Towards prevention of COVID-19 among children in Ghana: Parents’ views about children wearing nose masks in public gatherings

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ABSTRACT

Objectives: The authors examined parents’ views about children nose-masking in public gatherings in Ghana between January and May 2021.

Study design: This is exploratory sequential mixed methods study comprising qualitative and quantitative components.

Methods: Four hundred and thirty-nine parents were interviewed using author-developed structured questionnaires and interview guides in a public University in Ghana. Ten respondents in the company of at least three children and of high academic status were further interviewed in-depth to obtain some qualitative information on the research topic. All interviews were conducted in English. Quantitative data were analyzed using Statistical Package for Social Sciences version 20 whiles qualitative data were analyzed thematically.

Results: In Ghana, various types of nose masks are used in public gatherings. Profiles of respondents show that females (89%) with higher educational attainments (69%) supported children’s nose masking. Mothers (91%) affirmed the relevance of nose masking by children aged 0–15 years as against 30% of male respondents who did not know the importance of nose masking among this age group. A strong Linear female correlation (0.018) backed by positive qualitative responses by mothers supported children’s nose masking. A significant positive correlation (0.042) was also observed between respondents’ educational attainment and perceptions of children nose masking. The authors further observed that materials used for producing children’s nose masks and duration of wearing as key parental concerns.

Conclusions: There is an urgent need by public health institutions for risk communication on the safety of masks for children, their efficacy in preventing COVID-19 infection as well as seeking collaborations with relevant nose mask producers to design appropriate child-friendly nose masks to ensure compliance for child safety.

1. Background

The World Health Organization (WHO) declared the 2019–2020 coronavirus outbreaks a pandemic of Public Health Emergency and International Concern [1], following the outbreak of the Coronavirus Disease (COVID-19) in 2019 and the subsequent global spread [2]. As part of WHO’s measures to contain the disease at the international and national levels, various safety measures including the correct and consistent use of nose mask has been recommended by the World Health Organization (WHO) as one of the preventive measures against contracting COVID-19 [3]. These measures have become national response strategies in many countries including Ghana [4].

Ghana as a country has since ascribed to the WHO’s safety measures at various public places and social gatherings to contain the spread [5]. Whereas various studies have been done on compliance to the covid-19 safety protocols in transport stations [6], and marketplaces [7] in urban Ghana over the past year, little empirical evidence exists on compliance of the covid-19 safety protocol in Academic institutions in Ghana with a specific focus on awareness and use of nose mask among children aged 0–15 years. The main aim of this study is therefore to examine parents’ views and compliance to wearing nose masks particularly by children on the campus of a public university in Ghana. In relation to this, the study further examined respondent’s knowledge about types of nose masks used to prevent covid-19 infection in children, sources, importance to

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preventing covid-19 infection among children, children’s ability to comply with nose masking, as well as some challenges encountered by parents in ensuring that children wear the nose masks as a safety measure. The findings of the study will inform Public Health policy and program decisions that will prevent the spread of the disease.

2. Methods

2.1. Study area

The study was conducted at multiple locations of public gatherings (i.e. administration blocks, lecture halls, churches, markets, hospital and recreational centers) on the Winneba campuses of the University of Education, Winneba (UEW). The University of Education, Winneba was established in 1992 with a mandate to train educationists. The University is divided into satellite campuses across Ghana and has a current student population of 59,916. Administratively, UEW operates a centralized system headed by a Vice-Chancellor [8]. The University of Education, Winneba has other modules of admissions (matured student admission, sandwich, weekend, and evening school admissions) in addition to the regular admissions. Such modules of admissions and the work environment attract large numbers of parents who were the target population for the study. The choice of a tertiary institution was purposive and based on the assumption that, parents found in an academic environment are usually expected to be highly educated and abreast with current affairs, (in this particular case issues related to COVID-19 prevention using nose mask) at the local, national and international cycles. Multiple locations of public gatherings were however chosen for data collection to observe nose-masking behaviours of children at various settings and parents’ perceptions for compliance in these settings. The University of Education, Winneba was however chosen for the study because of it being one of the public tertiary institutions in Ghana with a unique mandate for education. UEW, was also a more convenient setting for the researchers who are based in Winneba in order to avoid traveling to other possible settings for the study to avoid a perceived risk of being exposed to COVID-19 during long distance traveling for the fieldwork.

2.2. Study design

The study design was an adopted exploratory sequential mixed methods design of qualitative and quantitative components [9] using both structured questionnaires and in-depth interview guides that were developed by the authors purposefully for this study. This design was characterized by an initial quantitative phase of data collection and analysis, followed by a phase of qualitative data collection and analysis, with a final phase of linking the two data sets to provide answers to the research questions in a more comprehensive and complete manner. The research instruments (questionnaires and in-depth interview guides) were pretested among parents on the North campus of the university who were not part of the final study for validity and reliability (Appendix 1 and 2).

2.3. Study population and sample size

The study population comprised parents on the three campuses (North, South, and Central) of UEW between January and May 2021 when the study was conducted. To select participants for the study, a purposive sampling technique was used to identify parents who were found in the company of at least one child at the study location. The physical presence of children used as an inclusion criterion was to authenticate a claim of parenthood so as to minimize the likelihood of false responses/claims. Because the population of such parents could not be predetermined prior to data collection for sample size estimation, the authors adopted a survey approach where every parent in the eligibility criteria set for participation in the study was contacted. This yielded five hundred and two (502) potential respondents. Out of this figure, four hundred and thirty-nine (439) parents consented to participate in the study hence were used for the quantitative part of the study. Ten (10) respondents (3) of professorial status, (3) senior lecturers, and (4) senior administrators in the company of at least three (3) children were purposively selected due to their perceived high level of educational background for further in-depth interviews to obtain some qualitative information on the research topic from an academic perspective. The participants for the in-depth interviews were a mixture of those who supported or opposed nose masking among children. They comprised six (6) females three (3) of each group either supported or disagreed with nose masking by children and four (4) males comprising two groups of those who supported or disagreed with nose masking by children.

3. Data collection procedure

Data was collected from identified parents found on the three campuses (North, South, and Central) of UEW between January and May 2021. Two field assistants supported the data collection. The interviews were conducted in English and lasted for about 30 min.

3.1. Data analysis

The quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20 and presented in tables while the qualitative data were analyzed using the thematic analysis approach. The documented responses were organized, coded, and managed manually. A list of code labels was created and a series of categories for the main themes that emerged were developed.

3.2. Ethical considerations

The University of Education, Winneba gave the ethical approval and permission for the study (DAA/A.1/A. A./Vol.4/29). Permission was also obtained from all respondents prior to data collection.

4. Results

Table 1 presents the background characteristics of the respondents. The majority of the respondents were females (89%), had tertiary education (69%), had at least one child (40%) of about 1–3 years of age (39%), and in primary school (44%).

In Table 2, the Gender of respondents and the question ‘Do you think it is important for children (0–15 years) to wear nose masks during the COVID-19 pandemic in Ghana?’ was cross-tabulated to examine the gender dimensions to the responses to this question. The majority of respondents being females (91%) responded positively to affirm the relevance of nose masking among their young children aged 0–15 years as against 30% of the male respondents who did not know the importance of nose masking among this age group of children.

The association between the gender of respondents and perception of the importance of nose masking among children aged 0–15 years were examined using Chi-Square Tests. A strong Linear-by-Linear association/Correlation (0.018) was observed in relation to this in support of female views of nose masking among children (Tables 3 and 4).

There were also some significant positive correlations (0.042) between respondent’s educational attainment and their perception of the importance of nose masking among children aged 0–15 years (Table 5).
5. Qualitative data

The qualitative data obtained were grouped into the following main themes and subthemes to ensure a focused discussion of key findings.

### Table 3: Association between gender of respondents and perception of importance of nose masking among children age 0–15 years.

| Chi-Square Tests | Value | df | Asymptotic Significance (2-sided) |
|------------------|-------|----|----------------------------------|
| Pearson Chi-Square | 6.066<sup>a</sup> | 2 | .048 |
| Likelihood Ratio | 4.646 | 2 | .098 |
| Linear-by-Linear Association | 5.624 | 1 | .018 |
| N of Valid Cases | 431 | |

<sup>a</sup> 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.02.

### Table 4: Correlations between gender of respondents and perception of importance of nose masking among children age 0–15 years.

| Correlations | Gender of respondent | Do you think it is important for children (0–15 years) to wear nose mask during COVID-19 pandemic in Ghana? |
|--------------|----------------------|-------------------------------------------------|
| Pearson Correlation | 1 | -.114* |
| Sig. (2-tailed) | .018 |
| N | 431 | 436 |

*Correlation is significant at the 0.05 level (2-tailed).

5.1. Relevance of nose masking by children

The relevance of nose masking by children was one of the key issues raised during the in-depth interviews. Some respondents indicated that:

‘I always drop my children at school and pick them home myself after school. So why should I worry these poor kids with nose masking’ (Female parent- Lecturer)

‘I thought it’s not necessary for such young children to wear nose masks in public since they are always with their parents ……’ (Female parent- graduate student).
perception of importance of nose masking among children age 0–15 years.

| Correlations                                    | Highest educational attainment (Pearson)                  | Do you think children (0–15 years) are capable of wearing a nose mask in Ghana (Pearson) |
|------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Highest educational attainment                  | 1                                                        | -.099*                                                                                 |
| Sig. (2-tailed)                                  | .042                                                     | .042                                                                                    |
| N                                               | 435                                                      | 424                                                                                    |
| Do you think children (0–15 years) are capable of wearing a nose mask in Ghana? | Pearson -.099*                                          | 1                                                                                      |
| Sig. (2-tailed)                                  | .042                                                     | 1                                                                                      |
| N                                               | 424                                                      | 428                                                                                    |

* Correlation is significant at the 0.05 level (2-tailed).

‘We are just worrying these poor children ……… leave them alone and focus on the adults …………’ (Male parent- Lecturer)

5.2. Safety of nose masking by children

Concerns about the child’s safety in the nose mask were other key issues raised. Some respondents held the view that:

‘Even we adults find it difficult to breathe wearing nose mask, are we not just going to suffocate our children to death with this child nose masking issue? (Male parent- Lecturer).

‘I don’t think it’s very safe for children to wear nose mask to school …….. they may rather end up harboring infection ……. and suffer from respiratory tract infections—————’ (Female parent -Graduate Student).

‘I don’t see anything wrong with our children wearing nose masks to prevent covid infection. Ever since I started encouraging my children to wear nose masks to school, there has been a drastic reduction in cough and common colds among them compared to the past … ’ (Female parent- Lecturer)

5.3. Types of materials suitable for making children nose masks

The respondents also raised concerns about the type of suitable materials to be used for nose mask production. Some of them stated that:

‘In as much as we have to encourage our children to wear nose mask for protection in public, I think we should also be mindful of the type of materials that are safe for children masks’ (Female parent- Lecturer).

‘Some of the nose masks on the market for children are very attractive, but I can’t tell if they have been certified by any quality assurance institutions in Ghana as safe for children to use This is something the universities should research into to advise the government’ (Male parent- Lecturer).

5.4. Frequency of changing nose masks for children

The issue about the frequency of changing nose masks for children was likened to various scenarios including changing diapers. Whereas there were no specific timelines for changing nose masks that children were in public, some of the respondents indicated that:

‘I think just like diapers, nose masks that our children were in public should be changed as soon as they become visibly dirty or wet’. This means we parents need to make provisions for changing them as and when necessary. (Female parent- Lecturer).

‘The issue about changing children’s nose mask should be commonsense based if we want the best for our children’ (Female parent- Lecturer).

5.5. Correct and consistent use of nose masks by children

The respondents were quite concerned about whether children will be able to keep their masks on in public at all times. It was clearly indicated that this is a very big challenge that undermines parents’ efforts to ensure that children wear theirs correctly and consistently after leaving home. Some of the views were:

‘Although we can’t guarantee the correct and consistent use of nose masks by our children when they are not with us, at least we have to keep educating and training them hoping they will grow to do the right things’. (Female parent- Lecturer).

‘ ……..this is a big challenge but we will get there someday’ (Male parent -Graduate Student).

‘Let’s pray covid is over soon and all these issues will become a thing of the past’ (Female parent- Lecturer).

6. Discussion

The use of nose masks has over the years been an integral part of comprehensive measures to suppress transmission of infectious disease to save human lives [10]. Consequently, nose masking has become one of the preventive measures adopted by WHO to contain the spread of COVID [10]. Although the use of a nose mask alone has been reported as not sufficient to provide an adequate level of protection against COVID [10,11]. Recent studies on nose masking among health workers [12] and social welfare workers [13], have shown significant levels of compliances to nose masking. The empirical literature on nose masking in institutions of higher learning (tertiary institutions) has been inadequately explored despite pockets of evidence that educational attainment is significantly associated with mask-wearing behaviors [13].

During the outbreak of COVID-19 in Ghana, various types of nose masks were publicly available as there was a national presidential directive to enforce the wearing of nose masks in public gatherings. This directive was however received by the populace amidst many discussions for and against the use of nose masks by children. Those who were in favour of nose masking by children argued from the child protection point of view but were also concerned about what type of material is suitable for producing children’s nose masks and which masks offer the maximum protection against COVID-19 infection. In this study, the authors observed that there remain unclarified concerns about the suitability of materials used for producing children’s nose masks, duration of wearing the mask, and the child’s safety whilst wearing the nose mask. The backdrop on this observation informed the current study.

The significant findings [females (89%), tertiary education (69%)], associated with the background characteristics of the respondents’ shows that females with higher educational attainments are more likely to comply with nose masking behaviors to protect their families and significant others. This observation was further confirmed as the majority of respondents being females (91%) responded positively to affirm the relevance of nose masking among their children aged 0–15 years as against 30% of the male respondents who did not know the importance of nose masking among this age group of children. There was also a strong Linear-by-Linear association/correlations (0.018) backed by positive qualitative responses to support these findings. Consistent with this finding is that of a previous study, which indicates that females tend to better comply with COVID-19 prevention guidelines [14].
The significant positive correlations (0.042) observed between respondent’s educational attainment and their perception of the importance of nose masking among children age 0–15 years indicates the relevance of using people particularly mothers with higher educational attainment as agents to prevent further spread of COVID-19 at the community level. Whereas the relevance of higher educational attainment in containing the spread of COVID-19 through adherence to nose masking cannot be over emphasized, other studies [15,16] that examined compliance to COVID-19 prevention measures at the community level using the health belief model, argued that there are other Intrapersonal factors such as health beliefs and risk perception of diseases that could impact on nose masking. This dimension of perception could be relevant to policy and program decisions on enforcing nose masking among all age groups since empirical evidence from this study suggested that some respondents even with higher educational attainment and regardless of their gender did not see the relevance of nose masking among children nor any level of risk associated with the children not wearing nose mask in public places. Various proposals and recommendations have been made at the international and national levels regarding the guidelines for producing safer nose masks for all age groups [17]. A study published in the European Journal of medical research however reported ‘weak evidence for wearing a face mask as an efficient hygienic tool to prevent the spread of a viral infection.’ [18].

6.1. Conclusion

The perceptions and views of parents on nose masking by children in the study area is generally positive, particularly among females. What is required however is urgent need for risk communication on the safety of masks for children, their efficacy in preventing COVID-19 infection as well as education on the choice of suitable materials for children’s nose masks, appropriate use, and disposal of the masks to ensure child safety and effective compliance to use. Nose mask producers should therefore collaborate with relevant public health institutions to design appropriate child-friendly nose masks for the Ghanaian market.

6.2. Limitation of the study

The Scope of this study was broadly a limitation as it only focused on a cross-section of parents in an academic environment in Ghana within a specific university (UEW). Although the authors have no intended bias in purposive sampling of respondents, due to a lack of random sampling, the purposive sampling used may pose some inadvertent selection bias. Expansion of the research setting and the target population could have provided some further diversity in the research findings. Nevertheless, the findings of the study provide valuable background information for public health education on nose making by children. The finding also provides the basis for further research in this area to inform public health policy and programme decisions.

Ethical approval

The university of Education, Winneba approved the study.

Consent to participate and for publication

All respondents gave voluntary verbal consent prior to data collection.

Availability of supporting data

The raw data collected is available upon reasonable request from the corresponding author.

Competing interests

The authors declared that they have no competing interests.

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Authors’ contributions

The first author (F.Y.G) conceptualized the study, designed the study and developed the concept note. The second author (R.Q) participated in data collection and analysis. Both authors developed the study report and finalized it for submission.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhip.2022.100265.

Abbreviations

COVID-19 Coronavirus Disease
SPSS Statistical Package for Social Sciences
UEW University of Education, Winneba
WHO World Health Organization

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