

HEALTH ISSUES IN SCHOOLS AND TEACHERS' PERCEPTIONS: A REVIEW WITH A FOCUS ON URBAN SLUMS IN PAKISTAN

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DOI:<https://doi.org/10.5281/zenodo.17668378>

Keywords

school health, urban slums, teachers' perceptions

Article History

Received: 12 October 2025

Accepted: 10 November 2025

Published: 21 November 2025

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Abstract

Schools are highly critical area for children and adolescents' health advancement, especially in compactly populated urban slums areas where environmental risks and service gaps are critical. Teachers are frontline workers of health advancement in schools, yet little is produced about their capacities, perceptions and constraints in slum contexts of Pakistan. This review article synthesizes, intervention literature, empirical studies and national reports from 2015 to 2025, to describe the major health issues facing school going children in slum areas, teachers' knowledge, attitudes, and perceived roles towards communicable diseases, identification of barriers to effective school health achievements and practical recommendations for policy and practice.

Key findings of this review were WASH (poor water, sanitation and hygiene) overloading of work on teachers, communicable diseases related to school settings, malnutrition among children and psycho-social issues are persistent in slum area schools, teachers recognize generally these issues but in literature reported limited guidance for community, resources for prevention and improvement of health, training for teachers and institutional sustenance. This review summarizes with recommendations for integrating teachers' capacity building, linkages of school to health system, community appropriate WASH, mental health measures and strong monitoring system using school census data.

1. INTRODUCTION

Schools are basic settings that effect children's wellbeing like physical health, emotional, and social health. The quality of school-based health conditions, such as water and sanitation, hygiene, proper nutrition and psychosocial protection directly influence attendance in schools, concentration on studies, learning outcomes and lifelong improvement. International evidence demonstrates that in-adequate school Water, Sanitation and Hygiene (WASH) facilities markedly increase absenteeism along with disease burden among school going children (WaterAid Pakistan, 2019). As well

as, the World Health Organization (WHO) emphasizes that preventable communicable diseases continue to affect millions of child due to improper hygiene and insufficient structured health education in schools settings (WHO, 2024).

In Pakistan, these health and education related challenges are exaggerated in **urban slums**, where schools regularly work with constrained resources. The Government of Sindh *Annual School Census (ASC) 2023-2024* reports extensive shortages of pure clean drinking water, damaged or nonfunctional toilets, inadequate classroom space and overcrowded

environments in public schools which are located in low income areas such as **Orangi Town, District west Karachi** (Government of Sindh, 2024). These organizational deficits create circumstances that enhance vulnerability to food born gastro-intestinal diseases, malnutrition and psychosocial trauma among school going children.

School teachers play dominant role in school health advancement. They observe students' hygiene practices, identify early signs and symptoms of illness, manage classroom sanitation habits and often serve as mediators between parents and health providing services. Research from Punjab Pakistan shows that teachers clearly distinguish the connection between poor infrastructure and school going children's health but lack the training and support desired to address these health related issues effectively (Habib, 2023). Another Karachi based research study highlights that teachers are aware of health and environmental risks but hardly receive practical guidance or materials to integrate health education into everyday teaching (Shakir, Naz, & Ahmed, 2024). These findings highlight the gap between teachers' perceived responsibilities and the official support available to them.

Despite the increasing literature on nutrition, WASH and psychological health in schools, there remains **limited consolidated evidence** exploratory how teachers in Pakistan especially those working in slum area communities perceive and respond to school based health challenges. Current studies tend to focus on inaccessible problems rather than integrating teachers' perspectives with the structural authenticities of low resource schools. This is mainly concerning in marginalized societies where teachers often serve as the only available health educators for children.

Therefore, this review makes open-access literature published from 2015 to 2025 to explore school related health issues and teachers' perceptions in Pakistan, with a special focus on urban slums such as Orangi Town Karachi. By highlighting mutually infrastructural challenges and teachers' experiences, this review aims to inform policy makers, teacher training programs and inter-sectoral association between education and health departments, ultimately contributing to enhanced health outcomes for children in marginalized school environments.

2. Methodology of the review

This review implemented a **narrative integrative approach**, which allows the synthesis of various forms of evidence including government documents, empirical studies, and conceptual research papers related to school-based health issues and teachers' perceptions in low resource locations. The aim of this methodology was to generate a comprehensive considerate of health-related challenges in slum area-based schools in Pakistan and the role of teachers in managing these challenges.

A structured literature search was conducted between August to September 2025 across the ResearchGate, Google Scholar, PubMed / PMC, Government and NGO websites (Reform Support Unit Sindh, WaterAid, WHO) and research journals. Search terms included combinations of these keywords, "school health," "teacher perception," "teacher knowledge," "urban slums," "Pakistan," "WASH in schools," "nutrition in schoolchildren," "psychosocial health," "public school challenges," "low-income communities," "Orangi Town," "health education in schools."

Boolean connectors also used to improve searches.

Critical review done on research studies published from 2015 to 2025 to ensure relevance to recent educational and public health conditions in Pakistan.

Only studies were included which met **all** the criteria like **population focus** teachers, schoolchildren, or school environments in Pakistan or comparable South Asian developing countries. Priority given to those studies which focusing on **urban slums**, low resource schools, or disadvantaged societies. As well as type of evidences from Government/NGO reports, WHO and national policy documents, Empirical quantitative or qualitative research, scientific reviews.

Topic relevance at least one of these areas, health issues in schools (WASH, nutrition for children, infectious diseases, psychological health, hygiene practices. Teachers' roles, perceptions, knowledge and practices related to school health. School infrastructure which affecting health and learning. School health interventions involving school teachers.

Studies were excluded focused on university students and hospital settings, Articles debating academic

performance only, Studies focusing on school management and economics.

A two-stage screening process was followed in stage 1 **title and Abstract Screening** approximately 70 records were identified during the initial search. After screening titles and abstracts, 30 studies were retained for full review based on inclusion and exclusion criteria, 25 documents qualified for final inclusion in this review. The final sample consisted of 12 empirical studies, 5 government/NGO reports ,4 review articles, 4 intervention and program evaluation studies

Form each included study, the key details were extracted like Author and year, Study setting and sample frame, Research methodology, Major health issues recognized, teachers' perceptions or roles, relevance to slum or low resource school contexts

Data were synthesized thematically, with major themes of WASH conditions, Communicable and nutritional diseases, Psychosocial well-being, Teachers' knowledge and limitations, Structural barriers and operative interferences involving teachers were used.

This methodology guaranteed systematic, clear and replicable synthesis while maintaining elasticity appropriate for a narrative review.

3. Literature Review

Schools situated in urban slums face a variety of solid health related challenges which directly disturb students' well-being, attendance and learning outcomes. These health problems are designed by organizational poverty, overcrowded classrooms, insufficient infrastructure, and limited formal support. Evidence from Pakistan and other developing countries highlights four major groups of school-based health issues, each of which effects teachers' day to day tasks and perceptions.

Water, sanitation and hygiene related health issues are among the most determined and severe challenges in slum area-based schools. Many organizations insufficient safe drinking water, functional and clean toilets, hand washing stations and waste disposal systems. According to the *WASH in Schools Pakistan Review*, more than one third of schools in low income surroundings do not have satisfactory sanitation facilities, creating circumstances that contribute to diarrhea, skin

infections and absenteeism (WaterAid Pakistan, 2019).

The government of Sindh *Annual School Census (ASC) 2023–2024* further reports significant WASH shortages in Karachi's Orangi Town, including broken toilets, unclean washrooms and inadequate water supply (Government of Sindh, 2024). Teachers working in these environments note that such circumstances make it problematic to continue hygiene among students and excessively affect females, who often avoid using school toilets due to poor privacy and cleanliness.

Teachers regularly report taking extra responsibilities such as monitoring hand washing or buying cleaning materials from personal funds indicating both awareness of the problem and insufficient institutional support.

Students in slum setting areas face a complex risk of malnutrition, anemia, abdominal worm infestations, respiratory tract infections and gastro-intestinal diseases. Improper hygiene, overcrowding and limited access to safe clean drinking water create environments where communicable diseases spread quickly.

School based involvement research in Pakistan validates that teacher led health education can significantly enhance students' hygiene practices and nutrition awareness. For example the *School Health Education Program (SHEPP)* feasibility study found that structured teacher led conferences increased students' physical activity and improved hygienic performs (SHEPP Feasibility Study, 2023). As well as hygiene centered educational involvements in South Asian urban schools have reduced absenteeism and illness, show the value of integrating health topics into routine schoolings (Pradhan et al., 2025).

Nutritional challenges in slum areas caused by food diffidence, bed dietary quality and lack of consciousness also impact students' attention and classroom performance. Teachers often observe signs such as fatigue, weakness and low contribution but lack formal training to report these issues.

Psycho-social health problems are progressively documented in school settings, especially within compactly populated and economically marginalized communities. Children in slums are more exposed to stressors such as internal conflict, poverty, community violence and limited parental

management. These conditions regularly manifest as anxiety, behavioral issues, aggression or withdrawal from classroom.

Teacher's statement perceiving emotional suffering and communication difficulties among students but feel unrehearsed to provide psycho-social support. A recent Pakistan based study comparing parents' and teachers' opinions on student psychological well-being found that teachers documented significant mental health concerns but inadequate training on counselling or classroom management strategies tailored to psychological needs (Munir, 2025).

Without organized psychosocial programs or referral pathways, teachers in slum area schools often rely on personal decision, which can lead to unreliable responses to student mental health issues.

Teachers working in slums surroundings face high workloads, over-crowded classes, behavioral tasks, and limited organizational support. These conditions contribute to emotional tiredness, frustration and burnout. In a Karachi based research study, secondary school teachers stated significant levels of stress, anger and feelings of being dazed due to over-crowded classrooms and insufficient resources (Tufail, 2019).

Poor teacher well-being affects not only teaching quality but also the capability of teachers to engage proactively in health promotion events. Stressed teachers are less likely to monitor hygiene routines and manage health emergencies or implement organized health education lessons.

4. Findings from the Literature Review (Themes)

4.1 Teachers' Knowledge, Perceptions and their Roles

Teachers play a dominant role in shaping students' health performances, monitoring daily hygiene practices, identifying illness signs and preserving a healthy classroom environment. In low resource and slum area-based schools their responsibilities extend even additional due to the absence of school medical staff, limited parental meetings, and insufficient municipal corporation health services. The literature shows that while teachers have basic awareness of school health issues their capacity to perform is often inhibited by inadequate training, unclear strategies and minimal official support.

4.2 Teachers' Knowledge of School Health Issues

Research studies conducted in Pakistan disclose that teachers usually understand the importance of sanitation, hygiene and nutrition for student well-being, yet their health-related knowledge is often **casual and shapeless**.

A survey from Punjab Pakistan found that teachers were aware of the link between poor organization and student illness but required deeper knowledge regarding hygiene protocols, disease prevention and first aid practices (Habib, 2023). Similarly a research findings from Karachi showed that teachers familiar environmental and health related risks but did not receive training or materials to integrate health topics into classroom instruction (Shakir, Naz, & Ahmed, 2024).

While most of the teachers are able to recognize common health symptoms such as fever, dehydration or malnutrition they are hardly trained to respond scientifically. This leads to unreliable practices across schools, especially in slum areas with higher student health needs.

4.3 Teachers' working in slum areas Perceptions towards Health Problems

Teachers serving in urban slums regularly report that health issues such as lack of clean water, unclean or damaged toilets, malnutrition, abdominal worm infestations and psycho-social stress are among the chief causes of student absenteeism and poor concentration in class. They perceive these problems as **operational and beyond their control**, yet identify their impact on learning outcomes.

In Karachi's low income schools, teachers define feeling accountable for implementing hygiene routines despite lacking resources. Many reports buying soap, antiseptics, or basic supplies from personal funds due to inadequate school budgets. Teachers also express concern about menstrual hygiene among adolescent females, who may avoid school due to lack of clean proper toilets or privacy an issue widely documented in WASH focused studies (WaterAid Pakistan, 2019).

Overall, teachers perceive school related health challenges as persistent, consistent, and deeply linked to the socio-economic realities of urban slums.

4.4 Teachers' Roles in Health Education and Promotion

Although teachers are not officially trained health professionals, they are the **primary agents of school based health education** in Pakistan. Their casual roles are monitoring student hygiene, recognizing sick children and communicating with parents, conducting morning assemblies with health communications, coaching basic hygiene and handwashing, inspiring physical activity, participating in campaigns (like deworming, vaccination, dengue awareness)

Evidence from intervention research studies indicates that teachers can significantly improve health results when properly supported and trained. The *School Health Education Program (SHEPP)* demonstrated that teacher led conferences improved students' hygiene practices, physical activity and nutrition awareness (SHEPP Feasibility Study, 2023). Similarly, a hygiene intervention in South Asian urban schools found that teacher involvement decreases absenteeism by up to 30% (Pradhan et al., 2025).

These research studies highlight the **untapped potential of teachers** as health sponsors especially in settings where formal health services are unreachable.

4.5 Barriers Limiting Teachers' Effectiveness

Despite their readiness, teachers face substantial limitations, **lack of training** only few receive expert growth in school health, hygiene upgrade, or psycho-social support. **Unclear role expectations** most schools lack written strategies explaining teachers' responsibilities in health elevation. **Inadequate resources for teachers** who cannot conduct health lessons without materials such as hygiene kits, charts or first aid supplies. **High workload on teachers** of over-crowded classrooms and multiple organizational tasks reduce time for health activities. **Poor coordination with health departments.**

A Karachi based research study documented high levels of stress and burnout among teachers due to these persistent restrictions, further limiting their ability to implement health interventions effectively (Tufail, 2019).

5. Structural Barriers in Slum Schools (Findings from the Literature)

Schools located in Pakistan's urban slums operate within surroundings marked by chronic infrastructural shortages, socio-economic hardship, and weak official support. These structural barriers meaningfully limit the capability of teachers and school leaders to promote student health. The following subcategories outline the most critical constraints identified in the literature.

5.1. Inadequate Infrastructure and WASH Facilities

Organization shortages are among the most persistent barriers in low income schools. Public schools in slum settlements regularly lack reliable access to clean safe drinking water, functional and clean toilets, electricity and proper ventilation. According to the *Annual School Census (ASC) 2023–2024*, many schools in areas such as Orangi Town have broken or unusable toilets, inadequate water supply, and damaged buildings (Government of Sindh, 2024).

These problems create direct health risks, mainly the spread of diarrhea, respiratory tract infections and skin diseases. The *WASH in Schools Review* further emphasizes that improper and poor sanitation excessively affects females, many of whom avoid using school toilets due to privacy and cleanliness concerns (WaterAid Pakistan, 2019).

Teachers report that insufficient hygiene facilities also limit their ability to enforce hand-washing routines or keep classroom cleanliness, especially when cleaning supplies are unavailable or must be bought privately.

5.2. Over-crowded Classrooms and High Student, Teacher Ratios

Over-crowding is a major structural constraint in slum area based schools. Many classrooms accommodate 50 to 70 students at a time, far exceptional recommended international standards. Large class sizes not only delay learning but also increase exposure to transmissible diseases, reduce ventilation and limit the teacher's ability to monitor hygiene or recognize sick students.

The ASC 2023–24 data show significantly high student teacher ratios in Karachi's underserved

Union Councils, reflecting uneven teacher spreading across the district (Government of Sindh, 2024).

In such surroundings, teachers often feel speechless and unable to integrate health activities or personalized support into their routine.

5.3. Limited Resources and Funding Constraints

Many slum schools operate on very restricted budgets, which affects their ability to buying cleaning supplies, basic medical kits, hygiene materials or instructional tools for health education. Teachers often report spending personal money to purchase soap, antiseptics or stationery for health related activities.

Lack of funding also limits to repairing of damaged WASH facilities, obtaining of safe clean drinking water, maintenance of school infrastructures, application of health awareness campaigns, buying of first-aid supplies

Without vital resources, even motivated teachers face trouble sustaining any form of school health program.

5.4. Weak Coordination Between Education and Health Departments

A significant barrier is the absence of official linkage between schools and local health systems. Research study indicates that school leaders and teachers hardly have traditional referral pathways for students needing medical or psycho-social support. A review of WASH and school based health interventions notes that poor inter sectoral coordination is a major reason why many creativities fail to produce lasting impact (Als, 2020).

In slums, health services themselves are often exploited or understaffed, further broadening the gap between school needs and available community resources.

5.5. Lack of Teacher Training and Professional Development

While teachers are likely to monitor health conditions, they rarely receive satisfactory training in hygiene and sanitation promotion, early detection of school-based illness, psycho-social support, menstrual health and hygiene management, emergency response or first aid.

Studies show that teachers are aware of these gaps and direct a desire for professional growth in health topics (Habib, 2023). Without organized training programs, many rely on personal decision or informal practice, leading to unreliable health practices across schools.

5.6. Psychosocial and Occupational Stress among Teachers

Teachers in slum settings face high levels of stress due to heavy workloads, hazardous environments, limited managerial support, and accountability for non academic duties such as sanitation monitoring. A study in Karachi found raised levels of anger and psychological strain among secondary school teachers in low income areas (Tufail, 2019).

Stress reduces teachers' ability to involve in health promotion activities, lowering overall school efficiency.

6. Evidence from Effective Interventions

While schools in urban slum areas face significant organizational and resource related challenges, several intervention studies from Pakistan and equivalent low income contexts demonstrate that **well designed, teacher supported health programs can significantly enhance student health conditions**. The literature highlights that program combining **teacher training, health education resources and basic WASH improvements** tend to be the most operative and sustainable.

6.1 Teacher-Led School based Health Education Programs

One of the strongest examples of fruitful school based health interventions in Pakistan is the **School Health Education Program (SHEPP)**. The SHEPP feasibility trial presented that training teachers to carry structured sessions on hygiene, physical activity and nutrition led to quantifiable improvements in students' behavior and awareness. Students reported improved handwashing, more physical activity and better understanding of healthy food choices after teacher led sessions (SHEPP Feasibility Study, 2023). Significantly, the study also found that teachers felt **more confident and proficient** after receiving basic health education training, telling that empowerment

through professional growth can produce long term benefits.

6.2 WASH-Based Interventions in Schools

Interventions integrating WASH developments with hygiene education have shown reliable positive results. According to the **AKU WASH Review**, school-based WASH programs are most effective when they include functional water and toilet facilities, soap obtainability, teacher training on hygiene practices, involvement of students through activities like handwashing demos and cleanliness drives.

These combined methods significantly reduce diarrheal diseases and improve student attendance, particularly in resource-poor communities (Als, 2020).

Similarly, global evidence from low income urban schools shows that hygiene focused interventions involving teachers can reduce absenteeism by up to 30% (Pradhan et al., 2025).

6.3 Health Education Integrated into Curriculum

Interventions that implant health topics into the everyday curriculum not just one time lessons are shown to be more maintainable. For example, integrating hygiene messages into science and social studies or conducting short health talks during morning assembly, strengthens healthy behavior without adding major burden to teachers.

A study conducted in Karachi on education for maintainable development found that teachers who received classroom materials and curricular guidance were more successful in sustaining health related debates and activities (Shakir, Naz, & Ahmed, 2024). Structured guidance confirms reliability and helps teachers align health messages with academic objectives.

6.4 Community and Parent Engagement Programs

Numerous interventions highlight the status of engaging parents and community members. In slum settings, where families often have limited health awareness or resources, community-based education sessions led by teachers or NGOs have shown to enhance hygiene habits at home.

Teacher facilitated parent meetings also improve communication about student health concerns,

resultant in early finding and management of issues such as abdominal worm infections, malnutrition and menstrual challenges.

Although evidence remains inadequate, available studies suggest that **teacher parent association** greatly enhances the effectiveness of school health initiatives.

6.5 Multicomponent Interventions

The most effective interventions in slum schools tend to syndicate several components like teacher training and development, student led hygiene clubs, school level awareness sessions, improved WASH facilities, monitoring and follow up mechanisms, participation of local health centers.

Programs planned with multicomponent strategies show longer lasting results compared to those applied in isolation. The WASH and nutrition focused programs studied in Pakistan prove that improving infrastructure without teacher focused behavior change has limited impact, while teacher centered models produce more maintainable outcomes (WaterAid Pakistan, 2019).

6.6 Key Lessons from Intervention Evidence

Across studies, three major lessons arise:

i. Teachers are critical mediators of change.

When empowered with training and materials, teachers can considerably improve health behaviors and awareness among students.

ii. Infrastructure improvements must be paired with education.

WASH facilities alone are not enough; student behavior changes only when teachers support hygiene practices constantly.

iii. Interventions must be situation specific.

Programs that consider the socio-economic realities of slum societies overcrowding, low literacy and limited parental participation are more successful.

7. Gaps and Research Needs

Despite rising evidence on school-based health issues in Pakistan and other developing countries, significant gaps remain, predominantly about slum-based schools and teachers' perceptions. Addressing these gaps is vital for developing effective, situation specific interventions. The following areas need urgent attention in future research.

7.1. Limited Research Focused Specifically on Slum Schools

Most existing studies combine data from urban and rural schools or focus on comprehensive district wide averages. This mask the unique challenges faced by **urban slums** such as Orangi Town, Baldia Town , Lyari, Machar Colony, and other underserved settlements.

There is a need for research that examines **infrastructure inequalities between slum and non-slum schools, health risks particularly to overcrowded, informal settlements, teacher workload and stress in slum settings.**

Existing indication (e.g., ASC 2023–24) highlights differences but does not explore how these affects day to day school health management.

7.2. Insufficient Teacher-Focused Quantitative Studies

While multiple qualitative studies capture teachers' views, Pakistan lacks **quantitative KAP (Knowledge, Attitudes, Practices)** studies assessing teachers' health-related knowledge, behaviors and attitude.

Gaps includes teachers' knowledge and attitude towards communicable disease, teachers' understanding of WASH protocols, teachers' ability to recognize malnutrition or psycho-social problems, teachers' readiness to conduct hygiene education, teachers' training needs for school health, barriers to applying health routines

Teacher-centered KAP surveys in slums can help develop targeted capacity building programs.

7.3. Lack of Research on Psycho-social and Mental Health in Schools

Most school health studies focus on hygiene and communicable diseases. But, psycho-social challenges such as stress, violence exposure, emotional distress, and behavioral issues are progressively recognized in slum communities.

There is a lack of studies examining on how teachers recognize and manage psycho-social issues, teachers' capacity to deliver psychological first aid, availability (or absence) of referral pathways, the impact of teacher stress or anxiety on student wellbeing.

One of the few related study (Munir, 2025) indicates teachers feel unprepared in this area, highlighting the need for more research.

7.4. Weak Documentation of Intervention Outcomes in Pakistan

Pakistan has employed several hygiene and school health campaigns, but **few are formally gaged**, especially in slum areas.

Research is needed to assess to the long term influence of WASH improvements, sustainability of teacher led health education, efficiency of community engagement strategies, success of pilot projects like SHEPP (SHEPP Feasibility Study, 2023), cost effectiveness of school based health interventions.

Without outcome assessments, policymakers cannot scale effective programs.

7.5. Absence of Intersectoral Coordination Models

There is limited research discovering how schools, health departments, municipal authorities and NGOs can cooperate to improve school health. Reviews show that poor coordination is a major barrier to sustainability (Als, 2020).

Research also needed on models of school based health center association, referral systems for student illness, roles of public organizations in slum health promotion, mechanisms for reporting school based health issues to local authorities.

7.6. Minimal Use of Mixed-Methods Approaches

Most studies use either qualitative or quantitative methods only. Mixed methods research could provide a deeper understanding of statistical trends in school going children health, teacher perceptions behind those trends, social and community level influences on hygiene behaviors, Mixed methods approaches would greatly support evidence for policy and intervention design.

7.7. Gaps in Teacher Training and Professional Development Research

Although many teachers report missing health related training, few studies evaluate which training models can work best, how teacher training enhances teacher confidence, whether training improves student health outcomes, possibility of integrating health training into routine in service programs.

Research in this area would help develop national guidelines on school health training.

7.8. Need for Setting Specific Health Education Materials

There is also limited evidence on developing or testing **domestic relevant** health education materials tailored to slum area environments, low literacy populations, cultural sensitivities (e.g., menstrual hygiene and health, nutrition beliefs), resource poor school settings.

Pilot studies testing visual materials, hygiene kits, and teacher guides are needed.

Overall, the literature reveals considerable gaps in slum specific school health research, especially regarding teachers' roles and perceptions. Future research should arrange teacher focused KAP studies, psychosocial health assessment, mixed methods design, and evaluation of intervention effectiveness. Filling these gaps is vital for designing sustainable, evidence-based school health programs in Pakistan's most marginalized communities.

8. Policy and Practice Recommendations

Based on the synthesized evidence, refining school-based health outcomes in Pakistan's urban slums needs a multi level approach connecting teachers, school management, government departments and community stakeholders. The following recommendations aim to address structural gaps, reinforce teacher capacity, and promote sustainable school based health practices.

8.1. Strengthen WASH Infrastructure and Maintenance Systems

Improving basic infrastructure is foundational for any school based health strategy. The *Annual School Census 2023–24* highlights critical sanitation, water and building shortages in slum areas such as Orangi Town (Government of Sindh, 2024).

Recommended actions can be ensuring **functional clean toilets, handwashing stations and clean drinking water** in all slum based schools. Assign dedicated maintenance budgets for regular cleaning and repairs. Introduce modest, low cost solutions (e.g., tippy taps, water filters, soap dispensers) where resources are limited. Implement school level WASH monitoring groups involving teachers, parents, and students.

8.2. Introduce Comprehensive Teacher Training on School Health

Teachers are dominant to health promotion, but they require structured, ongoing professional development.

Studies show that teachers gain self-assurance and effectiveness after receiving health-education training (SHEPP Feasibility Study, 2023).

Training should cover hygiene elevation and WASH routines, recognizing malnutrition disorders and communicable diseases, psycho-social first aid and classroom behavior management, menstrual health and hygiene management, referral procedures for health emergencies, integrating health topics into existing curriculum.

Training must be low cost, scalable, and aligned with local cultural circumstances.

8.3. Integrate Health Education into the School Curriculum

Health topics should be fixed into everyday teaching rather than offered as isolated activities. Evidence from Karachi Pakistan shows that teachers are more successful when provided with structured resources and curricular guidelines (Shakir, Naz, & Ahmed, 2024).

Suggested strategies are addition of hygiene and nutrition content to science, social studies, and life skills lessons, conduct short health sessions during morning assemblies daily basis, adopt storytelling, role play and age appropriate visual materials, involve students in peer led activities, such as "health clubs" or hygiene monitoring teams.

Curriculum integration ensures sustainability even in resource poor schools.

8.4. Develop Strong Coordination Between Education and Health Departments

Intersectoral union is essential for addressing multifaceted school based health issues. Reviews point out that lack of coordination leads to weak program sustainability and unreliable practices (Als, 2020).

Recommended actions can be establishing referral pathways connecting schools to local BHUs/dispensaries, coordinate regular school visits from health workers for alertness sessions, integrate school health into district level health planning,

share student health data between departments for targeted interventions.

Such partnerships are specially needed in densely populated slums with high disease burden.

8.5. Provide Health Education Materials Tailored to Slum Settings

Many schools lack teaching aids for health elevation. Materials should be socially sensitive, visually engaging, and suitable for low literacy environments. Examples are including hygiene posters, flip charts, and pictorial guides, menstrual health and hygiene brochures for adolescent girls, low cost first aid kits, nutrition charts and handwashing demos, local language materials for diverse slum societies.

Teachers report that such resources greatly improve their ability to communicate health messages effectively.

8.6. Support Teacher Well-being and Reduce Professional Stress

Teacher stress and burnout directly affect their ability to promote health in classrooms, especially in slum area schools with overcrowded classes and limited resources.

A Karachi study shows high levels of anger, frustration, and emotional strain among teachers in low-income areas (Tufail, 2019).

Recommended support strategies are to provide psychosocial support or counselling services for teachers, reduce administrative burdens to free time for health activities, ensure safety measures in high-risk slum environments, foster supportive school climates and peer-support groups.

Teacher well-being must be recognized as a prerequisite for effective school health promotion.

8.7. Engage Parents and Community Organizations

Health activities learned at school must be reinforced at home.

Community engagement strategies may include parent meetings focused on hygiene, nutrition, and student wellbeing, awareness sessions led jointly by teachers and local NGOs, home school communication through WhatsApp groups, or community workers, involving parents in cleanliness initiatives or school improvement committees.

Engaging parents supports the continuity of health behaviors beyond school walls.

8.8. Promote Monitoring, Evaluation, and Data-Driven Decision Making

The achievement of school health initiatives depends on systematic monitoring and evaluation. Schools and district authorities should track WASH facility functionality, student absenteeism related to health, hygiene compliance indicators, teachers' training status, progress of school health clubs.

Using ASC data and simple school-level registers can help monitor change and support targeted interventions.

In summary of **policy and practice Recommendations** effective school health promotion in Pakistan's slum areas requires a coordinated, teacher-centered approach. Refining WASH facilities, authorizing teachers through training, integrating health topics into the curriculum, strengthening intersectoral linkages, and supporting teacher well-being are crucial steps. These recommendations provide a practical roadmap for policymakers, school leaders and researchers aiming to improve health equity in marginalized educational settings.

9. Conclusion

School health remains a critical yet underprioritized module of educational quality in Pakistan, mainly within urban slum areas where socio-economic challenges, environmental hazards and infrastructural shortages strongly effect student well-being. This review highlights that teacher, despite being key contributors to school based health upgradations, often work under circumstances that limit their efficiency, including insufficient WASH facilities, overcrowded classrooms, inadequate training and weak official support. Evidence from existing interventions proves that when teachers receive structured training, suitable resources, and clear guidelines, they can significantly improve students' hygiene practices, nutrition alertness, and school attendance.

The findings also demonstrate that structural and systemic barriers such as limited funding, fragmented coordination between education and health departments, and high psycho-social stress among

teachers continue to challenge progress. These gaps highlight the need for multisectoral policies that integrate teacher capacity building with infrastructural developments, parental engagement and community level support. Future research should prioritize slum specific school health issues, teacher centered KAP assessments and severe evaluation of intervention models to ensure that policies are evidence based and relevant to context. Consolidation school health systems in marginalized surroundings is essential not only for improving student health but also for promoting reasonable learning chances and long term educational outcomes.

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