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Use of Nose Masks Among Children During The COVID-19 Pandemic: Views of Parents in an Academic Environment in Ghana

Quarcoo R[1] and Gbagbo FY[2*]

[1]University of Education, Winneba, Faculty of Home Economics Education, Department of Clothing and Textiles Education, Winneba, Central Region, Ghana

[2]University of Education, Winneba, Faculty of Science Education, Department of Health Administration and Education, Winneba, Central Region, Ghana

*** Corresponding Author**

Fred Yao Gbagbo, University of Education, Winneba, Faculty of Science Education, Department of Health Administration and Education, PO Box 25, Winneba, Central Region, Ghana, West African, E-mail: gbagbofredyao2002@yahoo.co.uk

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Abstract

Background: During the outbreak of Coronavirus Disease (COVID-19) in Ghana, various types of nose masks were publicly available following a presidential directive to enforce the wearing in public gatherings. In this study, the authors examined parents' views about children's nose masking on a public university campus in Ghana.

Methods: The study was conducted between January and May 2021 in a public University in Ghana. Using a mixed-method design with a purposive sampling technique, four hundred and thirty-nine (439) parents were interviewed using a structured questionnaire. Ten (10) respondents in the company of at least three (3) children were further interviewed in-depth to obtain some qualitative information on the research topic. All interviews were conducted in English. The quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20 whiles the qualitative data were analyzed thematically.

Results: Profiles of respondents show that females (89%) with higher educational attainments (69%) supported children's nose masking compared to the males although weak, there were some Linear correlation (0.018) backed by positive qualitative responses by females to support children's nose masking. A similar weak significant positive correlation (0.042) was also observed between respondents' educational attainment and perceptions of children aged 0-15 years nose masking. However, the authors observed the suitability of materials used for

producing children's nose masks, duration of wearing, and child's safety in the nose mask were key parental concerns.

Conclusions: The concerns raised by the parents on children's nose masking call for education on the choice of suitable materials for children's nose masks, appropriate use, and disposal of the masks is required to ensure child safety and effective compliance. The Clothing and Textile departments in the various tertiary institutions in Ghana should therefore collaborate with relevant public health institutions to design appropriate nose masks for Ghanaian markets.

Keywords: Academic-environment; Children; COVID-19; Ghana; Nose-masking; Parents

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

Background

The World Health Organization (WHO) declared the 2019–2020 coronavirus outbreaks a pandemic of Public Health Emergency and International Concern, (WHO, 2020) [1] following the outbreak of the disease in the Wuhan city in Hubei province of Central China 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 Coronavirus Disease (COVID-19 (WHO, 2020a) [1]. These measures have become national response strategies in many countries including Ghana [3].

Ghana as a country has since ascribed to the WHO's safety measures at various public places and social gatherings to contain the spread [4]. Whereas various studies have been done on compliance to the covid-19 safety protocols in transport stations, [5] and marketplaces [6] 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 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 policy and program decisions that will prevent the spread of the disease.

Methods

Study Area

The study was conducted on the Winneba campuses of the University of Education, Winneba (UEW). According to the University of Education, Winneba (2017) [7], UEW 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 [7]. 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 attract large numbers of working mothers and adults who may have reproductive intentions.

Study design

The study adopted a cross-sectional, mixed-method study design, using both structured questionnaire (Appendix 1) and an in-depth interview guide (Appendix 2) that were developed by the authors for data collection.

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. Purposive sampling was used to select and interview only parents who were found in the company of at least one child at the study location. Four hundred and thirty-nine (439) of such parents were used for the quantitative part of the study. Ten (10) respondents in the company of at least three (3) children were further interviewed in-depth to obtain some qualitative

information on the research topic. The participants for the in-depth interviews were mainly 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.

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 30minutes

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.

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.

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%).

Table 1: Background Characteristics of respondents

Variable	Frequency	Percentage (%)
Gender		
Male	44	10.0
Female	390	88.8
Missing	5	1.1
Total	**439**	**100.0**
Highest educational attainment		
No formal education	17	3.9
Basic school	28	6.4
Secondary school	82	18.7
Tertiary	302	68.8
Other	6	1.4
Missing	4	0.9
Total	**439**	**100.0**
Number of children		
None	0	0
1 child	177	40.3
2 children	137	31.2
3 children	83	18.9
4+ children	42	9.6
Total	**439**	**100.0**
Average Age(s) of Child/ren (0-15years)		
<1year	15	3.4
1-3	170	38.7
4-7	131	29.8
8-11	85	19.4
12-15	38	8.7
Total	**439**	**100.0**
Current class of Child/Children		
Not in school	10	2.3
Crèche	85	19.4
Nursery	48	10.9
Kindergarten	63	14.3
Primary school	191	43.5
JHS	38	8.7
Missing	4	0.9
Total	**439**	**100.0**

Source: Field data, 2021

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.

Table 2: Crosstabulation of Gender of respondent and 'Do you think it is important for children (0-15 years) to wear nose mask during COVID-19 pandemic in Ghana'

	Do you think it is important for children (0-15 years) to wear nose mask during COVID-19 pandemic in Ghana					
			Yes	No	Don't know	Total
Gender of respondent	Male	Count	34	7	3	44
		Expected Count	38.3	4.7	1.0	44.0
		% within Do you think it is important for children (0-15 years) to wear nose mask during COVID-19 pandemic in Ghana	9.1%	15.2%	30.0%	10.2%
	Female	Count	341	39	7	387
		Expected Count	375.0	46.0	10.0	431.0
	Total	% within Do you think it is important for children (0-15 years) to wear nose mask during COVID-19 pandemic in Ghana	100.0%	100.0%	100.0%	100.0%

Source: Field data, 2021

The association between the gender of respondents and perception of the importance of nose masking among children age 0-15 years were examined using Chi-Square Tests. A weak 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).

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[a]	2	.048
Likelihood Ratio	4.646	2	.098
Linear-by-Linear Association	5.624	1	.018
N of Valid Cases	431		
a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.02.			

Source: Field data, 2021

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 (0-15years) to wear nose mask during COVID-19 pandemic in Ghana?
Gender of respondent	Pearson Correlation	1	-.114*
	Sig. (2-tailed)		.018
	N	434	431
Do you think it is important for children (0-15 years) to wear nose mask during COVID-19 pandemic in Ghana	Pearson Correlation	-.114*	1
	Sig. (2-tailed)	.018	
	N	431	436
**. Correlation is significant at the 0.05 level (2-tailed).*			

Source: Field data, 2021

Although weak, 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 age 0-15 years (Table 5).

Table 5: Correlations between highest educational attainment of respondents and their perception of importance of nose masking among children age 0-15 years

Correlations			
		Highest educational attainment	Do you think children (0-15 years) are capable of wearing a nose mask in Ghana
Highest educational attainment	Pearson Correlation	1	-.099*
	Sig. (2-tailed)		.042
	N	435	424
Do you think children (0-15 years) are capable of wearing a nose mask in Ghana?	Pearson Correlation	-.099*	1
	Sig. (2-tailed)	.042	
	N	424	428
*. *Correlation is significant at the 0.05 level (2-tailed).*			

Source: Field data, 2021

The qualitative data obtained were grouped into main themes and subthemes (Table 6). The subthemes were general questions emanating from the main themes that respondents sought for clarification.

Table 6: Qualitative data groupings

Main themes	Subthemes
1. Relevance of nose masking by children	Is it very relevant for children (0-6) to were nose mask?
2. Safety of nose masking by children	How safe is nose masking children (0-6)?
3. Types of materials suitable for making children nose mask	Which is the best material for making children nose mask?
4. Frequency of changing nose masks for children	How often should children nose masks be changed?
5. Correct and consistent use of nose masks by children	How can children be helped to always keep their nose mask on?

Source: Field data, 2021

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 t- 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 - graduate student).

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

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 - Lecturer).

'I don't think it's very safe for children to were nose mask to school……. they may rather end up harboring infection…… and suffer from respiratory tract infections------' (Female -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 - Lecturer)

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 - 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 - Lecturer).

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- Lecturer).

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

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 - Lecturer).

'……this is a big challenge but we will get there someday' (Male -Graduate Student).
'Let's pray covid is over soon and all these issues will become a thing of the past' (Female - Lecturer).

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 [8]. Consequently, nose masking has become one of the preventive measures adopted by WHO to contain the spread of COVID [8]. Although the use of a nose mask alone has been reported as not sufficient to provide an adequate level of protection against COVID [8,10] recent studies on nose masking among health workers [9] and social welfare workers, (Barceló, and Sheen, 2020) 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 [11].

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 [15].

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 [12] 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 [13]. 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' [14,16,17].

Conclusion

The perceptions and views of parents on nose masking by children in an academic environment in Ghana are generally positive, particularly among female mothers. What is required however is 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. The clothing and textile departments in the various tertiary institutions in Ghana should therefore collaborate with relevant public health institutions to design appropriate child-friendly nose masks for the Ghanaian market.

Declarations

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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