

PARENTS' ATTITUDE TOWARDS CORONA VIRUS VACCINATION OF THEIR CHILDREN

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Abstract

The global impact of the coronavirus disease 2019 (COVID-19) pandemic has been shocking and vaccination is need to protect lives. Vaccines are now available for adults in India but there is also a great need to vaccinate children as soon as possible. As parents have ultimate say in vaccination decision of their children, the study surveyed 125 parents recruited through snowball sampling in Ahmedabad city to know about parents' attitude towards Corona Virus vaccination of their children. Primary data is collected through dissemination of google form. SPSS statistical software is used to analyse data through Crosstabulation, correlation, Phi and Cramer's V value. The results revealed that about 82.4% of the parents are ready to vaccinate their children. The study found that parents' intention to vaccinate their children has strong positive correlation with their own vaccination, trust on Indian healthcare system, trust on vaccines and weak correlation with parent's educational qualification, their own experience of Covid-19 infection and negative relation with parents' perception about Corona Virus as just another form of common flu and cold. Mothers comprised the majority of the participants in the survey. Possibility of illness and infection after taking vaccine is the most frequently quoted reason for not opting for vaccine. Not enough testing on vaccines and no clear understanding of vaccines contents were the other highly quoted reasons. On basis of results of the survey various strategies can be designed by health officials to increase acceptability of vaccine among parents.

Keywords: Coronavirus; COVID-19, parental attitudes; vaccination

1. INTRODUCTION

Year 2022 brings both good and bad news with it. The bad news is arrival of new variant of corona virus named omicron. On 24 November 2021 South Africa first reported the B.1.1.529 variant (omicron) to WHO (World Health Organization)¹. Omicron is designated as the Variant of concern (VOC) by WHO as it is spreading rapidly around the world and India is not an exception. The first case of omicron was detected in Karnataka on 2nd December 2021². Country reported first death due to omicron on 31st December 2021 in Rajasthan when 73-year-old fully vaccinated elderly person with comorbidities died after getting infected with this highly transmissible variant of coronavirus³. On 7th January 2022, after almost 7 months of recording daily low cases after second wave caused by Delta variant, the daily cases in India are now over 1 lakh. Good news is that the Indian government approved Bharat Biotech's Covaxin jab for teens in age group of 15-17 years. This indeed is a sigh of relief for many parents amid rising covid cases. But the cause of concern in those who fall in age category of 0-14 years. According to census data of 2011, 19.3 percent of the total population is in the age group of 0-14 years⁴. Now this means that this new policy is offering protection to only a small portion of large section of Indian population.

Parents are the ultimate decision takers in the matter of vaccination of their child. This study therefore, is focused to assess parents' perception and decision towards Covid vaccination for their kids.

Similar researches have been conducted around the world but very few in India and that too are almost a year old. As India has witnessed unprecedented devastation due to first and second wave and now with omicron, there are signs of country entering into third wave, the perception of many people towards Covid vaccine seemed to have changed. And so, this topic needs a fresh look and numbers.

¹ <https://www.who.int/news/item/28-11-2021-update-on-omicron>

² <https://www.hindustantimes.com/india-news/indias-first-omicron-cases-detected-in-karnataka-101638445884205.html>

³ <https://www.thehindu.com/news/national/india-reports-its-first-death-due-toomicron/article38128539.ece>

⁴ https://nhm.gov.in/New_Updates_2018/Report_Population_Projection_2019.pdf

2. LITERATURE REVIEW

Alfieri et al. (2021) examined hesitancy toward a future COVID-19 in Chicago and Cook County, Illinois and found that those demographic groups that have suffered the most due to COVID-19 showed the highest rates of hesitancy toward a future vaccine. **Drouin et al. (2021)** probed into intention of parents to vaccinate their child suffering from asthma. Results showed that, if a vaccine was available, 19.1% of parents of asthmatic children indicated they were "unlikely" or "extremely unlikely" to have their child vaccinated, and 21.0 percent stated they were "unlikely" or "very unlikely" to get vaccinated themselves. **Fazel et al. (2021)** Used the results of a large, school-based self-report survey of the students aged 9 to 18 years in England to explore the features of vaccine apprehensive children and adolescents. The findings revealed that, as compared to children who would opt-in, vaccine sceptics exhibited higher markers of social deprivation and reported a lack of community cohesion because they didn't feel like they belonged at their school. Also, they were more marginalised and distrusted. **Babicki et al. (2021)** aimed to gauge the Parental perspectives toward immunizations against COVID-19 given to their children in Poland. Mothers made up the vast majority of those who responded, and they had significantly higher positive sentiments toward immunizations than fathers. Four out of every five parents want their children to be vaccinated as soon as possible, while one out of every four parents don't want their child to be vaccinated at all. The main worries about the vaccines are that the preparation has not been well studied as well as a lack of knowledge about potential future problems. **Choi et al. (2021)** In Republic of Korea, researchers looked into parental acceptability of COVID-19 vaccination for their children, factors impacting parental acceptability, and children's impressions of COVID-19 vaccines. 226 parents and 117 children aged 10 to 18 years were involved in the study. Overall, 76.5 percent of parents planned to get vaccinated against COVID-19, while 64.2 percent planned to have their children get vaccinated. However, only 49.6% of youngsters said they would get vaccinated against COVID-19. **Temsah et al. (2021)** examined the vaccine hesitancy (VH) for COVID-19 vs. children's immunizations and quantified parental acceptance of the COVID-19 vaccine using eight vaccine hesitation scale (VHS) questions adapted from WHO's Strategic Advisory Group of Immunization (SAGE). 47.6% of all participants agreed to vaccinate their children against the COVID-19 virus. Inadequate safety information (69 %) and concerns about side effects were the most common reasons for refusal (60.65). Parents have significantly more positive attitudes toward routine immunizations for their children than the COVID-19 vaccine.

3. RESEARCH GAP

No study has been conducted on analysing parents' attitude towards vaccination of their children with specific context of Ahmedabad city.

4. OBJECTIVES

- To test whether there is relation between parents' own vaccination, experience of covid infection, education level, perception of covid infection and intention to vaccinate their children
- To test relation between parent's trust on Indian health-care system and vaccines and intention to vaccinate their children
- To identify main reasons for refusal to vaccinate their children and to opt out of vaccine program
- To identify vaccine choice of parents/guardians out of five vaccines approved by Government of India.

5. HYPOTHESIS

Null Hypothesis:

1. There is no relation between parents' own vaccination and intention to vaccinate their children
2. There is no relation between experience of covid infection and intention to vaccinate their children
3. There is no relation between education level and intention to vaccinate their children
4. There is no relation between parents' perception of covid infection and intention to vaccinate their children
5. There is no relation between parent's trust on Indian health-care system and intention to vaccinate their children
6. There is no relation between parent's trust on Indian vaccine and intention to vaccinate their children

Alternative Hypothesis:

1. There is relation between parents' own vaccination and intention to vaccinate their children
2. There is relation between experience of covid infection and intention to vaccinate their children

3. There is relation between education level and intention to vaccinate their children
4. There is relation between parents' perception of covid infection and intention to vaccinate their children
5. There is relation between parent's trust on Indian health-care system and intention to vaccinate their children
6. There is relation between parent's trust on Indian vaccine and intention to vaccinate their children

6. RESEARCH METHODOLOGY

For the purpose of the study the data was primary data was collected using questionnaire. The sample of 125 representatives was chosen using convenient sampling method. The collected data was analysed using Pearson's correlation coefficient test, Phi and Cramer's V. Statistical software SPSS was used to analyse the data.

6.1 METHOD:

PHI: Used to measure the strength of the association between two variables, each of which has only two categories. (It applies to 2 X 2 nominal tables only. The value lies between 0 to 1. Higher value signifies strong relation.⁵

CRAMER'S V: Used to measure the strength of the association between one nominal variable with either another nominal variable, or with an ordinal variable. Both of the variables can have more than 2 categories. The value ranges between 0 to 1. Higher values indicate a stronger correlation between the two variables. Formula for CRAMER'S V

$$\phi_c = \sqrt{\frac{\chi^2}{N(k-1)}} \quad 6$$

Pearson's correlation coefficient:

Karl Pearson's correlation coefficient is used to test the degree and direction of relation/association between the two variables. The value of correlation coefficient lies from -1.0 and 1.0. r=-1 indicates perfect negative relation, r=+1 shows perfect positive relation. Value between 0 and 1 shows partial positive relation. Value between -1 and 0 shows perfect negative relation. r=0 shows absence of linear relation between the two variables.

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}} \quad 7$$

r	=	correlation coefficient
x _i	=	values of the x-variable in a sample
\bar{x}	=	mean of the values of the x-variable
y _i	=	values of the y-variable in a sample
\bar{y}	=	mean of the values of the y-variable

7. DATA ANALYSIS

The collected data was analysed using SPSS. Following are the results of the study.

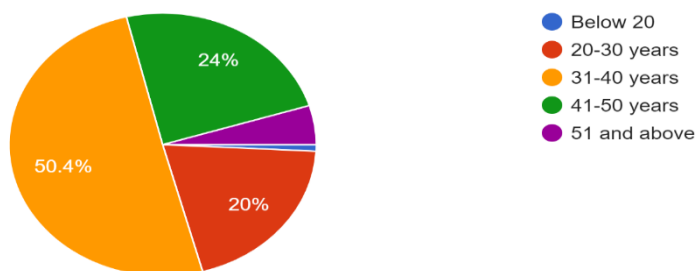
7.1 Diagrammatic presentation of data collected

⁵ <https://www.people.vcu.edu/~pdattalo/702SuppRead/MeasAssoc/NominalAssoc.html>

⁶ <https://www.spss-tutorials.com/cramers-v-what-and-why/>

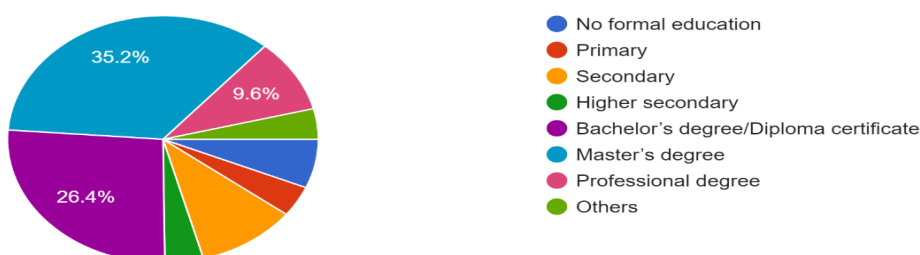
⁷ <https://www.cuemath.com/correlation-coefficient-formula/>

Figure 1: Age of participants



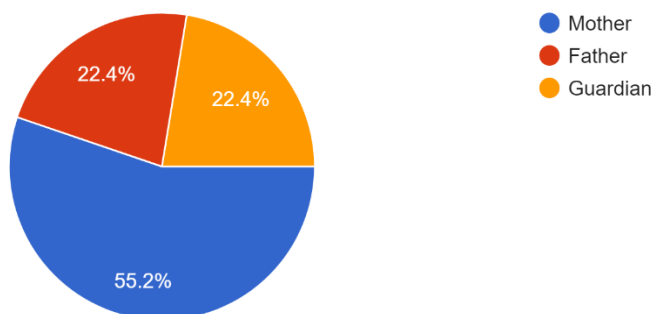
Majority of respondents the survey was between the age of 31-40 years, followed by people having age of 41-50 years.

Figure 2: Highest educational qualification



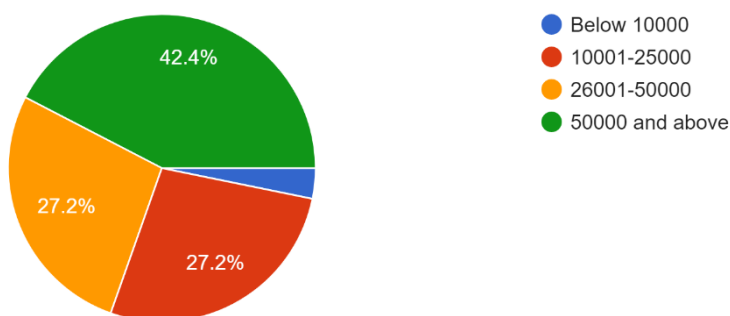
Respondents possessing master's degree were the highest in the sample. Bachelor/diploma holders were second largest group, followed by those holding professional degree

Figure 3: Relation with Child



Mothers comprised of highest sampled respondents. Father and guardian were equally represented in the sample.

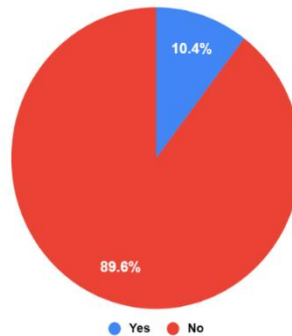
Figure 4: Monthly family Income in Rupees



Majority of respondent had a monthly family income of more than Rs. 50000. Respondents having monthly family income of Rs. 10001-250000 and Rs. 260001-50000 have equal representation in sample.

Figure 5: Parent's/Guardians perception about Corona virus

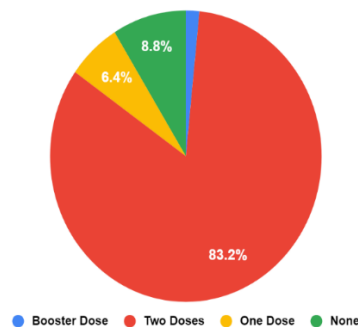
Do you believe that corona-virus is just another form of cold and flu



Majority of respondent believed that Corona-virus is not just a normal cold and flu

Figure 6: Doses of Corona-virus vaccine taken by parent/guardian

Doses of Corona vaccine taken by you?



About 83.2% respondents took both the doses of vaccine, 8.8% took only one dose, 6.4% people did not take vaccine and only 1.6% of respondents took booster dose of vaccine

Graph 1: Age and gender of children

Demographic profile of respondents can be seen in chart above. The sample included only those children having age of Less than or equal to 14 years.

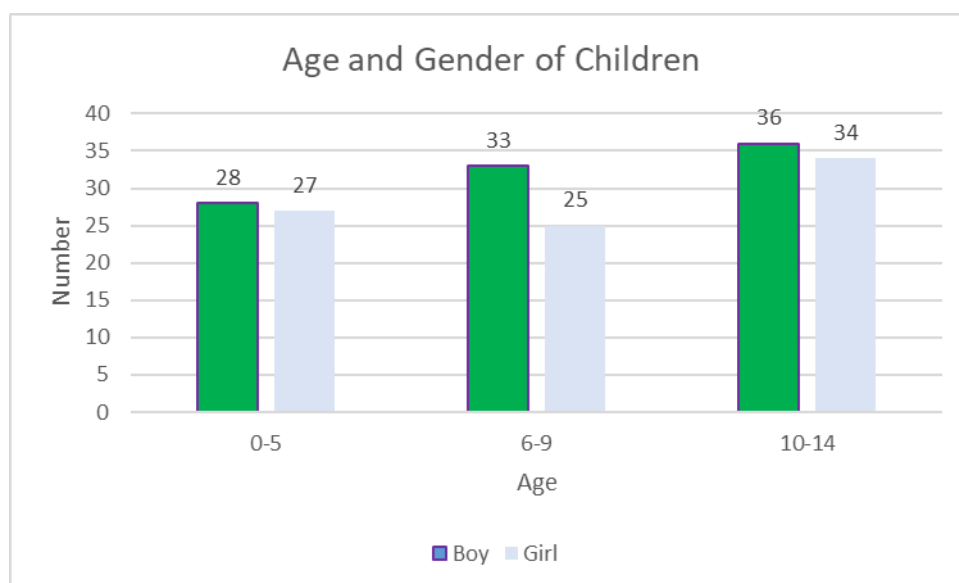
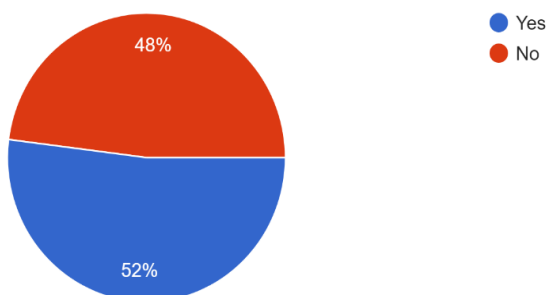


Figure 7: Parents'/guardians decision regarding sending child for offline schooling

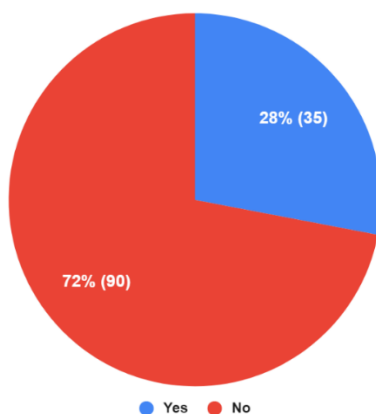
Do you send your child to attend offline sessions in schools ?

125 responses



52% of the parents send their children for offline school, whereas rest 48% prefer online mode of studies.

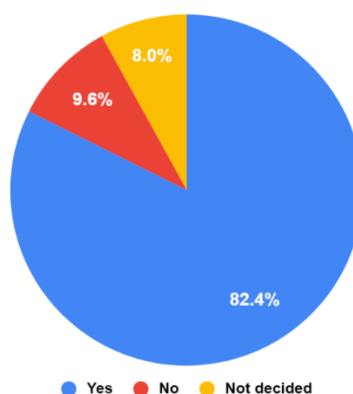
Figure 8: Parent's/Guardians experience about illness or death in the family even after taking Corona-virus vaccine



72% respondents said that there was no case of death or illness in their family or relatives, after taking corona virus vaccine.

Figure 9: Parent's/Guardians readiness to vaccinate their children:

Are you ready to vaccinate your child?

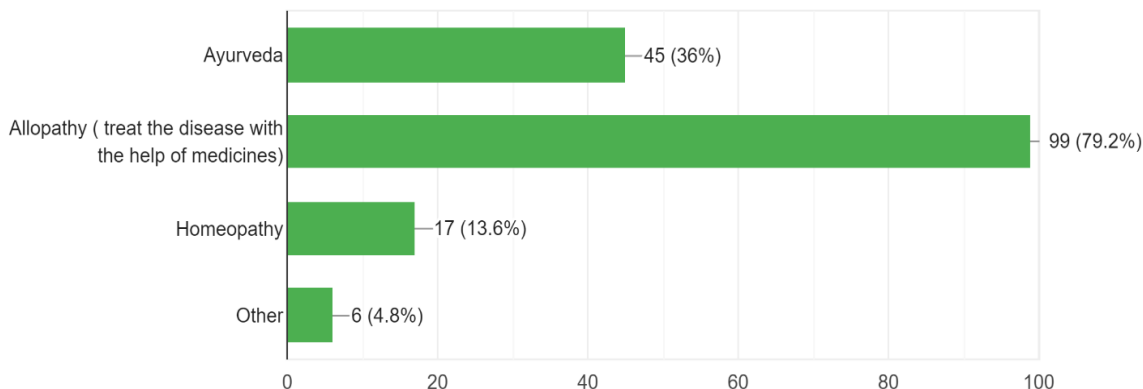


82.4% of the parents are ready to vaccinate their children, almost equal percentage of parents are either not ready to vaccinate their children or have yet not decided anything in this regard.

Graph 2: Parent’s/guardians preferable method of treatment in case of illness of their children

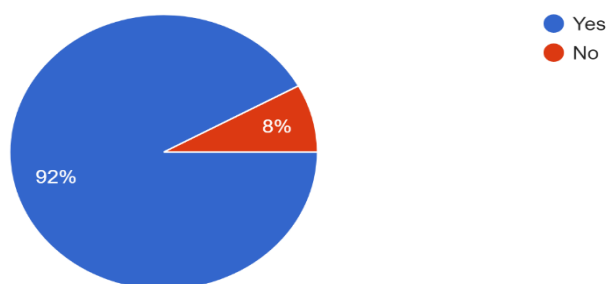
What kind of medical approach you prefer for treatment of your child? (more than one option can be selected)

125 responses



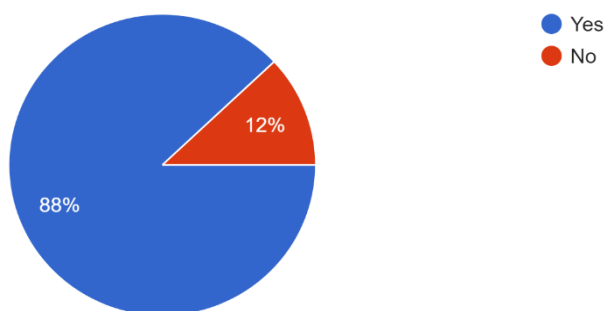
Majority of parents choose Allopathy treatment for their children, followed by ayurveda and homeopathy.

Figure 10: Parents’/guardians trust in India’s health-care system



Majority of respondents said that they have trust in India’s health care system.

Figure 11: Parents’/guardians trust in vaccine



About 88% respondent said that they trust vaccines.

7.2 Results of Hypothesis testing:

1) Relation between parents’ own vaccination and intention to vaccinate their children

Table 1: Crosstabulation for Relation between parents’ own vaccination and intention to vaccinate their children

Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years * Doses of corona vaccine taken by you?	Doses of corona vaccine taken by you?				Total
	Booster	Both	one	None	

		dose	doses	dose			
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Yes	Count	2	96	5	0	103
		% Within Doses of corona vaccine taken by you?	100.0%	92.3%	62.5%	0.0%	82.4%
	NO	Count	0	4	2	6	12
		% Within Doses of corona vaccine taken by you?	0.0%	3.8%	25.0%	54.5%	9.6%
	Not decided yet	Count	0	4	1	5	10
		% Within Doses of corona vaccine taken by you?	0.0%	3.8%	12.5%	45.5%	8.0%
Total		Count	2	104	8	11	125
		% Within Doses of corona vaccine taken by you?	100.0%	100.0%	100.0%	100.0%	100.0%

- 100% of those parents/guardians who have taken booster doses are ready to vaccinate their children. Out of those parents/guardians who have taken two doses of vaccine, 92.3% are ready to vaccinate their children, 3.8% have decided to opt out of vaccine program and other 3.8% have yet not decided on the issue.
- Out of those parents/guardians who have taken one dose of vaccine, 62.5% are ready to vaccinate their children, 25% have decided to opt out of vaccine program and other 12.5% have yet not decided on the issue.
- Out of those parents/guardians who have taken no dose of vaccine themselves, 0% are ready to vaccinate their children, 54.5% have decided to opt out of vaccine program and other 45.5% have yet not decided on the issue.

Table 2: Correlation between parents' own vaccination and intention to vaccinate their children

Correlations		Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Doses of corona vaccine taken by you?
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Pearson Correlation	1	.631**
	Sig. (2-tailed)		.000
	N	125	125
Doses of corona vaccine taken by you?	Pearson Correlation	.631**	1
	Sig. (2-tailed)	.000	
	N	125	125

** . Correlation is significant at the 0.01 level (2-tailed).

The results here show that there is **significant positive correlation (0.631)** between parents own vaccination and their intention to vaccinate their children.

Table 3: Phi and Cramer's V value for relation between parents own vaccination and their intention to vaccinate their children.

Symmetric Measures		Value	Approximate Significance

Nominal by Nominal	Phi	.702	.000
	Cramer's V	.496	.000
N of Valid Cases		125	

CRAMER'S V value of 0.496 is significant value and shows **moderate to strong relation between parents own vaccination and their intention to vaccinate their children.**

2) Relation between experience of covid infection and intention to vaccinate their children

Table 4: Crosstabulation for Relation between parents own experience of covid infection and intention to vaccinate their children

Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years * Is there any case of death or illness due to corona-virus, of in your family or family of your relatives and friends					
			Is there any case of death or illness due to corona-virus, of in your family or family of your relatives and friends		Total
			Yes	No	
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Yes	Count	31	72	103
		% Within Is there any case of death or illness due to corona-virus, of in your family or family of your relatives and friends	88.6%	80.0%	82.4%
	NO	Count	2	10	12
		% Within Is there any case of death or illness due to corona-virus, of in your family or family of your relatives and friends	5.7%	11.1%	9.6%
	Not decided yet	Count	2	8	10
		% Within Is there any case of death or illness due to corona-virus, of in your family or family of your relatives and friends	5.7%	8.9%	8.0%
Total		Count	35	90	125
		% Within Is there any case of death or illness due to corona-virus, of in your family or family of your relatives and friends	100.0%	100.0%	100.0%

- Of all those parents/guardians who have experienced any case of death or illness due to corona-virus, of in your family or family of your relatives and friends (even after taking vaccine), 88.6% are ready to vaccinate their children, 5.7% have decided to opt out of vaccine program and other 5.7% have yet not decided on the issue.
- Of all those parents/guardians who have experienced any case of death or illness due to corona-virus, of in your family or family of your relatives and friends (even after taking vaccine), 80% are ready to vaccinate their children, 11.1% have decided to opt out of vaccine program and other 8.9% have yet not decided on the issue.
- This shows that parents own experience has little weightage in deciding vaccination of their children or parents might believe that minor illness or other side-effects are common with any type of vaccine.

Table 5: Correlation between parents own experience of covid infection and intention to vaccinate their children

Correlations			
		Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Is there any case of death or illness due to corona-virus, of in your family or family of your relatives and friends
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Pearson Correlation	1	.089
	Sig. (2-tailed)		.323
	N	125	125
Is there any case of death or illness due to corona-virus, of in your family or family of your relatives and friends	Pearson Correlation	.089	1
	Sig. (2-tailed)	.323	
	N	125	125

Correlation results here show that there is **insignificant/weak correlation (0.089)** between parents own experience of covid infection and intention to vaccinate their children

Table 6: Phi and Cramer's V value for Relation between parents own experience of covid infection and intention to vaccinate their children

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.102	.520
	Cramer's V	.102	.520
N of Valid Cases		125	

Here, Phi value is 0.102 which is shows **very weak relation between the variables.**

3) To test relation between education level and intention to vaccinate their children

Table 7: Crosstabulation for parents Education Qualification and their intention to vaccinate their children

Highest Education Qualification * Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years						
			Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years			Total
			Yes	No	Not decided yet	
Highest Education Qualification	No formal education	Count	7	1	0	8
		% Within Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	6.8%	8.3%	0.0%	6.4%
	Primary	Count	4	0	1	5
		% Within Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	3.9%	0.0%	10.0%	4.0%
	Secondary	Count	10	2	1	13
		% Within Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	9.7%	16.7%	10.0%	10.4%
	Bachelor's degree/Diploma certificate	Count	27	5	1	33
		% Within Are you ready to vaccinate you	26.2%	41.7%	10.0%	26.4%

		child if government approves vaccine for children in age group of 0-14 years				
Master's degree	Count		38	3	3	44
	% Within Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years		36.9%	25.0%	30.0%	35.2%
Professional degree	Count		9	1	2	12
	% Within Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years		8.7%	8.3%	20.0%	9.6%
Higher secondary	Count		4	0	1	5
	% Within Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years		3.9%	0.0%	10.0%	4.0%
Other	Count		4	0	1	5
	% Within Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years		3.9%	0.0%	10.0%	4.0%
Total	Count		103	12	10	125
	% Within Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years		100.0%	100.0%	100.0%	100.0%

▪ Of all those parents/guardians who opted in to vaccinate their children, 6.8% have no formal education, 3.9% have primary education, 9.7% have secondary education, 3.9% have higher secondary education, 26.2% have bachelor's/diploma degree, 36.9% have master's degree, 8.7% have Professional degree and rest 3.9% have other degree.

▪ Of all those parents/guardians who opted out to vaccinate their children, 8.3% have no formal education, 16.7% have secondary education, 0% have higher secondary education, 41.7% have bachelor's/diploma degree, 25% have master's degree and 8.3% have Professional degree

▪ Of all those parents/guardians who yet not decided to vaccinate their children, 10% have primary education, 10% have secondary education, 10% have higher secondary education, 10% have bachelor's/diploma degree, 30% have master's degree, 20% have Professional degree and rest 10% have other degree.

Table 8: Correlation between parents Education Qualification and their intention to vaccinate their children

Correlations		Highest Education Qualification	Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years
Highest Education Qualification	Pearson Correlation	1	.067

	Sig. (2-tailed)		.457
	N	125	125
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Pearson Correlation	.067	1
	Sig. (2-tailed)	.457	
	N	125	125

Value of correlation coefficient is .067, which shows **very weak relation between parent's education qualification and their intention to vaccinate their children.**

Table 9: Phi and Cramer's V value for parents Education Qualification and their intention to vaccinate their children

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.271	.817
	Cramer's V	.192	.817
N of Valid Cases		125	

CRAMER'S V value of 0.192 is **insignificant value and shows weak relation between parents own education qualification and their intention to vaccinate their children.**

4) Relation between parents' perception of covid infection and intention to vaccinate their children

Table 10: Crosstabulation for relation between parents' perception of covid infection and intention to vaccinate their children

Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years * Do you think that Corona Virus is just another form of common flu and cold?					
			Do you think that Corona Virus is just another form of common flu and cold?		Total
			Yes	no	
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Yes	Count	5	98	103
		% Within Do you think that Corona Virus is just another form of common flu and cold?	38.5%	87.5%	82.4%
	NO	Count	7	5	12
		% Within Do you think that Corona Virus is just another form of common flu and cold?	53.8%	4.5%	9.6%
	Not decided yet	Count	1	9	10
		% Within Do you think that Corona Virus is just another form of common flu and cold?	7.7%	8.0%	8.0%
Total	Count	13	112	125	
	% Within Do you think that Corona Virus is just another form of common flu and cold?	100.0%	100.0%	100.0%	

▪ Out of those parents/guardians think that Corona Virus is just another form of common flu and cold, 38.5% are ready to vaccinate their children, 53.8% have decided to opt out of vaccine program and other 7.7% have yet not decided on the issue.

▪ Out of those parents/guardians think that Corona Virus is not just another form of common flu and cold, 87.5% are ready to vaccinate their children, 4.5% have decided to opt out of vaccine program and other 8% have yet not decided on the issue.

Table 11: Correlation between parents' perception of covid infection and intention to vaccinate their children

Correlations

		Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Do you think that Corona Virus is just an both form of common flu and cold?
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Pearson Correlation	1	-.251**
	Sig. (2-tailed)		.005
	N	125	125
Do you think that Corona Virus is just an both form of common flu and cold?	Pearson Correlation	-.251**	1
	Sig. (2-tailed)	.005	
	N	125	125

** . Correlation is significant at the 0.01 level (2-tailed).

Correlation shows significant **negative relation between parents' perception about Corona Virus as just another form of common flu and cold and their intention to vaccinate their children**

Table 12: Phi and Cramer's V value for relation between parents' perception of covid infection and intention to vaccinate their children

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.514	.000
	Cramer's V	.514	.000
N of Valid Cases		125	

Phi value of 0.514 shows **strong positive association between parents' perception about Corona Virus as just another form of common flu and cold and their intention to vaccinate their children.**

5) Relation between Parent's trust on Indian health-care system and their readiness to vaccinate their children

Table 13: Crosstabulation for relation between Parent's trust on Indian health-care system and their readiness to vaccinate their children

Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years * Do you trust Indian health-care system					
			Do you trust Indian health-care system		Total
			No	Yes	
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Yes	Count	0	103	103
		% Within Do you trust Indian health-care system	0.0%	89.6%	82.4%
	No	Count	5	7	12
		% Within Do you trust Indian health-care system	50.0%	6.1%	9.6%
	Not decided yet	Count	5	5	10
		% Within Do you trust Indian health-care system	50.0%	4.3%	8.0%
Total		Count	10	115	125
		% Within Do you trust Indian health-care system	100.0%	100.0%	100.0%

- Out of those parents/guardians who have shown trust in Indian health care system, 89.6% are ready to vaccinate their children, 6.1% have decided to opt out of vaccine program and other 4.3% have yet not decided on the issue.

- Out of those parents/guardians who have shown no trust in Indian health care system, 50% have decided to opt out of vaccine program and other 50% have yet not decided on the issue.

Table 14: Correlation between Parent's trust on Indian health-care system and their readiness to vaccinate their children

Correlations			
		Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Do you trust Indian health-care system
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Pearson Correlation	1	-.620**
	Sig. (2-tailed)		.000
	N	125	125
Do you trust Indian health-care system	Pearson Correlation	-.620**	1
	Sig. (2-tailed)	.000	
	N	125	125

** . Correlation is significant at the 0.01 level (2-tailed).

Correlation value of -0.620 **significant relation between parent's trust in Indian health care system and their intention to vaccinate their children.**

Table 15: Phi and Cramer's V value for relation between Parent's trust on Indian health-care system and their readiness to vaccinate their children

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.641	.000
	Cramer's V	.641	.000
N of Valid Cases		125	

Phi value of 0.641 shows **significant association between parent's trust in Indian health care system and their intention to vaccinate their children.**

6) Relation between parents trust on vaccines and their intention to vaccinate their children.

Table 16: Crosstabulation for relation between parents trust on vaccines and their intention to vaccinate their children.

Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years * Do you trust on vaccines?					
			Do you trust on vaccines?		Total
			Yes	No	
Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Yes	Count	101	2	103
		% Within Do you trust vaccines?	91.8%	13.3%	82.4%
	NO	Count	3	9	12
		% Within Do you trust vaccines?	2.7%	60.0%	9.6%
	Not decided yet	Count	6	4	10
		% Within Do you trust vaccines?	5.5%	26.7%	8.0%
Total		Count	110	15	125
		% Within Do you trust vaccines?	100.0%	100.0%	100.0%

- Out of those parents/guardians who have shown trust in vaccines, 91.8% are ready to vaccinate their children, 2.7% have decided to opt out of vaccine program and other 5.5% have yet not decided on the issue.
- Out of those parents/guardians who have shown no trust in vaccines, 13.3% are ready to vaccinate their children, 60% have decided to opt out of vaccine program and other 26.7% have yet not decided on the issue.

Table 17: Correlation between parents trust on vaccines and their intention to vaccinate their children.

Correlations			
		Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Do you trust on vaccines?

Are you ready to vaccinate you child if government approves vaccine for children in age group of 0-14 years	Pearson Correlation	1	.547**
	Sig. (2-tailed)		.000
	N	125	125
Do you trust on vaccines?	Pearson Correlation	.547**	1
	Sig. (2-tailed)	.000	
	N	125	125

** . Correlation is significant at the 0.01 level (2-tailed).

Correlation value of 0.547, shows **strong positive relation between parents trust on vaccines and their intention to vaccinate their children.**

Table 18: Phi and Cramer's V value for relation between parents trust on vaccines and their intention to vaccinate their children.

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.707	.000
	Cramer's V	.707	.000
N of Valid Cases		125	

Cramer's V value is close to 1(0.707), which shows **strong association between parents trust on vaccines and their intention to vaccinate their children.**

7) To identify main reasons for refusal to vaccinate their children

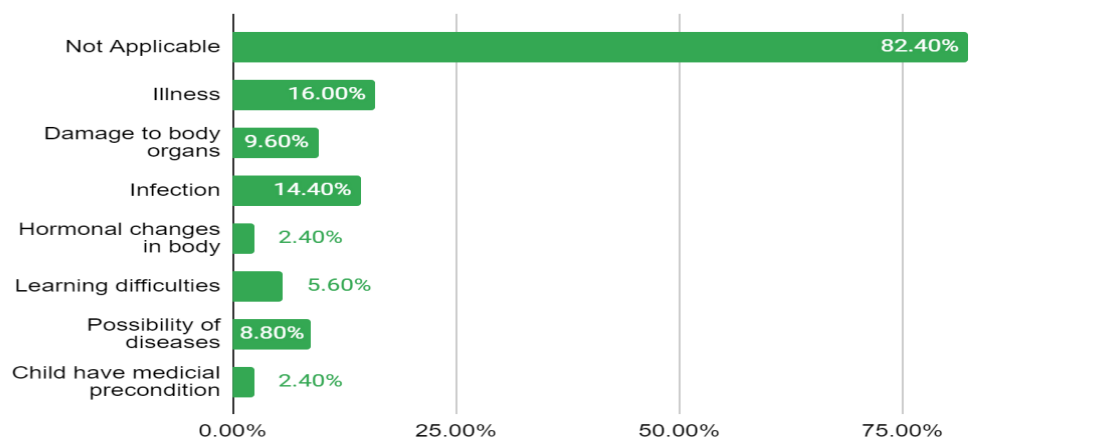
Table 19: Main reasons for refusal to vaccinate their children

Reasons for refusal to vaccinate their children	Frequencies			Percent of Cases
		Responses		
		N	Percent	
Reasons for refusal to vaccinate their children	Not applicable	103	58.2%	82.4%
	Illness	20	11.3%	16.0%
	Damage to body organs	12	6.8%	9.6%
	Infection	18	10.2%	14.4%
	Hormonal changes in body	3	1.7%	2.4%
	Learning difficulties	7	4.0%	5.6%
	Possibility of diseases	11	6.2%	8.8%
	Child already have medical condition	3	1.7%	2.4%
Total	177	100.0%	141.6%	

a. Dichotomy group tabulated at value 1.

Graph 2: Possible side-effects of vaccine

Possible side-effects of vaccine because of which you have decided to opt-out of vaccination for your child



Among those parents/guardians who have decided to opt-out of vaccine program, majority of them quoted illness after taking vaccine as a major fear, infection is the second most quoted reason, followed by possibility of diseases, hormonal changes and pre-medical condition of child.

8) To identify main factors that effects parents/Guardians' decision to opt out of vaccine program

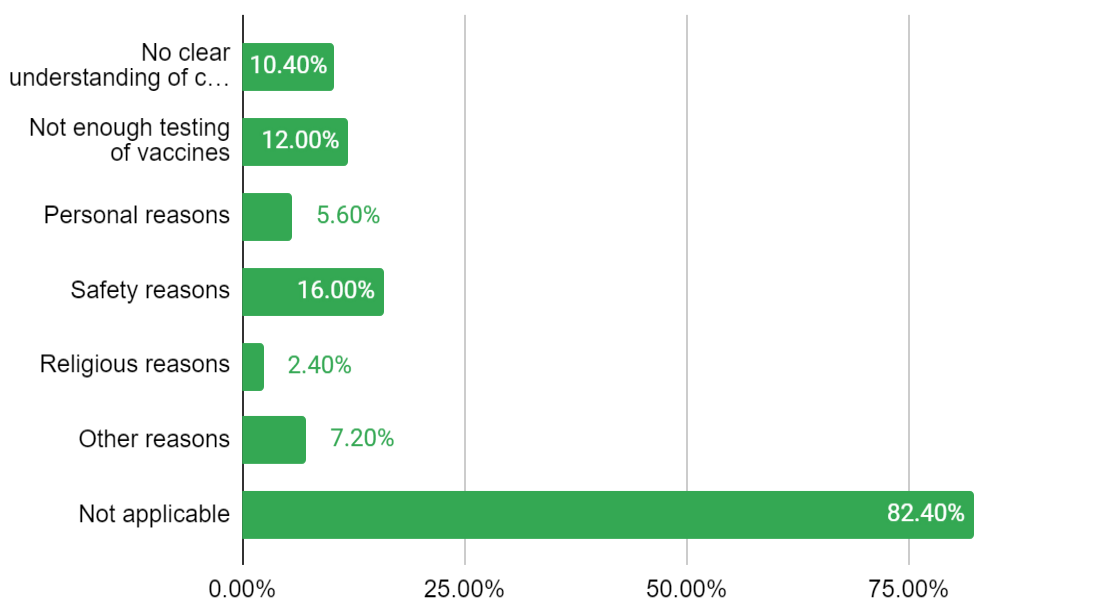
Table 20: Main factors that effects parents/Guardians' decision to opt out of vaccine program

		Responses		Percent of Cases
		N	Percent	
Factors for refusal to vaccinate their children	No clear understanding of components of vaccine	13	7.6%	10.4%
	Not enough testing of vaccines	15	8.8%	12.0%
	Personal reasons	7	4.1%	5.6%
	Safety reasons	20	11.8%	16.0%
	Religious reasons	3	1.8%	2.4%
	Other reasons	9	5.3%	7.2%
	Not applicable	103	60.6%	82.4%
Total		170	100.0%	136.0%

a. Dichotomy group tabulated at value 1.

Graph 3: Reasons to opt-out of vaccination for children

Factors that play major role in decision to opt-out of vaccination for child



Among those parents/guardians who have opted-out from vaccine program safety of child was quoted as most frequent concern for not taking vaccine. Not enough testing on vaccines and no clear understanding of vaccines contents were the other highly quoted reasons. Religious reasons were least important factor as narrated by respondents.

9) Vaccine Choice by parents/guardians:

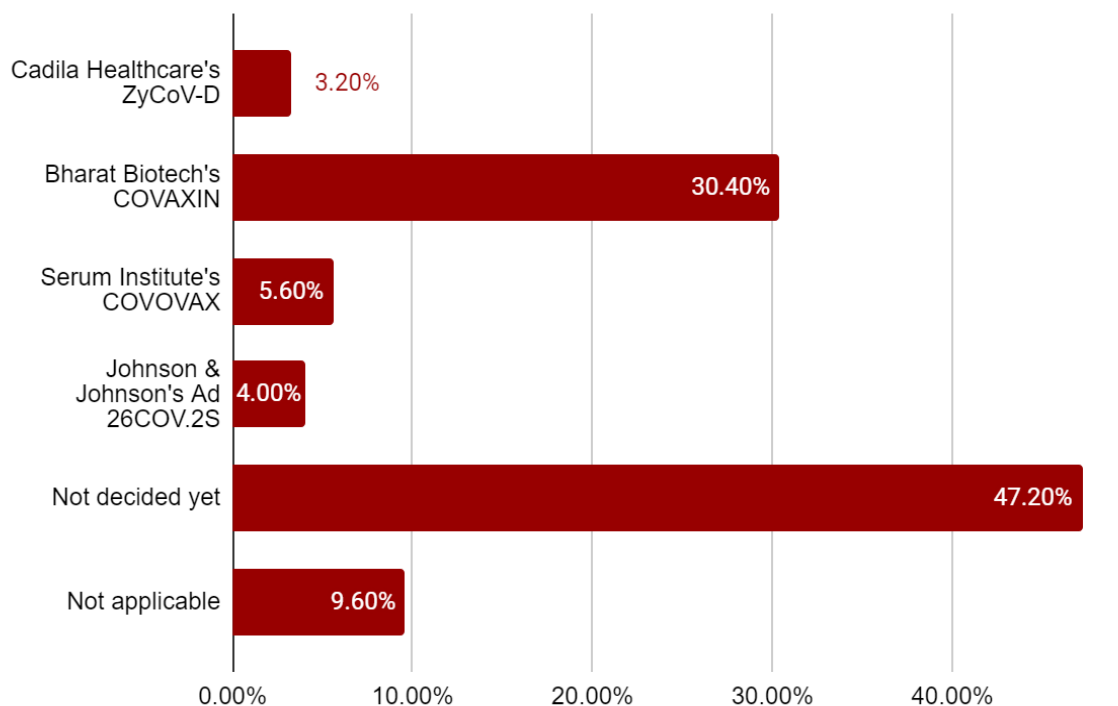
Table 21: Vaccine Choice by parents/guardians

		Responses		Percent of Cases
		N	Percent	
Vaccine choice	Cadila Healthcare's ZyCoV-D	4	3.2%	3.2%
	Bharat Biotech's COVAXIN	38	30.4%	30.4%
	Serum Institute's COVOVAX	7	5.6%	5.6%
	Johnson & Johnson's Ad 26COV.2S	5	4.0%	4.0%

	Not decided yet	59	47.2%	47.2%
	Not applicable	12	9.6%	9.6%
Total		125	100.0%	100.0%

a. Dichotomy group tabulated at value 1.

Graph 4: Vaccine choice by parents



Majority of respondents have not decided which vaccine they would opt for out of 5 vaccines approved by Government of India. About 30% respondent parents/guardians selected Bharat Biotech's COVAXIN as their first choice. No respondent selected Biological E's RBD vaccine.

8. SUMMARY OF FINDINGS

1. Majority of respondents the survey was between the age of 31-40 years, followed by people having age of 41-50 years.
2. Respondents possessing master's degree were the highest in the sample. Bachelor/diploma holders were second largest group, followed by those holding professional degree
3. Mothers comprised of highest sampled respondents. Father and guardian were equally represented in the sample.
4. Majority of respondent had a monthly family income of more than Rs. 50000. Respondents having monthly family income of Rs. 10001-250000 and Rs. 260001-50000 have equal representation in sample.
5. Majority of respondent believed that Corona-virus is not just a normal cold and flu
6. About 83.2% respondents took both the doses of vaccine, 8.8% took only one dose, 6.4% people did not take vaccine and only 1.6% of respondents took booster dose of vaccine
7. 52% of the parents send their children for offline school, whereas rest 48% prefer online mode of studies.
8. 72% respondents said that there was no case of death or illness in their family or relatives, after taking corona virus vaccine.
9. 82.4% of the parents are ready to vaccinate their children, almost equal percentage of parents are either not ready to vaccinate their children or have yet not decided anything in this regard.
10. Majority of parents choose Allopathy treatment for their children, followed by ayurveda and homeopathy.
11. Majority of respondents said that they have trust in India's health care system.
12. About 88% respondent said that they trust vaccines.
13. The results here show that there is **significant positive correlation (0.631) between parents own vaccination and their intention to vaccinate their children.**
14. Correlation results here show that there is **insignificant/weak correlation (0.089) between parents own experience of covid infection and intention to vaccinate their children.**

15. Value of correlation coefficient is .067, which shows **very weak relation between parent's education qualification and their intention to vaccinate their children.**
16. Correlation shows significant **negative relation between parents' perception about Corona Virus as just another form of common flu and cold and their intention to vaccinate their children**
17. Correlation value of -0.620 **significant relation between parent's trust in Indian health care system and their intention to vaccinate their children.**
18. Correlation value of 0.547, shows **strong positive relation between parents trust in made in India vaccines and their intention to vaccinate their children.**
19. Among those parents/guardians who have decided to opt-out of vaccine program, majority of them quoted illness after taking vaccine as a major fear, infection is the second most quoted reason, followed by possibility of diseases, hormonal changes and pre-medical condition of child.
20. Among those parents/guardians who have opted-out from vaccine program safety of child was quoted as most frequent concern for not taking vaccine. Not enough testing on vaccines and no clear understanding of vaccines contents were the other highly quoted reasons. Religious reasons were least important factor as narrated by respondents.
21. Majority of respondents have not decided which vaccine they would opt for out of 5 vaccines approved by Government of India. About 30% respondent parents/guardians selected Bharat Biotech's COVAXIN as their first choice. No respondent selected Biological E's RBD vaccine.

9. RECOMMENDATIONS

On the basis of analysis of data here are few recommendations that can improve overall acceptability of vaccination program by the parents:

1. The government should educate the parents that the vaccines are safe and in long-term it will not cause any kind of damage or harm to the child's body or immunity system.
2. Government should clearly demonstrate the benefits of vaccination for the children so as to remove any kind of hesitation in the minds of parents.
3. Government should remove the misconception in the minds of parents that corona-virus is just other form of cold and flu.
4. Parents who themselves are not vaccinated should be persuaded to do so by removing any pre-convinced notions against vaccination in their mind.
5. Goodwill of Indian health care system and Indian vaccines should be enhanced so as to boost the confidence of public in general.

10. LIMITATIONS OF THE STUDY

The main limitation of the study is small sample size and area of survey.

Future studies can be conducted to include more variables and with larger sample size so as to make results more generalizable.

ENDNOTES

- [1] <https://www.who.int/news/item/28-11-2021-update-on-omicron>
- [2] <https://www.hindustantimes.com/india-news/indias-first-omicron-cases-detected-in-karnataka-101638445884205.html>
- [3] <https://www.thehindu.com/news/national/india-reports-its-first-death-due-to-omicron/article38128539.ece>
- [4] https://nhm.gov.in/New_Updates_2018/Report_Population_Projection_2019.pdf
- [5] <http://www.people.vcu.edu/~pdattalo/702SuppRead/MeasAssoc/NominalAssoc.html>
- [6] <https://www.spss-tutorials.com/cramers-v-what-and-why/>
- [7] <https://www.cuemath.com/correlation-coefficient-formula/>

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- [2] Babicki, M., Pokorna-Kaławak, D., Doniec, Z., & Mastalerz-Migas, A. (2021). Attitudes of Parents with Regard to Vaccination of Children against COVID-19 in Poland. A Nationwide Online Survey. *Vaccines, 9*(10), 1192.

- [3] Choi, S. H., Jo, Y. H., Jo, K. J., & Park, S. E. (2021). Pediatric and Parents' Attitudes Towards COVID-19 Vaccines and Intention to Vaccinate for Children. *Journal of Korean medical science*, 36(31).
- [4] Drouin, O., Montmarquette, C., Prud'homme, A., Arnaud, Y., Fontaine, P., & Borgès Da Silva, R. (2021). Parental decision and intent towards COVID-19 vaccination in children with asthma. An econometric analysis. *An Econometric Analysis (March 1, 2021)*.
- [5] Fazel, M., Puntis, S., White, S. R., Townsend, A., Mansfield, K. L., Viner, R., ... & Freeman, D. (2021). Willingness of children and adolescents to have a COVID-19 vaccination: Results of a large whole schools' survey in England. *EclinicalMedicine*, 40, 101144.