



Title: The incidence and severity of post vaccine reaction after vaccination against covid-19 in Bangladesh prospective.

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DECLARATION

I hereby declare that this thesis is based on my own independent work, except for quotations and summaries which have been duly acknowledged on the reference page and completed under the supervision of Prof. DR. J.M.A Hannan. I also declare that no part of this work has been submitted for any degree to this or any other university.

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Title: The incidence and severity of post vaccine reaction after vaccination against covid-19 in Bangladesh prospective.

Introduction: Corona virus disease (Covid-19) is an infectious disease caused by the SARS-CoV-2 virus. The first known case identified in Wuhan, China, in December 2019. The pandemic of covid-19 might be limited by vaccination. Society should be vaccinated to prevent the spread of coronavirus disease 2019 and to protect persons who are at high risk for complications. Vaccination is a simple, safe and effective way of protecting you against harmful disease before you come into contact with them. It uses your body's natural defenses to build resistance to specific infections and makes your immune system stronger.

The Oxford-AstraZeneca vaccine was the only covid-19 vaccine authorized for emergency use from January to April 2021. Bangladesh ordered vaccines produced by Serum Institute of India. However, it delivered less than half of the doses agreed to Bangladesh. After the vaccine shortage due to this, Bangladesh approved the Russian Sputnik-V and Chinese Sinopharm BIBP vaccine for emergency use in late April 2021. Bangladesh has also authorized the emergency use of Pfizer-BioNTech covid-19 vaccine. At last October 2021 Bangladesh has fully approved 7 covid-19 vaccines. Such as Moderna (mRNA-1273) approved in 77 countries 32 trials in 8 countries. Pfizer/BioNTech BNT162b2 approved in 107 countries 45 trials in 21 countries. Gamaleya (Sputnik V) approved in 73 countries 22 trials in 7 countries. Janssen (Johnson & Johnson) ad26.cov2.s approved in 78 countries 16 trials in 18 countries Serum Institute of India Covishield (Oxford/AstraZeneca formulation) approved in 46 countries 2 trials in 1 country. Sinopharm BBIBP-Cor V. Approved in 68 countries, 19 trials in 10 countries. Sinovac approved in 43 countries 26 trials in 8 countries.

Common side effects after vaccinations are pain, redness, swelling, tiredness, headache, muscle pain, chills, fever, nausea. Complication may include pneumonia. Acute respiratory distress syndrome, multi organ failure, septic shock, and death. Bangladesh began the administration of covid-19 vaccines on 27 January 2021 while mass vaccination started on 7 February 2021. Percentage of the population vaccinated at least one dose as of February 17, 2022.

No one got immunity test after giving covid-19 vaccine in Bangladesh. If anyone tests immunity one can get an idea of when the vaccine is effective. As a result, the fear of some people about covid-19 vaccine will go away.

Moderna vaccine complications are much more than other vaccines.

2.OBJECTIVES OF THE STUDY

a. General objectives:

To find out the severity of the post vaccine reaction after vaccination against covid-19.

b. Specific objective:

1. To identify the relationship which vaccine have you received and symptoms appear after vaccination.

2. To give suggestions & recommendations to reduce severity after covid-19 vaccination.

3. Hypothesis:

The following hypothesis have been developed to meet the study objectives.

Ho: There is positive relationship between the severities of the post vaccine reaction after vaccination against covid-19.

Ha: There is no positive relationship between the severities of the post vaccine reaction after vaccination against covid-19.

4. MATERIALS AND METHOD

1. **Study design and data sources:** The study is based on cross sectional study. This study utilizes the data extracted from primary data sources. The data consists of the severity of post vaccine reaction after covid-19 vaccination. Here, severity after vaccination is dependent variable and the socio demographic factor are independent variable. <20->60 years aged group in Bangladesh are the study participants.
2. **Area of study:** The study was conducted in Evercare Hospital Dhaka. Total 470 client we are selected among them some were rural, some were urban, and some were semi-rural. All respondent were questioned. High school or less, a diploma or bachelor's degree, postgraduate studies, and others are the different classifications.
3. **Study population:** Data was collected from 470 clients.
4. **Study period:** The study was conducted from August 2021 to January 2022.
5. **Inclusion criteria:** vaccinated client both male and female.
6. **Exclusion criteria:** Unwilling to participate or unable to comply with protocol requirement.
7. **Procedure: Questionnaire:** Data was collected through interview using convenient
8. **Variable:** Age-in this research age of the respondents are categorized as less than 20 years, 20-29 years, 30-39 years, 40-49 years, 50-59 years, more than 60 years.
 - **Place of residence:** this variable has three categories-rural, urban, and semi-urban.
 - **Education:** the categories are High school or less, a diploma or bachelor's degree, postgraduate studies, and others.
 - **Sex:** this variable is determined by two categories-female and male.

RESULT:

Table 1: Descriptive analytic survey of background characteristics.

This study included 470 participates. In sex of the respondents male 54.5% and female 45.5%. In table 1, about 23.6% of the participates are 20-29 years old, with the remaining

18.9%, 18.1%, 16.2%, 15.7%, 7.4% of the participates being 40-49 years, >60 years, 50-59 years, 30-39 years, <20 years age group. From the frequency distribution analysis it's observed that 36.6% had high school, 26.4% had completed their Postgraduate, 26.0% had bachelors and 11.1% had completed other education. In profession 17.7% are Business, 16.8% are Housewife, 14.7 % are others, 12.6% are teacher, 11.5% nurse, 7.7% are student, 6.6% are doctor, 4.0% engineer, 3.6% government service, 2.8% farmer, 1.3% Pharmacist, 0.9% driver. In residence urban has the highest percentage 51.1% & rural has the lowest 48.9%. About chronic disease Hypertension 31.1%, no disease 24.3%, Diabetes mellitus 17.4%, Chronic respiratory disease 11.9%, Others disease 7.0%, Obesity 6.0%, Thyroid disorder 2.3%. About smoker (cigarettes or shisha) 57.2% Non-smoker & 42.8% Smoker. About suffering from an allergy to any types of food or medicine 56.8% have no allergy, 43.2% have allergy. People who are affected with covid-19 before vaccination among them 51.7% people not infected, 48.3% people were infected. 58.3% people not feel scared & 41.7% people scared to receive a covid-19 vaccine before vaccination.

Before vaccination 31.9% people have no choice, 20.9% people moderna, 17.2% Pfizer, 13.0% people sinopharm, 10.2% astrazeneca, & 6.8% people have choice to covaxin. Most of the participate know about covid-19 vaccine through social media platforms that is 25.7%, 23.6% Government owned media platform, 22.1% Friends and relatives, 17.2% Scientific and medical websites & 11.3% have no information. In this table we can see that, most of the participant received sinopharm vaccine that is 23.6%, 20.2% Moderna, 19.6% Astrazeneca, 16.8% taken Pfizer, 11.1% taken Johnson & Johnson, 8.5% taken Covaxin vaccine. Among all participates two doses taken 41.5%, single dose taken 30.2% & booster dose taken 28.3%. About the duration from 1st dose to 2nd dose after 30 days 29.8%, after 28 days 26.0%, after More than 45 days 24.7%, after 45 days 19.6%. 61.3% have not got infected with covid-19 after vaccination & 38.7% have got infected with covid-19 after vaccination. 56.8% people think that covid-19 vaccines are safe in the long term & 43.2% people think that covid-19 vaccines are not safe in the long term. 53.8% people feel more reassured after vaccination, & 46.2% people do not feel more reassured after vaccination. 57.0% people think that after the following of sterilization and social distance measure as well as wearing medical face masks, is still necessary after vaccination & 43.0% people do not think that after the following of sterilization and social distance measure as well as wearing medical face masks, is still necessary after vaccination.

51.5% people are monitoring their vital signs more frequent after vaccination and 38.5% people are not monitoring their vital signs more frequent after vaccination. 53.0% participates are advise other to get vaccine for covid-19 and 47.0% participates are not advise other to get vaccine for covid-19. 36.4% have you noticed yes, mild symptoms after vaccination, 33.6% have you noticed yes, moderate symptoms after vaccination and 30.0% have you noticed no symptoms after vaccination. Most of the participates have no complication that is, 32.6%, fever 20.4%, Tiredness and fatigue 15.7%, Pain or swelling at the injection site 17.7%, Headache 13.6%. 40.8% have no irritation and allergic skin reaction, or itchy skin, 29.8% have experienced irritation and allergic skin reaction, or itchy skin more than 6 weeks and 29.4% have experienced irritation and allergic skin reaction, or itchy skin less than 6 weeks.

Most of the cases symptoms appeared within 5-8 hours after vaccination, that is 38.1%, after 9-12hours 24.3%, up-to 4 hours 15.1%, after 21-24 hours 12.8%, after 13-16 hours 9.8%. The symptoms last 39.6% 1-3 days, 28.1% Less than 1 day, 16.2% 4-7 days, 16.2% More than 7

days. To relieve the symptoms that appeared after vaccination 55.5% took painkillers while staying at home, 44.5% took rest at home.

GENDER

Characteristics	Frequency	Percentages
Male	256	54.5
Female	214	45.5
Total	470	100

Age Category

Characteristics	Frequency	Percentages
<20 yrs	35	7.4
20-29 yrs	111	23.6

30-39 yrs	74	15.7
40-49 yrs	89	18.9
50-59 yrs	76	16.2
>60 yrs	85	18.1
Total	470	100

Educational Level

Characteristics	Frequency	Percentages
High school	172	36.6
Bachelor's	122	26.0
Postgraduate	124	26.4
Others	52	11.1
Total	470	100

Profession

Characteristics	Frequency	Percentages
Doctor	31	6.6
Nurse	54	11.5
Student	36	7.7
Teacher	59	12.6
Government service	17	3.6
Engineer	19	4.0
Farmer	13	2.8
Pharmacist	6	1.3
Driver	4	0.9
Housewife	79	16.8
Business	83	17.7
Others	69	14.7
Total	470	100

Place of residence

Characteristics	Frequency	Percentages
Urban	240	51.1
Rural	230	48.9
Sub-rural	0	0
Total	470	100

Are you suffering from any chronic disease?

Characteristics	Frequency	Percentages
No	114	24.3
Diabetes mellitus	82	17.4
Hypertension	146	31.1
Chronic respiratory disease	56	11.9
Obesity	28	6.0
Thyroid disorder	11	2.3
Others disease	33	7.0
total	470	100

Are you smoker (cigarettes or shisha)?

Characteristics	Frequency	Percentages
Smoker	201	42.8
Non-smoker	269	57.2
Total	470	100

Are you suffering from an allergy to any types of foods or medicines?

Characteristics	Frequency	Percentages
Yes	203	43.2
No	267	56.8
Total	470	100

Have you been infected with covid-19 before vaccination?

Characteristics	Frequency	Percentages
Yes	227	48.3
No	243	51.7
Total	470	100

Did you feel scared to receive a covid-19 vaccine before vaccination?

Characteristics	Frequency	Percentages
Yes	196	41.7
No	274	58.3
Total	470	100

Before vaccination, which type of covid-19 vaccines did you prefer?

Characteristics	Frequency	Percentages
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Astrazeneca	48	10.2
Pfizer	81	17.2
Sinopharm	61	13.0
Moderna	98	20.9
Covaxin	32	6.8
I have no prefer	150	31.9
Total	470	100

How did you know about covid-19 vaccines?

Characteristics	Frequency	Percentages
Government owned media platforms	111	23.6
Social media platforms	121	25.7
Friends and relatives	104	22.1
Scientific and medical websites	81	17.2
I have no information	53	11.3
Total	470	100

Which type of covid-19 vaccines have you received?

Characteristics	Frequency	Percentages
Astrazeneca	92	19.6
Pfizer	79	16.8
Sinopharm	111	23.6
Johnson & johnson	53	11.3
Moderna	95	20.2
Covaxin	40	8.5
Total	470	100

How many doses have you received so far?

Characteristics	Frequency	Percentages
Two doses	195	41.5
Single dose	142	30.2
Booster dose	133	28.3
Total	470	100

Duration from 1st dose to 2nd dose

Characteristics	Frequency	Percentages
28 days	122	26.0
30 days	140	29.8
45 days	92	19.6
More than 45 days	116	24.7

Total	470	100
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Have you got infected with covid-19 after vaccination?

Characteristics	Frequency	Percentages
Yes	182	38.7
No	288	61.3
Total	470	100

Do you think that covid-19 vaccines are safe in the long term?

Characteristics	Frequency	Percentages
Yes	267	56.8
No	203	43.2
Total	470	100

Do you feel more reassured after vaccination?

Characteristics	Frequency	Percentages
Yes	253	53.8
No	217	46.2
Total	470	100

Do you think that after the following of sterilization and social distance measure as well as wearing medical face masks, is still necessary after vaccination?

Characteristics	Frequency	Percentages
Yes	268	57.0
No	202	43.0
Total	470	100

Are you monitoring your vital signs more frequent after vaccination?

Characteristics	Frequency	Percentages
Yes	228	38.5
No	242	51.5
Total	470	100

Do you advise other to get vaccine for covid-19?

Characteristics	Frequency	Percentages
Yes	249	53.0
No	221	47.0
Total	470	100

Have you noticed any symptoms following vaccination?

Characteristics	Frequency	Percentages
No symptoms	141	30.0
Yes, mild symptoms	171	36.4
Yes, moderate symptoms	158	33.6
Total	470	100.0

Complication after vaccination

Characteristics	Frequency	Percentages
Tiredness and fatigue	74	15.7
Fever	96	20.4
Headache	64	13.6
Pain or swelling at the injection site	83	17.7
No complication	153	32.6
Total	470	100

Have you experienced irritation and allergic skin reaction, or itchy skin?

Characteristics	Frequency	Percentages
<6 weeks	138	29.4
>6 weeks	140	29.8
No	192	40.8
Total	470	100

How soon did the symptoms appear after injection with a covid-19 vaccine?

Characteristics	Frequency	Percentages
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Upto 4 hours	71	15.1
5-8 hours	179	38.1
9-12 hours	114	24.3
13-16 hours	46	9.8
21-24 hours	60	12.8
Total	470	100

How long did the symptoms last?

Characteristics	Frequency	Percentages
Less than 1 day	132	28.1
1-3 days	186	39.6
4-7 days	76	16.2
More than 7 days	76	16.2
Total	470	100

How did you act to relieve the symptoms that appeared after vaccination?

Characteristics	Frequency	Percentages
Took rest at home	209	44.5
Took painkillers while staying at home	261	55.5
Total	470	100

Table 2- Relationship between the chronic disease and symptoms after vaccination.

Are you suffering from any chronic disease?	Have you noticed any symptoms after vaccination?			
	No symptoms	Yes, mild symptoms	Yes, moderate symptoms	TOTAL
No	22.8%	45.6%	31.6%	100%
Diabetes mellitus	19.5%	57.3%	23.2%	100%
Hypertension	50.0%	30.8%	19.2%	100%
Chronic respiratory disease	26.8%	7.1%	66.1%	100%
Obesity	21.4%	32.1%	46.4%	100%
Thyroid disorders	18.2%	45.5%	36.4%	100%
Others disease	9.1%	27.3%	63.6%	100%
Total	30.0%	36.4%	33.6%	100%

Chi-square tests

	Value	Df	Asymptotic significance(2-sided)
Person chi-square	98.368a	12	.000
Likelihood Ratio	98.803	12	.000
Linear-by-linear association	16.754	1	.000
No of valid cases	470		

a.3 cells (14.3%) have expected count less than 5.the minimum expected count is 3.30.

Table 3- Relationship between smoker (cigarettes or shisha) and any symptoms after vaccinations

Are you smoker (cigarettes or shisha)	Have you noticed any symptoms after vaccination?			
	No symptoms	Yes, mild symptoms	Yes, moderate symptoms	Total
Yes	21.4%	33.3%	45.3%	100%
No	36.4%	38.7%	24.9%	100%
Total	30.0%	36.4%	33.6%	100%

Chi-square tests

	Value	Df	Asymptotic significance(2-sided)
Person chi-square	23.764a	2	.000
Likelihood Ratio	23.890	2	.000
Linear-by-linear association	22.666	1	.000
No of valid cases	470		

a.0 cell (.0) have expected count less than 5.the minimum expected count is 60.90.

Table 3- Relationship between suffering from allergy to any types of foods or medicine and any symptoms after vaccinations

	Have you noticed any symptoms after vaccination?
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Are you suffering from an allergy to any foods or medicines?	No symptoms	Yes, mild symptoms	Yes, moderate symptoms	Total
Yes	26.1%	32.0%	41.9%	100%
No	33.0%	39.7%	27.3%	100%
Total	30.0%	36.4%	33.6%	100%

Chi-square tests

	Value	Df	Asymptotic significance(2-sided)
Person chi-square	10.917a	2	.004
Likelihood Ratio	10.877	2	.004
Linear-by-linear association	8.287	1	.004
No of valid cases	470		

a.0 cell (.0) have expected count less than 5.the minimum expected count is 60.90.

Table 4- Relationship between which vaccine have you received and any symptoms after vaccinations

which vaccine have you received?	Have you noticed any symptoms after vaccination?			
	No symptoms	Yes, mild symptoms	Yes, moderate symptoms	Total
Astrazeneca	31.5%	44.6%	23.9%	100%
Pfizer	26.6%	51.9%	21.5%	100%
Sinopharm	56.8%	27.0%	27.0%	100%
Johnson & Johnson	28.3%	26.45	26.4%	100%
Moderna	8.3%	30.5%	30.5%	100%
Covaxin	12.5%	40.0%	40.0%	100%
Total	30.0%	36.4%	36.45	100%

Chi-square tests

	Value	Df	Asymptotic significance(2-sided)
Person chi-square	99.550a	10	.000

Likelihood Ratio	99.361	10	.000
Linear-by-linear association	33.664	1	.000
No of valid cases	470		

a.0 cell (.0%) have expected count less than 5.the minimum excepted count is 12.00.

DECLARATION

I thereby declare that thesis is based on my own independent work, except for quotations and summaries which have been duly acknowledged on the reference page and completed under the supervision of Prof.DR.J.M.A Hannan. I also declare that no part of this work has been submitted for any degree to this or any other university.

Submitted To,

Prof.DR.J.M.A Hannan.

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APPROVAL OF SUPERVISOR

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I would like to acknowledge and I would like to thank God, for letting me through all the difficulties. I have experienced your guidance day by day. You are the who let me finish my degree. I will keep on trusting you for my future.

