

A qualitative analysis of the implementation of the water, sanitation, and hygiene in schools program in the Philippines using the One Health lens

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Abstract

Background and Aim: Schools are ideal settings for interventions against diseases to develop sustainable and healthy behaviors that improve long-term health outcomes. The water, sanitation, and hygiene (WASH) in Schools (WinS) program provides school-based interventions to address health concerns. The integration and practice of the One Health approach in schools may provide useful synergies for improved WinS program efficiency by harmonizing the multisectoral efforts of various stakeholders involved; therefore, this study aimed to revisit the WinS program using the One Health Lens.

Materials and Methods: Qualitative methods employed included key informant interviews and focus groups to describe the status of WinS implementation in relation to community WASH and other health programs in the selected study sites using the One Health lens.

Results: Good practices in WinS implementation, including public-private sector partnerships to finance construction of WinS facilities, recognition of outstanding schools and innovations to improve program measures, and intensified health education through multimedia channels, were identified. Challenges include deworming hesitancy, disruption of services due to pandemics and disasters, difficulties in sustainable financing of facilities and supplies, inclusive infrastructure, reaching Last Mile schools in Geographically Isolated, Disadvantaged, and Conflict Areas, and the need to connect WinS, community WASH, and other health programs.

Conclusion: WASH has proven to be a viable vehicle for improving the health of people in schools and community settings. The study showed that health concerns require a concerted effort of public and private authorities. This study elicited the need to bridge the WASH program implemented in schools with community-based programs to ensure that policies are responsive and that logistic support is provided sustainably. Implementing the Universal Health Care Act and developing and using existing mechanisms for coordination between sectors, such as Healthy Learning Institutions, provide opportunities for aligning programs with the government health agenda.

Keywords: one health approach, Philippines, WASH in communities, WASH in schools.

Introduction

Safe water, sanitation, and hygiene (WASH) facilities are essential for health, survival, growth, and development. WASH interventions can be leveraged to target multiple infectious diseases and reduce the risk of novel zoonotic disease outbreaks and emerging and reemerging diseases [1]. The sustainable

development goals (SDGs) have targeted water and sanitation for all [2]. It is recommended that access to WASH should extend beyond the household setting and include institutions such as healthcare facilities and schools [3]. WASH in schools (WinS) contributes to SDG 3 (good health and well-being for all), SDG 4 (quality education), and SDG 6 (clean water and sanitation for all) [2].

Schools are ideal settings for preventive interventions against common childhood diseases, developing sustainable and healthy behaviors to improve long-term health outcomes, and facilitating health promotion [4]. Healthy and safe learning institutions support better teaching and learning. Promoting health in the school environment promotes a cycle of good

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health practices, leading to better health outcomes, better school performance, and reducing absenteeism. WinS can help reduce the incidence of diarrhea and respiratory diseases if combined with household WASH interventions [5].

The WinS program in the Philippines, implemented by the Department of Education (DepEd) since 2016, provides a package of school-based interventions to address intestinal parasitoses, vector-borne diseases, and dental diseases which may lead to diarrhea, anemia, stunted growth, and higher incidence of absenteeism [6]. It is hypothesized that the WASH situation in the community and in the school are linked to one another [7], which could, in turn, contribute to disease control and prevention, ultimately leading to improved health and learning outcomes.

One Health is a collaborative, multidisciplinary, and multisectoral approach that can address urgent, ongoing, or potential health threats at the human-animal-environment interface at subnational, national, regional, and global levels [8]. Integrating One Health in schools may provide useful synergies and logical connections for improving WinS program efficiency [9].

This study aimed to revisit the WinS program using the One Health Lens as part of continuing program improvement through monitoring and evaluation by describing the status of implementation of the WinS program in relation to community WASH and other health programs in the selected study sites.

Materials and Methods

Ethical approval and informed consent

This study was approved by the University of the Philippines, Manila Research Ethics Board (UPMREB 2022-0008-01). Before the implementation of the project, approval was obtained from the relevant local institutional review boards. Consent from the research participants was obtained from members of the research team using an informed consent form. The privacy and confidentiality of all data and information collected were ensured, and the research participants' anonymity was maintained in compliance with Philippine national ethical guidelines.

Study period and location

The study was conducted from November 2021 to August 2022 in selected municipalities in the Western Visayas and Caraga regions in the

Philippines. Western Visayas or Region 6 is composed of 6 provinces, namely, Aklan, Antique, Capiz, Guimaras, Iloilo and Negros Occidental. It covers 117 municipalities and 16 cities, two of which are highly urbanized. The latitude of Western Visayas is 11.00498360 and its longitude is 122.53727410. On the other hand, Caraga or Region 8, is composed of 5 provinces, namely, Agusan del Norte, Agusan del Sur, Dinagat Islands, Surigao del Norte and Surigao del Sur. It covers 67 municipalities and 6 cities, with one of the cities classified as highly urbanized. The latitude of Caraga regions is 8.80145620 and its longitude is 125.74068820.

Conceptual framework

School-based health interventions, such as the WinS program, can contribute to community WASH and other health programs. This study revisits the WinS program to identify strengths, challenges, opportunities, and possible links with community WASH and disease control programs, using the One Health Lens, which considers how human health is interlinked with animal and environmental health. These results could provide evidence for strengthening health policy and service delivery, leading to improved disease control and nutrition, ultimately contributing to improved overall health and learning outcomes (Figure-1).

Research design

Purposive sampling was used in this study. The Western Visayas and Caraga regions were selected as regional study sites. Provinces and cities/municipalities were selected on the basis of the availability of data and the willingness of local government units (LGUs) to participate in this study. Provinces and municipalities were selected using WASH data obtained from provincial health offices (PHOs) and WinS monitoring data from the DepEd WinS monitoring dashboard. For each region, one province with relatively high WASH and WinS indicators and one province with relatively low WASH and WinS indicators were selected. One municipality with relatively high WASH and WinS indicators and one municipality with relatively low WASH and WinS indicators in each province were selected. Similarly, purposive sampling was used for participant selection for both key informant (KI) interviews and focus group discussions (FGDs).

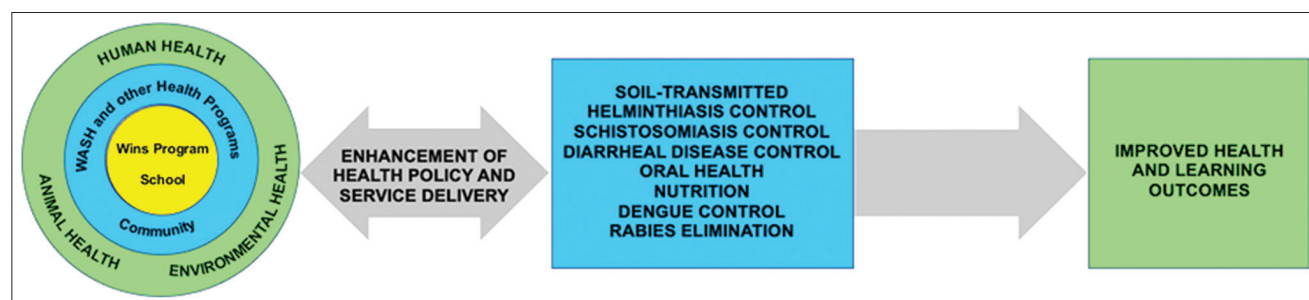


Figure-1: Conceptual framework for revisiting the WinS program using the One Health Lens to improve health and learning outcomes.

Key stakeholders directly involved in implementing the WinS program, community WASH, and relevant disease control programs from the national to local levels were interviewed, focusing on determining the enabling factors and barriers in its implementation. KIs included personnel from the DepEd Central Office Bureau of Learner Support Services-School Health Division, regional, division, and district offices for the WinS program. For community WASH and other disease control programs, KIs included relevant personnel from the Department of Health (DOH) Health Promotion Bureau, DOH regional offices, provincial/city health offices, and rural health units (RHUs). National-level KIs were recruited via e-mail, whereas regional, provincial, and municipal or city-level KIs were recruited through coordination with local DOH partners. FGDs were conducted with schoolteachers, RHU personnel, and mothers of school children in the community. Participant recruitment was carried out in coordination with the local DOH partners.

Statistical analysis

The data were analyzed by the thematic analysis. The themes and sub-themes have been identified on the basis of the One Health Lens to identify best practices, challenges encountered, and opportunities to address these issues. Preliminary results of the study were relayed, and additional inputs and recommendations were sought during the validation meeting.

Results

Research participants

We interviewed a total of 42 KIs. They included government education, health professionals, and other local authorities in the veterinary and agricultural sectors at local, regional, and national levels. The interviews delved into the implementation of WinS programs as well as the possible roles of other government sectors in enhancing WinS and community WASH programs. A total of 279 individuals in 23 focus groups participated in this study. The focus groups included schoolteachers (n = 105), RHU personnel composed of municipal health officers, nurses, and barangay health workers (n = 85), and mothers of school children in the community (n = 89) in each of the study barangays.

WinS program

Good practices

Schools mentioned good practices that enabled WinS program implementers to overcome challenges. These include the establishment of partnerships with the public and private sectors to provide additional funds and resources for the construction of WinS facilities. Some schools in the different study sites were able to lobby for the construction of WinS facilities through their LGUs through the Special Education Fund. Schools in Surigao del Norte were able to benefit from partnerships with local mining companies for the construction of handwashing facilities. A school

in Antique has developed a strong partnership with its alumni, which has led to the donation of various school facilities, such as clinics, handwashing equipment, and drinking fountains. A DepEd staff member in Antique stated, "...partnership, the support of the LGU, the stakeholders, in terms of sustaining the program and of course constant monitoring [of the program] at the division level."

Using the DepEd Three-Star Approach to WinS, the recognition of outstanding schools for WinS achievements at the Division level has motivated school personnel to improve or sustain star ratings. The three-star recognition scheme, which encourages schools to introduce innovations, was reported at district, division, and regional level.

The DepEd KIs reported the dissemination of information during the pandemic in which the importance of proper handwashing practices was highlighted. Messages were delivered in all study sites using traditional means of communication and multimedia. For example, radio broadcasts in Antique and mobile megaphones in Surigao del Norte were used for information exchange. Social media, such as group chats between teachers and learners on platforms such as Facebook Messenger, has also been used to intensify efforts on health education. A school teacher in Antique stated, "We also have a local radio here. We use that, the radio station... We broadcast daily to enhance the learning of the children... [We also have the] official school Facebook page... Us teachers, we also have [group chats {GC} such as] Eco GC [for a school initiative], Marites GC [for fellowship], [and] Parents' GC [for coordination]." Another school teacher in Surigao said that "For us, internet connection is very difficult so what we have is the bandilyo... which is like public information dissemination [using a mobile megaphone]."

Program implementation challenges

Human health

Deworming

Deworming hesitancy has been reported in Antique, Agusan del Sur, and Surigao del Norte with concerns regarding the drug's side effects and their association with the Dengvaxia controversy. Surigao's principal lamented that "One factor that really affected deworming, remember Dengvaxia. After that, even iron, weekly iron-folic acid, and even the parents did not sign the consent form. They really refused to take and accept the tablet because of their experience of watching television after Dengvaxia [controversy]."

Disruption of deworming in schools occurred at an early stage of the pandemic. In addition, deworming coverage has decreased due to the lack of a school-based method of delivery. The task of deworming school-age children has been temporarily transferred to the RHU for community-based implementation and DepEd has provided a list of school-age children to be addressed.

Other disease control and nutrition activities

In addition to deworming, teachers and mothers noted other health activities performed in the school, including immunization and feeding. However, these other activities are carried out under the other flagship programs of the OK sa DepEd program in collaboration with the relevant LGUs and not under the WinS program.

Environmental health

Water

Access to safe water services for drinking and washing has been identified as a priority area that needs to be addressed. In cases where the community does not have a potable water supply, this absence also extends to schools within the community. While this issue is common in “Last Mile Schools” [10], which are geographically isolated, disadvantaged, and conflict-affected areas (GIDCAs) [as termed by DepEd], some non-GIDCAs have also reported the lack of safe water. According to the KIs at all sites, some schools still depended on deep wells and rivers for their water supply. Some schools use rainwater catchment facilities where rainwater is stored in tanks. The schools in Antique and Agusan del Sur resorted to the purchase of expensive purified water from refilling stations. In some schools at all study sites, teachers provided potable water to their students by means of donations. A DepEd staff member in Antique said, “Even the teachers, if there is no water in the school, they need to go home or pack water with them. These are, of course, the basic facilities that are necessary in the school. Also, if there is no potable water in the school, this is also connected to diseases. Another one is the source of water because there are communities without piped water. They depend on deep wells or rivers, so water purification is also a challenge. They are buying [purified] drinking water to ensure [safety].” It has also been mentioned that water testing is crucial for the maintenance of safe water in schools and affects the star rating. However, some schools may not be able to access water testing facilities as well as funding to cover the costs of water testing. In Agusan del Sur, there was also a lack of awareness of government facilities offering this free service.

Sanitation

Teachers in the FGD reported that limited gender-segregated toilet facilities are one of the biggest challenges in sanitation. According to them, the original design of the schools did not meet the basic requirements and standards of the WinS program. In addition, the limited space of the school grounds further hindered the construction of additional toilet facilities.

According to reports, schools have limited budgets for the construction of toilet facilities. In view of the fact that water is essential for the proper functioning of toilets and handwashing facilities, school

officials may decide not to prioritize the construction of these facilities without first ensuring a steady supply of safe drinking water. As mentioned by a DepEd staff member in Antique, “For schools without water, they will not give priority to constructing toilets [since they do not have water].” These are interlinked problems.”

In addition, a lack of materials recovery facilities has been reported in schools in Surigao del Norte, which has been linked to a limited budget and a lack of space within the school grounds. Existing WinS facilities were either poorly maintained due to the reallocation of resources to the COVID-19 response or destroyed in some areas due to natural hazards (i.e., typhoons). The lack of funds was again mentioned as a constraint for maintaining and repairing facilities after the disaster. During the pandemic, classes were conducted remotely, along with group hygiene activities (i.e., toothbrushing and handwashing). In the course of the pandemic, there was also a deterioration of some hygiene facilities due to extended lock-ups and the continued closure of schools. In addition, the recent Typhoon Odette (ICN Rai) in Antique and SDN reportedly destroyed some facilities. Research participants expressed concern over the lack of funds for the repair of these facilities in preparation for the resumption of face-to-face classes and the expected resumption of group hygiene activities. A Principal in Surigao noted “The final challenge now, once face-to-face classes will resume, some of our built structures, particularly handwashing, are damaged due to [Typhoon] Odette - so we will begin again at the start - we will look for funds again...”

Animal health

School programs and activities related to animal health are limited. While the current curriculum reportedly covered the prevention and control of rabies, some teachers in Surigao del Norte mentioned limited awareness of the program among students. A Surigao schoolteacher shared in the FGD that, “The students need to be aware of the anti-rabies program. It’s not in the schools.” In addition, the presence of stray animals in school premises remains a problem at all study sites. The Provincial Veterinarian in Antique was concerned that stray dogs [and cats] entering schools would be dangerous to the students. “We cannot be sure if they may be victims of dog bites, cat bites, or cat scratches.”

Other program implementation challenges

A KI from the DepEd Central Office noted the limited capacity of the WinS program implementors. In addition, teachers mentioned that there was a need for training in data generation and computer literacy. The school teachers said that they were overloaded with work. Teachers were often assigned to perform other tasks other than teaching. The WinS program was only one of several health programs that schoolteachers were involved in.

DOH regional staff also did not know the WinS program. The KI of the DepEd Central Office added that greater visibility of the program could be achieved through advocacy with other sectors outside education.

Community WASH and other relevant health programs

Good practices

Good practices and innovations have been reported in the various study sites. In Agusan del Sur, a barangay-level ordinance institutionalized co-financing between LGU and community members to construct toilet facilities. In addition, there is a lack of provisions of the Sanitation Code to adapt to local conditions, leading to innovations in local implementation in the province concerned. The Environmental Health Division of PHO provides technical support and guidance on the use of more appropriate and cost-effective construction materials in flood-prone areas and more effective resource allocation through the gradual development of sanitary toilets and septic tanks in areas with geographical and resource challenges. In Surigao del Norte, partnerships with the private sector have provided funding for community handwashing facilities during the pandemic.

Challenges in implementing community WASH and health programs

Environmental health: Community WASH program challenges

Safely-managed water

KIs reported a limited availability of safe water supply in a number of communities, which also affects the availability of water in schools. The difficulty was reported in constructing toilets in coastal areas in Capiz and in upland areas in Agusan del Sur. Floods in coastal areas in Surigao del Norte and limited access to water for flushing in upland areas in Agusan del Sur are deterrents to the construction of toilets. These upland communities are usually located in areas with difficult access or geographically isolated and disadvantaged areas (GIDAs). The KI of the DOH Central Office stated that these areas need to be prioritized. The KI emphasized that the Last Mile schools are also located in these areas.

Some communities in Antique and Agusan del Sur lacked piped water systems, while others in Antique, Capiz, and Surigao del Norte also had limited water quality testing facilities. A principal in Surigao stated, “The potable water given to our learners is one issue.” How could we offer [water] to our learners when the community itself was unable to provide such potable water? The water source is difficult.”

Sanitation

Sanitary inspectors in Agusan del Sur and Surigao del Norte were reported to be overburdened with many responsibilities, which were further compounded by a rapid turnover of personnel, which

took a toll on the implementation of the community WASH program. The Sanitary Engineer in Antique noted, “Maybe there is a lot in the sanitary sector in the municipalities that are newbies because a lot of the veterans have retired, so maybe we need capability-building on the updates, on the orientations on PD (Presidential Decree) 856 (Sanitation Code) because it has a broad scope, and we need training.”

Health personnel in Agusan del Sur and Surigao del Norte reported limited logistical support for program implementation, monitoring, and evaluation. The funding of latrines was limited; however, the KI of the DOH Central Office stated that the funding of latrines is at the discretion of the LGU, referring to the CLTS approach. In spite of the provision of latrines in some areas, community members did not prioritize the construction of the latrines in view of the additional costs and the time and labor costs, resulting in the loss of income opportunities for missed work days. The Provincial Sanitary Inspector in Surigao del Norte also explained that the unwillingness to build toilets is also related to the lack of water in certain areas.

Some health and education personnel in Capiz and Surigao del Norte also mentioned that the existing toilet facilities (e.g., storage areas) were not properly utilized. A RHU KI in Surigao said, “We also have some that are given [toilet] bowls, but they are just used for display; some are hung, [some are] nested by chickens.” In addition, some community members allegedly practice open defecation. Health personnel in Tagana-an, Surigao reported that some locals cited the convenience of having rice fields as a “wide” and “vast” toilet.

Disruption of WASH service delivery

Disruption of WASH services has been reported for various reasons. In Agusan del Sur, insurgency and armed conflict in GIDAs made providing and improving WASH services difficult. The pandemic also challenged the provision of WASH services in all areas due to a shift in personnel and resources for COVID-19 response, halting the implementation of WASH assessment, suspending training activities, and disrupting the implementation of Community Led Total Sanitation and Zero Open Defecation efforts due to travel restrictions and strict health protocols. The recent Typhoon Odette also destroyed WASH facilities in Agusan del Sur and Surigao del Norte as well as shifted human and other resources to disaster response.

Human health: Disease control challenges

Deworming hesitancy in the community in Agusan del Sur and Surigao del Norte was reported by RHU FGD participants. The same problem was encountered during school deworming. The FGD participants cited side effects and Dengvaxia controversy as barriers to uptake. Limited knowledge of schistosomiasis has also been reported to be a challenge in well-known geographical areas.

In Antique, health education on rabies has been conducted among grade school and high school students as part of Information Education and Communication and advocacy activities of the Provincial Veterinary Office (PVO). This was usually carried out during the Rabies Awareness Month in March, but in 2020 and 2021, the pandemic hampered its implementation. The PVO was able to do so only in selected schools, which prioritized agriculture in their programs and activities.

Animal health challenges

Education and health personnel in Antique, Agusan del Sur, and Surigao del Norte reported the presence of stray animals such as cats and dogs and carabaos in schools near rice fields as a challenge because these animals often find their way into school premises. In Trento, Agusan del Sur, there was a municipal ordinance for the impoundment of stray animals, but it was not consistently implemented. The PHO staff in the same province added that strays were initially confiscated to control their presence; however, no budget was allocated for the pound and the animals' food. According to a school teacher in Agusan, "There is a municipal ordinance that captures stray animals, but it is inconsistent. It was not monitored every day. There are still a lot of stray dogs."

Opportunities for WinS, WASH, and disease control programs to adopt a One Health approach

The adoption of existing forums for dialogue between various government sectors at provincial level was considered to be an opportunity to find common ground for cooperation in a more coordinated implementation of the WinS and community WASH programs. According to the DOH KI, there is an Inter-agency Committee on Environmental Health, which includes representatives of the DOH, the Department of Environment and Natural Resources, the Department of Labor and Employment, and the Department of Interior and Local Government, among others. This committee may be used for collaborative efforts in WinS and Community WASH.

In Surigao del Norte, convergence meetings, chaired by the Governor, were used as a platform for coordination between the different agencies. Meanwhile, an Environmental Health Division was established in the PHO of Agusan del Sur to enhance the implementation of related disease control and environmental health programs. In Antique, the PVO is connected with the PHO for the prevention and control of rabies and the two offices meet quarterly in the Provincial Nutrition Council. However, KIs at national level mentioned coordination problems, highlighting the different priorities of different agencies as a major factor.

Champions

According to a KI from the DepEd Central Office, WinS and community WASH programs should

have champions at all levels of governance, with the Secretaries of Health and Education at the forefront. Several WinS and WASH champions were identified from the local to regional levels by KIs in all study sites. In addition, the qualities of champions were articulated by the KI. Among them were those who were capable of delivering results, passionate about work, resourceful, influential, and visionary in setting goals for themselves and their work.

Discussion

One Health as a collaborative, multidisciplinary, and multisectoral approach may provide a lens through which the human-animal-environment nexus can be examined more closely. The effective and sustainable prevention of diseases requires measures aimed at different sectors related to One Health [11]. This approach has been useful in implementing health programs to mitigate the risk of various diseases [12], such as rabies, schistosomiasis, and other neglected tropical diseases.

This study identified good practices, challenges, and opportunities by revisiting WinS, community WASH, and disease control programs. We explored the perceptions of WinS program implementers on One Health and its relevance to the WinS program.

Human health

In 2018, DepEd Order No. 28 officially launched the OK sa DepEd program. OK sa DepEd is a convergence of DepEd's health and nutrition programs, of which the WinS program is among the six flagship programs implemented at the K-12 level [13]. OK sa DepEd focuses, in particular, on the prevention aspects of health through the provision of primary health and nutrition services to students to enable them to achieve optimal educational development. OK sa DepEd highlights the DepEd's priority health programs and stresses the need to provide funding and other resources necessary for their implementation, monitoring, and evaluation.

Deworming of school children was implemented in schools. Challenges, however, were articulated by DepEd KIs in relation to deworming. Deworming hesitancy has also been reported in several studies. There is a need for intensified health education highlighting the importance of these various interventions and clarifying misinformation to address various social issues such as deworming hesitancy [14]. In addition to improved WASH coverage [15], the likelihood of diarrheal diseases decreases with improved deworming [16] and vaccination coverage [17]. These interventions will improve nutrition among school children, ultimately improving health and learning outcomes [18].

The Pantawid Pamilyang Pilipino program (4Ps), a conditional cash transfer program for human capital investment and poverty reduction, is implemented by the Department of Social Welfare and Development.

This program can be harnessed by building on its alignment with the WinS program, which also seeks to improve Filipinos' health, nutrition, education, and socioeconomic aspects. For example, deworming for soil-transmitted helminth (STH) infections in children aged 1–14 years is included as one of the requirements to be eligible for cash transfers [19]. The inclusion of other health services in the requirements can contribute to improving health coverage. This may include deworming for SCH and expansion of deworming for STH to older grade levels, taking into account the entire population of K-12. In addition, the 4Ps' requirement for availing regular preventive health and nutrition services, including check-ups and vaccinations, only includes those aged 0–5 years [19]. This may be expanded to include 6–18 years, which will cover relevant routine vaccines such as measles, mumps, rubella, tetanus–diphtheria, human papillomavirus, influenza, and pneumococcal polysaccharide vaccine, with the possible addition of pre-exposure prophylaxis for rabies.

Environmental health

The literature provides evidence of the effectiveness of WASH interventions, such as provision of safe water and use of basic sanitation facilities with sewer connection, in reducing the risk of diarrhea among school-age children [18, 20]. However, this study component showed that some schools did not have access to safely managed water within the school premises. It has been mentioned as a major drawback in the schools' bid to achieve star ratings. Although some measures have been taken to improve water access, such as teachers providing drinking water to their pupils from their personal funds or through fundraising activities, these measures may not be feasible in the long term.

In some study sites, limited access to WinS facilities, especially gender-segregated toilets, was observed. Increasing attention has also been paid to learners with disabilities in relation to WinS. As identified by SDG 4.a (2), the readiness of the school to accept children with disabilities is a major factor in establishing an enabling and inclusive learning environment [21]. It is necessary to recognize individuals with disabilities in the WinS program as a part of the population being left behind without access to basic sanitation facilities [22].

The provision of hygiene infrastructure and supplies alone may not be sufficient for the success of the WinS program. Stakeholder cooperation, such as school officials, parents, and learners [23], must be ensured. The facilities must be properly used and maintained in such a way as to ensure that they can be used within a reasonable period. It is envisaged that ensuring an accessible environment for children with disabilities will contribute to greater health inclusion.

Animal health

Activities related to the importance of animal health in human health were limited. It is

recommended that animal health strategies should be included among the key elements of the WinS program. Strategies can include health education on the importance of public health of animals for human health. Given that the presence of stray dogs within the school premises has been reported, the inclusion of health education on rabies with modules on community rabies prevention and control programs in the school curriculum may be done considering that those aged 15 and below are among those who suffer most from rabies [24–26]. This health education initiative may also be extended to the community to cover out-of-school children [27]. Carabaos, considered one of the most significant reservoir hosts of *Schistosoma japonicum* in the Philippines [28], has also been observed in schools near rice fields as the cause of schistosomiasis, a zoonotic parasitic disease. More stringent school policies on keeping farm animals away from the school grounds may have to be considered. School waste management should be strengthened as it plays an integral part in avoiding the risk of attracting stray animals and pests that may contribute to vector-borne diseases [29].

Stray animals were able to enter the school building. School children are vulnerable to rabies, dog bites [24], and other zoonotic diseases, such as schistosomiasis, as well as vector-borne zoonoses, such as dengue, which are endemic in the country. In cooperation with the veterinary sector, it is possible to include the regulation of strays within the school complex. Pre-exposure prophylaxis for rabies may also be administered in schools, especially in areas with limited access to rabies control services [27]. Sanitation measures in schools and implementation of DepEd Memo 152 s. 2011 on Preventing Dengue in Schools should be intensified because school-age children are vulnerable to the disease.

Governance and school management

Bridging the WinS and community WASH programs

There was a lack of an interface between the WASH programs implemented in schools and in communities. This could have been due to the lack of an integrated policy and independent implementation of the two programs at their respective platforms. In addition to the provision of health services at the school level, health-promoting schools are expected to engage community leaders on how the community contributes to health and education [30]. Healthy practices in schools may not lead to long-term desirable health outcomes if these practices are not continued at home or if the environment at home does not support such practices. In addition, the continuity of school and community settings is evident in the common challenges encountered in the implementation of the WASH program. The challenges faced in schools are similar to those faced in communities. One of the challenges identified by the KIs is access to safe water. This highlights the need for coordination not only in

the implementation of programs but also in resolving the common challenges faced by schools and the community. The role of the LGU is crucial for the provision of the necessary resources and regulations for the successful resolution of these challenges.

In the past, the DepEd and the DOH have had various opportunities for collaboration. This includes the implementation of the National Deworming Day [6] activities and, more recently, the limited face-to-face learning modality during the pandemic [31]. Such close cooperation between the two departments can be extended to other programs and activities to optimize the health of all individuals in schools and communities. There is a need to coordinate the efforts of schools and communities to improve WinS in the community through policies. DOH Administrative Order (AO) No. 2021-0063 on the Health Promotion Framework 2030 urges the adoption of life course and settings-based approaches to implement health promotion strategies. The AO adopted the setting-based approach of the World Health Organization in identifying priority settings, including healthy communities, healthy schools, and healthy workplaces. Such an approach can be considered ideal for bridging school and community health initiatives. These initiatives could benefit from a comprehensive communication strategy highlighting the achievements of WinS and community WASH programs and their importance in achieving the desired health outcomes for school children and other community members.

Reaching Last Mile schools and schools with no star rating

This study highlights the possible positive contribution of the WinS program to health outcomes, especially in decreasing diarrheal diseases. Considering that schools in the study sites did not have at least a one-star rating, it is important that these schools be provided with the necessary logistical support to move up and attain at least one-star rating in the WinS program. There is also a possibility that the “Last Mile Schools” are among the schools that have no star rating. DepEd Memo No. 59, s. 2019 on “Prioritizing the Development of the Last Mile Schools in 2020–2021: Reaching Out and Closing the Gap” for implementing the Last Mile Schools program provides the rationale for giving these schools preferential attention in resource allocation from DepEd. Achieving star ratings in the Last Mile schools’ WinS program could have been incorporated in the program’s monitoring and evaluation scheme. Chatterley *et al.* [32] highlighted the need to reduce inequities at subnational levels in their review of WASH data in non-household settings, which included schools in 10 countries, particularly in the context of SDG 6.

Developing pandemic preparedness and disaster resilience for WinS and WASH programs

There may be opportunities even in times of adversity, such as natural disasters and the COVID-19

pandemic. Teachers and school officials were quick to connect health advice on proper handwashing and related it to the WinS program. In addition, social media platforms such as Facebook Messenger were widely used by teachers to monitor group handwashing and toothbrushing of learners. UNICEF [33] reported that in Vanuatu, the WinS Facebook group, which promotes WASH activities, has increased the star rating of schools by 104%.

During Typhoon Odette in December 2021 and the ongoing COVID-19 pandemic, the destruction of physical structures and disruption of health services occurred. Policies and guidelines for emergencies exist, such as DepEd Order No. 14 Series of 2020 for COVID-19 and DOH AO No. 2020-0032 or the National Policy on WASH in Emergencies and Disasters. However, funding may not be sufficient for the repair of physical structures, such as handwashing and toothbrushing facilities. The roads have also become impassable due to debris and destruction caused by devastating natural disasters, thereby disrupting the monitoring of the WinS program in severely affected areas. The Local Disaster Risk Reduction Fund for disaster recovery and rehabilitation, otherwise known as the calamity funds, can be used by LGUs for disaster rehabilitation in communities. Schools are covered by the Rapid Response Fund and the Basic Education Facility Fund for repairing and reconstructing school facilities caused by disasters. These funds can be made available and more accessible to communities and schools affected by disasters by simplifying requirements and processes.

Strengthening multisectoral coordination and feedback

The results of this study show that there is a need for greater coordination between schools, human health, and animal health sectors. In the learning exchange held among WinS program implementors in 2019, a desirable coordinating mechanism that would bring all WinS program stakeholders together for an effective intersectoral engagement was articulated as a major challenge in WinS implementation [34]. These coordinating mechanisms should be not only vertical but also horizontal, given that the DepEd and the Department of Public Works and Highways are responsible for the construction of schools. Under these arrangements, different line agencies are involved in planning, implementation, and evaluation. At the national level, there is a multisectoral TWG for HLI co-chaired by DOH and DepEd. The Regional Inter-Agency Committee on Environmental Health and the Regional Inter-Agency Coordinating Team are located at the regional level. At provincial and local levels, there are platforms such as Provincial Board, City and Municipal Council, Local School Board, and Local Health Board. These may serve as a platform for dialogue and coordination between different stakeholder agencies to improve policy and improve

service delivery. There are existing inter-agency coordination mechanisms in the education and health sectors at different levels of governance.

Financing WinS and community WASH through the Universal Health Care (UHC) Act

A number of problems identified for WinS and community WASH programs were linked to budgetary constraints. The creation of a platform for coordination can lead to the formulation and strengthening of policies to help to mobilize funds for programs. The literature mentions not only the sharing of responsibilities among coordinating bodies but also cost-sharing arrangements since funding is an important aspect in multisectoral collaboration [35].

The UHC Act (RA 11223) provides a great opportunity to support WinS, community WASH, and other health programs. With the settings-based approach of the DOH Health Promotion Framework Strategy (HPFS), the OK sa DepEd program may be linked with the Healthy Schools Setting and its corresponding program components. Remarkably, five out of the six flagship programs of OK sa DepEd are aligned with the priority areas for DOH HPFS; however, some thematic areas of the WinS program are excluded as priorities [36].

Therefore, it is important to ensure that the entire WinS and community WASH programs are recognized as population-based services that require health financing from the health sector and LGUs. Population-based services, such as health promotion activities and campaigns, including vector control, water quality assurance, and sanitation services, are to be supported by financial resources mainly from the tax-based budget appropriations of DOH, complemented by the LGU budget for health and the Special Health Fund (SHF). In conjunction with the SEF, the LGU SHF may be able to increase funding for population-based services.

In some areas, donations from other sectors (e.g., private sector) have been beneficial for the provision of additional support. However, it may not be as sustainable as government-based funding. The UHC Act and EO 138 emphasize the importance of public-private partnerships and counterpart support, both of which may be taken into account in the SHF, which is well aligned with the intended allowable expenses charged to the SHF [37].

Enhancing knowledge and awareness

During the study, WinS implementers were receptive to using the One Health Lens in assessing WinS after a brief introduction to One Health. To achieve sustainability, there is a need for strong political commitment and community engagement. Strengthening health promotion and education initiatives and advocating for the interrelatedness of human, animal, and environmental health among children and the community, implementers (education and health

personnel), and policymakers are needed [38]. The One Health approach can be used as an overarching concept for integrating key health messages in each of the content areas in the K-12 health curriculum. A policy to integrate One Health concepts in secondary and tertiary education curricula was considered vital for students to understand One Health [39] and its value in improving health and learning outcomes. To capacitate school implementers to work in a One Health framework, the development of training modules and conduct of training on One Health in the context of the WinS program for school implementers may be done.

Engaging school and public health champions

This study highlights the importance of champions in the promotion of school and public health programs. Engaging these champions as agents of change within the community may contribute to the acceptance of intervention [40]. It is necessary to document their experiences, innovative solutions to program challenges, and actions they have taken to support vital health programs and to share them for possible adoption in other areas. The formal recognition of these champions may also encourage others to take similar measures.

Conclusion

WASH programs in schools and in communities have proved to be a viable means to improve the health of people of different ages. This study has highlighted some of the best practices in their implementation. These best practices can be continued and the necessary policy and logistical support for sustainability and the possibility of their implementation in other similar areas can be provided. The study also revealed challenges in implementation, especially for the WinS program in the known GIDCA areas. The One Health lens has been identified as an ideal tool for developing measures to address these implementation challenges, particularly regarding clarification of the responsibilities between sectors. The study showed that health concerns are not the health sector's responsibility alone but require the concerted efforts of various agencies from both the public and the private sectors. Moreover, the study also saw the need to bridge the WASH program implemented in schools with the WASH program implemented in communities. After all, these two environments are not mutually exclusive. In addition, it is important to identify champions as role models and advocates for strengthening the government's health agenda.

Authors' Contributions

VYB, SNMD, JAL, and CV: Conceptualization. VYB and SNMD: Design of the study and project administration. SNMD, CRL, LMCG, TGS, and RNFL: Collection of data. VYB, SNMD, CRL, LMCG, JAL, TGS, RNFL, and CV: Formal analysis and interpretation of data. VYB, SNMD, CRL, LMCG,

TGS, and RNFL: Writing-original draft preparation. VYB, SNMD, CRL, LMCG, TGS, RNFL, JAL, and CV: Edited the manuscript. All authors have read, reviewed, and approved the final manuscript.

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Competing Interests

The authors declare that they have no competing interests.

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