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Research Paper

Patients' Knowledge, Attitudes and Perceptions Towards Covid-19 Vaccinations at Karoi District Hospital in Zimbabwe

Sipuka Ruth[1], Mazinga Costain[2]
[1](Department of Health Sciences, Zimbabwe Open University, Zimbabwe)
[2](Department of Health Sciences, Zimbabwe Open University, Zimbabwe)
Corresponding Author: Mazinga Costain

ABSTRACT: *The aim of the study was to determine patients' knowledge, attitude and perceptions towards COVID-19 vaccinations at Karoi District Hospital in Zimbabwe. Several vaccines had been approved for use against coronavirus disease (COVID-19) and distributed globally in different regions. Vaccine hesitancy, which encompasses reluctance, delay, or refusal to receive a vaccine despite availability, had been a significant threat to the effectiveness of vaccination programs at Karoi District Hospital. The study sought to determine the patients' level of knowledge, attitude and perceptions towards COVID-19 vaccinations. The researcher adopted the Health Belief Model (HBM) theory as a conceptual framework in understanding knowledge, attitude and perceptions towards COVID-19 vaccinations. In addition, a quantitative descriptive cross-sectional research design was used in this study. The target population for the study included patients seeking health services at Karoi District Hospital. The researcher employed a non-probability convenience sampling method where research data was collected from a conveniently available pool of respondents. In addition, the researcher used questionnaires as a research instrument. Data collected was presented in the form of narratives, tables and bar graphs. The findings indicated that patients had knowledge about the COVID-19 vaccine and the effectiveness of the COVID-19 vaccine. In addition, it was found that patients were not sure that the newly discovered COVID-19 vaccine is safe and that that the COVID-19 vaccine is essential for us. Findings also indicated that COVID-19 pandemic could not be eradicated without vaccination and that everyone was supposed to be vaccinated against COVID-19.*

KEYWORDS: *Attitudes, Covid-19 Vaccinations, Knowledge, Perceptions, Zimbabwe.*

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I. INTRODUCTION

Towards the end of December 2019, an extraordinary outbreak of a pneumonia-like disease of unknown cause emerged in Wuhan, China [1]. The World Health Organization (WHO) subsequently termed the illness Coronavirus Disease 2019 (COVID-19); it was caused by a novel coronavirus called SARS-CoV-2 [2]. Despite quarantine efforts and strict global containment, COVID-19 spread worldwide and posed a global health concern. As of January 2022, the COVID-19 outbreak caused more than 350 million infections worldwide, as well as over 5.5 million deaths, after it was declared a global pandemic by the WHO on 11 March 2020 [2].

The SARS-CoV-2 pandemic inflicted almost unimaginable harm on our lives in unprecedented ways. In this grim situation, the development of safe and effective vaccines against the virus was considered a decisive moment to curb disease spread and ensure the resumption of ordinary life [3]. More than 330 candidate vaccines were under clinical evaluation globally, 44 of which were already in phase 3 clinical trials [3]. The three authorized COVID-19 vaccines were initially shown in trials to be highly effective in preventing the disease among adults, with an efficacy of 76.7% for the Ad26.COV2 is the Johnson and Johnson–Janssen, Beerse, Belgium [4]. The second vaccine with an efficacy of 94.1% for the mRNA-1273 was the Moderna, Cambridge, MA, USA [4]. The third vaccine with an efficacy of 95% for the BNT162b2 was Pfizer–BioNTech, Manhattan, NY, USA [5].

In mid-September 2020, phase 3 studies on the inactivated SARS-CoV-2 vaccine named CoronaVac, developed by Sinovac Life Science Company (Beijing, China), was initiated in Turkey [7]. The Republic of Turkey Ministry of Health gave an emergency-use authorization for the CoronaVac COVID-19 vaccine on 14 January 2021. It launched an immediate vaccination program prioritizing healthcare workers and older adults aged 65 and over. After the limited number of doses of CoronaVac vaccine was provided and the high efficacy of the BNT162b2 mRNA COVID-19 vaccine was shown in clinical trials, the Republic of Turkey Ministry of Health launched a mass vaccination campaign by administering the BNT162b2 vaccine in April 2021 [8].

One year after the novel coronavirus (COVID-19) pandemic led to its first lockdown in March 2020, the UK vaccination program was continuing at pace [9]. Vaccine uptake had been a key focus throughout the pandemic, in both policy and public discussions [10]. Vaccination was widely considered as a critical tool to bring the pandemic under control [3]. Debates around vaccination were multi-faceted and complex. However, despite the overall high uptake of, or intention to receive, COVID-19 vaccines, there were several disparities in terms of who was more or less likely to receive, or be willing to receive, a vaccine [19]. One study in Canada on overall attitudes to public health measures to reduce COVID-19 transmission found that many participants felt that vaccines were a means to get back to normal life while some were hesitant due to a lack of confidence in the potential efficacy of the vaccine and concerns over side-effects [20]. In addition, another study focused on India found a range of mixed views across people's knowledge, attitudes, perceptions and concerns [21].

Concerns had also been raised about the effectiveness of the existing vaccines in protecting against new variants as new SARS-CoV-2 variants had emerged and spread. Although many vaccines had been found to be highly effective against the COVID-19 reference strain, they may not provide the same level of protection against mutation strains [22]. The omicron variant was first identified in South Africa in November 2021 and had quickly become the dominant variant after a third wave of COVID-19 driven by the delta variant had largely subsided [24].

In 2021, the Zimbabwean government rolled out vaccination programs against COVID-19 to its citizens [25]. At first, the vaccination program against COVID-19 was for those willing to take the COVID-19 vaccine without coercion. However, due to low uptake of the COVID-19 vaccine, the government changed from voluntary uptake to make it mandatory for all frontline workers to be vaccinated against COVID-19 [25]. Other government departments and different organizations also followed the initiative whereby all workers were given a deadline to be vaccinated against COVID-19 or face disciplinary action. Despite groundbreaking scientific discoveries and mass vaccination campaigns, skepticism, hesitancy, and a negative perception of vaccines were obstacles to halting the outbreak [25]. Therefore, this study analyzed patients' knowledge, attitude and perceptions towards COVID-19 vaccinations at Karoi District Hospital in Zimbabwe.

Several vaccines were approved for use against coronavirus disease (COVID-19) and were distributed globally in different regions. Vaccine hesitancy, which encompasses reluctance, delay, or refusal to receive a vaccine despite availability, was a significant threat to the effectiveness of vaccination programs at Karoi District Hospital. There was a lot of concern and debate about the COVID-19 vaccine among the general population seeking medical services at Karoi District Hospital. Despite encouraging results from COVID-19 vaccine studies, people were unsure regarding COVID-19 vaccination and whether to accept the vaccine. Notwithstanding groundbreaking scientific discoveries and mass vaccination campaigns, skepticism, hesitancy and a negative perception of the vaccines were obstacles to halting the outbreak. However, general knowledge, attitudes and perceptions towards COVID-19 vaccinations were poorly understood. To undertake most effective vaccination strategy, the researcher needed to know the people's attitudes, knowledge and perceptions regarding COVID-19 vaccines. Thus, the study investigated patients' knowledge, attitude and perceptions towards COVID-19 vaccinations at Karoi District Hospital.

The purpose of the study was to analyze patients' knowledge, attitude and perceptions towards COVID-19 vaccinations at Karoi District Hospital.

II. METHODOLOGY

A quantitative descriptive cross sectional research design was used in this study.

Study Setting

Patients seeking health services at Karoi District Hospital in Zimbabwe, were approached by the researcher seeking their consent to participate in the study

Sampling and data collection

The target population for the study included patients seeking health services at Karoi District Hospital. The accessible population were patients seeking health services at Karoi District Hospital during the period of the study The sample size was calculated using the minimum sample size determination for population proportion.

In determining the sample size, the following mathematical procedure was used:

$N = (z^2*p*q)/d^2$

Where:

N = required sample size

z = is the standard normal deviation set at 1.96 corresponding to 95% confidence interval.

p = expected frequency value that the patients had knowledge on COVID-19 vaccinations was taken as 91% since the prevalence is not known.

d = is maximum allowable error set at 0.1

Therefore $N = (1.96〗^2*0.89*0.11)/0.1〗^2$

N = 33

Consequently, the required minimum sample size was 36 participants. If we anticipate a 10% refusal rate, the maximum sample size will be 36 / 0.9 = 40. Taking into consideration that the 10% refusal rate was factored in, a total of 40 participants were used.

During data collection participants were allowed to use a language of their choice which was given as either Shona or English. The researcher employed a non-probability convenience sampling method in this study. Patients seeking health services at Karoi District Hospital were approached by the researcher seeking their consent to participate in the study. Only those who agreed to participate in the study were given the questionnaires to answer. The first available primary data source was used for research without additional requirements. In this study, the researcher used a self-administered questionnaire as research instrument.

The researcher obtained a permission letter from Zimbabwe Open University and sought permission from the Medical Officer to carry out the research at Karoi District Hospital. In addition, the researcher obtained ethical approval letter from The Medical Research Council of Zimbabwe to carry out the study. Informed consent from participants was taken into consideration as the researcher communicated with the participants in obtaining their appropriate informed consent. This also included informing the participants that they are free to participate or withdraw from the research explaining the foreseeable consequences of withdrawing, the significant factors that may be expected to influence their willingness to participate, such as the risks, limitations on confidentiality and explaining other aspects about which the prospective participants may inquire. The participants did not put their names on the questionnaires to assure them of anonymity. The data and surveys were stored at the researcher's place for privacy and safety keeping.

The researcher used descriptive statistics to analyze the data that was obtained. The process involved coding of the questionnaires to enable raw data to be summarized and collected into meaningful categories ensuring numbers obtained make intuitive sense. To analyze, frequency distribution tables were drawn, and graphs were used to examine the pattern of responses to each of the variables and investigations and make relevant comments on the data collected. An explanatory approach was attached to the graphs and tables to warranty fullness on the hand-caped tables and graphs. The explanations of the findings are detailed to provide sufficient information to be in line with the objectives and provide the solutions to the problems.

III. RESULTS

Here we summarize the socio-demographic characteristics of the respondents. Table I shows the socio-demographic characteristics of the participants in terms of age, gender, marital status, religion, educational level and employment status. The findings show that majority of the participants, 11 (41%) were between the age range of 36-45 years and 9 (33%) were over 45 years. Furthermore, the findings showed that 16 (59%) participants were female and 19 (70%) of participants were married. The results further showed that 27 (100%) participants were of Christians. 12 (44%) participants had secondary level of education, while 8 (30%) participants had tertiary level of education. In addition, 12 (44%) participants were self-employed, while 7 (26%) participants were unemployed.

Participants' responses in terms of place of residence showed that 22 (59%) respondents stayed in town, while 15 (41%) respondents stayed in the rural areas. In terms of participants' responses on whether they have received all necessary vaccines in their life, the results show that 25 (68%) respondents had received all necessary vaccines in life, while 12 (32%) respondents had not received all necessary vaccines in life.

This segment sought to determine the knowledge level of patients towards COVID-19 vaccination. Figure I showed participants' response towards COVID-19 vaccination. The findings show that 30 (81%) respondents knew about the COVID-19 vaccine. In addition, 23 (63%) of the respondents knew about the effectiveness of the COVID-19 vaccine, while 16 (44%) of the respondents agreed that it is dangerous to use overdose vaccines. Furthermore, 18 (48%) of the respondents were not sure on whether the COVID-19 vaccination increased allergic reactions and 19 (52%) were not sure on whether the COVID-19 vaccine increased autoimmune diseases.

In addition, Figure II showed responses on patients' response on source of knowledge about COVID-19 vaccine. The findings showed that 16 (44%) respondents used mass media as source of knowledge about

COVID-19 vaccine, while 11 (30%) respondents used family / friends as source of knowledge about COVID-19 vaccine. 7 (19%) respondents used social media as source of knowledge about COVID-19 vaccine

Table I – Socio-demographic characteristics (N = 37)

Demographic Characteristic	Description	Frequency	Percentage
		n	(%)
Age	18-25	4	11
	26-35	7	19
	36-45	14	38
	Over 45 years	11	29
Gender	Female	21	57
	Male	16	43
Marital Status	Married	24	65
	Single	13	35
Religion	Christianity	35	95
	Islam	2	5
	African TR	0	0
	Other	0	0
Level of Education	Primary	9	24
	Secondary	16	43
	Tertiary	12	32
Level of Employment	Employed	12	32
	Unemployed	9	24
	Self employed	14	38

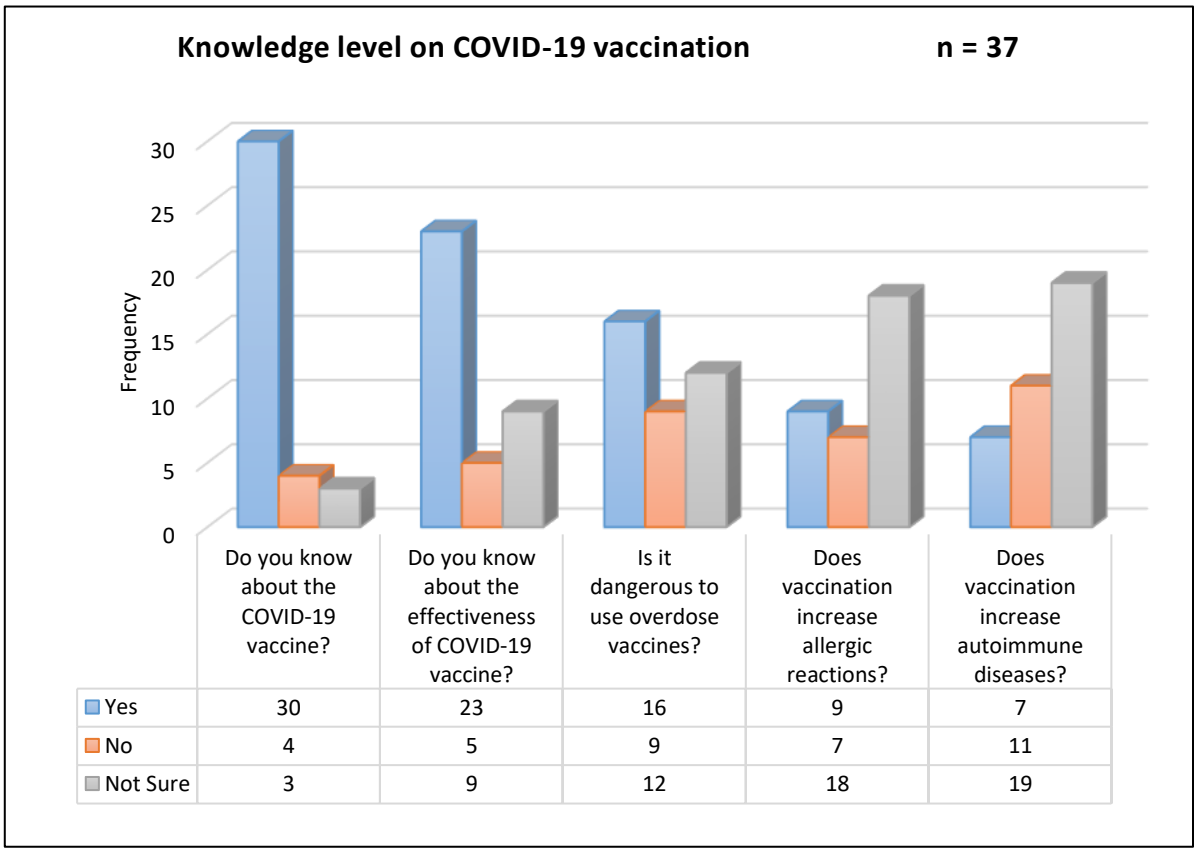

Figure I: Participants' knowledge level of patients towards COVID-19 vaccination

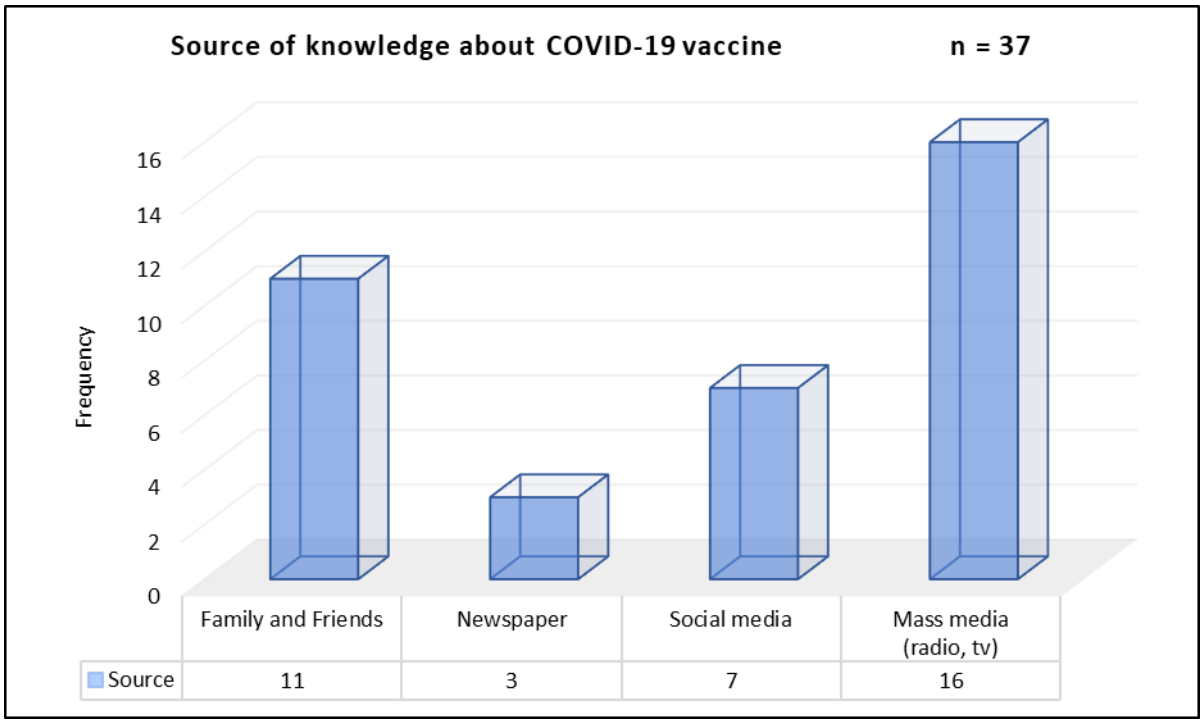

Figure II: Participants' response on source of knowledge about COVID-19 vaccine

This section presented participants response on participants' attitude towards COVID-19 vaccinations. Table II shows participants' response on on practices in infection prevention and control. The findings showed that 11 (30%) and 6 (15%) respondents strongly agreed and agreed that newly discovered COVID-19 vaccine was safe. In addition, 9 (26%) and 7 (19%) respondents strongly agreed and agreed that COVID-19 vaccine was essential for us, while 15 (41%) respondents disagreed that COVID-19 vaccine was essential for us. Furthermore, 15 (56%) respondents agreed that they will take the COVID-19 vaccine without any hesitation, if it was available. Only 22 (59%) agreed to encouraging family / friends / relatives to get vaccinated. In addition, the findings showed that 20 (55%) respondents disagreed that it was possible to reduce the incidence of COVID-19 without vaccination, while 11 (40%) respondents agreed that it was possible to reduce the incidence of COVID-19 without vaccination. Moreover, 27 (74%) respondents agreed that the COVID-19 vaccine should be distributed fairly to all of us.

Table II: Participants' attitude towards COVID-19 vaccination (n = 37)

	Risk factor		**1**	**2**	**3**	**4**	**5**
			(SA)	**(A)**	**(N)**	**(D)**	**(SD)**
1	The newly discovered COVID-19 vaccine	**n**	11	6	7	6	7
	is safe	**%**	30	15	19	15	19
2	The COVID-19 vaccine is essential for us	**n**	9	7	6	4	11
		%	26	19	15	11	30
3	I will take the COVID-19 vaccine without	**n**	15	6	3	10	3
	any hesitation, if it is available	**%**	41	15	7	26	11
4	I will encourage my family/ friends/	**n**	14	8	7	3	5
	relatives to get vaccinated	**%**	37	22	19	7	15
5	It is possible to reduce the incidence of	**n**	4	7	6	12	8
	COVID-19 without vaccination	**%**	11	19	15	33	22
6	The COVID-19 vaccine should be	**n**	19	8	3	6	1
	distributed fairly to all of us.	**%**	52	22	7	15	4

Figure III showed participants' responses on whether the newly discovered COVID-19 vaccine may have had side effects. The findings showed that 22 (59%) respondents agreed that the newly discovered COVID-19 vaccine may have side effects and 15 (41%) respondents disagreed that the newly discovered COVID-19 vaccine may have side effects.

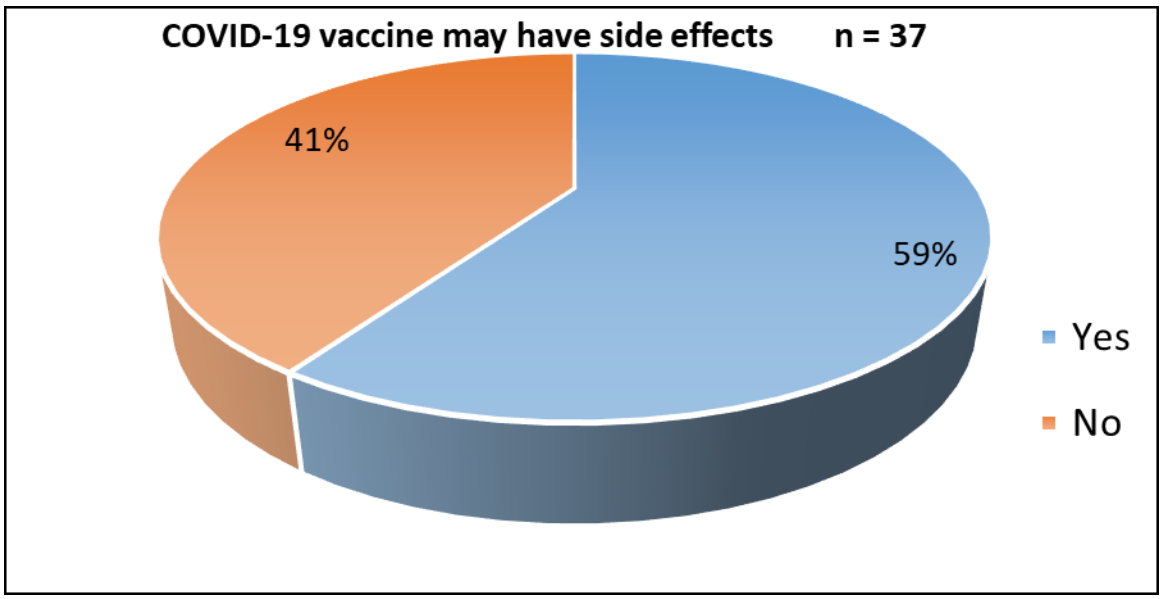

Figure III: The newly discovered COVID-19 vaccine may have side effects

In addition, responses on whether if everyone in the society maintained the preventive measures, COVID-19 pandemic can be eradicated without vaccination. The results showed that 22 (56%) respondents disagreed that COVID-19 pandemic can be eradicated without vaccination and 15 (44%) respondents agreed that COVID-19 pandemic can be eradicated without vaccination.

In addition, results in Figure IV showed who should be vaccinated against COVID-19. The findings showed that 15 (41%) respondents agreed that everyone should be vaccinated against COVID-19, while 11 (29%) respondents agreed that people infected with COVID-19 should only be vaccinated.

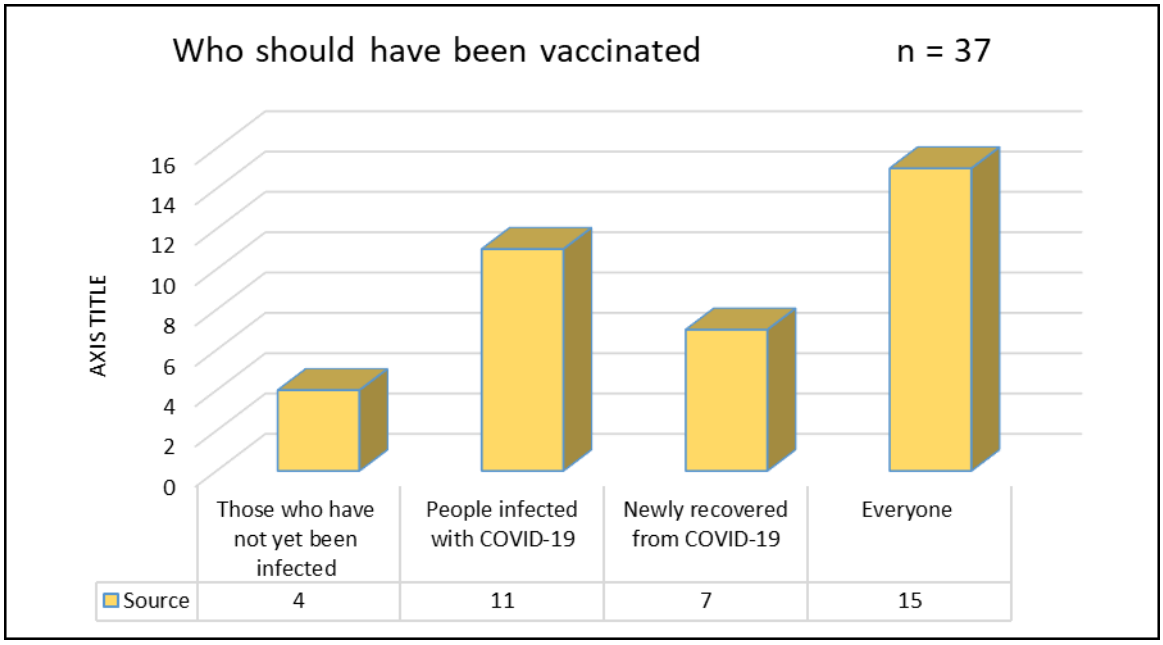

Figure IV: Who should be vaccinated?

The findings in Figure V showed that 22 (59%) respondents agreed that health workers should be prioritized for vaccinations and 7 (19%) respondents agreed that teachers / students should be prioritized for vaccinations, while 6 (15%) respondents agreed that the public should be prioritized for vaccinations.

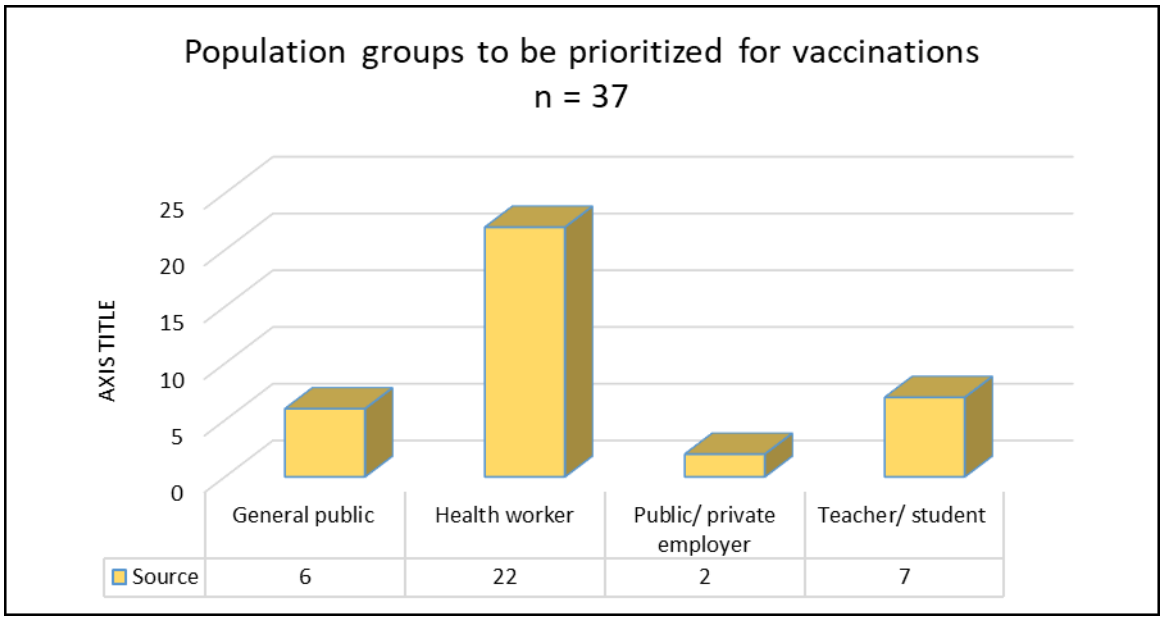

Figure V: Groups to be prioritized for vaccination

The findings showed that 33 (89%) agreed that the vaccine should be administered free of charge in Zimbabwe and 34 (93%) respondents agreed that they cannot afford the vaccine at their own expense.

IV. DISCUSSION

The findings showed that most of the respondents knew about the COVID-19 vaccine. In addition, most respondents knew about the effectiveness of the COVID-19 vaccine. In line with the findings, research conducted on 1357 health workers including doctors, nurses, and paramedics in China showed that medical doctors obtained higher knowledge on COVID-19 vaccination scores compared with nurses and paramedics [26]. In Italy, respondents from 2046 hospital staff showed that, in general, healthcare workers possessed good knowledge about vaccines [27].

Furthermore, some of respondents were not sure on whether the COVID-19 vaccination increased allergic reactions. In line with the findings, in Jordan, medical and non-medical students obtained an average score, where 90% of the participants had good knowledge of COVID-19 symptoms and more than 80% are aware of the lack of vaccine and treatment for COVID-19. No significant differences were observed regarding knowledge between medical and non-medical students [27].

The findings further showed that most of the respondents use mass media as source of knowledge about COVID-19 vaccines, while some respondents used family / friends as source of knowledge about COVID-19 vaccines. Despite these groundbreaking scientific discoveries and mass vaccination campaigns, skepticism, hesitancy and a negative perception of vaccines were obstacles to halting the outbreak. Concerns have also been raised about the effectiveness of the existing vaccines in protecting against new variants as new SARS-CoV-2 variants have emerged and spread.

The findings showed that more than half of the respondents were not sure that the newly discovered COVID-19 vaccine were safe. In addition, only 47% of respondents agreed that the COVID-19 vaccine was essential for us. In this case, the more that patients think they are protected by COVID-19 vaccination, the more likely it was that they pursue vaccinations. Attitude, and especially instrumental attitude, closely resembled the confidence of vaccine hesitancy.

Furthermore, only 56% of respondents agreed that they would take the COVID-19 vaccine without any hesitation, if it was available. In addition, the findings showed that most of the respondents disagreed that it was possible to reduce the incidence of COVID-19 without vaccination. The findings concurred with a study by Wolfe where vaccine hesitancy, which encompasses reluctance, delay or refusal to receive a vaccine despite availability, has been a significant threat to the effectiveness of vaccination programs. Despite encouraging results for COVID-19 vaccine studies, according to a global survey of approval of COVID-19 vaccines, 48% of the study participants were unsure regarding COVID-19 vaccination and whether they would accept the vaccine [16]

Moreover, most of the respondents agreed that the COVID-19 vaccine should be distributed fairly to all of us. Vaccine hesitancy is seen as a heterogeneous group in-between, including those who delay acceptance (that was, do not get it when first offered or according to schedule). As has been acknowledged, vaccine

acceptability exists on a spectrum, and it is important to distinguish vaccine hesitancy - where individuals may have limited information or who may have had genuine concerns about the safety or efficacy of a specific vaccine.

The findings showed that most of the respondents agreed that the newly discovered COVID-19 vaccines may have had side effects. In addition, the findings showed that 56% of respondents disagreed that COVID-19 pandemic can be eradicated without vaccination. Agreeing with the findings, said one major obstacle facing the achievement of such a goal was believed to be vaccine hesitancy and skepticism among the population worldwide [11]. Many people had doubts about vaccine safety, and this was going to be a major challenge to be resolved by health care providers, policymakers, community leaders and governments to increase the widespread acceptance of the vaccines [12].

The findings further revealed that 41% of respondents indicated that everyone should be vaccinated against COVID-19, while 29% of respondents indicated that people infected with COVID-19 should only be vaccinated. In line with the findings, French said that vaccine complacency was associated with a low realized risk of the vaccine-preventable disease and hence more negative attitudes towards the vaccines [13]. Such skepticism was demonstrated in a poll that was conducted in the US, where 50% of the Americans said they were willing to take the vaccine, 30% were unsure, while 20% were refusing the vaccine [14].

The results showed that most of the respondents concurred that health workers should be prioritized for vaccinations. With the lack of consistent media along with ever-changing guidelines from public health officials regarding the COVID-19 vaccine, vaccine hesitancy has been fueled by a lack of trust [15]. This era of limited trust in health officials has created confusion towards what the real risks are concerning catching COVID and / or receiving one or more doses of the COVID-19 vaccine.

The findings further showed the vaccine should be administered free of charge in Zimbabwe. Most of the respondents also indicated that they could not afford the vaccine at their own expense. Understanding the perception of the general population and their willingness to be vaccinated are crucial for improving vaccination rates [16]. In this context, a recent study revealed that college and above educational level, access to mass media, and urban residency were significantly associated with awareness about COVID-19 vaccines [17]. Furthermore, WHO strongly encourages governments to provide accurate and reliable knowledge about COVID-19 vaccination [3].

V. CONCLUSION

This study demonstrated that patients attending Karoi District Hospital generally possessed adequate knowledge about COVID-19 vaccines and their effectiveness. However, this knowledge did not consistently translate into positive attitudes and confidence, as substantial uncertainty remained regarding vaccine safety, side effects, and necessity. Vaccine hesitancy was influenced by perceived risks, mixed information sources, and concerns over affordability. Despite these reservations, most respondents acknowledged that COVID-19 could not be effectively controlled without vaccination and supported equitable, free vaccine distribution, with prioritization of health workers. The findings highlight the need for targeted health education, consistent risk communication, and strengthened public trust to vaccinations.

AUTHOR DISCLOSURE

The authors declare that there is no conflict of interest arising from this publication

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