Royal College of Nursing. RCN School Nurse Survey 2016. https://www.rcn.org.uk/-/media/royal-college-of-nursing/documents/forums/children-and-young-people/staying-healthy-forum/rcn-survey-of-school-nurses-2016.pdf.
48. Ruckert A, Schram A, Labonte R, Friel S, Geleeson DH, Thow AM. Policy coherence, health and the sustainable development goals: a health impact assessment of the trans-Pacific partnership. 2016;27(1). https://doi.org/10.1080/09581596.2016.1178379.
49. Sandelowski M, Barroso J. Toward a metasynthesis of qualitative findings on motherhood in HIV-positive women. Res Nurs Health. 2007;26(2). https://doi.org/10.1002/nur.10072.

50. Scottish Government. A healthier future: Scotland's diet & healthy weight delivery plan. 2018. https://www.gov.scot/publications/healthier-future-scotlands-diet-healthy-weight-delivery-plan/.
51. Snow M, Tincello I, Johnston R. Drinking water, sanitation and hygiene in schools: 2018 global baseline report. UNICEF; World Health Organisation. 2018. https://www.unwater.org/publications/drinking-water-sanitation-and-hygiene-schools-global-baseline-report-2018.
52. Stallard P, Simpson N, Anderson S, Goddard M. The FRIENDS emotional health prevention programme: 12 month follow-up of a universal UK school based trial. Eur Child Adolesc Psychiatry. 2008;17(5):283–9. https://doi.org/10.1007/s00787-007-0665-5.
53. Tanner A, von Gaudecker J, Buelow JM, Miller WR. Adolescents' Perceptions of School Nurses' Role in Functional Seizures at School. J school nursing: official publication Natl Association School Nurses. 2025;41(5):625–31. https://doi.org/10.1177/10598405231218287.
54. U.K. Department of Health. Future in mind: promoting, protecting and improving our children and young people's mental health and wellbeing. 2013. https://assets.publishing.service.gov.uk/media/5a80b26bed915d74e33fbe3c/Childrens_Mental_Health.pdf.
55. Welsh Government. Together for mental health. 2019. https://www.gov.wales/sites/default/files/publications/2019-04/together-for-mental-health-summary.pdf.
56. WHO & UNESCO. Making every school a health-promoting school: Global standards and indicators. World Health Organisation. 2021. https://iris.who.int/server/api/core/bitstreams/936bedca-bd90-4bfb-846f-c0e97d8a158a/content.
57. WHO & UNICEF. State of the world's sanitation: An urgent call to action. World Health Organisation; 2020.
58. World Health Organisation. Closing the gap in a generation: Health equity through action on the social determinants of health. Final Rep Comm social determinants health. 2008. https://iris.who.int/handle/10665/43943.
59. World Health Organisation. Global recommendations on physical activity for health. 2010. https://www.who.int/publications/i/item/9789241599979.
60. World Health Organisation. Guidelines on sanitation and health. 2017. https://iris.who.int/handle/10665/274939.
61. Zaiger DS. School nursing services: The early years. J School Nurs. 2000;16(3):10–9. https://doi.org/10.1177/105984050001600302.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.