

A STUDY ON PERCEPTION ABOUT TWO WAVES OF COVID

COVID infection, vaccination, and COVID
appropriate behaviour

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Introduction

- Corona virus disease-2019 (COVID-19) also known as 2019 novel corona virus (2019-nCoV) was identified in December 2019 in Wuhan city, China. On 11 March 2020 WHO declared Noble Corona Virus as a pandemic.
- The virus spreads primarily through close contact between infected individuals and through respiratory droplets produced when an infected individual coughs or sneezes.
- In India, the first case was reported on 30 January 2020. Following the peak of the first wave in September 2020, coronavirus cases in India began to rise again in the first week of March, signaling the arrival of the country's second wave of the pandemic.¹⁰
- Coronavirus Disease 2019 (COVID-19) is in its second wave, infecting people all over the world. Young individuals in India did not get infected or have much of a serious condition during the first wave of COVID-19, but this is not the case with the second wave.⁶ The death toll in India as a result of Covid-19 has now surpassed three lakh.
- Because the virus is rapidly evolving and new variants are being discovered, patients who have recently been infected are experiencing new and unusual symptoms. It is critical to be aware of the most recent COVID-19 symptoms in order to identify them, receive timely treatment, and avoid complications.



- COVID-19 vaccinations are desperately needed over the world. There are now 78 vaccine candidates in development, with 201 trials active and more on the way. Twelve vaccines have been approved, with the application of these vaccines being phased in across the globe.⁴ To bring this pandemic to an end, a large share of the world needs to be immune to the virus.
- Knowledge and awareness about what to expect following immunization will help educate the public, prevent misinformation, and reduce vaccine hesitancy.
- It is critical to be aware of the most recent COVID-19 symptoms in order to identify them, receive timely treatment, and avoid complications. It is important to be aware of the newest symptoms of COVID-19 to be able to identify them, take timely treatment and avoid complications
- Also, the COVID-19 precautions, such as physical separation, hand-washing, and mask use. Others are less stringent in requiring these precautions or restricting certain high-risk activities.

Literature Reviews

Year	Author	Title	Findings
2021	Jain J, Saurabh S, Goel AD, Gupta MK, Bhardwaj P, Raghav PR.	COVID-19 vaccine hesitancy among undergraduate medical students: results from a nationwide survey in India	One out of every ten medical students had COVID-19 vaccine reluctance. Vaccine hesitation was independently predicted by a lack of understanding about vaccination eligibility, concerns about adverse events and vaccine efficacy, and a lack of faith in government. COVID-19 vaccination reluctance was reduced due to heightened risk perception. The survey has the drawback of being conducted after COVID-19 immunisation had begun in several medical schools. As a result, it's possible that it underestimated initial vaccine apprehension among individuals who were vaccinated and then converted to the vaccination acceptance group.
2021	Jayadevan R, Shenoy R, Ts A.	Survey of symptoms following COVID-19 vaccination in India	Mild and short-term post-vaccination symptoms were noted by two-thirds of healthcare workers who responded to the survey. The most common symptoms were fatigue, myalgia, and fever. These symptoms matched those seen in prior phase 2/3 trials and were consistent with an immunological response usually linked with vaccinations. In 90% of cases, the effects were either milder than predicted or met the vaccine recipient's expectations. There were no severe incidents recorded. There was no way to report delayed effects because the survey was conducted immediately after vaccination began. The study was conducted on the basis of trust; it was difficult to trace each respondent's I.D. or information. The small proportion of people who received the Covaxin, Pfizer, and Sinopharm vaccinations makes a head-to-head comparison problematic.
2021	Sah R, Shrestha S, Mehta R, Sah SK, Rabaan AA, Dhama K, et al.	AZD1222 (Covishield) vaccination for COVID-19: Experiences, challenges, and solutions in Nepal	Some health workers reported irritation in their mood four hours after immunisation, and myalgia, nausea, soreness at the injection site, and a feverish feeling six hours later. After 12 hours, a fever with chills occurred, which needed to be treated with paracetamol. The fever and headache subsided by the second day of immunisation, but myalgia and pain at the injection site remained. Early morning awakening, head heaviness, and soreness at the injection site persisted on the third day. Vaccine apprehension and literacy are two more issues that have not been addressed.

Literature Reviews

Year	Author	Title	Findings
2021	Samarasekera U.	India grapples with second wave of COVID-19	Vaccine supply has been a problem, with shortages of COVID-19 vaccinations reported in numerous states as early as May. Only 2% of India's 14 billion people had received one dosage of the COVID-19 vaccine as of May 3, and only 9% were fully immunised.
2021	Jain VK, Iyengar KP, Vaishya R.	Differences between First wave and Second wave of COVID-19 in India	COVID-19 patients face an acute lack of hospital beds, oxygen, medication, and ventilators across the country. Although there is no notable increase in the fatality rate in the second wave, the total death statistics are sadly high due to an alarmingly large number of cases.
2021	Sv P, Lathabhavan R, Ittamalla R.	What concerns Indian general public on second wave of COVID-19? A report on social media opinions	The possibility of an increase in deaths due to the new COVID-19 strain, the possibility of reinstating lockdown, whether hospitals have the capacity to deal with the surging COVID-19 cases due to the new strain, the aspect of travelling, whether vaccines will be effective on new strains, and so on have all been investigated.
2021	Ranjan R, Sharma A, Verma MK.	Characterization of the Second Wave of COVID-19 in India	According to the research, the virus is currently far more infectious than it was during the first wave, yet the number of daily deaths per infection is lower. However, with an abnormally high number of patients and an overburdened healthcare system, the daily fatality rate could skyrocket. Because it excludes several aspects like as asymptomatic individuals, lockdowns, immunisation, and so forth, the SIR model may not be very accurate.

Literature Reviews

Year	Author	Title	Findings
2020	Iftimie S, López-Azcona AF, Vallverdú I, Hernández-Flix S, de Febrer G, Parra S, et al.	First and second waves of coronavirus disease-19: A comparative study in hospitalized patients.	It was found during the first period, 204 patients were admitted to the hospital, and 264 were admitted during the second period. Patients in the second wave were younger, with shorter hospital stays and a lower case-fatality rate than those in the first wave. There were more children, as well as pregnant and post-partum women, in the second wave. Fever, dyspnoea, pneumonia, and cough were the most common signs and symptoms in both waves, and the most significant comorbidities were cardiovascular disease, type 2 diabetes mellitus, and chronic neurological diseases. Patients in the second wave had a higher prevalence of renal and gastrointestinal symptoms and were mostly treated with non-invasive mechanical ventilation and corticoids, rather than invasive mechanical ventilation, conventional oxygen therapy, and anticoagulants. A number of differences in mortality risk factors were also discovered.
2021	John Hopkins	Coronavirus second wave? Why cases increase	It was observed that human behaviour is the most important factor. The responses of state and local governments, as well as individuals, to the pandemic vary. Some people take COVID-19 precautions, such as physical separation, hand-washing, and mask use. Others are less stringent in requiring these precautions or restricting certain high-risk activities.



Research Questions

Q1. What is the perception of people about two waves of COVID 19 with respect to infection severity, COVID appropriate behaviour and vaccination?

Q2. Did people behave differently in terms of COVID testing, and COVID appropriate behaviour during two waves of the COVID-19?

1. To assess the perceived severity of the COVID symptoms & post recovery effects, during two different waves of COVID-19.
2. To know the behaviour of people towards COVID testing during two waves of COVID-19.
3. To collect perception towards the severity of vaccination side-effects after the first dose of COVID-19 vaccine.
4. To compare the COVID appropriate behaviour of people during two waves of the COVID-19.

Objectives

Methodology

- **Study design:** An Observational Analytical Cross Sectional Study.
- **Study population:** Anyone above 10 years of age with at least one family member having cell phone participated in the study.
- **Study duration:** Study duration was 3 months from April to July 2021.
- **Study tools:** Structured Survey Questionnaire was used as study tool.

The questionnaire had 6 sections,

- (i) Demographic details,
- (ii) Vaccination status,
- (iii) Post vaccination side effects,
- (iv) COVID-19 infection,
- (v) Post COVID recovery side effects and
- (vi) COVID appropriate behavior. Most of the questions were closed ended to make the tool comprehensible and easy to fill by respondents.

- **Data Collection Methods:**

Primary data: Online survey was conducted using questionnaire which was circulated in the form of Google forms to the target population using email Ids, phone numbers, and linked in.

- **Sampling Method:** Convenience Sampling was done.
- **Sample Size:** 298 respondents choose to participate in the online survey.
- **Data Analysis:** Descriptive statistical tools from MS excel was used to carry out the analysis.
- **Data Representation:** Tables, Charts and graphs using MS Excel were generated to represent the data

Limitations & Ethical Considerations

- **Limitation** – Due to the ongoing COVID – 19 pandemic face to face interviews could not be done, only online survey was done using google forms therefore open ended questions were avoided. Only the families having at least one smart phone with either an account on WhatsApp or having email Id could be surveyed.
- **Ethical Considerations:**
 - The confidentiality of study participants has been maintained throughout the study.
 - The information collected is shared for dissertation purpose only.
 - No one was forced to participate in the study.
 - Consent was taken from every respondent.

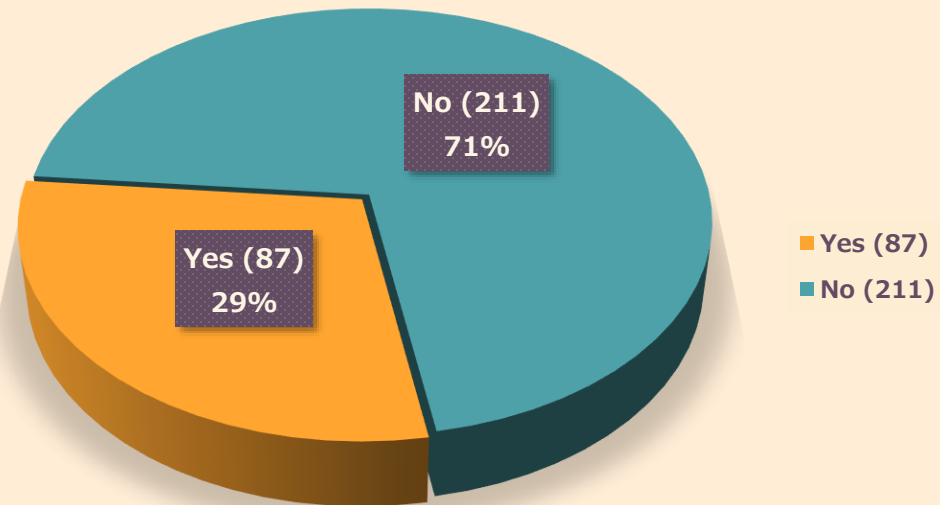
Results & Analysis

Table 1: Demographic Profile of the respondents

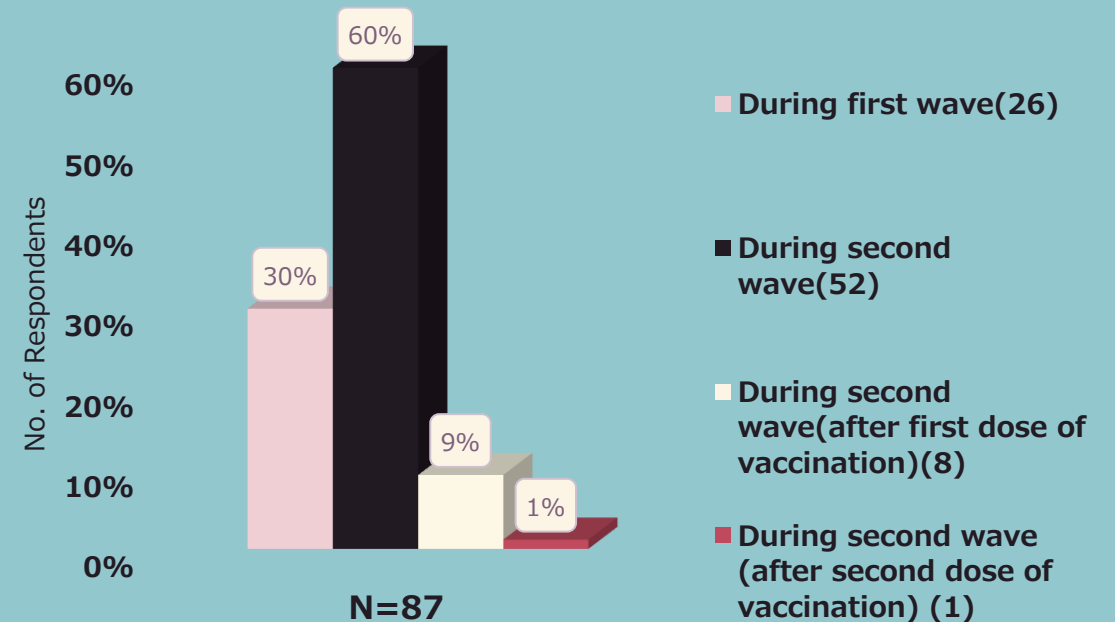
Items	Male		Female		Total	
	No.	%	No	%	No.	%
Respondents interviewed	144	48.3	154	51.7	298	100
Age group						
Less than 18 years	4	3	13	8	17	6
18-44 years	120	83	124	81	244	82
45-60 years	15	10	13	8	28	9
60+	5	3	4	3	9	3
Minimum Age	11		14		11	
Maximum Age	78		72		78	

COVID infection during 1st & 2nd wave

Have you ever experienced symptoms of COVID-19

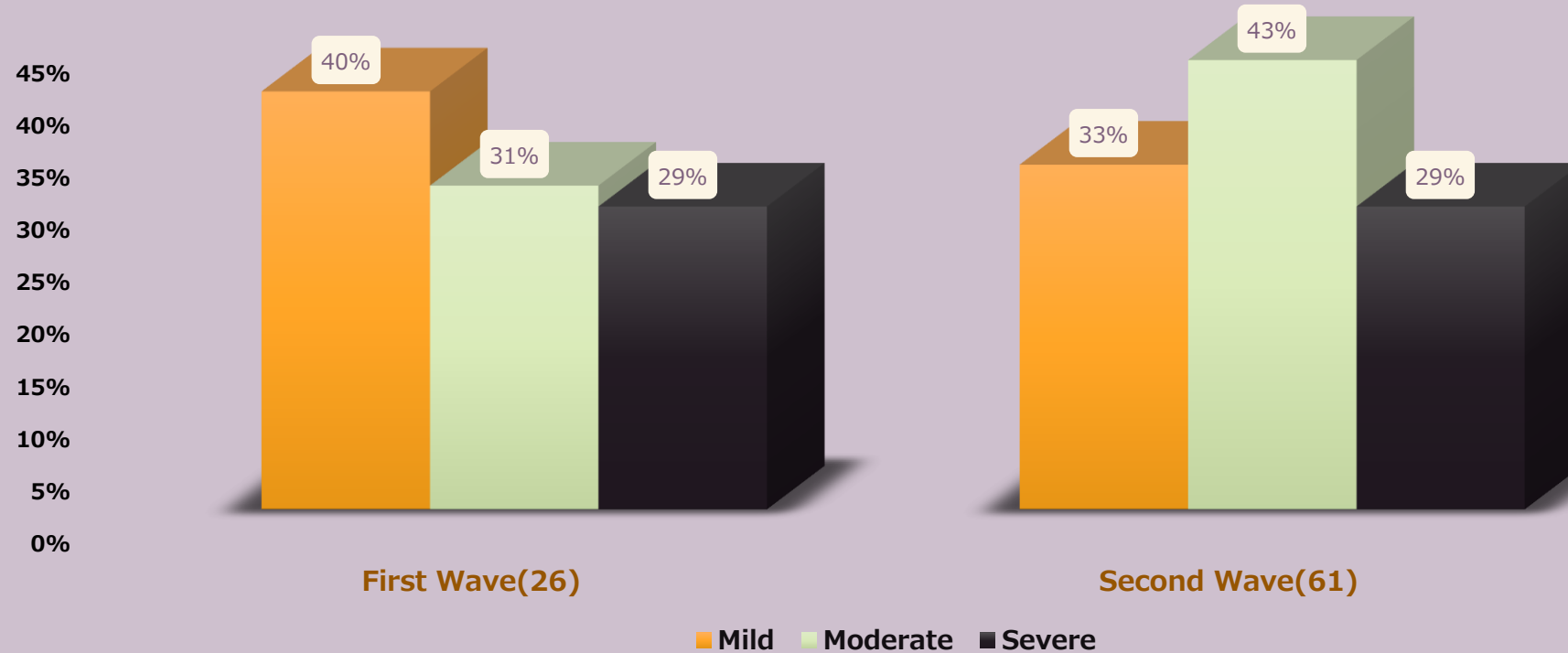


When did you get COVID Infection



Perceived Severity of the COVID symptoms during two waves of COVID-19

Severity of the COVID symptoms during two waves of COVID-19



Severity of the COVID symptoms & post recovery effects, during two different waves of COVID-19

Items	First Wave		Second Wave	
	No	%	No.	%
N	26	30%	61	70%
Symptoms suffered				
Fever	23	88%	58	95%
Cough (new onset or worsening of chronic cough)	20	77%	50	82%
Sore throat	20	77%	48	79%
Runny nose	12	46%	34	56%
Shortness of breath	12	46%	33	54%
Chills	11	42%	29	48%
Fatigue	20	77%	20	33%
General lack of energy or malaise	16	62%	45	74%
Loss of appetite	12	46%	34	56%
Discomfort, tightness, or pressure in chest	12	46%	34	56%
Vomiting	10	38%	24	39%
Nausea	9	35%	22	36%
Diarrhoea	8	31%	23	38%
Muscle aches	16	62%	38	62%
Joint aches	15	58%	35	57%
Headache	13	50%	37	61%
Dizziness	9	35%	28	46%
Altered consciousness or feeling like it was difficult to stay awake	7	27%	28	46%
Loss of ability to smell	20	77%	43	70%
Loss of ability to taste	20	77%	45	74%
Abdominal pain	9	35%	24	39%

Analysis

Table : Cross tabulation for Age group vs Waves of COVID-19

Variables	Total	COVID 19 WAVE 1 ST	COVID 19 WAVE 2 ND	P-value
AGE GROUP	(100%) 87	(29%) 26	(71%) 61	
11-20 Years	(100%) 7	14% 1	86% 6	0.356059633
21-30 years	(100%) 49	29% 14	71% 35	
31-40 years	(100%) 12	42% 5	58% 7	
41-50 years	(100%) 10	30% 3	70% 7	
51-60 years	(100%) 4	0% 0	100% 4	
60+	(100%) 5	60% 3	40% 2	

Table shows the result of chi-square test of independence performed to examine the relation between different age groups and waves of COVID. The relationship identified between the above variables was not significant, **p= 0.356059633**

Therefore, there was no significant different age groups and waves of COVID.

Screening, hospitalization and recovery status during two waves of COVID-19

Items	First Wave		Second Wave		Total
N	26		61		87
	No.	%	No	%	
COVID testing	17	65.4%	52	85.3%	69
Hospitalization was required	5	19.23%	6	9.83	11
Oxygen support was required	3	11.53%	5	8.19%	8
Current Status					
Recovered	24	92%	55	90%	79
Post Recovery Side effects	11	42.3%	20	32.7%	31
Feeling better but not completely recovered	2	8%	4	6%	6
Not completely recovered	0	0	2	4%	2

Analysis

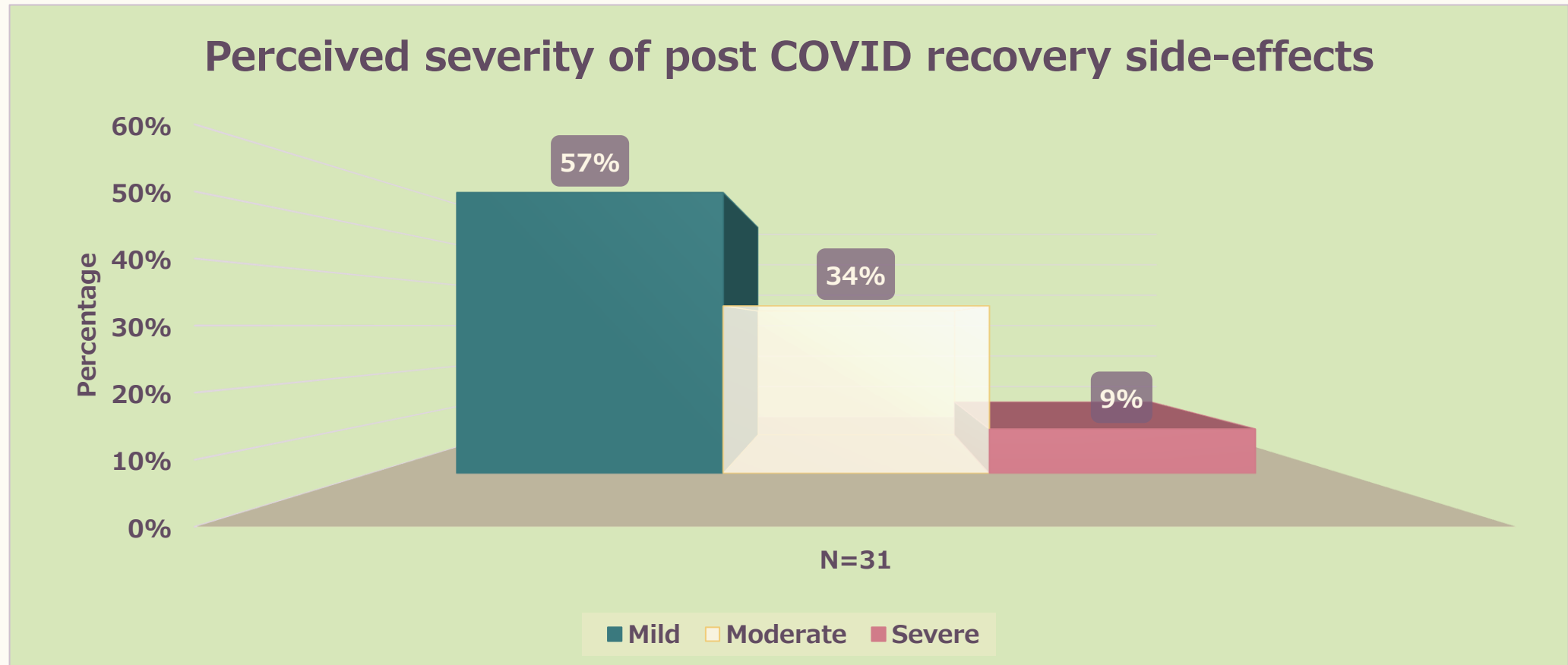
Table : Cross tabulation for COVID-19 testing vs Waves of COVID

Variables	Total	COVID 19 WAVE 1 ST	COVID 19 WAVE 2 ND	P-value
COVID 19 TESTING	(100%)	(100%)	(100%)	
Yes	87 79%	26 65%	61 85%	0.028796968
No	69 21%	17 35%	52 15%	
	18	9	9	

Table shows the result of chi-square test of independence performed to examine the relation between COVID-19 testing during different waves of COVID. The relationship identified between the above variables was **significant, p=0.028796968**

Therefore, there was significant difference between COVID-19 testing during different waves of COVID.

Perceived severity of post COVID recovery side-effects



Perceived severity of post COVID recovery side-effects

Symptoms	Mild		Moderate		Severe		Total
N							31
	No	%	No	%	No	%	
Fever	7	70%	3	30%	0	0%	10
Cough (new onset or worsening of chronic cough)	6	55%	5	45%	0	0%	11
Sore throat	7	64%	3	27%	1	9%	11
Runny nose	7	78%	2	22%	0	0%	9
Shortness of breath	5	36%	9	64%	0	0%	14
Chills	5	71%	2	29%	0	0%	7
Fatigue	4	21%	12	63%	3	16%	19
General lack of energy or malaise	7	35%	9	45%	4	20%	20
Loss of appetite	9	64%	5	36%	0	0%	14
Discomfort, tightness, or pressure in chest	7	50%	7	50%	0	0%	14
Vomiting	5	71%	2	29%	0	0%	7
Nausea	7	78%	1	11%	1	11%	9
Diarrhoea	5	63%	3	38%	0	0%	8
Muscle aches	4	25%	9	56%	3	19%	16
Joint aches	5	31%	7	44%	4	25%	16
Headache	8	50%	6	38%	2	13%	16
Dizziness	7	37%	5	26%	7	37%	19
Altered consciousness or feeling like it was difficult to stay awake	4	50%	4	50%	0	0%	8
Loss of ability to smell	6	55%	3	27%	2	18%	11
Loss of ability to taste	7	64%	1	9%	3	27%	11
Abdominal pain	7	88%	1	13%	0	0%	8
Fungal Infection	1	100%	0	0%	0	0%	1

Post COVID recovery side effects

Need of consultation and hospitalization due to post COVID recovery effects

As shown in table 3, out of 31 respondents, 17(54.8%) respondents require consultation and 3.2% (1 respondent) required hospitalization due to side effects.

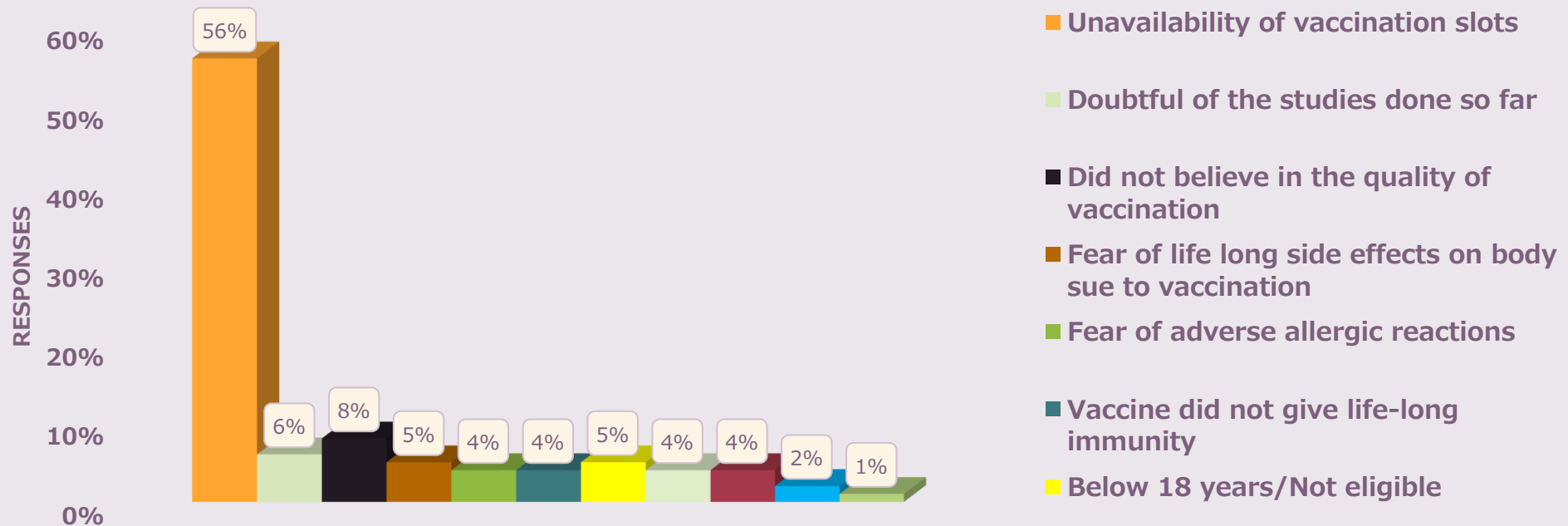
Current status

As shown in table 3, out of all the respondents, 21(67.7%) respondents recovered and are symptoms free, while 18(25.8%) respondents are feeling better but not completely recovered and 2(6.5%) respondents are still not feeling better.

Vaccination status and post vaccination side effects and their severity

Items	No.	%
N	298	
Vaccination Status		
Yes	131	44%
No	167	66%

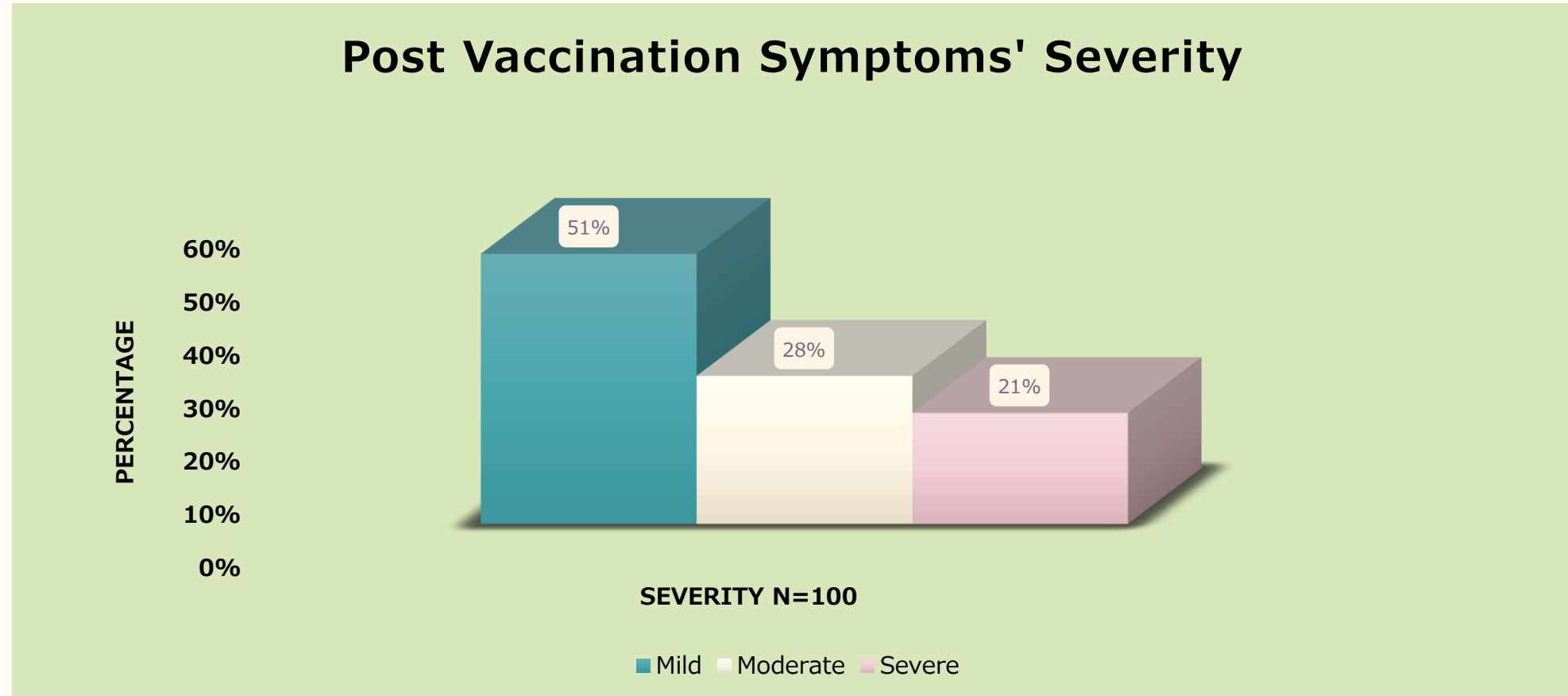
Reasons of not taking vaccination



Vaccination status

Items	No.	%
N	131	
Doses		
First Dose	96	73.30%
Second Dose	35	43.60%
Type of Vaccination	131	
Covishield	107	81.70%
Covaxin	27	18.30%
Paid/Free		
Paid	17	13%
Free	114	87%
Ease of getting vaccinated	131	
Very Easy	57	43.50%
Easy	48	36.60%
Difficult	13	9.90%
Very Difficult	13	9.90%
Post vaccination side-effects	100	76%
Days to recover	100	
< 24 hours	48	48%
24-48 hours	38	38%
>48 hours	14	14%

Post Vaccination Symptoms' Perceived Severity



Post Vaccination Symptoms suffered and its perceived severity

Symptoms	Mild		Moderate		Severe	
	No	%	No	%	No	%
Tiredness	42	51%	31	38%	9	11%
Body ache	31	40%	37	48%	9	12%
Fever	35	43%	28	34%	19	23%
Headache	36	52%	20	29%	13	19%
Joint pain	17	39%	16	36%	11	25%
Nausea	9	50%	6	33%	3	17%
Vomiting	9	50%	6	33%	3	17%
Diarrhoea	13	57%	6	26%	4	17%
Dizziness	13	57%	6	26%	4	17%
Chills	14	56%	6	24%	5	20%
Sore throat	13	68%	2	11%	4	21%
Allergic rashes	11	61%	3	17%	4	22%
Sleeplessness	8	30%	8	30%	11	41%
Giddiness	11	65%	1	6%	5	29%

COVID infection among those vaccinated and non-vaccinated

Items	Got COVID infection		Did not get COVID infection		Total
	No	%	No	%	
Vaccination done	9	6.8%	122	93.2%	131
Vaccination not done	78	46.7%	89	53.3%	167

Analysis

Table : Cross tabulation for Vaccination Dose vs COVID-19

Variables	Total	Vaccination done	Vaccination not done	P-value
COVID infection	(100%) 298	(100%) 131	(100%) 167	
Yes	29% 87	7% 9	47% 78	0.0000
No	71% 211	93% 122	53% 89	

Above mentioned table shows the result of chi-square test of independence performed to examine the relation between different doses of vaccination and COVID-19 infection. The relationship identified between the above variables was significant, $p=0.0000$

Therefore, there is significant relation between the vaccination and COVID-19 infection.

Behavioural changes to protect from COVID-19

Activities	Always	Often	Sometimes	Rarely	Never
More handwashing than usual	68%	22%	5%	1%	4%
More use of hand sanitizer than usual	59%	24%	11%	3%	3%
More cleaning in your home than usual	59%	24%	12%	2%	3%
More disinfecting surfaces in household than usual	53%	30%	12%	3%	3%
Disinfecting or wiping down groceries.	63%	24%	9%	1%	3%
Disinfecting or wiping down mail or packages.	62%	22%	11%	3%	2%
Stocking up on food and supplies	41%	18%	21%	8%	11%
Avoiding or cancelling domestic travel	61%	21%	9%	4%	1%
Avoiding or cancelling international travel	68%	13%	7%	5%	7%
Not ordering take out from restaurants.	53%	19%	16%	6%	6%
Wearing a mask when out in public	88%	6%	4%	0%	2%
Kept six feet distance from those outside	71%	19%	7%	1%	2%

Behavioural changes during two waves of COVID-19

Activities	1 st wave only	2 nd wave only	Both	None
More handwashing than usual	21%	17%	61%	2%
More use of hand sanitizer than usual	26%	17%	56%	2%
More cleaning in your home than usual	22%	17%	58%	3%
More disinfecting surfaces in household than usual	23%	18%	56%	3%
Disinfecting or wiping down groceries.	21%	16%	59%	3%
Disinfecting or wiping down mail or packages.	22%	16%	59%	3%
Stocking up on food and supplies	25%	15%	44%	16%
Avoiding or cancelling domestic travel	15%	16%	65%	4%
Avoiding or cancelling international travel	15%	15%	66%	5%
Not ordering take out from restaurants.	19%	16%	61%	4%
Wearing a mask when out in public	16%	12%	70%	2%
Kept six feet distance from those outside	18%	12%	68%	2%

Conclusion

- It was found that the people who got infected due to COVID 19, most of them (70%) got the infection during second wave of COVID-19. The most common experienced by respondents were fever, cough, tiredness, loss of ability to smell & taste, and general lack of energy.
- Out of the 87 respondents who got COVID, 31(35%) respondents experienced post recovery effects, the most common side effects were joint aches, muscle aches, lethargy, general weakness.
- Out of 298 respondents total 131(43.6%) people have received the vaccination, among which 96(73.3%) received first dose of the vaccination and 35(26.7%) received both the doses of the vaccination.
- Out of 131 respondents who received COVID Vaccination, 100(76%) respondents says that they experienced few symptoms/side-effects post COVID vaccination. Tiredness, fever, joint pain, muscle aches were the commonly experienced symptoms 51% of the symptoms were mild. Out of 131 respondents who got vaccinated 9 respondents got COVID infection after the vaccination.
- Due to COVID 19 and lockdown it was found that 62% respondents experienced changes in their lifestyle to greater extent. During two waves of COVID-19, 60% of the respondents followed the COVID appropriate behaviour during both the waves, 20% of the respondents followed the behaviour more rigorously during 1st wave as compared to that of 2nd wave, where 16% respondents followed the behaviour.
- In statistical analysis it was found that COVID testing and COVID infection has a significant relationship, also the relation between different age groups and COVID 19 was found to be significant. Knowledge and awareness about what to expect following immunization will help educate the public, prevent misinformation, and reduce vaccine hesitancy³. Also, it is important to be aware of the newest symptoms of COVID-19 to be able to identify them, take timely treatment and avoid complications.

THANK YOU

