

COVID-19 Vaccination Status among Religious and Non-religious Jamaicans: Are there differences based on Age, Gender, and Religious and Non-religious Affiliations?

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Abstract

Introduction: There is still a need for a greater number of individuals to be vaccinated if we are to realize the true effect of vaccination on the COVID-19 virus. Vaccination as a Public Health measure to control or eradicate diseases is a longstanding effective approach. The COVID-19 vaccine is available worldwide to both religious and non-religious persons, but there is hesitancy on both sides. Some religious persons also believe that the vaccine is the Mark of the Beast mentioned in the Bible.

Objective: This study aimed to evaluate the level of COVID-19 vaccination among religious and non-religious persons in Jamaica and to find out their views on the Covid 19 vaccine.

Materials & Methods: A descriptive cross-sectional convenience sampling design was used to collect data from religious and non-religious Jamaicans on the COVID-19 vaccination. The data for this research was collected using an online standardized questionnaire created on a web based standardized survey, which consisted of eleven closed ended questions. The retrieved data were stored then analyzed using descriptive and inferential

statistics with the Statistical Packages for the Social Sciences (SPSS) for Windows version 25.0.

Results: Almost 52% of Jamaicans indicated that they were unvaccinated compared to those vaccinated at 48%. A higher COVID-19 vaccine hesitancy existed for Judaism (100%, n=5), Hindi (87.5%, n=7), Islam (85.7%, n=6), Rastafari (85.7%, n=36), young people ages 18-26 years (56%, n=228), and non-religious Jamaicans (73.4%, n=105) compared to Christians (45.9%, n=416).

Conclusions: Vaccine status among religious and non-religious Jamaicans vary based on age, gender and religious affiliation. Younger Jamaicans are less likely to be vaccinated compared to the elderly population. Religious Christians are the most likely to be vaccinated among the Jamaican population with females at a higher rate of vaccination. An opportunity exists for the Jamaican government to continue building trust among the population as vaccination initiatives continue across the island.

Keywords: Herd immunity, vaccinations, COVID-19, Jamaica, religious, non-religious, Mark of the Beast.

Introduction

Staging an effective strategy to mitigate the COVID-19 pandemic worldwide could require a multi-layered approach to include current measures that seem to be working, such as vaccination. There is still a need for a greater number of individuals to be vaccinated if we are to realize the true effect on vaccination this virus (Skjefte et al., 2021). Vaccination as a Public Health measure to control or eradicate diseases is a longstanding effective approach (Freeman, 1997; The College of Physicians of Philadelphia, 2021). According to WHO (2021) vaccination is a simple, safe, and effective way of protecting you against harmful diseases.

Vaccines mimic disease causing agents while “stimulating the immune system to build up a defense” (The College of Physicians of Philadelphia, 2021). D’Souza and Dowdy (2021) argued that the idea of “herd immunity” was a frequently discussed topic at the dawn of the COVID-19 pandemic but has since changed amid the continued surge globally. However, they contend that there is still a possibility of herd immunity with better understanding of the disease. Challenges such as the way people interact, the number of vaccinated persons, and level of contagion may impact the achievement of herd immunity. Nevertheless, D’Souza & Dowdy (2021) contend that even if the threshold for herd immunity is unmet, immunity in the population from vaccination is possible. So should people be hesitant about the option of vaccination when there is a possibility of protection?

The COVID-19 vaccine is available worldwide to both religious and non-religious persons, but there is hesitancy on both sides. Some religious persons refuse to take the COVID-19 vaccines

and are requesting an exception from the government, but the authorities stated that such an exception will not be easy to receive. Some religious persons also believe that the vaccine is the Mark of the Beast mentioned in the Bible (Alberta Politics, 2021; Bailey, 2021; Gleeson & Gilbert, 2021; Firebaugh, 2021). Furthermore, some believe the vaccination cards, and the mask, are symbols of submission, fear, social pressure and tyrants. In summary, the prophetic Mark of the Beast is all about submission. The general thought is that if you have sheepishly accepted the mask, you will probably also accept the vaccination. If you unquestionably accept the vaccination, you will probably also accept the Mark of the Beast (The Coming Tribulation, 2020; Patriot Daily Press, 2021). Conversely, non-religious persons are not an organized group of people but a diverse mix, with a wide variety of beliefs, values, and ways of looking at the world. They are more likely to be objective, scientific, and rational peoples compared to religious peoples, and this justifies their high willingness to be vaccinated than religious sect (British Broadcasting Corporation, 2021; Ramirez, 2021).

It is very difficult to say for sure how many people are non-religious, but in 2011, the Office of National Statistics found that 14.1 million people did not follow a religion. In the 2019 British Social Attitudes survey, 52% of people asked stated they had no religion. Many non-religious people believe it is possible to live a good and fulfilling life without following a religion, and without a belief in a god or gods. A religious person is one who manifests devotion to a deity, individual, mortal, person, somebody, someone, soul - a human being; a person addicted to religion, or a religious zealot (Curtis, 2007; Davies & Thate, 2017; Grim & Grim, 2019; Promises Behavioral Health, 2021). Most religious individuals are looking forward to life after death and so their actions are guided by the doctrine of the religious faith (Choudry, Latif, & Warburton, 2018; Christian Enquiry Agency, nd ; Keown, 2005; Newcott, 2007). The literature has provided evidence on the view of religious people on various issues, particularly in keeping with their end time's belief, and so there is a gap in the literature on views and practice of religious and non-religious Jamaicans on the COVID-19 vaccination. This study aims to evaluate the level of COVID-19 vaccination among religious and non-religious persons in Jamaica and assess their views on the COVID-19 vaccine.

Theoretical Framework

The Theory of Reasoned Action (TRA) model was proposed in 1975 by Fishbein and Ajzen (Salgues, 2016). The TRA suggests that a person's behavior is determined by their intention to perform the behavior and that this intention is, in turn, a function of their attitude toward the behavior and subjective norms (Fishbein & Ajzen, 1975). The best predictor of behavior is intention or instrumentality (belief that the behavior will lead to the intended outcome). Instrumentality is determined by three things: their attitude toward the specific behavior, their subjective norms, and their perceived behavioral control. The more favorable the attitude and the subjective norms and the greater the perceived control, the stronger the person's intention to perform the behavior (Silverman et al, 2016). Additionally, Salgues (2016) stated that, The TRA model focuses on the construction of a system of observation of two groups of variables,

which are: attitudes defined as a positive or negative feeling in relation to the achievement of an objective; subjective norms, which are the very representations of the individuals' perception in relation to the ability of reaching one's perception (Fishbein & Ajzen, 1975).

The Theory of Reasoned Action is explicitly concerned with peoples' behaviour. This theory also recognizes that there are situations (or factors) that limit the influence of attitude on behaviour. Continuing, The Theory of Reasoned Action predicts behavioral intention, a compromise between stopping at attitude predictions and predicting behavior. Because it separates behavioral intention from behaviour, which makes it fitting for examining religious and non-religious Jamaica behaviour relating to COVID-19 vaccination.

Literature Review

There are 257 million cases and 5.15 million deaths resulting from the COVID-19 pandemic worldwide, with five major countries (United States, India, Brazil, United Kingdom, and Russia) listed in the order of greatest to least (Ritchie et al., 2020). As of November 19, 2021, Jamaica recorded 90 630 confirmed cases and 2,356 deaths since the first recorded case in March 2020 (MOH, 2021). A high vaccination rate level is among the many recommendations supported by world and health leaders alike to eradicate the COVID-19 pandemic. It is part of the philosophy of herd immunity, in which the majority of the population is immunized against a particular disease, which mitigates the likelihood of contracting the disease (The College of Physicians of Philadelphia, 2021). Nevertheless, is this enough to convince unvaccinated individuals to get vaccinated? It is essential to take a different approach to vaccination than in the past. Harrison and Wu (2020) contend that the Public Health approach toward COVID-19 vaccination needs to be about more than vaccinating the public's technology and act. There must be just as much focus on building confidence through the evidence of vaccine efficacy. Furthermore, recognizing the reason behind the decision to accept or reject the COVID-19 vaccines must not be overlooked because of their impact on any intention to increase vaccination uptake. For example, the idea of religious beliefs and the decision to vaccinate continues growing in its public discussion globally.

According to Burge (2021), religious belief and vaccination status have continued to be the main headlines in the media routinely since vaccines became available. One example was the notion that Evangelical Christians were the vaccine holdouts. However, Burge (2021) found that the highest incidence of the unvaccinated was among those of no religious affiliations. The data of vaccinated individuals reflected 62% of Evangelical Protestants, 70% of non-Evangelical Protestants, 62% Catholics, and 47% no Religion as of May 11, 2021. Studies comparing major countries with varying religious beliefs and practices concerning vaccination status have yielded exciting results.

Researchers conducted multiple large-scale surveys examining the level of vaccinations among the Israeli and Japanese cultures. The surveys explored the relationship between levels of vaccination and "religious faith." The findings indicated that individuals with "strong religious beliefs" were less likely to be vaccinated than those claiming to be "less religious." Researchers

also considered Israeli religious denomination and religion identification in Japan. A non-linear relationship existed between the level of religious belief and vaccination willingness (Lahav et al., 2021). Vaccine acceptance may be further impacted by religious and spiritual beliefs compounded by the influence of religious conspiracy theories (RCT).

In a survey study of Czech adults ($n = 459$), researchers investigated the variables of religiosity and spirituality (R/S), religious conspiracy theories (RCT), religious fundamentalism, and intention of COVID-19 vaccination. Spirituality was significantly associated with RCT belief.

When combined R/S groups revealed a higher RCT belief among those claiming spirituality but no religious affiliation. Furthermore, associations existed between spirituality with non-religious affiliation when observing for vaccine refusal. There was a higher chance of vaccine refusal among those claiming to be spiritual. An association existed between "spirituality and religious fundamentalism with RCT" related to COVID-19 vaccination (Kosarkova et al., 2021). These findings support previous studies calling for a better understanding of the relationship between religious beliefs and vaccine intentions and effects on current Public Health initiatives to increase vaccination uptake (Burge, 2021; Lahav et al., 2021).

Materials & Method

The research design was a descriptive cross-sectional convenience sampling from religious and non-religious Jamaicans on their COVID-19 vaccination status. The use of this method would ensure that each element in the population has a known nonzero chance of being selected using a random selection procedure (Lavrakas, 2011) to obtain the data from a sample of $N=1067$ using a confidence interval of 95%, a standard deviation of 0.5, a margin of error of 3% with population of 2,734,092 to calculate the sample size sample.

The data for this research was collected using an online standardized questionnaire created on a web base standardized survey, which consisted of eleven closed ended questions. The structured questionnaire is an investigative instrument that typically consists of a distinct set of questions that was designed by the researchers to collect information from respondents. The retrieved data were stored then analyzed using descriptive and inferential statistics with the Statistical Packages for the Social Sciences (SPSS) for Windows version 25.0. Concerning classification, questionnaires were both quantitative and qualitative methods, depending on the question type. Quantitative analysis methods work best when analyzing responses from closed ended questions with multiple choice answer options, and they may typically involve pie charts, bar charts, and comparable percentages (Duquia, et al., 2014; In & Lee, 2017; Minter & Michaud, 2003). The survey questionnaire distribution occurred using social media platforms (WhatsApp, Facebook Messenger) and a web base standardized survey to the research population of religious and non-religious Jamaicans living in Jamaica. The collection of data was from September 21 to October 31, 2021. Participants received instructions on the nature and purpose of the research. Religious and non-religious Jamaicans in Jamaica received a web base standardized survey containing the link to the survey questionnaire and details of the research on, A Comparative Analysis of the

Perception of religious and non-religious Jamaicans on the Vaccination against the Coronavirus (COVID-19) Disease for completion.

Findings

Table 1 presents demographic characteristics of the sampled respondents. Of the sampled respondents (n=1,111), the majority were 1) females (61.0%, n=678), 2) 18-26 years old (36.6%, n=407), 3) religious (87.1%,n=968), and 4) Christians (81.6%, n=907).

Table 1. Demographic Characteristics of Sampled, n=1,111

Details	% (n)
Gender	
Male	38.3 (425)
Female	61.0 (678)
Other	0.7 (8)
Age cohort	
18-26 years	36.6 (407)
27-37 years	25.4 (282)
38-48 years	15.4 (171)
49-59 years	11.1 (123)
60+ years	11.5 (128)
Religious affiliation	
Religious	87.1 (968)
Non-religious	12.9 (143)
Type of Religious affiliation	
Christianity	81.6 (907)
Hindi	0.7 (8)
Islam	0.6 (7)
Judaism	0.5 (5)
Rastafarian	3.8 (42)
None	12.8 (142)

Figure 1 depicts a bar graph of the respondent's on whether their religion is against COVID-19 vaccination. Of the sampled respondents (n=1,111), 11.2% (n=124) indicated that their religion is anti-COVID-19 vaccination compared to 38.3% (425) who were uncertain and 50.6% (n=562) who said no.

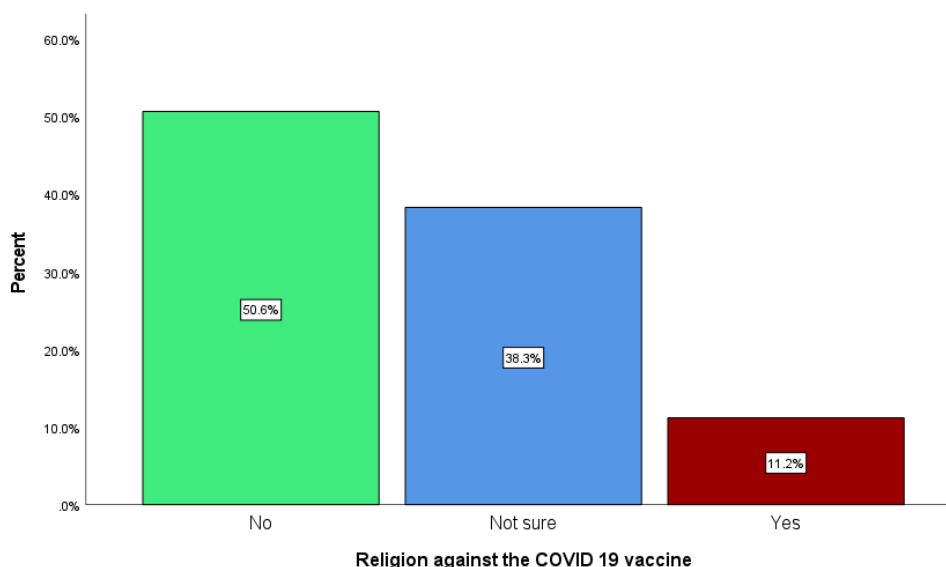


Figure 1. Respondent's religion against COVID-19 vaccination

A cross tabulation between state of religion being anti-COVID-19 vaccination and type of religious belief is presented in Table 2. The findings revealed a significant statistical relationship between the two variables ($\chi^2(10)=106.68$, $P < 0.001$), with the relationship being a weak one (contingency coefficient = 0.296) and one's religious sect accounting for 8.8% of change in the state of religion being against COVID-19 vaccine. Furthermore, Christians had the lowest anti-COVID-19 vaccine behaviour (9.0%) compared to Hindi (25.0%), Islam (57.1%), Judaism (60.0%) and Rastafarians (45.2%).

Table 2. A cross tabulation between state of religion being anti-COVID-19 vaccination and type of religious belief

State of Religion against the COVID-19 vaccine	Type of religious belief						Total
	Christianity	Hindi	Islam	Judaism	None	Rastafari	
	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
No	54.8 (497)	0.0 (0)	14.3 (1)	0.0 (0)	40.8 (58)	14.3 (6)	50.6 (562)
Not sure	36.2 (328)	75.0 (6)	28.6 (2)	40.0 (2)	49.3 (70)	40.5 (17)	38.3 (425)
Yes	9.0 (82)	25.0 (2)	57.1 (4)	60.0 (3)	9.9 (14)	45.2 (19)	11.2 (124)
Total	907	8	7	5	142	42	1,111

Table 3 presents a cross tabulation between state of religion being anti-COVID-19 vaccination and age cohort. The cross tabulation revealed no statistical association between the variables ($\chi^2(8)= 13.687$, $P = 0.090$) indicating that age of the respondents does not have influence on one's state of religion being anti-COVID-19 vaccination stance.

Table 3. Cross tabulation between state of religion being anti-COVID-19 vaccination and Age cohort

State of religion being anti-COVID-19 vaccination	Age cohort					Total
	18-26 years	27-37 years	38-48 years	49-59 years	60+ years	
	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
No	47.2 (192)	54.6 (154)	53.2 (91)	44.7 (55)	54.7 (70)	50.6 (562)
Not sure	42.3 (172)	37.2 (105)	35.1 (60)	38.2 (47)	32.0 (41)	38.3 (425)
Yes	10.6 (43)	8.2 (23)	11.7 (20)	17.1 (21)	13.3 (17)	11.2 (124)
Total	407	282	171	123	128	1,111

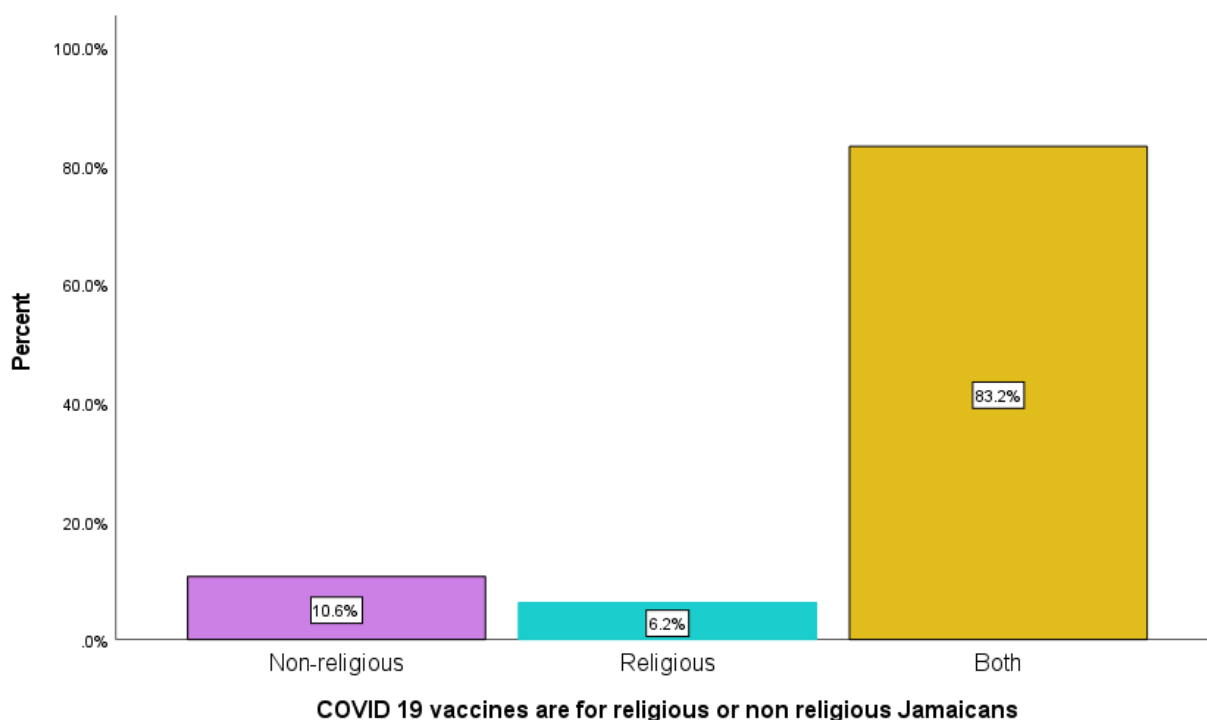


Figure 2. Respondent's perspective on COVID-19 vaccines being for religious or non-religious Jamaicans

Figure 2 below depicts respondent's perspective on COVID-19 vaccines whereby majority of the sampled respondents indicated that the COVID-19 vaccines are for both religious and non-religious Jamaica (83.2%, n=924), 10.6% stating is for non-religious and only 6.2% stating it is only for religious Jamaicans.

Table 4 presents a cross tabulation between selected variables and gender of respondents. Of the sampled respondents (n=1,111), 19.7% (n=219) indicated that the COVID-19 vaccines are dangerous to one's health compared to 35.0% who said no (n=389) and 45.3% (n=503) who were

uncertain. Almost 52% of Jamaicans indicated that they have not taken the vaccine compared to 48% who said yes. However, 85% of Jamaicans indicated that they have been vaccinated against polio, measles, and other diseases. Furthermore, the findings revealed that there is no statistical association between COVID-19 vaccines being dangerous to one's health and 1) gender ($\chi^2(4) = 7.511, P=0.111$), 2) those who had taken the vaccine ($\chi^2(4) = 4.757, P=0.093$). However, more females have been vaccinated against polio, measles and other diseases (88.9%, n=603) compared to males (78.6%, n=334) and 62.5% (n=5) of those who stated other for their gender ($\chi^2(4) = 28.427, P < 0.001$).

Table 4. Cross tabulation of selected variables by gender

Details	Gender			Total
	Male	Female	Other	
	% (n)	% (n)	% (n)	% (n)
Vaccine is dangerous for one's health¹				
No	33.9 (144)	36.1 (245)	0.0 (0)	35.0 (389)
Not sure	45.4 (193)	45.1 (306)	50.0 (4)	45.3 (503)
Yes	20.7 (88)	18.7 (127)	50.0 (4)	19.7 (219)
Taken the vaccine²				
No	50.1 (213)	52.7 (357)	87.5 (7)	51.9 (577)
Yes	49.9 (212)	47.3 (321)	12.5 (1)	48.1 (534)
Vaccinated against polio, measles, etc.				
No	7.1 (30)	3.7 (25)	25.0 (2)	5.1 (57)
Not sure	14.4 (61)	7.4 (50)	12.5 (1)	10.1 (112)
Yes	78.6 (334)	88.9 (603)	62.5 (5)	84.8 (942)

¹ $\chi^2(4) = 7.511, P = 0.111$

² $\chi^2(4) = 4.757, P = 0.093$

³ $\chi^2(4) = 28.427, P < 0.001$

Table 5 presents a cross tabulation of taken the COVID-19 vaccine and religious affiliation. The cross tabulation revealed a significant statistical relationship between the two afore-mentioned variables ($\chi^2(1) = 30.368, P < 0.001$) with the relationship being a weak one (contingency coefficient = 0.253). This means that COVID-19 vaccine hesitancy is higher among non-religious Jamaicans (73.4%, n=105) compared to religious Jamaicans (48.8%, n=472).

Table 5. Cross tabulation of taken the COVID-19 vaccine and religious affiliation

Taken the COVID-19 vaccine	Religious affiliation		Total
	Religious	Non-religious	
	(% n)	(% n)	(% n)
No	48.8 (472)	73.4 (105)	51.9 (577)
Yes	51.2 (496)	26.6 (38)	48.1 (534)
Total	968	143	1,111

Table 6 presents a cross tabulation between “taken”the COVID-19 vaccine and religious affiliation. The findings revealed higher COVID-19 vaccine hesitancy existed for Judaism (100%, n=5), Hindi (87.5%, n=7), Islam (85.7%, n=6), Rastafari (85.7%, n=36) and non-religious Jamaicans (75.4%) compared to Christians (45.9%, n=416), with the relationship being a weak one ($\chi^2(1) = 75.658, P < 0.001$, contingency coefficient = 0.253).

Table 6. Cross tabulation of taken the COVID-19 vaccine and religious affiliation

Taken the COVID-19 vaccine	Type of religious affiliation						Total
	Christianity	Hindi	Islam	Judaism	None	Rastafari	
	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
No	45.9 (416)	87.5 (7)	85.7 (6)	100.0 (5)	75.4 (107)	85.7 (36)	51.9 (577)
Yes	54.1 (491)	12.5 (1)	14.3 (1)	0.0 (0)	24.6 (35)	14.3 (6)	48.1 (534)
Total	907	8	7	5	142	42	1,111

Young Jamaicans are the most hesitant in taking the COVID-19 vaccines. Table 7 presents a cross tabulation between ‘taken the COVID-19 vaccine’ and age of the respondents. All of the sampled respondents were used for this analysis. The findings revealed that a statistical association emerged between the two afore-mentioned variables ($\chi^2(4)=12.783, P=0.012$). Fifty-six per cent (n=228) of those ages 18-26 years are hesitant in taking the COVID-19 vaccine compared to 53.5% (n=151) of those ages 27-37 years, 51.2% (n=63) of those ages 49-59 years and 50.3% of those ages 38-48 years. On the other hand, the elderly are the least COVID-19 vaccine hesitant (38.3%, n=38.3%).

Table 7. Cross tabulation of taken the COVID-19 vaccine by age cohort

Taken the COVID-19 vaccine	Age					Total
	18-26 years	27-37 years	38-48 years	49-59 years	60+ years	
	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
No	56.0 (228)	53.5 (151)	50.3 (86)	51.2 (63)	38.3 (49)	51.9 (577)
Yes	44.0 (179)	46.5 (131)	49.7 (85)	48.8 (60)	61.7 (79)	48.1 (534)
Total	407	282	171	123	128	1,111

Table 8 presents a cross tabulation of taken the COVID-19 vaccine by age controlled for by religious status. There is high COVID-19 vaccine hesitancy among the non-religious (73.4%, n=105) compared 48.8% among the religious sampled respondents, with no statistical association among the non-religious status ($\chi^2(4)=1.481, P =0.830$) and the contrary among the religious people ($\chi^2(4)=17.431, P =0.002$). Furthermore, more than half of those religious 18-26 years

(54%, n=191) and ages 27-37 years (51.2%) are COVID-19 hesitant compared to those 38 years and old, with the only 32.1% of elderly religious respondents being anti-vaccinates.

Table 8. Cross tabulation of taken the COVID-19 vaccine by age cohort controlled by religious status

Religious affiliation			Age					Total
			18-26 years	27-37 years	38-48 years	49-59 years	60+ years	
Religious	Taken the vaccine	No	54.0 (191)	51.2 (131)	44.8 (65)	48.1 (50)	32.1 (35)	48.8 (472)
		Yes	46.0 (163)	48.8 (125)	55.2 (80)	51.9 (54)	67.9 (74)	51.2 (496)
Total			354	256	145	104	109	968
Non-religious	Taken the vaccine	No	69.8 (37)	76.9 (20)	80.8 (21)	68.4 (13)	73.7 (14)	73.4 (105)
		Yes	30.2 (16)	23.1 (6)	19.2 (5)	31.6 (6)	26.3 (5)	26.6 (38)
Total			53	26	26	19	19	143
Total	Taken the vaccine	No	56.0 (228)	53.5 (151)	50.3 (86)	51.2 (63)	38.3 (49)	51.9 (577)
		Yes	44.0 (179)	46.5 (131)	49.7 (85)	48.8 (60)	61.7 (79)	48.1 (534)
Total			407	282	171	123	128	1,111

Table 9 presents a predictive binary logistic regression of those who have taken the COVID-19 vaccines by selected predictors. One thousand, one hundred and eleven respondents were used to determine the factors that predict Jamaicans who took the COVID-19 vaccine. Of the 1,111 respondents, 65.6% (n=729) were overall correctly classified (89.7% of those who indicated having taken the COVID-19 vaccine and 43.3% of those have not taken the vaccine). The general binary logistic model is a predictive one ($\chi^2(7)=206.489, P < 0.001, LI=1332.020$; Hosmer and Lemeshow Test: ($\chi^2(7)=4.417, P = 0.731$) and this accounted for 22.6% of the variability in taken the vaccine (Nagelkerke R^2). Furthermore, religious affiliation, perception that vaccine is dangerous, and age account for the 22.6% of the predictive power of the model, with perception that vaccine is dangerous having the most influence on one's decision to be vaccinated Wald statistics = 107.576, $P < 0.001$). People who perceived the COVID-19 vaccine to be harmful to one's health str 0.907 times less likely to be vaccinated. Non-religious respondents 0.594 times less likely to be vaccinated, and older respondents are more likely to be vaccinated in Jamaica.

Table 9. Binary Logistic regression of COVID-19 vaccination by selected estimates

Predictors	B	S.E.	Wald	P value	Odd ratio
Religious affiliation (non-religious =1, 0=otherwise)	-.902	.218	17.199	<0.001	0.406
Gender (1=female, 0=otherwise)	-.192	.137	1.942	0.163	0.826
Vaccine dangerous to health (1=yes, 0=otherwise)	-2.373	.229	107.576	<0.001	0.093
Age1 (18-26 years)	-1.031	.240	18.462	<0.001	0.357
Age2 (27-37 years)	-.945	.250	14.276	<0.001	0.389
Age3 (38-48 years)	-.572	.273	4.370	0.037	0.565
Age4 (49-59 years)	-.696	.291	5.722	0.017	0.499
Reference group (60+ years)					
Constant	1.302	.234	30.868	<0.001	3.678

Discussion

An important issue that is addressed in this study is whether religious Jamaicans think that the COVID-19 vaccine is the ‘Mark of the Beast’ or is a precursor to the ‘Mark of the Beast’. The findings indicate that 50.6% of the respondents’ religion did not forbid them from taking the vaccine, while 11.2% were anti-COVID-19 vaccine and 38.3% were unsure. COVID-19 vaccine hesitancy was higher among non-religious Jamaicans (73.4%, n=105) than religious Jamaicans (48.8%, n=472). Furthermore, a higher COVID-19 vaccine hesitancy existed for Judaism (100%, n=5), Hindi (87.5%, n=7), Islam (85.7%, n=6), Rastafari (85.7%, n=36) and non-religious Jamaicans (75.4%) compared to Christians (45.9%, n=416). Young Jamaicans were the most hesitant in taking the COVID-19 vaccines. Furthermore, more than half of those religious 18-26 years (54%, n=191) and ages 27-37 years (51.2%) are COVID-19 hesitant compared to those 38 years and older, with only 32.1% of elderly religious respondents being anti-vaccinates. The current study concurs with the literature as it found that young people are more hesitant of the COVID-19 vaccines compared to older adults (Burge, R. (2021). People who perceived the COVID-19 vaccine as harmful to one’s health were less likely to be vaccinated, which provides a rationale for the behaviour of Jamaicans on resisting COVID-19 vaccination. Unlike the literature which found that non-religious people are more likely to be vaccinated against COVID-10 (Burge, 2021; Ramirez, 2021) because they are pragmatic and believer in science, the present study found the opposite as this cohort is the least vaccinated in Jamaica. In fact, Jaradat (2021) provide us with some rationales for the non-religious or unaffiliated reluctance in accepting the COVID-19 vaccination, and these were “It’s a personal decision” to “I refuse to bow to COVID.” Self-belief that one will recover from the virus may be a plausible reason why young Jamaicans as well as the non-religious are resisting the vaccine.

In addition to religious status, this study explores whether age and gender impact vaccination status. The study adds to the current emerging research in the area of factors that influence vaccination status. The religious representation in this study looked at a variety of beliefs that

exist in Jamaica. The results challenge the idea that religious individuals are less likely to be vaccinated, as the opposite was found true. However, there are some limitations to this study. Although the study design was appropriate for a new study in this setting, it may not generalize to the larger population. Therefore, the recommendation is to replicate the study using a different setting to confirm these current results. A further limitation is that enough males did not respond, resulting in most respondents being female. Therefore, future studies may consider looking at a specific gender.

Vaccine status among religious and non-religious Jamaicans varies based on age, gender, and religious affiliation. Younger Jamaicans are less likely to be vaccinated compared to the elderly population. Religious Christians are the most likely to be vaccinated among the Jamaican population, with females at a higher vaccination rate. These results are opposite of previous research studies that explored the effects of religion on vaccination (Best et al., 2019; Kosarkova et al., 2021; Thomas et al., 2015). Sensitivity is an important aspect when addressing barriers relating to areas such as beliefs and faith. A collaborative approach between government, healthcare providers, and other leaders and stakeholders is critical in pushing for increased vaccination uptake among Jamaicans regardless of gender, age, or religious status.

Conclusion

This study aimed to evaluate the level of COVID-19 vaccination among religious and non-religious persons in Jamaica and explore their views on the COVID-19 vaccine. The results indicate that religious status is positively associated with accepting the COVID-19 vaccination. An opportunity exists for the Jamaican government to continue building trust among the population as vaccination initiatives continue across the island. The country's future is at stake as a fourth wave begins to sweep the globe. Policymakers must identify the barriers among the unvaccinated and develop and implement initiatives that will gain public consensus while increasing public trust amid the ongoing pandemic. A growing barrier is a conflict between a person's autonomy and right to choose, and public health initiatives surrounding the COVID-19 vaccine require further attention. Future research should focus on exploring the causal effect of non-religious beliefs and the COVID-19 vaccination.

Recommendation

The researchers are recommending that the Ministry of Health and Wellness desist from the current slogan of 'The Jab' to one of a reasoned action where people are brought into the knowledge on the sciences of the vaccine. In addition, there is a need to remove the politics from science as this is a part of the hesitance of young and non-religious people from accepting the vaccine. Simply put, the government of Jamaica should immediately cease from offering tangible or intangible items in exchange for people's willingness to accept the vaccine against COVID-19. Furthermore, the government should allow the scientists to speak openly to the public on the safety, quality, and reliability of the vaccine as its involvement is retarding the acceptance rate on vaccination.

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Appendix 1: Questionnaire

1. What is your gender?
 - Male
 - Female

2. What age group do you belong?
 - 18-26 years
 - 27-37 years
 - 38-48 years
 - 49-59 years
 - 60-70 years
 - 70+ years

3. Are you a religious or non-religious person?
 - Religious person
 - Non-religious person

4. Which religion do you practice?
 - Christianity
 - Hinduism
 - Islam
 - Judaism
 - Rastafarianism
 - None

5. Is your religion against COVID-vaccination?
 - Yes
 - Not sure
 - No

6. Do you believe that COVID-19 vaccines are dangerous to one's health?
 - Yes
 - Not sure
 - No

7. Do you believe that COVID-19 vaccines are for religious or non-religious Jamaicans?
 - Religious
 - Non-Religious
 - Both

8. What are the types of the COVID-19 vaccines used/given in Jamaica?
 - Johnson and Johnson
 - Pfizer
 - AstraZeneca
 - Moderna

9. Have you taken the COVID-19 vaccine?
 - Yes
 - No

10. If no, do you intend to take the COVID-19 vaccine?
 - Yes
 - Not sure
 - No

11. Before the COVID-19 pandemic, were you vaccinated against polio, measles, etc.?
 - Yes
 - Not sure
 - No