FACTORS ASSOCIATED WITH COVID-19 VACCINE HESITANCY AMONG HEALTH WORKERS IN THE UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL

## Research Questions

1. What is the level of knowledge of COVID-19 vaccines among health workers in the University of Port Harcourt Teaching Hospital?
2. What is the proportion of uptake of the COVID-19 vaccine among health workers in the University of Port Harcourt Teaching Hospital?
3. What is the proportion of COVID-19 vaccine hesitancy among health workers at the University of Port Harcourt Teaching Hospital?
4. What factors (socio-demographic) are associated with vaccine hesitancy among health workers in the University of Port Harcourt Teaching Hospital?

## 

## **Aim and Objectives of the Study**

**Aim of the study**

This study aimed to determine the prevalence of COVID-19 vaccine hesitancy and its associated factors among health workers at the University of Port Harcourt Teaching Hospital Rivers State Nigeria.

**Specific objectives**

1. To assess knowledge of the COVID-19 vaccine among health workers at the University of Port Harcourt Teaching Hospital.
2. To determine uptake of COVID-19 Vaccine among health workers in the University of Port Harcourt Teaching Hospital.
3. To determine the proportion of COVID-19 vaccine-hesitancy among health workers in the University of Port Harcourt Teaching Hospital.
4. To identify factors (sociodemographic) associated with COVID-19 vaccine hesitancy among health workers in the University of Port Harcourt Teaching Hospital.

**Data Analysis Plan**

Data obtained was computed, sorted, and cleaned using a Microsoft Excel sheet (2016 version) on windows 10 and analysed using IBM SPSS version 25.

**Descriptive Statistics:**

Categorical data were presented in the form of frequencies and percentages (%) and Continuous data in means and standard deviation (SD) with results presented in tables. The knowledge was determined by computing a total percentage of correct responses for each of the respondents, the percentage correct score was further grouped into three categories; poor knowledge (0-49%), fair knowledge (50-79%), good knowledge (80-100%). The level of vaccine hesitancy was determined by computing a percentage score for the vaccine hesitancy questions, the percentage score when then grouped into low hesitancy (0-49%), moderate hesitancy (50-79%) and high hesitancy(80-100%).

## Inferential Statistics:

The Chi-square (χ2) test analysis was performed to test for association between the dependent variable which is the COVID-19 Vaccine hesitancy and independent variables such as sex, age, occupation, income, marital status, duration of service and to determine the level of statistical significance between the variables associated. An observation was said to be statistically significant if the “p-value is less than or equal to 0.05 (≤0.05). Statistically significant variables were subjected to Multivariate regression analysis.

## RESULT

### Table 4.1: Social Demographic Characteristics of the respondents

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| **Sex** |  |  |
| Male | 178 | 46.1 |
| Female | 208 | 53.9 |
| **Age group** |  |  |
| 20-29 | 133 | 34.5 |
| 30-39 | 181 | 46.9 |
| 40-49 | 49 | 12.7 |
| 50-59 | 21 | 5.4 |
| 60and above | 2 | 0.5 |
| **Marital status** |  |  |
| Single | 199 | 51.6 |
| Married | 181 | 46.9 |
| Separated | 4 | 1.0 |
| Divorced | 1 | 0.3 |
| Widowed | 1 | 0.3 |
| **Professions** |  |  |
| Doctors | 182 | 47.2 |
| Nurses | 151 | 39.1 |
| Lab Scientists | 26 | 3.9 |
| Physiotherapists | 7 | 1.8 |
| Dieticians | 3 | 0.8 |
| Optometrists | 2 | 0.5 |
| Pharmacists | 15 | 3.9 |
| **Education** |  |  |
| University/First Degree | 322 | 83.4 |
| Diploma completed | 19 | 4.9 |
| Masters completed | 33 | 8.5 |
| Fellowship completed | 18 | 4.7 |
| **Monthly income** |  |  |
| <100000 | 59 | 15.3 |
| 100000-199999 | 208 | 53.9 |
| 200000-299999 | 69 | 17.9 |
| 300000-399999 | 30 | 7.8 |
| 400000-499999 | 17 | 4.4 |
| ≥500000 | 3 | 0.8 |
| **Duration of service** |  |  |
| < 5 years | 227 | 58.8 |
| 5-9 years | 92 | 23.8 |
| 10-14 years | 39 | 10.1 |
| 15-19 years | 17 | 4.4 |
| ≥20 years | 11 | 2.8 |

The result shows that 208(53.9%) of the respondents were females, 181(46.9%) of the respondents were between the age of 30-39 years, 199(51.6%) were singles, 182(47.2%) were doctors, 320(82.9%) had university first degree, 208(53.9%) earn between 100000-199999 and 227(58.8%) had been in service < 5 years.

### Table 4.1b: Knowledge of COVID-19 among the respondents

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| Legally mandatory to take COVID 19 |  |  |
| Yes | 76 | 19.7 |
| No | 218 | 56.5 |
| Don’t know | 92 | 23.8 |
| **Infants less than one year eligible** |  |  |
| Eligible | 39 | 10.1 |
| Not eligible | 285 | 73.8 |
| Don’t know | 62 | 16.1 |
| **Children/Adolescents less than 18 eligible** |  |  |
| Eligible | 193 | 50.0 |
| Not eligible | 126 | 32.6 |
| Don’t know | 67 | 17.4 |
| **Adults 18 or above eligible** |  |  |
| Eligible | 330 | 85.5 |
| Not eligible | 28 | 7.3 |
| Don’t know | 28 | 7.3 |
| **Pregnant Ladies/Lactating mothers eligible** |  |  |
| Eligible | 137 | 35.5 |
| Not eligible | 162 | 42.0 |
| Don’t know | 87 | 22.5 |
| **Patients with chronic diseases are eligible** |  |  |
| Eligible | 222 | 57.5 |
| Not eligible | 87 | 22.5 |
| Don’t know | 77 | 19.9 |

### Table 4.1c: Knowledge of COVID-19 among the respondents

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| **Active COVID patients are eligible** |  |  |
| Eligible | 234 | 60.6 |
| Not eligible | 99 | 25.6 |
| Don’t know | 53 | 13.7 |
| **Recovered COVID patients eligible** | |  |
| Eligible | 278 | 72.0 |
| Not eligible | 50 | 13.0 |
| Don’t know | 58 | 15.0 |
| **Persons allergic to food/drugs eligible** |  |  |
| Eligible | 180 | 46.6 |
| Not eligible | 72 | 18.7 |
| Don’t know | 134 | 34.7 |
| **Immune comprised patients eligible** |  |  |
| Eligible | 148 | 38.3 |
| Not eligible | 112 | 29.0 |
| Don’t know | 126 | 32.6 |
| **Immunity will be achieved after** | |  |
| First dose | 126 | 32.6 |
| Second dose | 119 | 30.8 |
| Fourteen days after the first dose | 141 | 36.5 |
| **Source of news** |  |  |
| Eligible | 54 | 14.0 |
| Not eligible | 163 | 42.2 |
| Don’t know | 169 | 43.8 |

In measuring the overall level of knowledge of the COVID-19 vaccine, 16-point questions were used. Those that were in favour of eligibility were scored 1 point while those that favoured ineligibility and “don’t know” were scored 0 points. Participants that scored 8 and above out of the 16 questions were noted to have good knowledge while those below 8 out of the 16 questions were noted to have poor knowledge. The table shows that 218(56.5%) of the respondents reported that it is not mandatory to take the COVID-19 vaccine, 285(73.8%) reported that infants less than one are not eligible to take the vaccine, 193(50.0%) reported that children/adolescents less than 18 are eligible, 330(85.5%) reported that adult 18 or above are eligible, 162(42.0%) reported that pregnant ladies/lactating mothers are not eligible and finally, 222(57.5%) reported that patients with chronic diseases are eligible to get the COVID-19 vaccine. The result shows that 234(60.6%) of the respondents reported that active COVID-19 patients are eligible to receive the COVID-19 vaccine, 278(72.0%) reported that recovered COVID-19 patients are eligible to receive the vaccine, 180(46.6%) reported that persons allergic to food/drugs are eligible, 148(38.3%) reported that immune-compromised patients are eligible, 126(32.6%) reported that immunity will be achieved after the first doses.

### Table 4.1d: Level of knowledge of COVID-19 of the respondents

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| Poor | 166 | 43.0 |
| Fair | 127 | 32.9 |
| Good | 93 | 24.1 |

The table shows that 166(43.0%) of the respondents had poor knowledge 127(32.9%) had fair knowledge and 93(24.1%) had good knowledge.

### Table 4.1e: The level of knowledge of COVID-19 of the respondents categorized into two

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| Poor | 293 | 75.9 |
| Good | 93 | 24.1 |

The above table shows that 93(24.1%) of the respondents had good knowledge of the COVID-19 Vaccine.

### Table 4.1f: Perception of the source of information

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| **National TV/Radio** |  |  |
| Insignificant effect | 54 | 14.0 |
| Somewhat significant effect | 163 | 42.2 |
| Very significant effect | 169 | 43.8 |
| **Government agencies** |  |  |
| Insignificant effect | 88 | 22.8 |
| Somewhat significant effect | 149 | 38.6 |
| Very significant effect | 149 | 38.6 |
| **Social media** |  |  |
| Insignificant effect | 26 | 6.7 |
| Somewhat significant effect | 95 | 24.6 |
| Very significant effect | 265 | 68.7 |
| **Discussions with family and friends** |  |  |
| Insignificant effect | 60 | 15.5 |
| Somewhat significant effect | 169 | 43.8 |
| Very significant effect | 157 | 40.7 |
| **Health care provider** |  |  |
| Insignificant effect | 63 | 16.3 |
| Somewhat significant effect | 153 | 39.6 |
| Very significant effect | 170 | 44.1 |

The result shows that information from National TV/Radio has a very significant effect on 169(43.8%) of the respondents, information from government agencies has a very significant effect on 149(38.6%), information from social media has a very significant effect on 265(68.7%) of the respondents, discussion with family and friends has a very significant effect on 157(40.7%) of the respondents and information from the health care provider has a very significant effect on 170(44.0%) of the respondents.

### Table 4.2: Vaccination history and Preference

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| **Preferred vaccine brand** |  |  |
| Astrazeneca | 184 | 47.7 |
| Moderna | 120 | 31.1 |
| Johnson&Johnson | 82 | 21.2 |
| **Vaccinated** |  |  |
| Yes | 215 | 55.7 |
| No | 171 | 44.3 |
| **Received any COVID 19 vaccine n=215** |  |  |
| Yes (First dose) | 61 | 28.4 |
| Yes (Both doses) | 137 | 63.7 |
| Yes (2 doses + booster dose) | 17 | 7.9 |
| **Tested for COVID-19** |  |  |
| Yes | 119 | 30.8 |
| No | 267 | 69.2 |

The above table shows that 17(7.9%) have been fully vaccinated,137(35.5%) of the respondents had received both doses, 184(47.7%) preferred AstraZeneca and 267(79.2%) have not tested for COVID-19.

|  |  |
| --- | --- |
|  |  |
|  |  |

### Table 4.3 COVID-19 Vaccine hesitancy of the respondents

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| **Would delay in getting the COVID-19 vaccine** |  |  |
| Agree | 139 | 36.0 |
| Undecided | 90 | 23.3 |
| Disagree | 157 | 40.7 |
| **Get any of the recommended vaccines at any time** |  |  |
| Agree | 230 | 59.6 |
| Undecided | 92 | 23.8 |
| Disagree | 64 | 16.6 |
| **Believe the COVID-19 vaccine can prevent disease** |  |  |
| Agree | 262 | 67.9 |
| Undecided | 65 | 16.8 |
| Disagree | 59 | 15.3 |
| **Better to develop immunity by getting COVID than to receive the vaccine** |  |  |
| Agree | 189 | 49.0 |
| Undecided | 71 | 18.4 |
| Disagree | 126 | 32.6 |
| **Better to get fewer vaccines at the same time** |  |  |
| Agree | 93 | 24.1 |
| Undecided | 113 | 29.3 |
| Disagree | 180 | 46.6 |

### Table 4.3b COVID-19 Vaccine hesitancy of the respondents

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| **Concerned that COVID 19 not safe** |  |  |
| Agree | 156 | 40.4 |
| Undecided | 69 | 17.9 |
| Disagree | 161 | 41.7 |
| **Concerned that a shot may not prevent COVID 19** |  |  |
| Agree | 115 | 29.8 |
| Undecided | 63 | 16.3 |
| Disagree | 208 | 53.9 |
| **Consider myself hesitant to receive the COVID-19 vaccine** |  |  |
| Agree | 135 | 35.0 |
| Undecided | 95 | 24.6 |
| Disagree | 156 | 40.4 |
| **Trust the information I receive about COVID 19 Vaccine** |  |  |
| Agree | 194 | 50.3 |
| Undecided | 108 | 28.0 |
| Disagree | 84 | 21.8 |
| **Openly discuss concerns with Doctor** |  |  |
| Agree | 276 | 71.5 |
| Undecided | 57 | 14.8 |
| Disagree | 53 | 13.7 |

In measuring the overall level of COVID-19 vaccine hesitancy among the respondents, 10-point questions on a Likert scale (strongly agree, agree, undecided, disagree and strongly disagree) were used. All questions that were in the positive direction and those that chose “strongly agreed” and “agreed” were scored 5 and 4 respectively and were considered not hesitant while those that chose “undecided”, “disagree”, and “strongly disagree” were scored 3,2, and 1 respectively and were considered hesitant. Also, all respondents in the negative direction “strongly agreed” and “agreed” were scored 1 and 2 respectively while “undecided” “disagree” and “strongly disagree” were scored 3,4 and 5 respectively. The median was calculated.

The result showed that 139(36.0%) of the respondents would delay getting the vaccine, 230(59.6%) agree to get any of the recommended vaccines at any time, 262(67.9%) believe COVID-19 vaccine can prevent disease, 189(49.0%) agreed that it is better to develop immunity and 180(46.6%) disagreed that it is better to get fewer vaccines at the same time. (Table 4.4)

The result shows that 156(40.4%) were concerned about COVID-19 vaccine safety, 115(29.8%) were concerned that a shot may not prevent COVID, 135(35.0%) consider themselves hesitant to receive the COVID-19 vaccine, 194(50.3%) trust the information they receive and 276(71.5%) openly discuss concerns with their doctor.

### Table 4.3c: Level of vaccine hesitancy of the respondents

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| Low | 90 | 23.3 |
| Moderate | 245 | 63.5 |
| High | 51 | 13.2 |

The result shows that 90(23.3%) of the respondents had low vaccine hesitancy, 145(63.5%) had moderate and 51(13.2%) of the respondents had high level of vaccine hesitancy

### Table 4.3d: Level of vaccine hesitancy of the respondents categorized into two

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=386** | **Percent (%)** |
| Low | 90 | 23.3 |
| High | 296 | 66.7 |

The result showed that 296(66.7%) of the respondents had high COVID-19 vaccine hesitancy

### Table 4.4: Sociodemographic associated with COVID-19 Vaccine Hesitancy

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Vaccine Hesitancy** | | χ2 **(p-value)** |
|  | **Low** | **High** |  |
| **Sex** |  |  |  |
| Male | 43(24.2) | 135(75.8) | 0.131(0.718) |
| Females | 47(22.6) | 161(77.4) |  |
| **Marital status** |  |  |  |
| Single/Divorced/Widowed | 41(20.0) | 164(80.0) | 2.689(0.101) |
| Married | 71(39.2) | 110(60.8) |  |
| **Profession** |  |  |  |
| Doctors/Nurses | 88(37.3) | 249(73.9) | 11.613(0.001)\* |
| Others | 2(4.1) | 47(95.9) |  |
| **Education** |  |  |  |
| Diploma | 3(84.2) | 16(84.2) | 0.633(0.426) |
| First-degree/Postgraduate | 87(23.7) | 280(75.2) |  |
| **Income group** |  |  |  |
| **<** 100000 | 9(15.3) | 50(84.7) | 2.532(0.112) |
| **≥**100000 | 81(24.8) | 246(75.2) |  |
| **Years of experience** |  |  |  |
| < 5 Years | 42(18.5) | 185(81.5) | 7.142(0.008)\* |
| **≥** 5 Years | 63(39.6) | 96(60.4) |  |

\*Statistical significance

The result shows that profession (χ2 =11.613, p=0.001), and years of experience (χ2=7142, p=0.008) was significantly associated with the level of COVID-19 hesitancy