FACTORS ASSOCIATED WITH THE UPTAKE OF COVID-19 VACCINES: A CROSS-SECTIONAL STUDY AMONG THE STUDENTS OF BISHOP STUART UNIVERSITY.

Mary Jesenta Ngabirano[a,*], Francis Kazibwe, Ronald Bahati[b], Bright Laban Waswa[c], Wycliffe Tumwesigye[d]

[a] *Faculty of Nursing and Health Sciences Bishop Stuart University.*
[b] *Administrator, Research Ethics Committee - REC Bishop Stuart University.*
[c] *Department of Publich Health and Biomedical Sciences, Faculty of Nursing and Health Sciences, Bishop Stuart University.*
[d] *Department of Agriculture, Faculty of Agriculture, Environmental Sciences and Technology, Bishop Stuart University.*

Abstract

Background :

Numerous vaccines against coronavirus disease (COVID-19) were approved and distributed globally. However, little information was available on the factors that affect the uptake of COVID-19 vaccines in Uganda. The aim of this study therefore, is to find out the Factors associated with uptake of COVID-19 vaccines among the Students of Bishop Stuart University, Mbarara City.

Methodology :

A cross-sectional study design using qualitative and quantitative approaches was employed. Data was collected from a sample of randomly selected 370 respondents from Bishop Stuart University. Qualitative and Quantitative data collection methods were employed. Data was collected between 11^{th} July and 3^{th} October 2022. Statistical Package for Social Sciences version 26 was used during analysis. Chi square and logistic regressions were used to assess factors associated with uptake of COVID-19 vaccines. Factors with p-values <0.2 at bivariate analysis were entered into multivariate analysis. Factors with $p<0.05$ were considered significant.

Results :

Respondents that reported to always be busy with domestic work indicated a lower likelihood for the uptake of Covid-19 vaccines (AOR = 0.6, 95%CI: 0.40-0.99, p = 0.045). Respondents who perceived that the costs in the hospital were too high to manage Covid-19 illness indicated a higher likelihood for uptake of Covid-19 vaccines (AOR = 3.4, 95%CI: 1.93-6.12, p <0.001).

Conclusion :

Domestic work has been found out to hinder the majority of the respondents from vaccinating against Covid-19. High rates of the uptake of Covid-19 vaccines were registered among those who feared the high costs of Covid-19 illness management in hospitals. The cultural norms associated with being a male or female, therefore, had impacted on the decision to take Covid-19 vaccines**.**

Recommendation:

Community outreaches should be organized to sensitize communities about the dangers of domestic work and how to strike a balance when it comes to daily activities. This will in return lead to high return rates for Covid-19 vaccination.

Keywords: factors, Covid-19, vaccines, uptake, students, university, Submitted:17th/12/2022 Accepted: 19th/12/2022

1. Background of the study

According to Haynes *et al.*, (2020), COVID-19 vaccines are vaccines intended to provide acquired immunity against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus causing coronavirus disease 2019.

Globally, studies have shown clearly that there was need to dig deep into the factors that may hinder the public from being vaccinated against Covid-19 to be able to acquire herd immunity (Wang et al., 2022). The study carried out by Mant et al., (2021) showed that University students in Canada had even resisted the approved Covid-19 Vaccines that do not necessarily had supply issues. They attributed everything to the speed with which vaccines were developed and they believed that the global and national authorities, together with pharmaceutical companies were just interested in financial gains but not the health of the general public. This had posed a challenge to the process of vaccination.

In a recent global review of 19,991 students and trainees in healthcare professions from 39 countries, factors associated with the uptake of Covid-19 vaccines included being a priority group, having greater access to vaccines, or due to their knowledge about medical and health sciences, the preferences and perspectives of non-healthcare related and non-medical college/university students on COVID-19 vaccinations (Khubchandani et al., 2022).

The study carried out by Mant et al., (2021) showed that University students in Canada and found out that the factors associated with the uptake of Covid-19 vaccines were fear of the speed with which vaccines were developed and a belief that the global and national authorities, together with pharmaceutical companies were just interested in financial gains but not the health of the general public. This had posed a challenge to the process of vaccination.

In Europe, one of the factors associated with the uptake of Covid-19 vaccines was compulsory COVID-19 certification which resulted into improved vaccinations (Mills & Rüttenauer, 2022). In the same study, age was a factor behind Covid-19 vaccines uptake where most young people below the age of 30 were recorded to take Covid-19 vaccine doses after the introduction of certification. Most of these were students in higher institutions of learning (Mills & Rüttenauer, 2022). In Uganda, the same campaign was introduced but after some time, people seemed to have relaxed and everything was taken lightly. This study, therefore, intended to find out those factors that might have led to this scenario.

Wong et al., (2022) identified factors associated with the uptake of Covid-19 vaccines and these include: current employment condition ($p<0.001$), perceived health status ($p<0.001$), perceived mental health status ($p<0.001$), contact with the known suspected case(s) of COVID-19 ($p<0.017$), perceived exposure to COVID-19 ($p=0.003$), perceived knowledge of COVID-19 ($p<0.001$), perceived knowledge of COVID-19 vaccines ($p<0.001$), healthcare providers as a source of knowledge about COVID-19 ($p=0.004$), healthcare providers ($p=0.017$) and brochures, posters, and other printed materials ($p=0.004$) as sources of knowledge about COVID-19 vaccines, perception about family members being at risk of COVID-19 infection ($p=0.032$), and confidence in protecting themselves against COVID-19 ($p=0.031$). This study was done among the general population of community members in Hong Kong and did not pay attention to those factors related to students, an area of interest of the researcher in this study

In Sub Saharan Africa, factors affecting COVID-19 vaccination campaigns are vaccine supply and financing (Kanyanda et al., 2021). Little was known about factors associated with the uptake of the available COVID-19 vaccines in these countries and in Africa in particular. This was part of the reason behind this study.

In African countries like Nigeria, factors associated with the uptake of Covid-19 vaccines range from education levels, to occupation and religion, among others. Adedeji-Adenola et al., (2022) identified factors associated with the uptake of

*Corresponding author.
Email address: mjngabirano@gmail.com (Mary Jesenta Ngabirano)

Covid-19 vaccines in Nigeria and they suggested factors such as education, religion, occupation, prior diagnosis of COVID-19 disease, distrust and safety concerns as predictive variables that influence awareness of vaccination exercise

In Africa still, many beliefs and myths that surrounded Covid-19 and Covid-19 vaccines had caused many Africans to decline vaccinations at a time when new, more infectious coronavirus variants were spreading across the continent like the Omicron variant of South Africa (Khubchandani & Macias, 2021). Most Africans believed that the government leaders had made people to believe that there was Covid-19 so that they could get a chance to hold onto power. So there was no trust in the vaccines since they believed that they are dangerous. Others believed that Covid-19 was for the whites and did not pose a serious threat to Africans and they said that even the belief they had in African tonics could not be compared to the dangerous Covid-19 vaccines. Others believed that whites wanted to kill Africans for their own interests. Such beliefs had hampered the vaccination campaigns in most African Countries despite the efforts made by different Ministries of Health in Africa.

In East Africa, the factors associated with the uptake of Covid-19 vaccines were: attending above secondary school (AOR: 2.1, 95%CI: 1.37, 2.96), having good knowledge about the vaccine (AOR: 2.1, 95%CI: 1.6, 2.8), having a positive attitude towards vaccine (AOR: 3.8, 95%CI: 2.3, 6.2), history of COVID-19 infection (AOR: 2.7, 95%CI: 1.6, 4.7) and being male (AOR: 1.8, 95%CI: 1.2, 2.7 (Alemayehu et al., 2022).

In Tanzania, the factors associated with the uptake of Covid-19 vaccines included the health officials struggling to dispel the criticism and misinformation about Covid-19 vaccine. This challenge had affected all age groups including University students after joining the World Health Organization's COVAX initiative which led to the reception of more than 1 million doses of Johnson & Johnson vaccine donated by United States (US) (Osuagwu, 2021).

According to Kabagyenyi et al., (2022), factors associated with the uptake of Covid-19 vaccines in Uganda include location, education level, knowledge on how COVID-19 is transmitted, perceptions towards Covid-19, level of awareness on vaccine types or vaccination areas, misconceptions like the ability of the vaccine to cause infertility, or spreading the virus into the body, and acknowledgment of alcohol as a possible cure were other reasons for vaccine hesitancy.

In spite of the studies carried out on the COVID-19 vaccines hesitancy and resistance among the populations, many questions about factors affecting the uptake of these vaccines remained unanswered. It was against this background that the study sought to find out the Factors Associated with the Uptake of COVID-19 vaccines among the Students of Bishop Stuart University, Mbarara City.

2. Methodology

2.1. Research design

Oso and Onen (2008) defined a research design as a plan for conducting a study. This study was conducted through a cross-sectional research design. According to Setia (2016), cross-sectional survey design is a type of observational study design where the researcher measures the outcome and the exposures in the study participants at the same time and the participants are selected based on the inclusion and exclusion criteria set for the study. Qualitative and quantitative approaches were employed for this study. The quantitative data was collected using an open and closed ended questionnaire. Qualitative data was collected using interview schedules and focus group discussions.

2.2. Area of the study

The study was carried out from Bishop Stuart University between 11th July and 3th October 2022. Bishop Stuart University has two campuses: Kakoba which is the main campus of the university on 48.2 hectares of land, 5km East of Mbarara City on plot 150, Buremba Road, Kashari Block 4, Kakoba Hill. Ruharo Campus, which is located at Ruharo hill in the neighborhood of the Diocesan Cathedral of St. James.

2.3. Study Population

According to Best and Kahn (2006), a study population is any group of individuals, that have one or more characteristics in common and which are of the interest to the researcher. The study population encompassed all the students of Bishop Stuart University from both campuses taking into account that the students were 5000 and above at the time of the study. 70% of these students (3500 students) need to be vaccinated if the students' population was to acquire herd immunity.

Inclusion criteria: The students aged 18 and above were recruited for this study. These were students of Bishop Stuart University who were currently pursuing a course in any of the faculties.

Exclusion criteria: Student below the age of 18, those who had finished from Bishop Stuart, students from other universities and the staff of Bishop Stuart were not recruited for this study.

2.4. Sampling strategies

This study employed both simple random sampling and snowball sampling. Simple random sampling is where each member in the target population has an equal probability of being chosen meaning that the sample is chosen without bias. Snowball sampling technique is used in non-probability sample where the research participants already enrolled in the study help to recruit future participants. This means that the researcher was helped by the participants to know the class coordinators who were targeted to be interviewed in this study. Simple random sampling was mainly used to select a random sample whereas snowball sampling was majorly used to collect focused information.

In this study, simple random sampling was used to get students who responded to the questionnaires and snowball sampling strategy was used in selection of students' coordinators to participate in the study. Simple random sampling technique was preferred for this study because the researcher aimed at ensuring that each student in Bishop Stuart University has equal chances of being included in the study so as to avoid biases. Snowball sampling technique was preferred in this study because the researcher wanted to get quality information from the selected students' coordinators without bias.

2.5. Sample size selection

The sample for this study will be determined using Slovin's formula as cited by Yamane (1967) which is

$$n = \frac{N}{1 + N\ (e)^2}$$

$$n = \frac{5000}{1 + 5000\ (0.05)^2}$$

= 370 students

n = Sample size

N= population size

e= co-efficiency level of precision (0.05)

n=370 students

The sample, therefore, consisted of 380 students of Bishop Stuart University. Of this sample, 10 class coordinators were involved in the study in focus group discussions as shown in Table 1. 370 students were chosen to participate in the quantitative study because they could provide required information on the social-cultural, social-economic and religious factors associated with the uptake of Covid-19 vaccines using the structured questions. These were the source of information as they had their own Covid-19 vaccine experiences unknown to the researcher. The 10 class coordinators were included in the study because they interact with these students on a daily basis and could bring out some information that would otherwise not been given by the students they coordinate.

2.6. Data collection methods

According to Bines, et al., (2004), data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes. In this study, quantitative data was collected using structured questionnaires developed in English, to elicit responses

Table 1: Showing Sample size methodological matrix

Population	**Sample size**	**Sampling technique**
Students	370	Simple random Sampling
Class Coordinators	10	Snowball sampling
Total	**380**	

from the study participants. The questionnaire was used to explore the individual characteristics of the participants, information on the social-cultural, social-economic and the religious factors associated with the uptake of Covid-19 vaccines among students. For qualitative data, focused group discussion and in-depth interview guides were used to obtain information from the students' coordinators to gain their perspectives on the factors that affect the uptake of Covid-19 vaccines.

2.7. Data quality control

2.8. Validity

Fraenkel and Devers (2000) defined validity as appropriate meaningfulness of inferences a researcher draws based on data obtained through the use of an instrument. In this study, the researcher designed questions which were discussed with the supervisors such that the information obtained may enable the researcher to make correct analysis, interpretations and conclusions about the topic of the study and the ethical principles. The questionnaire was tested through a pilot study of 10% of the respondents before using it in the field to ensure content validity and was calculated as:

$$\text{CVI} = \frac{\text{Total number of items receiving positive rating of content relevance}}{\text{total number of items on a measure.}}$$

Where CVI is content validity Index

Each objective was abbreviated as;

Prevalence of the uptake of Covid-19 vaccines = PUCV

Socio-cultural factors associated with the uptake of Covid-19 Vaccines =SCFAUCV

Socio-economic factors associated with the uptake of Covid-19 vaccines = SEFAUCV

Religious factors associated with the uptake of Covid-19 vaccines = RFAUCV

For PUCV QN = \frac67\;= 0 86

For SCFAUCV QN = \frac9{10}\;= 0 9

For SECFAUCV QN = \frac79\;= 0 78

According to Amiin (2005), for the instrument to be acceptable, the average index should be 0.6 and agreeing to table 2 above, the current instrument surpassed it making it valid. The closer to 1.0 the CVR is, the more essential the object is considered to be valid.

2.9. Reliability

Fraenkel and Dever (2000) defined reliability as a consistence of score or answer provided by an instrument. An instrument is reliable if it produces the same results whenever it is repeatedly used to measure trait or concept from the same respondents even by another researcher. In order to guarantee reliability, the researcher run a reliability statistic using Cohen's Kappa statistics to determine the consistency of the research study results from the equation below.

K= $\frac{P_O - P_e}{1 - P_e}$

Where P_O = Relative agreement among observers

P_e = Hypothetical probability of chance agreement

$P_O = \frac{30+8}{43} = 0.88$

$P_e = \left(\frac{30+2}{43}\right)\times\left(\frac{30+3}{43}\right) + \left(\frac{2+8}{43}\right)\times\left(\frac{8+3}{43}\right)$

$[(0.744)\times(0.767)] + [\ (0.233)\times(0.256)]$

$0.571 + 0.0596$

$= 0.63$

K= $\frac{0.88 - 0.63}{1 - 0.63}$

$= \frac{0.25}{0.37} = 0.68 =$ **0.7**

Table 2: Showing Content validity index of the questionnaire used in the study

QN	**CVI**	**Percentage (%)**
PUCV QN	0.86	86
SCFAUCV QN	0.9	90
SEFAUCV QN	0.78	78
RFAUCV QN	1	100

Table 3: Showing the results of two observers

		Observer 2	
		YES	NO
Observer 1	YES	30	2
	NO	3	8

The test above indicated that Cohen's Kappa statistics K = 0.7**.** This means that there was a substantial agreement between the frequencies of the observers.

2.10. Data management and analysis

Data analysis involved organizing data in ways that allow researchers to see patterns, identify themes, discover relationships, develop expectations, and make interpretations, mount critiques or generate theories (Bogdan & Biklen., 1992).

2.10.1. ***Quantitative analysis****:*

The data obtained was managed by first checking if it was complete. It was then entered into the computer for storage and later further processing. The Statistical Package for Social Sciences (SPSS) version 26 was used during analysis. Chi square and logistic regressions were used to assess factors associated with the uptake of Covid-19 vaccines among the students of Bishop Stuart University. Factors with p-values$<$0.2 at bivariate analysis were entered into multivariate analysis where factors with p$<$0.05 were considered significant.

2.10.2. ***Qualitative analysis****:*

The study employed both thematic and content analysis techniques to analyze the qualitative data. This was because it enabled the researcher to observe patterns or speech like what the respondents talked about (Berg, 2004). The information was encoded and edited to find out if there were questions that would not be properly filled and cross checked responses to the interview guides to ensure that questions were given complete answers. Therefore, discrete bit of information was assigned into categories using themes as coding units. Important thematic areas such direct quotations were extracted and reported in line with study variable verbatim.

3. Ethical Consideration

Research and ethical approval to conduct the study was obtained from the Research Ethics Committee (REC) of Bishop Stuart University (REC-BSU-2022-1). This enabled transparency and verification of the authenticity of the data collected.

Informed consent was obtained from each study participant ensuring that no one was forced or coerced into participating in this study.

Confidentiality was observed by making sure that the information provided by the research participants were recorded and analyzed anonymously with no one's name mention hence protecting their identity and degree of freedom in participating in the study.

The study avoided fabricating, falsifying, or misrepresenting research data to promote the truth. This was done by carrying out data col-

lections from the intended categories of the respondents, took permission from the authorities to carry out this data collection and work from other scholars incorporated in this current study were duly acknowledge through citations and reference lists.

4. Results

4.1. ***Socio-cultural factors associated with the uptake of Covid-19 vaccines***

Respondents were asked about the social-cultural factors associated with the uptake of Covid-19 vaccines. The results were as shown in table 6 whereby respondents that reported to always be busy with domestic work indicated a lower likelihood for uptake of Covid-19 vaccines (COR = 0.6, 95%CI: 0.40-0.97, p = 0.035). However, factors in the bivariate model with p<0.2 were entered into multivariate model to control for confounding and interaction as shown in table 7. In the multivariate model (in presence of other factors) respondents that reported always busy with work domestic still indicated a lower likelihood for uptake of Covid-19 vaccines (AOR = 0.6, 95%CI: 0.40-0.99, p = 0.045).

In in-depth interviews, some responses were quoted verbatim and in agreement with quantitative information. One respondent said:

"Musawo, time is a problem. There is too much work waiting for me always and by the time I think of going to the nearest health centre, it's already late" (ID 1)

One other participant indicated transport challenge when it was said:

"I would wish to be vaccinated but transport is a problem yet the health centre is far" (ID K)

4.2. ***Socio-economic factors associated with the Uptake of Covid-19 vaccines***

Another objective intended to find out the social-economic factors associated with the Uptake of Covid-19 vaccines among the students of Bishop Stuart University. In the bivariate analysis (absence of other factors), respondents who perceived that Covid-19 was killing people of high status (it is for the rich people) were less likely to take Covid-19 vaccines (COR = 0.5, 95%CI: 0.30-0.70, p <0.001) compared to those whose beliefs were different. However, respondents that perceived that the costs in the hospital were too high to manage Covid-19 illness (COR = 4.1, 95%CI: 2.58-6.48, p <0.001), those ready to pay for the vaccines in case the government stops free medication (COR = 2.8, 95%CI: 1.81-4.33, p <0.001), Covid-19 as a means to promote digital payments so that governments can track every citizen (COR = 9.0, 95%CI: 5.38-14.91, p <0.001) and powerful Countries inventing Covid-19 to boost their economies (COR = 1.6, 95%CI: 1.06-2.43, p <0.001) were more likely to uptake of Covid-19 vaccines. The findings are as shown in table 6. Factors in the bivariate model with p<0.2 were entered into multivariate model to control for confounding and interaction. In the multivariate model (in presence of other factors) respondents that perceived that the costs in the hospital were too high to manage Covid-19 illness indicated a higher likelihood for uptake of Covid-19 vaccines (AOR = 3.4, 95%CI: 1.93-6.12, p <0.001) as shown in table 7 compared to those who perceived managing Covid-19 illness in the hospital to be manageable.

In in-depth interviews, some responses were quoted verbatim and in agreement with quantitative information. One respondent said:

"*I need to first wait and understand this whole thing called Covid-19 vaccines, the good thing is that I got a health insurance cover at the work place of recent" (Interview Z)*

"The fact is that vaccination against Covid-19 is just for employment, why else would I take those vaccines if not for my job?"(Interview X)

Another respondent said: *"As a person, I vaccinated against this virus because even if every family member of mine sells their land, I can't raise the money to pay in the hospital in case I get the virus. Okwerinda nikukira okutambirwa" (interview S).*

4.3. ***Religious factors associated with the uptake of Covid-19 vaccines.***

The last objective of the study was to examine the religious factors associated with the uptake of

Covid-19 vaccines among the students of Bishop Stuart University. The responses from the participants were recorded as shown in table 6. In the bivariate analysis (absence of other factors), respondents that perceived that they had trust in God, and that He would heal them from the virus were less likely to uptake Covid-19 vaccines (COR = 0.1, 95%CI: 0.09-0.23, p <0.001). However, respondents that reported that their pastor/church leader told them that Covid-19 was fake, so they had no fear for it (COR = 3.2, 95%CI: 2.08-4.92, p <0.001) and those that perceived that Covid-19 came to strengthen family prayer which was almost weakening COR = 1.7, 95%CI: 1.11-1.61, p = 0.015) were more likely to uptake Covid-19 vaccines.

All factors with p<0.2 were entered into multivariate model.

In the multivariate model (in presence of other factors), respondents that perceived that Covid-19 came to strengthen family prayer which was almost weakening and these were more likely to uptake of Covid-19 vaccines (AOR = 1.6, 95%CI: 0.35-0.91, p = 0.018) as shown in table 7.

Quoted verbatim, one respondent said:

"This Covid-19 thing reminds me of slave trade, do you know that even right now, the super power countries that no longer have beliefs in God are the ones behind this virus? They didn't want believers to go to churches to pray and our president and the friends rushed to close churches without any thought about the reason behind" (Respondent G)

"My God is bigger than the medicines for Covid-19. At the end of the day, you will come back and tell me that it was all scam" (Respondent Y)

"Covid-19 was invented and that these inventors were Anti-Christ, wanted churched closed and forced the presidents to close these churches in the name of fighting the virus" (Respondent Z).

5. Discussion:

5.1. Socio-cultural factors associated with the uptake of Covid-19 vaccines

The study established that respondents that reported always busy with domestic work indicated a lower likelihood for uptake of Covid-19 vaccines. These findings are in agreement with the findings of Tavolacci et al., (2021) whereby being a woman had a significant relationship in COVID-19 Vaccine acceptance, hesitancy, and resistance among University Students in France. These findings also are in agreement that the cultural norms associated with being a male or female had impacted on the decision to take Covid-19 vaccines and these findings are closely related to the findings of Ciarambino, et al., (2021) who found out that sex and gender impacted acceptance of, responses to, and the outcome of vaccination.

In reality, women are more associated with domestic work than men especially in African countries. This would possibly indicate that if the myths, norms, lifestyles, values, sexuality, attitudes and beliefs surrounding Covid-19 vaccines were well addressed (through sensitization, psycho-education, content studied in class, literature about Covid-19), there was a likelihood of many students getting vaccinated against Covid-19.

In practical terms, this means that women are not only left out in health related programs but also drained by everyday domestic activities. This may not only hinder development but also act as a setback for the government programs.

*5.2. **Socio-economic factors associated with the Uptake of Covid-19 vaccines***

The study established the high costs in the hospital for the management of Covid-19 illness was associated with the uptake of Covid-19 vaccines among the students of Bishop Stuart University. This is in agreement with the study of Saied et al., (2021) who also assessed the social-economic status of the respondents as a barrier to the uptake of Covid-19 vaccines. They found out among those with low social-economic status, 39.1% accepted Covid-19 vaccines, 43.9% were hesitant and 20.3% refused to be vaccinated against Covid-19. 35.4%, 40.9% and 18.1% were reported among those respondents whose social-economic status was average to have accepted, hesitated and refused to be vaccinated with Covid-19 Vaccines while 37.6%, 46.6% and 22.0% of the respondents had high

Table 4: Showing a bivariate analysis of the factors associated with the uptake of Covid-19 vaccines among the students of Bishop Stuart University

	Variables		Overall n(%)	Uptake of Covid-19 vaccines		Crude OR (95%CI)	p-value
				Yes, n (%)	No, n (%)		
Socio-cultural factors	Always busy with domestic work	No	139 (37.6)	89 (42.2)	50 (31.4)	1	
		Yes	231 (62.4)	122 (57.8)	109 (68.6)	0.6(0.40-0.97)	0.035*
	Lack of support and facilitation from partners/parents	No	70 (18.9)	35 (16.6)	35 (22.0)	1	
		Yes	300 (81.1)	176 (83.4)	124 (78.0)	1.4(0.84-2.39)	0.188
	the safety and effectiveness of Covid-19 vaccines	No	69 (18.6)	34 (16.1)	35 (22.0)	1	
		Yes	301 (81.4)	177 (83.9)	124 (78.0)	1.5(0.87-2.48)	0.151
	Covid-19 vaccines cause infertility in women.	No	105 (28.4)	66 (31.3)	39 (24.5)	1	
		Yes	265 (71.6)	145 (68.7)	120 (75.5)	0.7(0.45-1.14)	0.155
	Covid-19 is for the rich people	No	168 (45.4)	113 (53.6)	55 (34.6)	1	
		Yes	202 (54.6)	98 (46.4)	104 (65.4)	0.5(0.30-0.70)	<0.001*
Socio-economic factors	High hospital costs for Covid-19 illness	No	219 (59.2)	96 (45.5)	123 (77.4)	1	
		Yes	151 (40.8)	115 (54.5)	36 (22.6)	4.1(2.58-6.48)	<0.001*
	paying for the vaccines is better than rushing	No	136 (36.8)	56 (26.5)	80 (50.3)	1	
		Yes	234 (63.2)	155 (73.5)	79 (49.7)	2.8(1.81-4.33)	<0.001*
	Promoting digital payments, no Covid-19	No	213 (57.6)	79 (37.4)	134 (84.3)	1	
		Yes	157 (42.4)	132 (62.6)	25 (15.7)	9.0(5.38-14.91)	<0.001*
	Boosting economies	No	187 (50.5)	96 (45.5)	91 (57.2)	1	
		Yes	183 (49.5)	115 (54.5)	68 (42.8)	1.6(1.06-2.43)	0.026*
Religious factors	God is a healer	No	155 (41.9)	127 (60.2)	28 (17.6)	1	
		Yes	215 (58.1)	84 (39.8)	131 (82.4)	0.1(0.09-0.23)	<0.001*
	Pastor's influence	No	180 (48.6)	77 (36.5)	103 (64.8)	1	
		Yes	190 (51.4)	134 (63.5)	56 (35.2)	3.2(2.08-4.92)	<0.001*
	Strengthening family prayer	No	220 (59.5)	114 (54.0)	106 (66.7)	1	
		Yes	150 (40.5)	97 (46.0)	53 (33.3)	1.7(1.11-1.61)	0.015*

Table 5: showing a multivariate analysis of the factors associated with the uptake of Covid-19 vaccines among the students of Bishop Stuart University

	Variables		AOR (95% CI)	p-value
Socio-cultural factors	Always busy with domestic work	No	1	
		Yes	0.6(0.40-0.99)	0.045*
	Lack of support and facilitation from partners/parents	No	1	
		Yes	1.5(0.87-2.58)	0.142
	Limited knowledge about the safety and effectiveness of Covid-19 vaccines	No	1	
		Yes	1.4(0.80-2.36)	0.246
	Covid-19 vaccines cause infertility in women.	No	1	
		Yes	0.8(0.47-1.23)	0.265
Socio-economic factors	Covid-19 is for the rich people).	No	1	
		Yes	0.1(0.02-2.17)	<0.062
	High hospital costs for Covid-19 illness.	No	1	
		Yes	3.4(1.93-6.12)	<0.001*
	Promoting digital payments, no Covid-19	No	1	
		Yes	2.2(0.98-5.14)	0.057
	Paying for the vaccines is better than rushing.	No	1	
		Yes	0.7(0.39-1.20)	0.188
	Boosting economies	No	1	
		Yes	1.5(0.66-4.42)	0.065
Religious factors	God is a healer	No	1	
		Yes	0.3(0.13-2.46)	<0.001*
	Pastors' influence	No	1	
		Yes	1.5(0.74-3.24)	0.248
	Strengthening family prayer.	No	1	
		Yes	1.6(0.35-0.91)	0.018*

social-economic status and accepted, hesitated and refused to be vaccinated against Covid-19 respectively. There was a high possibility that costs of health care were associated with the uptake of Covid-19 vaccines. This would possibly mean that respondent's work experience and economic access to resources and social positions need maximum attention for an increase in these factors means increase in the uptake of Covid-19 vaccines and the reverse is true. This might explain why those who had a health insurance cover said that in case he could get the virus, he could manage the bills so they needed not to hurry to get vaccinated against Covid-19 without first understanding the whole process.

The results of this study, in an in-depth interview, established that vaccination against Covid-19 acted as a job security as they had to be vaccinated to secure the job. This study does not contradict the findings of the study carried out by Alqudeimat et al., (2021) on Acceptance of a COVID-19 Vaccine and its related determinants among the general adult population in Kuwait which found out that those earning less than 1,000KWD had more acceptance of Covid-19 vaccines (56.2%) than those earning more than 3,000KWD. Like it was found out in adult of Kuwait, the students of Bishop Stuart University had much reverence for Covid-19 vaccines because it was necessary for them to be vaccinated to be able to work. This means that being employed (employment) was possibly associated with the

uptake of Covid-19 vaccines among the students of Bishop Stuart University.

5.3. Religious factors associated with the uptake of Covid-19 vaccines

Finally the study also examined the religious factors associated with the uptake of Covid-19 vaccines among the students of Bishop Stuart University. It was indicated that respondents that perceived that they had trust in God, and knew He would heal them from the virus indicated a lower likelihood for uptake of Covid-19 vaccines. Besides, respondents that perceived that Covid-19 came to strengthen family prayer which was almost weakening were more likely to uptake of Covid-19 vaccines. This confirms what Tadros and Thomas, (2021), said, that religious minority affiliation or status can play a very important role in influencing people's access to vaccines as well as their willingness to undergo vaccination especially as they apply to Covid-19 vaccination. It's possible that this could mean that religious factors played a role in the decisions of students of Bishop Stuart to be vaccinated with Covid-19 vaccines. This means that a member of a particular faith community was core in the respondents' core identity.

It was found out in this study that some respondents believed that Covid-19 was invented and that these inventors wanted churched closed and forced the presidents to close these churches in the name of fighting the virus. Affirmatively, the study by Ossai (2021) affirms Covid-19 as antichrist. This is very unusual as people can attribute disease to faith, norms and beliefs of their religions and their unverifiable perception. The researcher maintains that such beliefs can possibly be misleading and though there was fear about the vaccine at its inception, however the rate of death would have changed their minds still not all received the vaccines as the study established there is just a moderate number that has been vaccinated.

6. Conclusion

Domestic work has been found out to hinder the majority of the respondents from vaccinating against Covid-19. High rates of the uptake of Covid-19 vaccines were registered among those who feared the high costs of Covid-19 illness management in hospitals. The cultural norms associated with being a male or female, therefore, had impacted on the decision to take Covid-19 vaccines.

7. Limitations

The researcher faced some challenges such late clearance to go for data collection.

Time was another factor to make sure the study was conducted and completed within the time frame.

Financial resources were a challenge to the study and it never received any external funding or donation of any kind.

8. Recommendation

The study recommends that the institution should strive to make sure their students are informed and encouraged to take the Covid-19 vaccines and the boosters for their benefits and abandon their religious, social-economic, social- cultural norms and support the fight against the deadly Covid-19.

Community outreaches should be organized to sensitize communities about the dangers of domestic work and how to strike a balance when it comes to daily activities. This will in return lead to high return rates for Covid-19 vaccination.

9. Acknowledgement

We acknowledge the financial support of Mr. Akimpaye Evariste towards, tuition clearance, data collection activities and other financial expenses in relation to this study. We also thank the Bishop Stuart University's Research Ethics Committee-REC for reviewing the study protocol and providing the ethical clearances required to conduct the study. We appreciate the contribution of the respondents for availing the data that brought us all this far.

10. List of Abbreviations

BSU: Bishop Stuart University
COVID-19: Coronavirus disease
HBM: Health Belief Model
SARS-COV-2: Severe acute respiratory syndrome coronavirus 2
WHO: World Health Organization

11. Source of funding

The study was funded by Mr. Akimpaye Evariste. Akimpaye had no role in the study design, data, collection and analysis, decision to publish, or preparation of the manuscript.

12. Conflict of interest

The authors declare that there was no conflict of interest.

13. Publisher details:

Publisher: Student's Journal of Health Research (SJHR)
(ISSN 2709-9997) Online
Category: Non-Governmental & Non-profit Organization
Email: studentsjournal2020@gmail.com
WhatsApp: +256775434261
Location: Wisdom Centre, P.O.BOX. 148, Uganda, East Africa.

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Author biography

Mary Jesenta Ngabirano ary Jesenta Ngabirano is currently a student of Public Health at the department of Public Health and Biomedical Studies under the faculty of Nursing and Health Sciences at Bishop Stuart University.

Francis Kazibwe Senior Lecturer at the department of Public Health and Biomedical Studies under the Faculty of Nursing and Health Sciences of Bishop Stuart University.

Ronald Bahati Administrator, Research Ethics Committee – REC of Bishop Stuart University

Bright Laban Waswa Lecturer and Head of Department of Publich Health and Biomedical Sciences under the Faculty of Nursing and Health Sciences

Wycliffe Tumwesigye Lecturer and Head of Department of Agriculture under the Faculty of Agriculture, Environmental Sciences and Technology.

April 7, 2023