



# A qualitative exploration of the experiences of school nurses during COVID-19 pandemic as the frontline primary health care professionals

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## ABSTRACT

**Background:** It is widely acknowledged that the experiences of frontline primary health care professionals during COVID-19 are important to understand how they respond and act under situations of pandemic as the gatekeepers in primary health care system. School nurses are primary health care professionals who lead health care in schools and practice in a holistic manner to address the needs of schoolchildren and school personnel. There are rising mental health concerns of frontline health care professionals with anxiety and panic disorders, somatic symptoms, and feeling isolated. No studies use a qualitative study approach to document community frontline school nursing professionals' experiences and challenges during the COVID-19 pandemic. Hence, understanding the school nurses' experiences and challenges to fight against COVID-19 in the communities is important.

**Purpose:** This study aims to explore the experiences of school nurses during the COVID-19 pandemic in Hong Kong.

**Methods:** A qualitative study design adopted the principles of thematic analysis. Nineteen school nurses were recruited to participate in individual semistructured interviews and shared their roles and responsibilities during the COVID-19 pandemic.

**Findings:** Three themes indicated the school nurses' expand professional responsibilities to fight against COVID-19 emerged from the data analysis. These were "Managing Stress," "Navigating the School Through the Pandemic," and "Raising the Profile of the School Nurse Professional,"

**Discussion:** Findings reveal the important role of school nursing professionals in minimizing the community-wide risk posed by pandemics and the need to integrate them into planning and implementation of school health policies and guidelines in the primary health care system. This essential role in schools is

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necessary to assess, implement, monitor, prevent, and reduce the spread of virus in school communities and to minimize the burden to and extra health care resources utilized in the acute care setting during COVID-19 pandemic.

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## Introduction

Coronavirus 2019 (COVID-19) is rapidly spreading worldwide. The pandemic of COVID-19 has evolved as a global challenge and increased in morbidity and mortality. As of July 26, 2020, there have been 12,552,765 confirmed cases worldwide, with 561,617 deaths reported by the World Health Organization (WHO) and a gradually rising daily increase in cases (World Health Organization, 2020). In China, there were 83,046 confirmed cases and 4,634 deaths as of the same date (Worldometer, 2020). In the early stage of the COVID-19 pandemic, more than 3,000 medical staff were infected in Hubei, China, among which 40% of them were infected in hospitals (State Council Information Office of the People's Republic of China, 2020). Health care providers persistently experienced high stress because of the fear of being infected due to the contagious nature of the virus, unknown transmission modes, close contact with patients, and infections among colleagues (State Council Information Office of the People's Republic of China, 2020). Aside from acute setting, health care professionals working at community settings are also at high risk of exposure to the virus and so experiencing high stress (Liu et al., 2020). Perceived stressors reflect the interaction between an individual, their perceptions, and the environment (Stangor, 2014). The perceived stressors that health care professionals experienced daily can have implications for physical health and mental well-being (Piazza, Charles, Sliwinski, Mogle, & Almeida, 2013).

In the early stage of the outbreak of COVID-19 in January 2020 in Hong Kong, all schools and universities were closed. Students were advised to return to school and schools entered a new stage of vigilance after a 4-month period of closure and preparation by the end of May 2020 as new cases reached zero across Hong Kong and China and social restrictions were lifted. Primary health care nurses, who work in a range of community settings such as schools, are the first level of contact within the health care system. They play a significant role in assessing, monitoring, coordinating, and evaluating the operations of those preventive measures employed to reduce the spread of viruses in the school communities. Specifically in the school communities, nurses are always in a leading position to strengthening health care practice in schools in a holistic manner to address the changing needs of school children and school personnel in all geographic settings. The National Association of School Nurses (NASN) in the United States delineates the roles and responsibilities

of school nurses' practice within the tenets of the Framework for the 21st Century School Nursing Practice through the five major principles of Leadership, Standards of Practice, Quality Improvement, Care Coordination, and Community/Public Health (National Association of School Nurses, 2016). During the COVID-19 pandemic, school nurses, and other health care professionals present in some schools, have been working very hard with school teachers and other school staff at the frontline of primary health care services for school children and their families. Their unique experiences and challenges from the COVID-19 pandemic that the school nurses are currently facing are valuable sources of information to be documented and be added to or inform the American Academy of Nursing's priorities and responses to the pandemic for future health care policy development. The experiences and inputs of school nurses as frontline health care workers in the schools/community to fight against the unprecedented pandemic would also be important and useful for the future global development of the standard of primary or public health care practice.

To this end, the aims of the present study are to analyze and understand school health care workers' perceived stressors, coping mechanisms, and mental well-being; to describe their experiences and challenges responding to COVID-19 during the early stage of the outbreak; and to describe strategies preparing students to return to school during a period of ongoing uncertainty. The participating primary health care nurses are the specialists in public health. Their roles are overarching and are applicable to school nurses and other health care professionals at all levels of practice in the school communities. The experiences of these community frontline health care professionals are important for understanding how they respond and act under situations of pandemic and expand their professional responsibilities given the reopening of all schools now in Hong Kong and the widespread panic and uncertainties as to what would happen next especially with the third wave of outbreaks since July 1, 2020.

## Methods

### Design

A qualitative descriptive study design was selected. School nurses were invited to participate in a 40- to 60-minute semistructured interviews to share their

experiences and challenges facing during COVID-19. They were recruited from the frontline of school communities between May and June 2020 from the Government-subsidized special schools, private schools, and international schools in Hong Kong. Inclusion criteria consisted of (1) working as a primary health care professional in a school during the COVID-19 pandemic; (2) working between January and June 2020 in Hong Kong; and (3) able to speak and understand either English or Cantonese.

Due to the pandemic, all schools were closed. Thus, 14 of the semistructured interviews were conducted via telephone and 5 interviews conducted via Zoom. Interviews were digitally recorded and lasted an average of 50 minutes. Data of the characteristics of the participants were collected at the beginning of the interview.

### Ethical Consideration

Ethical approval was obtained from the Ethics Committee of the Hong Kong School Nurses Association prior to conducting the study in Hong Kong (HKSNA2020-002). Confidentiality was ensured by deidentifying the participant and their personal information on any published report. All audio recordings and transcripts were coded and saved on a password-protected computer. Participants were advised that they could withdraw from the study at any time without penalty. Participants returned the signed consent forms to the Principal Investigator (PI) via email. The researchers followed the Standards for Reporting Qualitative Research guidelines in this study.

### Sample

The recruitment process resulted in the inclusion of 19 school nurses employed in Hong Kong, all of whom participated in individual semistructured interviews. They met the inclusion criteria and recruited via the member contact list of the Hong Kong School Nurses Association. The characteristics of the participants are presented in Table 1. They were employed full time at Government-subsidized special schools, a private school, and international schools during the time of data collection. The participants were all females and their ages ranged from 31 to 56 years old or older. These school nurses worked in international schools ( $n = 8$ ), special needs schools ( $n = 10$ ), and private school ( $n = 1$ ) during the time of interview. The monthly salary ( $n = 19$ ) ranged from US\$3,000 to US\$7,200. Ten school nurses reported having a 4-year bachelor's degree or higher. The other nine participants had a high diploma in nursing.

### Data Collection

Each semistructured interview was conducted at a time convenient for participants. At the beginning of

**Table 1 – Characteristics of the School Nurse Professional (N = 19)**

|                                      | Frequency | Percent |
|--------------------------------------|-----------|---------|
| Gender                               |           |         |
| Male                                 | 0         | 00      |
| Female                               | 19        | 100     |
| Age                                  |           |         |
| 31–35 years                          | 2         | 10.5    |
| 36–40 years                          | 0         | 0       |
| 41–45 years                          | 5         | 26.3    |
| 46–50 years                          | 0         | 0       |
| 51–55 years                          | 7         | 36.9    |
| >56 years                            | 5         | 26.3    |
| Working status                       |           |         |
| Registered nurse                     | 19        | 100     |
| Work experiences                     |           |         |
| 10–12 years                          | 4         | 21.1    |
| 13–15 years                          | 1         | 5.2     |
| 15 years                             | 14        | 73.7    |
| Professional education               |           |         |
| Master degree                        | 3         | 15.8    |
| Bachelor degree                      | 13        | 68.4    |
| High diploma                         | 3         | 15.8    |
| Monthly income                       |           |         |
| US\$2,000–\$3,000                    | 1         | 5.2     |
| US\$3,001–\$4,000                    | 6         | 31.7    |
| US\$4,001–\$5,000                    | 5         | 26.3    |
| US\$5,001–\$6,000                    | 2         | 10.5    |
| US\$6,001–\$7,000                    | 5         | 26.3    |
| Type of school                       |           |         |
| Government-subsidized special school | 10        | 52.7    |
| International school                 | 8         | 42.1    |
| Private school                       | 1         | 5.2     |

each interview, the PI collected participants' age, type of school setting, specific role in primary health care, number of years of work experience, professional qualifications, and the period that they worked at the school during the outbreak of COVID-19. The PI followed the semistructured interview guide (Appendix 1) and the interviews were conducted between May 27 and June 20, 2020. Examples of questions asked were “what are the significant challenges that you encountered at the beginning of the outbreak”; “how did you feel and cope with it”; “share with us the impact of COVID-19 on your role as the primary health care professional”; “what are the skills and knowledge that the primary health care professionals should have to cope with this outbreak”; and “what other challenges or experiences would you like to share on your role and responsibilities as a primary health care provider.” The PI also clarified and sought in-depth information during the interview. The length of interviews was between 40 and 60 minutes.

### Data Analysis

Fifteen interviews were conducted in Chinese language and the other seven conducted in English language. The PI and another researcher (A.T.) listened to the audio transcript and then translated the 15

interview scripts from Cantonese into English. Some of the quotations were back translated into Cantonese by the PI and A.T. to ensure the meaning was retained. All the interviews were transcribed for coding purposes adopting the principles of thematic analysis. Thematic analysis is a data analysis method for systematically identifying, organizing, and offering insight into patterns of meaning across a data set developed by [Braun and Clarke \(2013\)](#). The process involves the following six steps: (1) familiarization with data by transcribing data in English; (2) reading and re-reading the transcripts, and noting down initial ideas as key meanings; (3) generating initial codes by fully coding and collating the data that is potentially relevant to the research question; (4) searching for themes by collating codes into potential themes and subthemes and exploring the relationship between themes; (5) reviewing themes by checking if the themes are related to the coded extracts as well as the entire data set; and (6) defining and naming themes by refining each theme. Qualitative research analysis software, NVIVO, was used to assist data analysis by loading interview transcription into this software and highlighting and coding participants' responses, then reviewing these codes and building themes from these.

Data analysis was conducted in a stepwise process and it began with the PI noting significant comments in the interview data, followed by coding of significant statements in the data. Thematic analysis was adopted in this study ([Braun & Clarke, 2013](#)) because the researchers allocated similar coding to each theme that captures important information, without considering the frequency with which it appears. Direct quotes were used when presenting data. Themes were identified after analyzing the data. There are 3 main themes and 11 subthemes emerged from the study data ([Table 2](#)). Reporting the findings is achieved by selecting vivid and compelling extract examples, final analysis of extracts, and relating of the analysis to the study aim. The following strategies were implemented to enhance the trustworthiness of qualitative data on credibility, transferability, dependability, and confirmability ([Creswell & Poth, 2018](#)). A tracking document

was created at the beginning of the study to record the key decisions researchers made and their rationales based on the proposal's study aim. Four members of the research team (R.L., S.W., S.C., and A.T.) then discussed the data, codes, themes, and research process among themselves on a regular basis. Two co-authors (R.L. and S.W.) reviewed the raw data independently soon after collection to add further descriptions such as contextual descriptions. They used color pens to highlight key elements relating to study aim in the interview scripts. They then formulate meaning units in the coding process independently prior to discussing and finalizing the relationships of all the codes with emergent themes and subthemes. Agreement by separate coders was the most important factor, which is particularly important when the research is quantitatively oriented content analysis, where the strategy is to compare number of codes. The goal of data analysis was to reveal data on school nurses' experiences and challenges during the COVID-19 pandemic and to contextualize their experiences within the standard of practice for school nursing established by the [National Association of School Nurses \(2016\)](#) professional context.

### Trustworthiness

The researchers employed four strategies to develop the audit trail to enhance trustworthiness of this study as recommended by Lincoln and Guba's evaluative criteria in 1985 ([Lincoln & Guba, 1985](#)). The PI is a qualitative researcher who spent a prolonged period to build a rapport with each participant at the beginning of the interview. During each interview, the PI attempted to understand the context in an effort to bracket potential biases, seek detailed in-depth information, and seek clarification if necessary. All the interviews were digitally recorded either by the Zoom meeting recording tool or iPhone recording app. This enhanced the study's credibility. To establish the credibility in the audit trail, four participants' member check were employed to validate the interpretation of findings. Three researchers had frequently discussed the data from the coding process to the emerged themes to

**Table 2 – Theme and Subthemes**

| Themes  | Subthemes  |
|---|--|
| Theme 1:<br>Managing Stress                                       | a. Their initial stress<br>b. Ongoing psychological impacts on school nurses<br>c. Stress and psychological needs of other school staff  |
| Theme 2:<br>Navigating the School Through the Pandemic            | a. Finding relevant information and staying up to date on COVID-19 pandemic<br>b. Developing guidelines for the school<br>c. Understanding the contextual realities<br>d. Relying on informal networks |
| Theme 3:<br>Raising the Profile of the School Nurse Professionals | a. Being a role model for the school<br>b. Conducting themselves with professionalism<br>c. Raising the profile of school nursing professionals<br>d. Feeling respected and acknowledged               |

enhance the dependability in the audit trail. The transferability of the study data has been enhanced by providing detailed description of the research process.

## Findings

Data saturation was achieved after 18 interviews and no new information emerged. From the data analysis, three over-arching themes were found to consistently represent the experiences of school nurse professionals, including: “managing stress”; “navigating the school through the pandemic”; and “raising the profile of the school-based school nurse professionals” (Table 2). Each main theme had several subthemes within it: the subthemes for “Managing Stress” are (1) their initial stress; (2) ongoing psychological impacts on school nurses; and (3) the stress and psychological needs of other school staff, such as school teachers, and parents. The subthemes for “Navigating the School Through the Pandemic” are (1) finding relevant information and staying up to date on COVID-19; (2) developing guidelines for the school; (3) understanding contextual realities; and (4) relying informal networks to share knowledge and provide professional support. The subthemes for “Raising the Profile of the School-Based Primary Health Care Professional” are (1) being a role model for the school; (2) conducting themselves with professionalism; (3) raising the profile of school nursing professionals; and (4) feeling respected and acknowledged (Table 2).

### Managing Stress

The first theme “Managing Stress” was centered around the initial responses by participants, namely stress and ongoing uncertainty, and the ongoing psychological needs of participants, other school staff and parents of students.

#### *Their Initial Stress*

The majority of the participants expressed a sense of concern at the beginning of the COVID-19 pandemic, using terms such as helplessness, uncertainty, anxiety, stress, desperation, fear, and a sense of feeling physically unwell. “I feel very stressed, uncertain and overwhelmed with the information as it is a new virus and the information from those government authorities was very confusing” (Interviewee 1). The impetus for these feelings were a lack of information about transmission of the virus, lack of guidelines or confusing messages from the government, the high risk nature of special needs schools and their students, lack of available personal protective equipment (PPE), and fear for family members in countries other than Hong Kong. A participant shared:

“We do not have enough stock of masks and PPE in the school. We are panic and worried as the sales

told us that there was no mask and PPT available anywhere in the market. When we are able to get some masks and PPE, we are not worried then” (Interviewee 8).

One participant with family living overseas (United Kingdom) expressed concern for her family as prevention and control did not seem as strong as she believed it to be in Hong Kong. Only four participants (Interviewee 4, 12, 13, 17) mentioned not having feelings of concern or stress because they specifically mentioned prior experience with the severe acute respiratory syndrome (SARS) outbreak in 2003 and that this experience made them feel prepared for COVID-19. Two other participants mentioned a lack of stress as they perceived the government as acting quickly to control the situation (Interviewee 6, 14).

#### *Ongoing Psychological Impacts on School Nurses*

Participants indicated that their initial stress and fear declined over time and was replaced with a sense of psychological preparedness and support “I felt very stressed, worried and uncertain at the beginning of the outbreak as it was a new virus and it spread very fast and there was no PPE available in Hong Kong. Once I understood the causes, received the stock of PPE and being connected with others, I felt less stress and worry” (Interviewee 7).

As the pandemic continued teachers, other school staff, parents, students, and the school nurses themselves required ongoing support and assistance to deal with the psychological and physical impacts of school closures and social isolation, and the increased number of deaths locally and globally. One participant mentioned not having feelings of stress initially but as the pandemic continued, they experienced “invisible stress” (Interviewee 13) which resulted in weight loss. Another (Interviewee 20) discussed the importance of school nurses being physically and emotionally fit in order to be able to do their job properly.

#### *Stress and Psychological Needs of Other School Staff*

Several participants made specific mention of the support and counselling role they perceived themselves as having (Interviewee 1, 13, 14, 20). “The school staff told me that they are so fortunate to have a health care professional in the school and providing counselling to them as they felt very distressed and worried about the mass outbreak and the many people who have contracted the virus from others and died” (Interviewee 14). “I need to be there to provide emotional support to the school staff as it is my role during this critical time” (Interviewee 20). There was a need to check on the psychological state of other staff members and provide support and counseling, as well as their physical health. Two participants discussed contacting staff members to provide health advice on physical health matters, such as weight gain from inactivity, eye strain from seated computer

work at home, and even constipation (Interviewee 1, 13). There was also an identified need to be alert to the possible job and economic losses being experienced by parents and be mindful of the psychological impact of these. Three participants made specific mention of having had contact with parents to discuss the care needs of their children and to provide support and advice on such matters as epilepsy and behavioral management.

A school nurse from the special school stated: "I communicate the parents on the phone more frequent especially for those students with autism and ADHD. Some parents just could not handle their child 24 hours and 7 days a week. Some of them were admitted to the hospital because of that" (Interviewee 2). Another school nurse worked at the international school stated: "I contacted the parents and students via phone and checked that they were okay. I felt that they really appreciated my effort. One of the students called me back and asked questions. I could feel that they were very happy to talk to me and hear my voice on the phone" (Interviewee 13).

### *Navigating the School Through the Pandemic*

The second theme "Navigating the School Through the Pandemic" captured the responses by participants who expressed a move from initial thoughts of stress and uncertainty to one of acceptance and focusing on the job of preparing the school for a safe return of students. This preparation was expressed in four ways: (1) finding relevant information and staying up to date on COVID-19; (2) developing guidelines for the school to respond to COVID-19 pandemic and monitoring implementation of safe practices; (3) understanding the contextual realities and operating within these; and (4) relying on informal networks to share knowledge and provide professional support: "I am thankful for the technology that enabled me to be connected to the professional bodies and reliable sources accessing up-to-date COVID-19 information and guidelines when I was socially isolated in the school" (Interviewee 1).

#### *Finding Relevant Information and Staying Up to Date on COVID-19 Pandemic*

Participants acknowledged that clear and consistent information relating to COVID-19 was difficult to obtain in the beginning as it is a new virus to everyone. They expressed an underlying reality that it was up to them to seek out relevant information from reliable sources daily in order to stay current on knowledge and practices. This knowledge was important to be able to contribute to the development of school-based guidelines and practices, to provide professional advice to teachers, to promote a sense of trust in the school-based health care professional, and also to have a sense of being in control.

#### *Developing Guidelines for the School*

With up to date information, school nurses felt equipped to assist with preparing the school to respond to COVID-19 and the return of students once schools reopened. The role of the school was integral, and one participant described the school as "the shadow hidden in the community" (Interviewee 4). The role of the school nursing professional became one of preparing new procedures for the school, providing health education, providing health counseling, monitoring compliance with guidelines, and responding to issues and realities as they arose. Preparation involved such aspects as developing a triage flow chart, ensuring stock of PPE was maintained where possible, creating an isolation area, and relocating to areas of the school that minimized likely spread of any virus. Involvement in preparation did not always occur, however. One participant expressed feelings of upset when they discovered they had not been included in the development on their school's guidelines and letters to parents. She perceived the guidelines that were developed as having information shortfalls as a consequence of their lack of involvement.

School nurses provided staff education in such areas as proper hand hygiene, cleaning and disinfecting of the school and school buses, wearing of masks, proper cleaning of vomitus, and disposal of PPE. Compliance included such aspects as reinforcing the need for 14-day quarantine periods for returned travelers, educating parents on the need to check students' temperatures before sending them to school and to keep them home if unwell, checking temperatures upon arrival, and monitoring student hygiene. Participants highlighted the importance of good communication with parents and clear explanations of the procedures that needed to be followed, as well as communication with other school staff to create an environment of safety and confidence.

#### *Understanding the Contextual Realities*

In preparing their schools for a response to COVID-19, the school health professionals expressed a range of challenges related to contextual realities and the need to understand and respond to these. For example, two participants highlighted the difficulties of proper social distancing in small schools. "My school is very small. We do not have adequate space to keep the social distancing among the students. I need to discuss with the teachers and develop specific policies and guidelines based on my professional input as I am the sole professional in the school. Thus, I found it challenging." Thus, the students will not have any recess outside their classroom. Additionally, it was a challenge to maintain hygiene practices, such as face touching, among often younger student cohorts as well as issues maintaining PPE with students with intellectual disabilities. "I found it very challenging and difficult to stop our students with intellectual disabilities not touching their eyes and noses. They even use their

hands to play with their saliva” (Interviewee 7). Two participants commented that school teachers themselves had refused to wear masks at the beginning of outbreak. “Some of our school teachers refuse to put on any PPE” (Interviewee 6) and some teachers had bargained with them to relax the preventative measures when health care professionals shared the insights on restricting the school activities. “I sat in the management meeting and provided input on the guidelines on maintaining social distancing during recess. The school teachers bargained with me and requested me to relax the guideline a bit” (Interviewee 7). Most of the participants stated that supplies of PPE such as masks and hand sanitizers were problematic to maintain which added to a sense of stress. There was also the isolation from up to date information, where participants reflected upon the resources and updates available in hospital settings that were not present in schools where often only one health care professional worked. Indeed, one participant reflected on the fact that there was no COVID-19-specific information seminar for school nurse professionals until May 2020 when the Hong Kong School Nurses Association delivered one such seminar.

#### *Relying on Informal Networks*

Participants identified one strategy for overcoming isolation from COVID-19 information as informal, intra-professional networking. All participants discussed being connected to other school nurses and primary health care professionals as a key means to link, share information, network and provide professional support, with more than half making specific reference to the formation of a WhatsApp group, which is a social media platform for communication. This WhatsApp group allowed primary health care professionals to informally communicate and thus overcome professional isolation, information deficit, and uncertainty.

#### *Raising the Profile of the School Nurse Professional*

The third theme “Raising the Profile of the School Nurse Professional” highlighted the increased visibility of their professional image due to their role in developing guidelines and policies for the school to reduce the spread of virus.

#### *Being a Role Model for the School*

Coming through the COVID-19 lockdown period and into the reopening of schools, many participants commented on the way the pandemic had raised the profile of the school health professional and the opportunity it had afforded them to act as a role model for health and safety in their school. “As I increasingly take on more and more roles in reducing the spread of the virus, my professional image has become visible and valuable” (Interviewee 2). “I feel that my role is well respected and valued by the school staff during the outbreak” (Interviewee 22). Acting as a role model was considered a necessity by participants and was

demonstrated through being proactive, staying calm, demonstrating leadership, paying attention to the well-being of those around them, and providing counseling. Through acting as role models, participants felt more respected and believed other staff felt more secure during the pandemic because of the health knowledge and expertise they could provide.

#### *Conducting Themselves With Professionalism*

Professionalism was a concept mentioned as working hand-in-hand with acting as a role model. Using professional expertise, proposing ideas and proactive strategies, and simply conducting oneself in a professional manner at all times were seen as important in not only preparing the school for COVID-19 but increasing the value of school-based primary health care professionals among others. Most of the participants expressed the view that they would use all their efforts to demonstrate their professionalism and do the best possible job in fighting the virus such as finding out up-to-date information and developing school health policies to assist the school teachers and parents to prevent the spread of the virus.

A school nurse, who worked at the international school, stated: “I have tried all my best to fight for this outbreak by developing all the guidelines and screening protocols to minimize the spread of the virus in the school. As I am the only health professional in the school, I have to act as a role model for others to follow in the school” (Interviewee 1). Another school nurse, who worked at the special school, stated: “I lead the school team to combat this outbreak as I am a health professional. I always search COVID-19 information via internet and connect to other school nurses so that I can provide relevant information to update the school policies and guides” (Interviewee 14).

The interviewer asked the participants’ willingness caring for suspected case in the school. Five participants expressed that they were willing to care for a suspected case of COVID-19 as they had previous experiences in taking care of patients with SARS. Thus, those suspected case of COVID-19 when the PI asked: “would you be willing to manage a suspected case of COVID-19 in the school.” The participants stated they were willing to care for any suspected case in the school as they are a health care provider and have the past experiences to handle the outbreak of similar virus during SARS in 2003.

One participant shared her experience and stated: “It is my role as a nurse caring for suspected case. I will take over without hesitation when the case referred to me” (Interviewee 4). Another participant shared: “I have gone through SARS in 2003 as I was working in the hospital at that time, I am competent in taking care of suspected cases of COVID-19 in the school” (Interviewee 12). One participant claimed her experience with confidence and stated: “I remember the experiences of taking care of SARS patients in the hospital. The SARS and COVID-19 belong to a family of

viruses. Thus, I have confidence to manage a suspected case in the school” (Interviewee 14).

### *Raising the Profile of School Nursing Professionals*

By conducting themselves in this manner, and by the sudden increased exposure they experienced as a consequence of the pandemic, many participants believed it was a valuable opportunity to raise the profile of the school nursing professionals. Whereas the image of the school nurses was seen as low before the pandemic by some school staff, the experience had made them more respected and valuable to their schools, led to improved consultation of the school nurses by school staff and parents, offered opportunities for them to do some health teaching in classrooms, and positioned them advantageously against budget constraints and possible job cuts. “It is much easier to deliver health education sessions such as personal hygiene in the classroom now. Before the outbreak, school teachers did not allow us to deliver health talks to students in the classroom” (Interviewee 5). Providing social support was also found to be significantly important as reported by the participants in this study. A few participants reinforced that taking care of the school teachers’, school administrators’ and parents’ anxiety and panic can be a stress reliever, but it should be balanced with care for ourselves as the sole health care provider in the school and we need to stay calm with confidence (Interviewee 1, 12, 13, 14, 17). Other participants also shared that [helping others cope with their stress](#), such as by providing reliable COVID-19 information and updates and caring for each other, can also make our community stronger (Interviewee 2, 5, 7, 20). During times of increased social distancing due to COVID-19, school nurses can still maintain social connections and care for the students’ and their parents’ emotional well-being via virtual communication tools like mobile phones, Zoom meetings, or video chats which can help them feel less lonely and isolated (Interviewee 1, 12, 13). “Thanks to all the advanced technology I am still able to communicate with other professionals and share guidelines via WhatsApp and Zoom. Otherwise, I would feel very isolated and uncertain” (Interviewee 1).

### *Feeling Respected and Acknowledged*

A respectful workplace brings enormous benefits to organizations. School nurses who reported that they felt respected were more satisfied with their jobs and more grateful for their employers. They were more resilient, cooperate more with others, performed better and more creatively, and were more likely to take direction from their leaders. A few school nurses shared that they received many positive feedbacks from the school teachers and school staff and parents during the COVID-19 pandemic. One school nurse stated: “My role as a school nurse is being recognized and respected during the pandemic” (Interviewee 3). The other school nurse shared: “The school staff told me that it is very

fortune to have the school nurse in our school during the outbreak” (Interviewee 14).

## **Discussion**

To our knowledge, this is the first study that explored the experiences and challenges of undocumented, the roles of school nurses during the COVID-19 pandemic locally and globally. Our findings indicate that the undocumented hidden and essential roles of school nurses as the frontline primary health care professionals in combating crisis during pandemics creating a context that they always felt challenged with the impact of their existing job description and role identity in the school community within the health care system. School nurses feel insecure with their jobs when there is a provincial budget cut especially the primary health care sector. Additionally, the findings of this study offer new insights into how undocumented roles of school nurses navigate their challenges through raising their profile and visibility as the primary health care professionals during COVID-19 pandemic.

The findings of this study highlight an expected path from initial feelings of uncertainty and stress at the start of the pandemic, to a focus on preparedness and then reaping the benefits of this preparedness and professionalism through heightened attention to their roles with school communities. The notion of stress among health care professionals involved in pandemics, particularly COVID-19, is not new. However, none of the participants expressed a view that their stress was related to concerns about themselves. Indeed, their stress was about a lack of information or supplies, or simply a general lack of uncertainty, which can hinder decision-making and create psychological pressure (Selikowitz, 2020). This lack of concern for one’s own health is consistent with other studies into health care professionals’ responses to the pandemic, which have found that health care professionals do not worry about their own infection during the course of their work (Chen et al., 2020). The other basis for a lack of concern was the sense of preparedness for those who had previous involvement in health care delivery during the SARS epidemic in 2003 (Qiu, Chu, Mao, & Wu, 2018). All participants who mentioned SARS demonstrated a view that this had given them first-hand experience at working during such a health crisis and this allowed them to reduce their stress. The link between experience with SARS and feelings of preparedness for COVID-19 has also been established in statements by nursing bodies globally (Nassar, 2020).

A consistent element of preparing their school for reopening and safe response to the pandemic was the ability to find reliable information and stay up to date on COVID-19. Reliable and accessible information is an important aspect in being able to feel prepared but is

also notable important in reducing psychological impacts on primary health care professionals. Recent literature has highlighted the link between central information, clear communication and well-defined expectations, and reduced anxiety (Dewey, Hingle, Goelz, & Linzer, 2020). For participants in this study, when information was fragmented, not easily accessible or missing they felt increased stress. However, as information, such as that provided by the Department of Health and Education Bureau, was more forthcoming participants felt better able to prepare and respond. Information was also sourced through informal networking via WhatsApp with other primary health care professionals working in school communities. Participants identified the need to either share knowledge they had or obtain such knowledge from others as a way of prompting the overall body of information available to them, as well as to give and receive a sense of professional support and assurance. The use of WhatsApp to form a group of their peers was discussed positively by all who mentioned it. This is consistent with a recent review of multiple studies looking at the use of WhatsApp and Instagram for clinical communication, which found WhatsApp was considered as a key way to communicate, learn, and improve the care they delivered (Kamel Boulos, Giustini, & Wheeler, 2016).

The outcome of the school nursing professional's involvement in responding to the pandemic and preparing schools to operate under its restrictions was commonly acknowledged among participants as a rise in the profile of their roles. Much time and many resources are focused on acute care during such pandemics but the work in the primary health care setting has been seen often to go unnoticed (Goel, 2020). Even within the school setting, the role of school nursing professionals has been likened to an invisible one, with school teachers and parents having little understanding of the role, and therefore the value, of these health professionals (Brooks et al., 2007). Their role and responsibilities are extremely important in reducing and preventing the spread of the virus in communities, where much of the disease transfer can occur, and thereby decrease the burden and minimize the utilization of extra health care resources during this crisis in the acute care setting. By acting in a pivotal role during a period of heightened uncertainty, school nurses have the opportunity to harness their increased professional respect and positioning to shield their role from possible budget cuts. The positive responses they receive from other school staff and from the community more generally can also act to reinforce resilience, which will further assist them in periods of crisis in the future (Dewey et al., 2020).

### Limitations

There are four limitations in this study. School nurses' responses to the interview questions might have been impacted by feeling challenged on their role and responsibilities in fighting this global outbreak with so

many uncertainties. Two school nurses requested PI not to have their names included in any report documents. All the interviews were conducted via communication tools due to social distance restriction. Thus, data corroborated from face-to-face interviews. Most of the school nurses in this study had more than 17 years of work experience. Nurses who were younger might not have cared for SARS patients and they might have had more anxiety for their own health.

### Conclusion

Although school nurses faced many uncertain challenges and stressors in their roles and responsibilities as the sole health care providers in their school communities, they were able to demonstrate their strengths and resilience by providing social and emotional support to the students, school teachers, school administrative staff, parents, and community. Understanding the risk to themselves and people they care about can help them connect with others and make an outbreak less stressful. This finding is similar to the study reported by health care providers working at the acute care setting during the COVID-19 in China (Liu et al., 2020). The authors found that it was important to get connected with the clients that health professionals serve and the professional bodies that they work with in the community (Lee, 2011).

The findings of this qualitative study provide new insights into school nursing professionals' perspectives in preparing and responding to pandemics and crisis and how they prepare to reduce the spread of the virus in school communities. These findings demonstrate the essential roles and responsibilities of school nurses to fight COVID-19 in the community where the virus is often transferred and the importance of involving school nurses in the design, implementation and monitoring of school-based guidelines and health promotional activities. The implications for future practice are improved pandemic preparedness of primary health care professionals who, like those who worked during the SARS crisis, will be more mentally prepared to respond to future events with reduced feelings of stress and uncertainty. This will add new evidence in developing health policy in the public health agenda locally and globally.

### Author Contribution

All authors had full access to all the data in this study and take responsibility for the integrity of the data and the accuracy of the data analysis. RL is the corresponding author. RL, SW, SC, and CWT conducted the literature search. RL, AT, and SC prepared the tables. RL, SW, AT, SC, CWT, CHY, and CC created the study design. RL, SW, and AT conducted data collection, data

analysis, and data interpretation. RL and SW wrote the draft of manuscript. All authors contributed to reviewing and editing the manuscript.

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## Appendix I

### Interview Guide

1. Please share with me your experience on the role of School Nurse during COVID-19.
2. Share the challenges that you have encountered to cope with COVID-19.
3. Share with us whether you do extra things on the top of routine nursing care before COVID-19.
4. Share with us the resources that required to support your role as a school nurse to deal with COVID-19.
5. What are the skills and knowledge required for you as a school nurse to cope with COVID-19 in the school community?
6. What have you done to prepare the students back to school?
7. Are there any resources in assisting you to develop those COVID-19 guidelines/protocols?
8. What are the preventive measures to reduce the spread of COVID-19 in the school?
9. Are you willing in caring for any suspected cases of COVID-19 if they are referred to you?

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