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Confronting COVID-19 Whilst Elementary School Students Resume In-Person Learning

Doreen Ahwireng[1]

[1] Department of Educational Studies and Leadership, University of Ghana, Ghana

Correspondence: Doreen Ahwireng, Department of Educational Studies and Leadership, University of Ghana, P. O. Box LG 1181, Legon, Ghana.

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Abstract

Resuming in-person teaching and learning during the COVID-19 pandemic implies that schools must deploy strategies to enforce adherence to the safety protocols to help contain and reduce the spread of the corona virus disease among school children. Thus, the current qualitative study adopted a case study design to explore strategies that were deployed to enforce adherence to the COVID-19 safety protocols among elementary school students. A semi-structured interview guide was used to gather data from 30 teachers enrolled in a one-year master's degree in Educational Leadership and Management program at a public university in Ghana. The study showed that strict and compulsory handwashing before entering the school was deployed to ensure adherence to handwashing safety protocol, provision of veronica buckets contributed to adherence to handwashing. Also, interventions that were deployed to enforce social distancing were spacing of desk, having mealtime in class, eating meals in turns, suspension of assembly and other social gatherings, split class for shift system. Additionally, schools ensured students wore nose masks by providing nose masks to students who could not afford.

Keywords: COVID-19, Veronica bucket, face mask, handwashing, social distancing, students, elementary school

1. Introduction

Debate about reopening schools whilst the world is experiencing COVID-19 calls for stakeholders to put in place strategic interventions that will reduce the risk of students contracting the virus. The novel corona virus disease, also known as COVID-19, was first discovered in Wuhan, China in December 2019. This virus quickly spread all over the world within a short period, and in March 2020, the virus was declared a global pandemic (World Health Organization, 2020). COVID-19 outbreak affected different areas of human life such as education, research, sports, entertainment, transportation, worship, social gatherings, and economic activities (Onyema, Nwafor, Obafemi, Sen, Atonye, Sharma, & Alsayed, 2020; Zethembe, 2020). Schools in most parts of the world were not spared. The pandemic led to closure of schools with no exception to schools in Ghana. Because data from previous studies on influenza viruses showed that children were more likely to transmit severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), keeping children out of school could prevent the spread of COVID-19. However, school closure during COVID-19 pandemic was strongly criticized because the assumptions supporting this decision were weak (Dong, Mo, Hu, Qi, Jiang, & Tong, 2020). Closing schools to minimize the risk of children becoming infected with COVID-19 is of poor clinical importance because when children contracted SARS-CoV-2, they generally exhibit mild sickness that does not require hospitalization (Dong, Mo, Hu, Qi, Jiang, & Tong, 2020; Wang, Ng, & Brook, 2020). Also, school closure during the SARS and MERS epidemics was less effective in reducing morbidity and mortality (Wang, Ng, & Brook, 2020). Moreover, school closure could create socio-economic and health problems which are more devastating than those caused by COVID-19 (Esposito, Cotugno, & Principi, 2021; Esposito & Principi, 2019). One in seven children has missed more than three-quarters of in-person teaching and learning, tthus affecting their social, mental, and physical development (Gasibat, Aymen, & Gasibat, 2021). Consequently, scholars are of the view that to ensure adequate learning and avoid social and economic problems, schools must reopen and adhere to the recommended preventive COVID-19 safety protocols (Esposito, Cotugno, & Principi, 2021; Gasibat, Aymen, & Gasibat, 2021). These scholarstic views, call for stakeholders' attention to optimize school facilities significantly to reduce the

spread of corona virus (Esposito, Cotugno, & Principi, 2021; Gasibat, Aymen, & Gasibat, 2021; Dong, Mo, Hu, Qi, Jiang, Jiang, & Tong, 2020; Wang, Ng, & Brook, 2020). Considering all the challenges associated with school closure, government of Ghana deliberated with stakeholders such as educators, parents, and teacher unions, for schools to reopen. School reopening comes with certain challenges that need to be addressed to contain the spread of COVID-19 among school children. Therefore, Government of Ghana put in place COVID-19 safety protocols to ensure that schools are safe for students to return to school. Among the safety protocols put in place were frequent handwashing, wearing of nose/face mask, hand sanitization, health screening and quarantine, checking of temperature, social distancing, and provision of veronica buckets (Anand, Bargawa, & Panda, 2021; Nambole los santos & Giles Chaves, 2020). Additionally, schools were fumigated, disinfected, and mapped to a health facility for identification and treatment of suspected cases of COVID-19. Also, COVID-19 response teams were trained in schools to ensure the adherence to the safety protocols. Moreover, comprehensive "Guidelines for School Re-opening during COVID-19" were published and distributed to all Regional, Metropolitan and District Directors of Education, and Heads of all schools from kindergarten to senior high schools in the country (Ghana COVID-19 Situation Report #14, 2021). Consequently, government together with Ghana Education Service issued directives to schools to strictly adhere to the COVID-19 safety protocols. Following the directives to adhere to the COVID-19 safety protocols, the government of Ghana announced the reopening of schools in June 2020. School reopening was done in phases starting with final year students in tertiary institutions, followed by elementary, and secondary schools to enable them to prepare for their final examination, while ensuring that students observe COVID-19 safety protocols (Apanga, Bador Lettor, & Akunvane, 2021). Despite the directives that were issued to schools to make sure that students adhered to the COVID-19 safety protocols, some students tested positive to COVID-19 (Apanga, Bador Lettor, & Akunvane, 2021). Positive cases of COVID-19 among school children raised concerns and suggest that the COVID-19 safety protocols are not strictly adhered to among elementary school children. Research shows that adherence is pivotal to controlling the spread of COVID-19 (Esposito, Cotugno, & Principi, 2021; Gasibat, Aymen, & Gasibat, 2021; Dong, Mo, Hu, Qi, Jiang, Jiang, & Tong, 2020; Wang, Ng, & Brook, 2020). Therefore, it is imperative for schools to devise interventions that will help students adhere to the COVID-19 safety protocols, thus controlling the spread of the corona virus disease. However, no study has investigated the strategies that elementary schools have deployed to ensure adherence to the COVID-19 safety protocols among students. Consequently, the objective of this qualitative study is to explore interventions that were deployed to ensure elementary school students adhered to COVID-19 safety protocols to help contain the spread of COVID-19. Thus, this qualitative study seeks to address the following research question: (1) what strategies are deployed to enforce adherence to COVID-19 safety protocols among elementary school students? Significantly, this study will highlight strategies that help elementary school students adhere to COVID-19 safety protocols.

2. Literature Review

COVID-19 caused by severe acute respiratory syndrome Corona virus 2 (SARS-CoV-2) was declared a global pandemic in March 2020 (World Health Organization, 2020). This led to several countries adopting school closures as a measure to control and curb the spread of the pandemic, however, these observed national school closures greatly affected about 862 million school going children (Gasibat, Aymen, & Gasibat, 2021). The school closure intervention was informed by previous pandemics that were curbed through minimizing students social contacts, hence, breaking the chain of transmitting the influenza virus (Gasibat, Aymen, & Gasibat, 2021). Indeed, research shows that school closure intervention minimized the spread of the corona virus disease and decreased death by only 2% to 4% (Gasibat, Aymen, & Gasibat, 2021; UNESCO COVID-19, 2020). Also, it is unclear whether school closures are effective in combating virus outbreaks such as COVID-19, for which transmission dynamics appear to be different from other pandemics that have plagued the world. Four systematic reviews of the effects of school closure on influenza outbreaks or pandemics suggest that school closure can be a useful control measure but has very little effect on the spread of viruses (Gasibat, Aymen, & Gasibat, 2021; WHO, 2020). Presently, evidence to support school closure to fight the spread of corona virus disease is very weak. Moreover, school closure has the potential to threaten socio-economic activities (Esposito, Cotugno, & Principi, 2021; Gasibat, Aymen, & Gasibat, 2021; WHO, 2020). Onyema et al. (2020) posit that school closure is not the only option to contain the spread of coronavirus. Research findings from the outbreak of SARS in China, Hong Kong, and Singapore depicts little to no contribution of school closure to the control of the virus (Viner et al., 2020). Consequently, the WHO Director-General suggested on March 12, 2020, that "all countries must strike a fine balance between protecting health, preventing economic and social disruption, and respecting human rights" (WHO Director General's Opening Remarks, 2020, p. 1). This suggestion informed decisions to reopen schools for in-person teaching and learning to continue. In as much as in-person teaching and learning is necessary, risk and safety interventions are pivotal to making schools safe for teaching and learning. Some

countries that reopened schools adopted certain safety interventions such as physical distance and class size limits (Melnick & Darling-Hammond, 2020). Given these interventions, these countries did not record spikes in corona virus related deaths (Gasibat, Aymen, & Gasibat, 2021; Melnick & Darling-Hammond, 2020). To maximize the benefit of in-person teaching and learning and address the challenges of school closure, multidimensional safety interventions must be deployed to contain and reduce the spread of covid-19 pandemic among school children. These multidimensional safety interventions include, physical and social distancing, sanitizing practices, minimal class sizes, wearing of nose/face mask, hand washing, and regular temperature checks (Bailey & Hess, 2020; Cahapay, 2020; Gasibat, Aymen, & Gasibat, 2021; Melnick & Darling-Hammond, 2020; Melnick, Darling-Hammond, Leung, Yun, Schachner, Plasencia, & Ondrasek, 2020).

2.1 Physical and Social Distancing

Physical and social distancing is a tripod dimensional strategy to reduce risk of virus transmission: keeping at least six feet distance away from other people, not gather in groups, and stay out of crowded places (Centers for Disease Control and Prevention, 2020). Social distancing has two main components, as identified by the U.S. Centers for Disease Control and Prevention and the World Health Organization: keeping individuals at a safe distance from one another (3 to 6 feet) and reducing the number of people with whom an individual interacts face-to-face. Research findings from past pandemics show that enforced school closures can prevent disease transmission in the context of social distancing measures (Lofgren, Rogers, Senese, & Fefferman, 2008; Ridenhour, Braun, Teyrasse, & Goldsman, 2011; Viner et al., 2020). Countries deployed different strategies to achieve physical and social distancing in schools. Such strategies include remodeling classrooms for students, limiting the number of students attending school in person on a particular day, ensuring adequate gaps between desks occupied by children during a class, and deploying time shifts whereby students of the same standard are attending classes over spread out time frame, reducing class size, keeping students in a stable homeroom class, seating students farther apart with assigned seats, stopping large-scale gatherings such as assemblies and sporting events, and using staggered school schedules so that fewer students attend school at the same time or are congregated in common areas at one time and use of remote learning (Cahapay, 2020).

The first country in Europe to resume in-person teaching and learning was Denmark. Denmark deployed social and physical distancing interventions to curb the risk of transmitting the COVID-19 virus among students. These interventions include reduced class sizes to 10 or 11, use of outdoor play areas and gymnasiums for teaching students in the lower grade, required students to maintain 2 meters (6 feet) of separation in class and recommends, split classes into one or more stable groups (Chiacu, 2020; Hunter & Jaber, 2020; Kingsley, 2020; Melnick & Darling-Hammond, 2020). Practically, teachers handled one or two classes, whilst support staff helped teachers to teach the split classes. Senior high school classrooms were used to accommodate students in the lower grades of school because students in the early grades reopened before students in the higher grade (Kingsley, 2020; Hunter & Jaber, 2020). Also, when students in the higher grade resumed in-person teaching and learning, students sat in their homeroom classes while teachers moved in turns to teach students, except for biology and chemistry classes, which were taught in science laboratories. Norway and Denmark are parallel in terms of the adoption of small class size of 15 and 20 respectively in middle schools. Moreover, two teachers handled a split class (Cahapay, 2020; Melnick et al., 2020). Unlike Denmark, Cahapay (2020) reported that Taiwan schools kept students in a homeroom class with a core teacher, while subject-specific teachers went to teach students when it was time for a specific subject to be taught. This social distancing intervention is consistent with the strategy adopted to combat the spread of the H1N1 outbreak (Yen et al., 2014), this approach to social distancing, combined with Taiwan's classroom suspension procedures helped contain the spread of COVID-19 and reduced social disruption (Viner et al., 20202; WHO, 2020). In addition to maintaining stable homerooms, desks were separated from one another, sometimes using dividers (Cahapay, 2020; Melnick et al., 2020). In Singapore, each class contained about 30 students. This intervention was not a challenge because the classrooms are spacious enough to allow students to be seated 1–2 meters (3–6 feet) from each other (Peng & Ling, 2020). Kindergarteners and grade 2 students sat-together in unchanging clusters. Students in grades 3 and beyond sat in rows arranged like an examination setting (Peng & Ling, 2020). China carried out a similar exercise, however, the practices differ in terms of conditions and situations. Xiao, Leijing and Qun (2020) observed that some schools maintain a class size of less than 30 instead of the 50 students per class which has been the norm. Cahapay (2020) reported that in 2020, Austria, recommended that schools should stagger student attendance to allow enough room for social distancing. Quismorio and Luci-Atienza (2020) reported that schools sent one group of students to school on Monday to Wednesday one week but on Thursday to Friday the following week. In Denmark, arrivals and departures are sometimes staggered by grade, so the children come into school single file, with markings on the ground to show where students should wait as they enter. Katz

(2020) observed that school children in China wear a creative winged hat that provide children cues to exercise a meter away from their colleagues (Menlick & Darling-Hammond, 2020).

Penna (2020) observed that during mealtimes guidance generally encourages students to be spaced well apart and stay with homeroom groups; and sets standards for handling food and utensils and cleaning tables. Students are not allowed to share food or do buffet. Typically, students eat at their desks. Also, Penna (2020) reported that some schools in Taiwan and China used dividers to separate students to reduce the transmission of virus, at lunchtime. According to Baharudin (2020) some schools in China adopted the split student intervention during lunch. Practically, during lunchtime some students eat at the dining hall in their assigned seats that is spaced apart, whereas other students eat in their classrooms. Cooking utensils, cutleries and towels are sterilized after each use. Likewise, Singapore adopted assigned seating arrangement in the dining hall for easy contact tracing in the event of a suspected case. However, Baharudin (2020) reported that Norway schools disallowed the use of the cafeteria but suggests that, if students had to eat at the dining hall, one homeroom is permitted at a time. Lunchtime or recess was staggered for different groups of students in schools in Singapore.

Considering adherence to social distancing during playtime, Lin (2020) reported that indoor and inter-school physical activities were temporarily cancelled, whereas outdoor play activities were allowed in small groups under supervision. Taiwan suspended all sports and physical education; however, some schools continue to engage in physical education in China, based upon local school discretion (Lin, 2020). Such schools encouraged play in homeroom groups split into groups. For instance, five students in each group converge in one area under adult supervision to ensure students do not hold one another. Dobrzyn and Iwasinski (2020) reported that schools are advised to put physical partitions and guides, such as tape markers on floors and visual signs on the prominent areas to enforce social distancing in US schools.

2.2 Use of Sanitizer

Scholars agree that schools in Denmark allowed for the use of wipes and hand sanitizer with 70–85% rubbing alcohol in the case that water is not accessible (Melnick & Darling-Hammond, 2020; Penna, 2020). Cleaning is frequent, especially in common areas (Penna, 2020; Melnick & Darling-Hammond, 2020). Taiwan's Central Epidemic Command Center recommended that schools clean and disinfect buses before students resumed from their February vacation and wipe down frequent-touch areas such as doorknobs and desks, every 2 hours (Taiwan Centers for Disease Control, 2020). For instance, Melnick and Darling-Hammond (2020) noted that students in Norway and Singapore, sanitized their own desks every 2 hours. In Norway, water closets and hand basin were sanitized 2–4 times per day. Also, tablets and computers were expected to be sanitized immediately after each use (Melnick & Darling-Hammond, 2020).

2.3 Wearing of Nose/Face Mask

Melnick and Darling-Hammond (2020) reported that kindergarten students wore mask in Taiwan. These nose masks were supplied by the government of Taiwan. The Ministry of Health and Family Welfare, Government of India, has recently issued guidance on wearing masks by children belonging to different age groups. While masks are not recommended for under 5 children, 6–11-year-old children may wear a mask depending upon their ability to use them safely and appropriately and children above 12 years and older should wear masks under the same conditions as adults (Ministry of Health and Family Welfare, Government of India. Guidelines for management of COVID-19 in children below 18 years, 2021). In Austria, masks may be taken off in class (Melnick and Darling-Hammond, 2020).

2.4 Washing of Hands

Most countries recommend students frequently wash their hands every 2 hours (Penna, 2020; Melnick & Darling-Hammond, 2020). Hand washing was one of the simplest most effective COVID-19 control and prevention strategies (Nuwagaba, Rutayisire, Balizzakiwa, Kisengula, Nagaddya, & Dave, 2020). Hand washing with soap can reduce the risk of acute respiratory infections by 16% to 23% (Nuwagaba, Rutayisire, Balizzakiwa, Kisengula, Nagaddya, & Dave, 2020; Rabie & Curtis, 2006). Countries have taken common approaches to handwashing, which are consistent with the U.S. Centers for Disease Control and Prevention's recommendations for frequent handwashing and cleaning of commonly touched surfaces to fight the spread of COVID-19 the virus. In Singapore, the Ministry of Education launched cartoon heroes known as the Soaper 5 to remind students to practice good personal hygiene (Melnick & Darling-Hammond, 2020). Denmark recommended that hand sanitizer with 70–80% rubbing alcohol should be used for handwashing in the case that water is not accessible. When South Korea reopened schools, students were required to participate in online classes related to personal hygiene and health and safety measures the week before they return to school (Melnick & Darling-Hammond, 2020). Droplets containing the virus can spread to hands from coughing, sneezing or from surfaces. If a person

then touches their mouth, nose, or eyes they may become infected. Therefore, handwashing is recommended

to reduce the risk of infection from hand-to-face behaviors or during food preparation or other opportunities for the virus to enter the eyes, nose, or mouth. To reopen schools and operate in a pandemic, school are advised to … ensure frequent handwashing for students and staff (National Academies of Science Engineering and Medicine, 2020, p. 57).

Gasibat, Aymen and Gasibat (2021) observed that hand washing was very critical to school reopen in Denmark. Schools required students to wash their hands hourly. In Austria, China, and Taiwan, students and teachers are required to wash their hands as they enter the building.

2.5 Temperature Testing

Considering that COVID-19 transmission is an 'over-dispersed' phenomenon, frequent temperature checks in schools may be a safety intervention to curb the spread of corona virus (Bilinski, Ciaranello, Fitzpatrick, Giardina, Shah, Salomon, & Kendall, 2021). Tupper and Colijn (2021) observed that a stochastic individual based model in Canada assessing as to what happens when an infected individual attends the class of susceptible individuals demonstrated that only frequent screening of the entire class was able to reduce the size of clusters substantively. This observation points towards frequent testing of school staff and students for early detection of COVID-19 cases, which is essential to prevent outbreaks. However, WHO (2021) recommends that routine temperature or symptom checking in schools should be avoided due to limited evidence on their utility (World Health Organization (2021), rather schools should have access to onsite testing facilities per existing country-specific guidelines (World Health Organization, 2021).

2.6 Ventilation

Ventilation is pivotal to preventing the spread of COVID-19. Therefore, schools should ensure that indoor spaces are well ventilated, and students should spend less time in enclosed settings. Windows and doors should be left open as much as possible to maintain ventilation. Schools should install exhaust fans in classrooms to create negative pressure to stop the potential spread of COVID-19. Schools should switch off air conditions in classrooms. Melnick, and Darling-Hammond (2020) observed that schools in many countries such as the Netherlands, the US, and Denmark taught students outside the classroom in open spaces and under trees. Also, assembly halls and other large spaces within schools were creatively used for learning. Doors and windows were often opened for proper ventilation in schools in Norway and Denmark (Melnick & Darling-Hammond, 2020). Considering the extant literature on strategies deployed in schools to help students adhere to the COVID-19 safety protocols, majority of the studies were carried out in developed countries (Bilinski, Ciaranello, Fitzpatrick, Giardina, Shah, Salomon, & Kendall, 2021; Melnick & Darling-Hammond, 2020; Tupper and Colijn, 2021), little is known about the strategies deployed by schools in developing countries such as Ghana to help students adhere to the COVID-19 safety protocols whilst schools resume in-person learning.

3. Method

This qualitative study adopted a case study research design (Creswell, 2014) to explore strategies that were deployed to enforce adherence to COVID-19 safety protocols among elementary school students as schools resume in-person learning amidst the COVID-19 pandemic. Cohen, Manion, and Morrison (2000) contend that case studies portray what is to be in a particular situation to catch the close-up realities and take the description of participants. Kwabia (2006) asserts that case study is a research work about a single social group, entity or phenomena and its characteristic. Thus, teachers were considered as a social entity and insights were obtained from them regarding strategies that were deployed to ensure elementary school students adhered to the COVID-19 safety protocols.

3.1 Population, Sample, and Sampling Technique

Population for the study consisted of 160 teachers who pursued master's degree in Educational Leadership and Management program at a public university in Ghana in 2021. Fifteen male and fifteen female teachers totaling thirty teachers were purposively sampled for the study (Creswell, 2014; Johnson & Christensen, 2012). The goal was to elicit information from a group considered to be part of leadership and management that can make schools safe for children to learn. Thus, the teachers provided rich and useful information on the strategies deployed to ensure students adhered to COVID-19 safety protocol.

3.2 Data Collection

Face-to-face semi-structured interview was adopted for the study (Creswell, 2014). The researcher adopted a semi-structured interview because she wanted to obtain in-depth information about strategies deployed to enure

students adhered to the COVID-19 safety protocols (Johnson & Christensen, 2012). After receiving ethics approval from the public university, the researcher sought the consent of teachers pursuing a master's degree in Educational Leadership and Management program to participate in the study. After the participants consented to participate in the study, date, and time convenient to the researcher and participants were fixed for interview. A semi-structured interview guide was used to glean data from 30 teachers. Interviews were carried out at the researcher's office whilst observing all the COVID-19 safety protocols. Each interview lasted for sixty minutes. The researcher audio-recorded all the interviews with permission from the research participants (Creswell, 2014; Johnson & Christensen, 2012).

3.3 Credibility and Trustworthiness

Creswell (2014) argue that credibility is where the researcher ascertains the accuracy of the data. Thus, to ascertain the accuracy of the data, member checking was adopted. The researcher emailed the final interview transcript to the participants for them to confirm that their responses were correctly documented (Anney, 2014; Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005). Also, research participants were given the opportunity to review the findings and interpretations (Lincoln & Guba, 1985). In addition, the researcher adopted rich thick description in reporting the findings so that those who seek to transfer the findings to their own site can judge transferability (Brantlinger et al., 2005; Lincoln & Guba, 1985; Nowell, Norris, White, & Moules, 2017). The researcher adopted audit-trail to ensure credibility (Johnson & Christensen, 2012; Maxwell, 1992). Audit trail enabled the researcher to document all the process followed during the research. These processes include the basis for selecting the participants, the site selected for the study, as well as the interview process (Johnson & Christensen, 2012). This process will enable readers to clearly follow the decision trail and judge the dependability of the research (Anney, 2014; Lincoln & Guba, 1985; Nowell, Norris, White, & Moules, 2017; Sandelowski, 1986; Treharne & Riggs, 2014).

3.4 Ethical Considerations

The researcher ensured that the study followed all ethical protocols by obtaining permission from the Ethics Committee for Humanities at a public university in Ghana. Also, participants consented to participate in the study. Participants were informed of their voluntary participation and the freedom to opt out of the study anytime they deemed necessary (Marczyk et al., 2005). Permission was sought from participants to audiorecord each interview session. To ensure privacy and anonymity, participants were assigned pseudonyms in the data report (Cohen et al., 2018).

3.5 Data Analysis

Thematic data analysis method was employed to analyze the data (Braun & Clarke, 2006). First, each recorded interview was transcribed. Second, the researcher read through each transcript several times to immerse herself with the data and familiarize herself with the depth and breadth of the data (Bogdan & Biklen, 2007; Braun & Clarke, 2006; Silverman, 2010) for meanings and patterns across the dataset (Braun & Clarke, 2006). Third, the researcher coded the data by highlighting recurring patterns in the data. Fourth, the researcher developed a category map for each code with short narrative. Fifth, coded data extracts for each theme were reviewed to ensure that they follow a logical pattern (Braun & Clarke, 2006; Nowell, Norris, White, & Moules, 2017). Sixth, themes were defined and named to show how the themes correspond to the research question (Braun & Clarke, 2006). Finally, quotes were extracted from the data set to support the themes that emanated from the data set to aid in understanding specific points of interpretation and demonstrate the prevalence of the themes (King, 2004; Nowell, Norris, White, & Moules, 2017; Saldana, 2013).

4. Results

The study sought to explore the strategies that were deployed to enforce adherence to COVID-19 safety protocols among elementary school students. The findings that emerged from the study are presented below.

4.1 Strict and Compulsory Handwashing Before Entering the School

The study revealed that elementary school pupils practiced handwashing as a safety intervention to contain and reduce the spread of COVID-19. Handwashing using veronica bucket was apparent in a comment from Christabel,

> The school has made it compulsory for all students to wash their hands with soap and water. Students wash their hands first thing before they enter their individual classroom. At the entrance of the school, students are made to wash their hands with soap, under portable running water. Teachers on duty ensure that students wash their hands before they enter the school compound. Students are encouraged to wash their hands regularly.

Dylan too mentioned that,

> There are veronica buckets at the entrance of the school, the cleaning staff are there to ensure that all students wash their hands. The younger children are assisted by these cleaning staff to wash their hands and the older ones are prompted to wash with soap under running water. …

Also, Joseph reported that,

> [Apart] from washing of hands once learners arrive at the entrance of the school, there is also periodic handwashing on the timetable. Learners move according to classes to wash their hands. We have a health team in the school which ensures that all learners adhere to hand washing protocols. They also supervise activities at the areas where we have the Veronica buckets.

Also, Oliver mentioned that "learners are monitored to wash their hands every morning before entering their classrooms. During this pandemic, learners have been taught and guided on how to use veronica bucket to regularly wash their hands with soap". Similarly, Alberta commented that, "younger children are assisted by their care-givers and older children were taught to wash their hands properly".

4.1.1 Provision of Veronica Buckets at Vantage Points on School Premises

Also, to make the strict handwashing effective whilst schools reopen in a pandemic, veronica buckets were mounted at vantage points on school premises. Provision of veronica buckets for students to wash their hands frequently was apparent in comments from the following participants:

Herbert reported that,

> the school made it compulsory for all student to wash their hands with soap and water. As such, veronica buckets filled with water and soap have been provided by the school to ensure that each student wash their hands. Disposal paper towels are provided on daily basis to ensure that students wipe their hands after washing.

Equally, Nicholas commented that,

> in compliance to the COVID-19 protocols, several veronica buckets had been made available in addition to the hand washing sinks available in the school. These buckets are always filled with clean water for handwashing. Soap and tissue paper are always available for handwashing and wiping of hands.

Similarly, Emmanuel reported that

> there are six veronica buckets filled with water for students for handwashing. In addition to this, there are over thirty (30) tap-stands with running water which provide extra opportunity for every member of the school community to wash their hands. Also, there are fourteen basins in the washrooms which also have 24/7 water supply, the school has dug a mechanised borehole which supply water throughout the year without interruption. There is regular supply of liquid soap and tissue paper.

4.2 Social Distancing

Another COVID-19 safety intervention that students adhered to in schools that emerged from the study was social distancing. Further interrogation revealed that suspension of assembly and other social gatherings, shift system, mealtime in class, split class, and desk spacing were deployed to achieve social distancing in elementary schools.

4.2.1 Suspension of Assembly and Other Social Gatherings to Enforce Social Distancing

Suspension of assembly and other social gatherings emerged as one of the interventions deployed to achieve social distancing among elementary school students. Suspension of assembly and other social gatherings was evident in comments from the following participants:

Magdalene said that

> one of the major changes that happened [during this pandemic] is the limiting of morning assembly to classes. There is no mass gathering at the school. Students pray and sing in their separate classes each morning and go through the day … observing social distancing. The classrooms have been arranged to cater for that and the administration ensures that no class goes beyond its capacity.

Also, Alfred reported that,

> currently, all assembly and [other] activities have been put on hold due to the pandemic. Devotions and assemblies are held in the classrooms. On Wednesdays, the service is led by the school chaplain. Students stay in their classrooms while the chaplain uses the Public Address (P.A) system to address the entire

> school.

Similarly, Oliver mentioned that,

> general assemblies have also been put on hold until further notice. School assemblies were suspended so as to observe COVID-19 safety protocol in my school. There are no public gatherings like assembly and worship. Because of the COVID-19 pandemic, the school no longer holds morning and closing assemblies.

Also, Alberta reported that, "mass assembly and general playground activities have been suspended. Due to the pandemic learners no longer gather together for school assembly. Information is passed on to students by means of the public address system". Rashid reported that … the school no longer conducts morning assembly. The school ensures social distancing by cancelling gatherings like assembly and worships". Likewise, Elvis reported that, "large gatherings like morning assembly and worship have been kept in smaller units at class levels to help maintain social distancing". Similarly, Anika mentioned that "due to the limited space … the school has stopped public gatherings, such as assembly, during the pandemic …".

4.2.2 Desk Spacing

Spacing of desks emerged as one of the strategies schools adopted to ensure social distancing. Desk spacing was obvious in a comment from Philip, "desks are far apart than normal. There are spaces between each desk and minimum of twenty-five (25) pupils in each class in my school to ensure social distancing". Also, Kendrick reported that, "all classrooms although have already enough space were spaced out even more". Isabelle mentioned that, due to unavailability of extra classrooms, the Parent Teacher Association built some temporary structures. The sitting arrangement in the classroom has also been readjusted to create enough space to ensure social distancing". Also, Ayisha reported that, "to ensure social distancing, the regular class size has been reduced to ensure a proper spacing within classrooms".

4.2.3 Split Large Class Size for Shift System

Analysis of the data revealed that splitting large class sizes was a strategy adopted to achieve social distancing among elementary school students. Splitting of large class size was highlighted by Anika, "due to the limited space in the classroom, coupled with large students' population, the classes were divided into two for them to comply with safety protocol in terms of social distancing in the classroom". Maureen hinted that the school ensures learners observe social distance by splitting the various classrooms into two with learners running shift.

In the same way, Chanelle reported that the school ensures social distancing in the classrooms, the class sizes have been reduced. Anika too said that,

> social distancing is a COVID-19 protocol that is observed in the school to the latter, this has resulted in the introduction of the shift system that has helped reduce the number of learners per class to a maximum of 30 learners.

Likewise, Stephen expressed that the school ensures learners observe social distance by splitting the various classrooms into two with learners running shift.

4.2.4 Lunchtime in Class to Ensure Social Distancing During Break Time

The study revealed that schools deployed lunchtime in class to avoid overcrowding at the canteen or cafeteria as a measure to achieve social distancing. This practice was illuminated in a comment from Esther, learners are not encouraged to have break time on the compound, they usually have their snack and lunch in their various classrooms. Similarly, Philip revealed that students do not go out … They stay in class during break to eat and take their snacks. Alfred too reported that lunch and snack breaks for the lower grade are now eaten in the classrooms to ensure social distancing.

4.2.5 Lunchtime in Turns at Canteen to Ensure Social Distancing During Break Time

Lunchtime in turns emerged as one of the measures deployed to ensure social distancing among elementary school students. This theme was crystallized in a statement from Michael, lunchtimes are run in turns as the student's population is significant and admitting all students at once will be breaking COVID-19 protocols. Also, Christabel said the students prior to the pandemic had break time at the same time but now each class comes out at a different time … Likewise Philip said that,

> my school has school feeding program so during lunch time, we don't allow all pupils to go for their food at a go. They go on class basis starting from the students in the lowest grade to the upper grade to ensure students observe social distancing.

Equally, Nicholas said that "to observe social distancing during break, we have to go for break on class basis.

We also increased the servers at the canteen".

5. Strict Wearing of Nose Mask

Strict wearing of nose/face mask emerged as one of the strategies schools deployed to combat the spread of covid-19 when schools resumed in-person learning. Strict wearing of nose/face mask was obvious in comments from the following respondents.

Oliver said that,

> there is a strict no-mask, no-entry policy in the school. All individuals are required to wear a mask as long as they are on the school premises. Learners are allowed to take mask breaks as per the teachers' discretion.

Also, Sharon reported that,

> Students are supposed to come to school with their won nose masks. Wearing of masks at all times was also strictly enforced by all staff members. Students were provided extra ones by teachers in case of emergency. Students' whose masks are torn are given new ones.

Nicholas hinted that, "learners were taught how to … wear and how to remove nose mask". Benjamin reported that the school provided … face shields for all students to observe the COVID-19 protocols". Alberta said that "the school insist on age-appropriate mask use. Students from KG to grade 6 are all encouraged to wear their facemasks. Students are asked to wear a face mask and shields at the same time". Also, Joseph said that "the school insists that students wear their nose masks at all times".

6. Discussion

This study sought to explore the strategies that were deployed to enforce adherence to COVID-19 safety protocols among elementary school students. The study revealed that elementary school students practiced handwashing as a safety intervention to contain and reduce the spread of COVID-19. This finding is consistent with previous studies that shows that school children in Denmark, Norway, and Australia were asked to wash their hands every hour to avoid the spread of corona virus (Gasibat, Aymen, & Gasibat, 2021; Melnick & Darling-Hammond, 2020). To make the strict handwashing effective whilst schools reopen in a pandemic, veronica buckets were mounted at vantage points on school premises. Considering that hand washing is the simplest most effective COVID-19 control and prevention strategy (Nuwagaba, Rutayisire, Balizzakiwa, Kisengula, Nagaddya, & Dave, 2020), use of veronica buckets for handwashing could be useful in areas where there is no running water. Adoption of veronica buckets for handwashing is critical to decontamination and combating the spread of viruses and other disease-causing agents instead of several people washing their hands in a common bowl of water which can cause contamination. Enforcement of handwashing was also achieved through supervision from teachers on duty and janitors who ensured that students wash their hands before entering the school. This finding aligns with WHO guidance on measures to practice as countries plan to reopen schools (Gasibut, Aymen, & Gasibut, 2020; WHO, 2020). Another COVID-19 safety intervention that students adhered to in schools that emerged from the study was social distancing. Strategies that were deployed to achieve social distancing in schools included the abolition of social events such as school assembly and entire school gathering for worship. This finding is interesting because it appears that COVID-19 transmission was primarily related to social events linked to school life rather than transmission within classrooms (Zhang et al., 2020). This practice of holding school worship in classrooms instead of the entire school gathering for worship is important because, observing social distancing should not lead to religious disruptions in schools. Also, the shift system, which was deployed as an intervention to achieve social distancing is similar to those of Gasibat, Aymen, and Gasibat's (2020) study that shows that several countries adopted alternate shifts (morning, afternoon) or alternate days as a way or reducing the spread of COVID-19 among students. Adoption of mealtime in class to achieve social distancing is consistent with Melnick and Dalling-Hammond's (2020) findings that revealed that students ate lunch in class in Denmark. The study revealed that schools allowed small groups of students to visit the cafeteria in turns to eat their lunch as a way of observing social distancing. This finding is similar to findings from Coughlan (2020) that shows that micro-groups of students went to the school cafeteria at different times and ate lunch separately. Additionally, splitting large class sizes was a strategy adopted to achieve social distancing among elementary school students. Similar to the findings from Gasibat, Aymen and Gasibat (2021), splitting large classes made it possible to create more spaces in the classroom for desks to be spaced out to ensure social distancing. Nonetheless, this study's finding revealed that some schools were unable to practice social distancing in class due to large class size. Further, strict wearing of nose/face mask as an intervention to control the spread of COVID-19 among elementary school students is consistent with earlier studies that reported that countries that reopened schools amidst the COVID-19 pandemic always practiced the wearing of

nose mask (Ward, 2020; Lyst, 2020; Sharif, 2020; Hamilton, 2020). Nambo de los Santos and Giles Chavez's (2020) argue that adherence is a way of managing the spread of COVID-19 pandemic and making schools safe for learning, therefore, knowledge about interventions deployed to ensure adherence to COVID-19 safety protocols among elementary school students in Ghana is critical to containing the spread of COVID-19 among school children, assuring parents that schools are safe for children to learn, and teachers are safe to teach.

7. Conclusion and Recommendations

Schools must remain open whilst the world experience the corona virus pandemic. However, potential risk of transmission must be reduced to make schools safe for teaching and learning. Consequently, the current study sought to explore interventions that were deployed to help elementary school students adhere to the COVID-19 safety protocols. The study revealed that one of the strategies deployed to enforce adherence to handwashing was strict handwashing before entering the school. Also, interventions that were deployed to enforce social distancing were spacing of desk, mealtime in class, eating meals in turns, suspension of assembly and other social gatherings, split class for shift system. However, this study revealed that some schools could not practice social distancing because of large class size. This challenge calls for building additional classrooms or adopting blended teaching and learning. Considering that this study utilized a qualitative approach, one of the major limitations, is the small sample size (Johnson & Christensen, 2012) which is not a representation of all the elementary schools in Ghana, hence the findings cannot be generalized (Johnson & Christensen, 2012) to all elementary schools in Ghana. Therefore, further research that uses a mixed method approach will aid in making the findings generalizeable to all elementary schools in the country. Another limitation is the use of interviews. Interviewees can be biased in their responses. Therefore, observations should be used to augment interviews to avoid respondent biases (Creswell, 2014). Also, future research should explore how social distancing can be practiced among children during playtime. Additional research that focuses on how students with disability are supported to adhere to the COVID-19 safety protocols is important. Nonetheless, this study fills an important gap in literature and provides relevant information on strategies that can be deployed to ensure adherence to COVID-19 safety protocols among elementary school students.

References

Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies*, *5*(2), 272–281.

Apanga, P. A., & Kumbeni, M. T. (2021). Adherence to COVID‐19 preventive measures and associated factors among pregnant women in Ghana. *Tropical Medicine & International Health*, *26*(6), 656–663. https://doi.org/10.1111/tmi.13566

Apanga, P. A., Lettor, I. B. K., & Akunvane, R. (2021). Practice of COVID-19 preventive measures and its associated factors among students in Ghana. *The American Society of Tropical Medicine and Hygiene*, *104*(2), 526–531. https://doi.org/10.4269/ajtmh.20-1301

Baharudin, H. (2020). *Coronavirus: S'pore contact tracing app now open-sourced, 1 in 5 here have downloaded*. The Straits Times.

Bailey, J. P., & Hess, F. M. (2020). *A blueprint for back to school*. American Enterprise Institute.

Bilinski, A., Ciaranello, A., Fitzpatrick, M. C., Giardina, J., Shah, M., Salomon, J. A., & Kendall, E. A. (2021). *SARS-CoV-2 testing strategies to contain school-associated transmission: Model-based analysis of impact and cost of diagnostic testing, screening, and surveillance*. medRxiv. https://doi.org/10.1101/2021.05.12.21257131

Bin Nafisah, S., Alamery, A. H., Al Nafesa, A., Aleid, B., & Brazanji, N. A. (2018). School closureduring novel influenza: A systematic review. *Journal of Infection and Public Health*, *11*(5), 657–661. https://doi.org/10.1016/j.jiph.2018.01.003

Bogdan, R., & Biklen, S. K. (2007). *Qualitative research for education: An introduction to theory and methods*. Pearson/Allyn and Bacon.

Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V. (2005). Qualitative studies in special education. *Exceptional Children*, *71*(2), 195–207. https://doi.org/10.1177/001440290507100205

Cahapay, M. B. (2020). A Reconceptualization of Learning Space as Schools Reopen amid and after COVID-19 Pandemic. *Asian Journal of Distance Education*, *15*(1), 269–276.

Centers for Disease Control and Prevention. (2020). *Interim clinical guidance for management of patients with confirmed coronavirus disease* (COVID-19).

Centers for Disease Control and Prevention. (2021). *Science brief: Transmission of SARS-CoV-2 in K-12 schools and early care and education programs*. Updated. Retrieved from https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/transmission_k_12_schools.html#schools-cov2-transmission

Coughlan, S. (2020). *How reopened schools in Denmark keep children safely apart*. BBC News. BBC [Internet].

Cowling, B. J., Ali, S. T., Ng, T. W., Tsang, T. K., Li, J. C., Fong, M. W., … Leung, G. M. (2020). Impact assessment of non-pharmaceutical interventions against coronavirus disease 2019 and influenza in Hong Kong: an observational study. *The Lancet Public Health*, *5*(5), e279–e288. https://doi.org/10.1016/S2468-2667(20)30090-6

Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Dobrzyn, E., & Iwasinski, A. (2020). *Here's what schools could look like when they reopen as the COVID-19 pandemic continues*.

Dong, Y., Mo, X., Hu, Y., Qi, X., Jiang, F., Jiang, Z., & Tong, S. (2020). Epidemiology of COVID-19 among children in China. *Pediatrics*, *145*(6), 1–10. https://doi.org/10.1542/peds.2020-0702

Eames, K. T., Tilston, N. L., White, P. J., Adams, E., & Edmunds, W. J. (2010). The impact of illness and the impact of school closure on social contact patterns. *Health Technol Assess*, *14*, 267–312. https://doi.org/10.3310/hta14340-04

Esposito, S., Cotugno, N., & Principi, N. (2021). Comprehensive and safe school strategy during COVID-19 pandemic. *Italian Journal of Pediatrics*, *47*(6), 2–4. https://doi.org/10.1186/s13052-021-00960-6

Gasibat, Q., Aymen, A., & Gasibat, M. (2021). Should schools reopen during the COVID-19 pandemic? *Journal of Medicine*, *22*, 57–59. https://doi.org/10.3329/jom.v22i1.51393

Guthrie, B. L., Tordoff, D. M., & Meisner, J. (2020). *Summary of school re-opening models and implementation approaches during the COVID-19 pandemic*.

Hunter, M., & Jaber, Z. (2020). *Touch a shadow, 'You're it!': New routines as Denmark returns to school after coronavirus lockdown*. NBC News.

Johnson, B., & Christensen, L. (2012). *Educational research: Quantitative, qualitative, and mixed approaches* (4th ed.). Sage.

King, N. (2004). Using templates in the thematic analysis of text. In C. Cassell & G. Symon (Eds.), *Essential guide to qualitative methods in organizational research* (pp. 257–270). London, UK: Sage.

Kingsley, P. (2020). *In Denmark, the rarest of sights: Classrooms full of students*. New York Times.

Lin, W. (2020). *Student death stirs controversy over face mask rule in PE classes*. Global Times.

Lincoln, Y., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage. https://doi.org/10.1016/0147-1767(85)90062-8

Lo Moro, G., Sinigaglia, T., Bert, F., Savatteri, A., Gualano, M. R., & Siliquini, R. (2020). Reopening schools during the COVID-19 pandemic: Overview and rapid systematic review of guidelines and recommendations on preventive measures and the management of cases. *International Journal of Environmental Research and Public Health*, *17*(23), 8839. https://doi.org/10.3390/ijerph17238839

Lofgren, E. T., Rogers, J., Senese, M., & Fefferman, N. H. (2008). Pandemic preparedness strategies for school systems: Is closure really the only way? *Annales Zoologici Fennici*, *45*(5), 449–458. https://doi.org/10.5735/086.045.0508

Maxwell, J. A. (1992). Understanding and validity in qualitative research. *Harvard Educational Review*, *62*(3), 279–299. https://doi.org/10.17763/haer.62.3.8323320856251826

Melnick, H., & Darling-Hammond, L. (2020). reopening schools in the context of COVID-19: Health and safety guidelines from other countries. Policy Brief. *Learning Policy Institute*, 1–13. https://doi.org/10.1177/1609406917733847

National Academies of Science, Engineering and Medicine. (2020). *Reopening K-12 schools during the COVID-19 Pandemic: Prioritizing the Health, Equity, and Communities*. Washington, DC. The National Academies Press. https://doi.org/10.1101/2020.06.05.20123042

Nowell, L. S., Norris, J. M., White, D. E., & Moules. N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, *16*, 1–13.

Nuwagaba, J., Rutayisire, M., Balizzakiwa, T., Kisengula, I., Nagaddya, E. J., & Dave, D. A. (2020). *The era of coronavirus: Knowledge, attitude, practice, and barriers to hand hygiene among Makerere University students and Katanga community residents*.

O'Brien, C. (2020). *Ten pupils per class, hourly handwashing: What reopened schools could look like*. Irish Times.

Onyema, E. M., Nwafor, E. C., Obafemi, F. A., Sen, S., Atonye, F. G., Sharma, A., & Alsayed, A. O., (2020). Impact of coronavirus pandemic on education. *Journal of Education and Practice*, *11*(13), 108–121.

Panda, S., Kaur, H., Dandona, L., & Bhargava, B. (2021). Face mask–An essential amour in the fight of India against COVID-19. *Indian Journal of Medical Research*, *153*, 233–237. https://doi.org/10.4103/ijmr.IJMR_4486_20

Peng, T. C., & Ling, L. E. (2020). *Singapore's education efforts against the global pandemic* [Memo]. Compiled from published media including The Straits Times, Channel News Asia, and the Singapore Ministry of Education's official Facebook page.

Penna, D. (2020). *As coronavirus lockdowns ease, this is how other countries are gradually reopening schools*. The Telegraph.

Rabie, T., & Curtis, V. (2006). Handwashing and risk of respiratory infections: A quantitative systematic review. *Tropical Medicine & International Health*, *11*(3), 258–267. https://doi.org/10.1111/j.1365-3156.2006.01568.x

Rashid, H., Ridda, I., King, C. et al. (2015). Evidence compendium and advice on social distancing and other related measures for response to an influenza pandemic. *Pediatric Respiratory Reviews*, *16*(2), 119–126. https://doi.org/10.1016/j.prrv.2014.01.003

Ridenhour, B. J., Braun, A., Teyrasse, T., & Goldsman, D. (2011). Controlling the spread of disease in schools. *PLoS One*, *6*(12), 16–18. https://doi.org/10.1371/journal.pone.0029640

Saldana, J. (2016). *The coding manual for qualitative research* (3rd ed.). Sage Publication

Taiwan Centers for Disease Control. (2020). *Government agencies working in unison to ensure proper cleaning and disinfection procedures for the upcoming school semester*.

Treharne, G. J., & Riggs, D. W. (2014). Quality in qualitative research. In P. Rohleder & A. Lyons (Eds.), *Qualitative research in clinical and health psychology* (pp. 57–73). London, England: Palgrave. https://doi.org/10.1007/978-1-137-29105-9_5

Tupper, P., & Colijn, C. (2021). COVID-19 in schools: Mitigating classroom clusters in the context of variable transmission. *PLoS Computational Biology*, *17*(7). https://doi.org/10.1371/journal.pcbi.1009120

Viner, R. M., Russell, S. J., Croker, H., Packer, J., Ward, J., Stansfield, C., … Booy, R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: A rapid systematic review. *The Lancet Child & Adolescent Health*, *4*(5), 397–404. https://doi.org/10.1016/S2352-4642(20)30095-X

Wang, C. J., Ng, C. Y., & Brook, R. H. (2020). Response to COVID-19 in Taiwan: big data analytics, new technology, and proactive testing. *Jama*, *323*(14), 1341–1342. https://doi.org/10.1001/jama.2020.3151

World Health Organization (2021). *Schooling during COVID-19*. Recommendations from the European Technical Advisory Group for schooling during COVID-19. Retrieved from https://apps.who.int/iris/bitstream/handle/10665/342075/WHO-EURO-2021-2151- 41906-59077-eng.pdf

Xiao, Z., Leijing, H., & Qun, Z. (2020, March 30). *Xinhua Headlines: Schools begin to reopen in China amid strict measures*.

Zethembe, M. (2020). A literature review of e-learning and e-teaching in the era of COVID-19 pandemic. *International Journal of Innovative Science and Research Technology*, *5*(10), 588–597.

Zhang, J., Litvinova, M., Liang, Y., Wang, Y., Wang, W., Zhao, S., … Ajelli, M. (2020). Changes in the contact patterns shape the dynamics of the COVID-19 outbreak in China. *Science*, *368*(6498), 1481–1486. https://doi.org/10.1126/science.abb8001