ORIGINAL RESEARCH ARTICLE

Are Parents Willing to Vaccinate Their 6 to 11 Year Old Children Against COVID-19? A Community Based Study in Murshidabad, India

Prithwish Bandyopadhyay[1], Syed Shayeb Mahmud[2], Anirban Bhattacharyya[3], Ritu Ghosh[4*], Monojit Das[5]

[1,2,3,4,5]Murshidabad Medical College, Berhampore, West Bengal, India

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ABSTRACT

Context/Background: The future of Corona virus disease is still uncertain due to viral mutations. Immunization against COVID-19 has not yet been introduced for children aged 6-11 years. Parents are instrumental for the success of any immunization programme, being the chief decision makers for their wards. The study aims to assess the perceptions of parents regarding COVID 19 vaccination among children aged 6-11 years in an urban slum of Murshidabad and identify the factors influencing such perceptions among them.

Methodology: A cross sectional study was conducted among 106 parents in a slum area of Murshidabad, West Bengal. Participants were interviewed using a validated WHO Vaccine Hesitancy Scale (VHS). Bivariate and multivariable analysis were done using Chi square test and binary logistic regression respectively.

Results: Majority of the study subjects instead of parents were unlikely to vaccinate their children against COVID-19. The major concern centered around the safety (73.5%) of the vaccine. Higher level of education (p=0.003), previous history of COVID-19 infection in the family (p=0.004) and having a children aged between 6-8 years (p=0.006), influenced such perceptions, with the latter being the single most important predictor (AOR 4.126, P=0.007).

Conclusions: The likelihood of parents to vaccinate their child was found to be low. This underscores the importance of an effective communication strategy when such programme will be rolled out.

Key-words: Covid-19 vaccination, children, parents, perception, vaccine hesitancy

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***Correspondence:** Ritu Ghosh (Email: ritughoshchowdhury@gmail.com)

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INTRODUCTION

Corona virus disease 2019 (COVID-19) caused a significant burden on health and economy across the globe.[1] Globally, around 0.4% of deaths occurred due to COVID-19 in children and adolescents under 20 years of age out of which 58% were among adolescents aged 10-19 years and 42% were children between 0-9 years of age.[2] Vaccination is found to be one of the most important and effective public health interventions in restricting the spread of COVID-19 infection, protecting the vulnerable population and reducing the number of deaths in all age-groups, including children. COVID-19 illness indirectly affected child health by disrupting services like immunization, antenatal care which resulted in increase in childhood mortality.[3] Though Children infected with COVID-19 possess lower risk of hospitalization and life-threatening complication, various public health authorities like WHO and CDC recommended vaccination for children.[4]

The future of Corona virus disease is still uncertain, given the development of mutant strains. Vaccination of adults and adolescents served as an effective public health intervention to combat the pandemic.[5] However, immunization against COVID-19 has not yet been introduced for school going children aged 6-11 years. Despite low mortality rate due to COVID-19, vaccination in this age group might help in maintaining a high level of population immunity against the disease. Vaccine hesitancy is well documented among parents for their children for routine immunization.[4] As parents are the major decision makers for their children it is important to assess their perception regarding the COVID-19 vaccination.

There is paucity of literature on parental perceptions regarding Covid 19 immunization among school going children India. There is dearth of community-based studies regarding this in Eastern part of India including West Bengal. Hence the study was conducted to assess the perceptions of parents regarding COVID 19 vaccination among children aged 6-11 years residing in an urban slum of Murshidabad, west Bengal and to identify the factors influencing such perception among them.

METHODOLOGY

A community based, cross sectional study was undertaken in the urban slum areas of Gorabazar, Berhampore, Murshidabad between July 2022 to August 2022. The latter is the field practice area of the Department of Community Medicine, Murshidabad Medical College & Hospital, West Bengal. Parents having children of 6-11 years and living in the study area comprised the study population.

Sample Size and Sampling technique: The sample was calculated by using the formula:

$N= (Z_{(1-\alpha/2)}^2 \cdot p \cdot (1-p))/d^2$

Since, similar studies were not available in India during the time of proposal submission to the Ethics Committee, a prevalence of parents 'unlikely to accept COVID-19 vaccination for their children was considered as 50% with an absolute precision of 10%, and 10% non-response rate. The ultimate sample size was estimated to be 106. The study subjects were recruited by consecutive sampling of households until the desired sample size was attained. Only one respondent was considered from each household. If a household did not have an eligible beneficiary, the next household was approached.

Study tool and Data collection: Data were collected by interviewing the study subjects using a predesigned pretested schedule after taking informed consent. Information was sought regarding pertinent sociodemographic variables like age, gender, education, occupation, socioeconomic status, number of children in the family aged between 6-11 years, age of the child, history of COVID-19 infection in the family, COVID-19 vaccination status of parents and likely vaccine hesitancy. Vaccine hesitancy was assessed by the intentions of parents to vaccinate of their child which was evaluated by a 5-point Likert scale where "Very likely or somewhat likely" were coded as "likely to get a COVID vaccine" and "Unsure, somewhat unlikely and Very unlikely" were labeled as "Unlikely to get a COVID vaccine". The perceptions of parents were assessed by World Health Organization's Vaccine Hesitancy Scale (VHS).[6] In this study, 8 items of Vaccine Hesitancy Scale rated on a five-point Likert scale ranging from "Strongly agree" to "strongly disagree". The VHS was translated to vernacular and back translated in English. The questionnaire was assessed for content validity by a group of experts. The content validity index (CVI) was 0.8 & Cronbach's alpha was 0.768 indicating good internal consistency.

Data analysis: Data were analyzed by using SPSS IBM version 20.0. Simple proportions were used for descriptive statistics while Chi square test, binary logistic regression was used for inferential statistics. Goodness of fit was tested by Hosmer Lemeshow test. Odds ratio with 95% confidence interval (CI) were also estimated. $P<0.05$ was taken as the level of significance.

Ethical Consideration: The proposal was cleared by the Institutional ethics committee vide IEC-MSD/MCH/PR/1521/2022/I dated 24.06.22

RESULTS

Socio demographic characteristics: The mean age of the study participants was 20.04 years (± 10.63) with most of them aged between 30-39 years (42.5%). Nearly two-third of the participants were females (65.1%). Most of the subjects (51.0%) were educated above middle school while nearly16% were illiterate. Three-fourth of the participants were skilled & unskilled workers (75.7%). Most of participants belonged to lower middle class (39.6 %). Ma-

jority of the families had a child aged between 6-8 years (69.8%). Nearly 35.8% of the families had a history of COVID-19 infection in the family and 56.6% of the study participants were themselves hesitant to COVID 19 vaccination.

Table 1 shows most of the study participants were somewhat unlikely to vaccinate their child (26.4%), whereas 23.5% were unsure regarding the vaccine.

Figure 1 shows parental perceptions about COVID-19 vaccination. Most of the study participants perceived that COVID-19 vaccine will not be important for their child (61.4%) and getting the vaccine will not protect the child against COVID-19 infection (69.9%). Majority of study participants were concerned about the safety (73.5%) and serious side effect of the vaccine (82.1%).

Table 2 shows factors influencing vaccine hesitancy among study participants. Illiterate parents and those educated above middle school (p=0.00029), having a children aged between 6-8 years (p=0.006), and those without previous history of COVID-19 infection in the family were unlikely to vaccinate their children (p=0.004).

Table 3 shows that age of the children between 6-8 years was the only significant predictor of unlikeliness to administer COVID 19 vaccination to their child. (AOR of 4.126 (95% CI 1.463-11.639, P= 0.007)

Table-1: Distribution of study subjects according to their likelihood to vaccinate their children against COVID -19 (n=106)

Likelihood to vaccinate Children	Participants (%)
Very likely	20 (18.9)
Somewhat likely	21 (19.8)
Unsure	25 (23.6)
Somewhat Unlikely	28 (26.4)
Very unlikely	12 (11.3)
Total	106 (100)

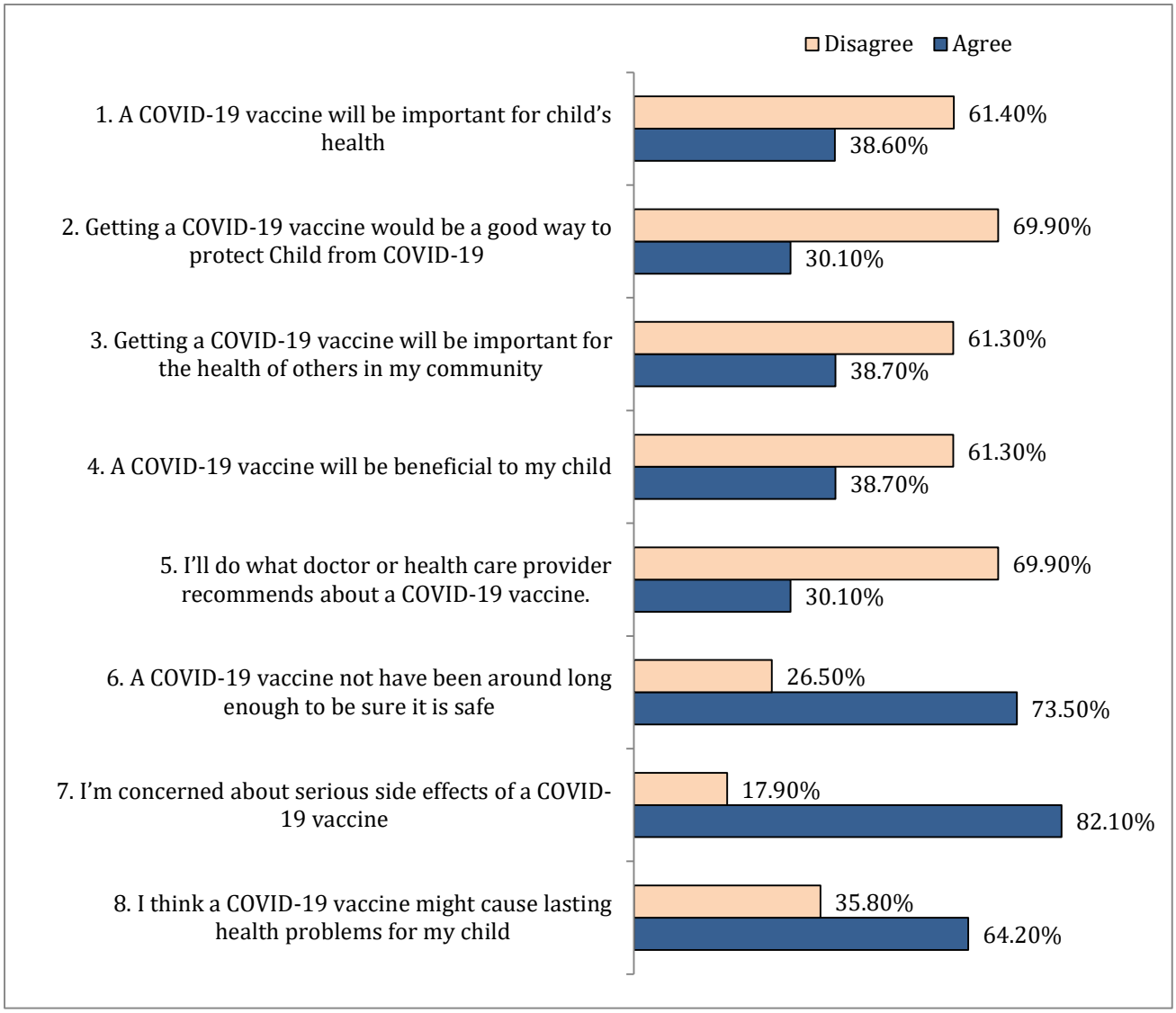

Figure-1: Distribution of study subjects according to their perception to vaccinate their child against COVID-19 (n=106)

Table-2: Factors influencing vaccine hesitancy among study participants (n=106)

Variables	Likely to vaccinate (n=41) (%)	Unlikely to Vaccinate (n=65) (%)	OR (95% CI)	P-value
Age of parent/ respondent (in years)				
18-29 (n=43)	18 (41.8)	25 (58.2)	1.38 (0.4-4.1)	0.326
30-39 (n=45)	14 (31.1)	31 (68.9)	2.21 (0.7-6.7)	
≥40 (n=18)	09 (50.0)	09 (50.0)	1(Ref)	
Gender				
Male (n=37)	14 (37.8)	23 (62.1)	1.05 (0.4-2.4)	0.896
Female (n=69)	27 (39.1)	42 (60.8)	1(Ref)	
Education				
Illiterate (n=17)	05 (29.4)	12 (70.6)	0.76 (0.22-2.5)	0.00029
Middle school and below (n=35)	23 (65.7)	12 (34.3)	0.16 (0.06-0.42)	
Above middle school (n= 54)	13 (24.1)	41 (75.9)	1(Ref)	
Occupation				
Service and self-employed (n=26)	12 (46.2)	14 (53.8)	0.66 (0.2-1.6)	0.368
Skilled & Unskilled worker (n=80)	29 (36.2)	51 (63.8)	1(Ref)	
Socio-economic status				
Upper (n=38)	11 (28.9)	27 (71.1)	1.9 (0.7- 4.7)	0.306
Middle (n=16)	07 (43.8)	09 (56.2)	1.01 (0.3-3.1)	
Lower (n=52)	23 (44.2)	29 (55.8)	1(Ref)	
No. of Children in the family age between 6-11 years				
One (n=71)	27 (38.1)	44 (61.9)	1.08 (0.4-2.4)	0.845
More than one (n=35)	14 (40.0)	21 (60.0)	1(Ref)	
Age of the Child (in years)				
6-8 (n=74)	35 (47.2)	39 (52.8)	1(Ref)	0.006
9-11(n=32)	06 (18.8)	26 (81.2)	4.82 (1.7-13.1)	
History of COVID-19 infection in the family				
Yes (n=38)	23 (60.5)	15 (39.5)	1(Ref)	0.0005
No (n=68)	18 (26.4)	50 (73.6)	4.25 (1.83-9.91)	
Covid-19 vaccination status of Parents				
Vaccine hesitant (n=60)	24 (40.0)	36 (60.0)	1(Ref)	0.75
Fully Vaccinated (n=46)	17 (37.0)	29 (63.0)	1.16 (0.5-2.5)	

Table-3: Multivariable regression of variables associated with unlikeliness to vaccinate among study participants

Variables	Adjusted Odds Ratio (AOR)	95% CI	p-value
Illiterate Parents	1.263	0.711-2.243	0.426
Age of Children 6-8 years	4.126	1.463-11.639	0.007
Positive history of COVID-19 infection in the family	1.957	0.834-4.589	0.123

CI - Confidence Interval

DISCUSSION

A community based, cross sectional study was conducted in a slum area of Berhampore, Murshidabad among parents of children aged between 6 to 11 years with the aim to assess the perception of parents regarding COVID-19 immunization of their children and identify the factors influencing such perception among them.

In our study we found nearly 61% of the respondents were unlikely to vaccinate their children provided a vaccine becomes available. This might be an indirect reflection of possible vaccine hesitancy when the same will be introduced. The finding from our study is congruent with the findings of Padhi et al [4] who reported 67% of the study participants were unlikely to vaccinate their children. Similarly, another study done by Almaliki et al[7] in Saudi Arabia among parents of children aged 5-11 years, found that 61.9% were vaccine hesitant. Fisher et al[8] conducted a study in the United States among parents of children under five years and revealed 68.7% were unlikely to vaccinate their children. In contrary, a web based online survey conducted by Nayak et al[9] in Bengaluru, Chennai and Gurugram, found that nearly 70 % of the parents were likely to vaccinate their children.

In the present study, majority of the parents were unlikely to vaccinate their children because they were concerned about the side effects and safety of the vaccine as the COVID-19 vaccine for adolescent "has not been around long enough to be sure it is safe". Similar observation was noticed in a national survey conducted among parents in Saudi Arabia by Temsah et al[10] and found that more than half of the parents were hesitant about the COVID-19 vaccine as they were not sanguine about its effectiveness, safety, and whether it is essential for their children. Another study conducted in Saudi Arab by Altulaihi et al[11] revealed that lack of information and evidence regarding vaccine was the most common reason for

vaccine hesitancy among parents. Novelty of the vaccine being the most common reason of refusal among parents was found in a study conducted across six countries by Goldman et al[12] which is consistent with our current study. Concern regarding COVID-19 vaccine safety and effectiveness prompted by the novelty and rapid development of the vaccine was found to be associated with vaccine hesitancy by Bell et al[13].

In the present study, the reluctance of parents to vaccinate their child may be attributed to the compromised socioeconomic background of the study participants. Moreover, lower rate of infectivity, hospitalization and mortality of COVID-19 in children in India as well as worldwide might also have accounted for this hesitancy. Sociodemographic factors like illiteracy and higher parental education, parents having children aged between 6-8 years and no previous history of COVID-19 infection in the family were found to be significantly associated with the unwillingness of parents to vaccinate their children. However, the age of children between 6-8 years was the single most important predictor of reluctance for vaccination among parents. This can be explained by the fact that majority (90.5%) did not have a child in the adolescent age group. Only 9.4% of the subjects had a child within the adolescent age group who had been vaccinated against COVID-19. Presence of children in that age group might have altered parental perceptions regarding the vaccine, as adolescent vaccination was rolled out in India and found to be safe. Almalki et al[7] reported that parents with higher level of education were more hesitant to vaccinate their children congruent to the findings of our study. A web based national survey conducted in India by Padhi et al[4] found that parents who were highly educated and those who had accepted COVID 19 vaccine, were more likely to vaccinate their children, in contrary to our present study findings. Hetherington et al[14], Temsah et al[10] and Mohamed et al[15] found that lower education, lower income and incomplete vaccination of parents were less likely to vaccinate their child akin to the findings of our study. Moreover, parental concerns hovered around the novelty, safety and unanticipated adverse effects of the vaccine.

Limitation

The findings of the current study should be validated by the conduction of further studies as small sample size limits the generalizability of the findings.

Conclusion

The study revealed that the likelihood of parents to vaccinate their children aged 6-11 years against COVID-19 was quite low, major reason being the concern regarding probable safety of the vaccine. Having a child aged between 6-8 years was the most important predictor for the likelihood for future vaccine acceptance among parents. To achieve global immunization against COVID-19, it is important to combat hesitancy among parents. Behavior change communication strategies have to be planned in view of parental perceptions and concerns regarding COVID 19 vaccination among children aged 6-11 years. Proactive involvement of urban ASHAs and service providers at urban health facilities should be ensured to mitigate potential vaccine hesitancy, if the vaccine becomes available in the near future.

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