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Determinants Of Covid-19 Vaccine Hesitancy Among Healthcare Workers In Oicha Health District, Democratic Republic Of Congo

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Abstract

Background: High rates of vaccination worldwide are required to establish herd immunity and stop the spread of the current COVID-19 pandemic. Vaccine hesitancy is a major barrier for achieving this goal across different populations including Healthcare workers. The purpose of the study was to identify key determinants of COVID-19 vaccine hesitancy among healthcare workers in the health district of Oicha, in Democratic Republic of the Congo. The results shall inform policymakers in public health on how to deal with these major challenges and improve communication for behaviour change strategies towards utilization of vaccination.

Methods: The study adopted a cross-sectional descriptive survey research design. The population study was 649 healthcare workers, working in public or integrated health care facilities. A stratified random sampling technique was used to draw a sample size of 248 respondents. Data was collected using interview schedules. The data was analyzed using descriptive statistics with presentation made using tables and figures. The level of association between the independent and dependent variables was assessed by chi-squared test and adjusted odds ratio and p-values at 95% confidence interval. The Statistical Package for Social Sciences (SPSS) software was used for data analysis.

Result: The findings show that 58.0% of healthcare workers in Oicha Health District were hesitant. Vaccine hesitancy were associated with variables as shown by bivariate and multivariate analysis results. Belief in vaccine safety (chi-square 202, p-value 0.000<0.05; OR = 13.4[6.85; 26.037], vaccine effectiveness (chi-square 146.714, p-value 0.000< 0.05; OR=68[26.3; 156.41], vaccine necessity (chi-square 180, p-value 0.000<0.05; OR=11[7;25], vaccine availability in Oicha health district (chi-square105; p-value 0.000<0.05; OR= 24[12;60], Trust in political administrative authority (Chi-square 2, p-value 0.132>0.05; OR=2[0.77;6.34] were significantly associated with hesitancy of COVID-19 vaccine. Besides, 96% of the respondents stated that they had already heard mixed negative news about the COVID-19 vaccine.

Conclusions and recommendations: Finally, it was established that vaccine safety, effectiveness, necessity, availability and trust in administrative authority were associated with vaccine hesitancy. This study can guide policymakers in improving the vaccination strategies.

Keywords – Determinants, Covid-19 Vaccine Hesitancy,Healthcare Workers,Oicha Health District, Democratic Republic Of Congo

I. INTRODUCTION

The world is facing a major health crisis due to the COVID-19 pandemic. It has been responsible for millions of deaths worldwide.

In the Democratic Republic of the Congo, at February 26th 2023, there have been 95,646 confirmed cases of COVID-19, with 1,464 deaths[1]. In contrast only 7,1% people have been vaccinated [2](PEVRDC, 2023), vaccine uptake among the lowest in the continent.

Knowing that, hand washing, social distancing and quarantine may slow the spread of the virus and flatten the epidemic curve, it may not be sufficient to completely halt the spread of COVID-19; herd immunity will need to be well established within the population. A high uptake of vaccines is required for the control, elimination, and global eradication of vaccine-preventable disease(1)

COVID-19 vaccine hesitancy contributes to significantly decreased rates of vaccination among populations and resembles a great challenge to public health experts in terms of battling infectious diseases. Its trends vary across the globe and subpopulation, including Health Care providers who are in front line battling COVID-19 pandemic.

In Oicha health district, only 32.2% healthcare workers are fully immunized. Meanwhile, morbidity data indicate that the cumulative number of COVID-19 cases among health workers was 39, including 8 deaths [3]

This would be extremely relevant for vaccination campaigns, as healthcare workers are among the most trusted sources of vaccine information and have a direct influence on the vaccination decisions of their patients and social contacts. Furthermore, insufficient vaccination uptake risks increasing COVID-19 infections (most likely leading to more hospitalizations and less available health staff), the workload in hospitals, and thus reducing the capacities of the health system to adequately respond to the epidemic.

It is vital to have a better understanding of the "why" behind their vaccine hesitancy so that vaccine campaigns can be tailored appropriately to address these concerns.

In this study we aimed to identify determinants of COVID-19 vaccine hesitancy among healthcare workers in the health district of Oicha, in North Kivu Province, DR Congo.

II. METHODS

Study design

We conducted descriptive, cross-sectional study between January and December 2022 using a qualitative approach.

Study settings

The study was carried out in Oicha health district is located in the northeast of the Democratic Republic of the Congo, north Kivu province especially Beni Territory. It straddles the equator between 0.4185°, or 0° 25' 7" north latitude, and 29.5507°, or 29° 33' 3" east longitude, at an altitude of 873 meters. It has an area of 1658 km2, and its population density is 183 inhabitants per km2.

Study population

The target population for this study was 649 healthcare workers working in public or integrated healthcare facilities. To be included in the study, the participant must meet the following criteria: be a resident of the Oicha Health District for 3 years, be a doctor, nurse, midwife, pharmacist, or hygienist regularly assigned for at least 3 years in one of the health centres of the Oicha Health District, voluntarily agree to answer the research questions and provide informed consent.

[1] Ministere de la Sante RDC, Statistiques COVID19, Kinshasa 2022
[2] BCZS OICHA. Statistique sur la vaccination contre COVID 19 dans la Zone de sante. Activités de vaccination, Oicha: BCZS, 2022.
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Sampling: Sample size determination, sampling procedures and instrument

We used stratified weighted sampling in proportion to 38% of each occupational category. In health care facilities, the healthcare worker category was selected using a lottery.

The study used primary data that was collected using semi-structured questionnaire comprised of 45 open and close-ended questions categorized into 7 main sections.

Study variables

Independent variables were the sociodemographic characteristics, vaccine confidence, factors, convenience, complacency, calculation and collective responsibility as well as conspiracy theories and misinformation around COVID-19 vaccine and the dependent variable healthcare workers COVID-19 vaccine hesitancy.

Data management analysis

Data were analysed using Ep SPSS software. The associations between independent variables and the primary outcomes (COVID-19 vaccine hesitancy) were tested using the Chi-square test as appropriate. We built a bivariate and multivariate logistic regression model assessing the association between determinants and COVID-19 vaccine hesitancy.

III. Result

Table 1: Association between vaccine hesitancy with socio-demographic characteristics

Variables		**Not Hesitant (n=106)**	**Hesitant (n=142)**	**Bivariate analysis**			
Characteristic	**Description**	**(%)**	**(%)**	**X^2**	**Df**	**OR(95% CI)**	**p value**
Sex	Male	65(52.0)	60(48.0)	7	1	2.162 (1.291–3.934)	0.000
	Female	41(33.3)	82(66.7)				
Age	< 40 years	62 (36.9)	106(63.1)	7.3	1	0.479 (0.250-0.836)	0.007
	≥ 40 years	44(55.0)	36(45.0)				
Marital Status	Married	86(48.0)	93(52.0)	7.4	1	2. 26(1.23-4.03)	0.007
	Single	20(29.0)	49(71.0)				
Profession	Nurses and midwives	50(42.0)	69(58.0)	12.0	2	4.22 (1.264-14.06)	0.019
	Administrative staff	43(38.4)	69(61.6)				
	Other staff	11(73.3)	4(26.7)				
Type of facility	Public	89(50.3)	88(49.7)	14.4	1	3.21(1.75-6.44)	0.000
	Private	17(23.9)	54(76.1)				

From table above, the findings show an association between COVID-19 vaccine hesitancy and respondent gender with a chi-square test of 17, df 1, and a p-value of 0.000 < 0.05. This implies that if the number of female participants were lower, the level of vaccine hesitation would decrease. Also, COVID-19 vaccine hesitancy is associated with respondent gender with a chi-square

test of 17, df 1, and a p-value of 0.000 < 0.05. This implies that if the number of female participants were lower, the level of vaccine hesitation would decrease.

Besides, COVID-19 vaccine hesitancy is associated with type of facility with chi-square test 14,36, df1, p-value 0,000< 0,05. Further, findings show an association between COVID-19 vaccine hesitancy with occupational category with a chi-square test 12, df 4, p-value 0.019 < 0.05. This implies that nurses and other staff were quite higher than other categories. In Oicha health district the training curriculum of physician and pharmacist is higher than nurses and other staff. Despite this, pharmacist was equally hesitant and getting COVID-19 vaccine.

However, COVID-19 vaccine hesitancy is not associated with marital status with a chi-square test of 7.4, df of 1, p-value 0.06> 0.05.

Table 2 Association between healthcare workers COVID 19 vaccine hesitancy with belief in COVID 19 vaccine safety, effectiveness, trust in administrative authority (Vaccine confidence analysis)

		No hesitant (n=106)	Hesitant (n=142)	Bivariate analysis			
Vaccine confidence analysis	Description	%	%	**chi-square**	**df**	**OR (95%CI**	**p-value**
Belief in COVID-19 vaccine Safety	No	4(2.9)	134(97,1)				
	Yes	102(92,7)	8(7,3)	202	1	13,4 (6,85-26,04)	0.000
Belief in vaccine effectiveness?	I believe	87(90,6)	9(9,4)				
	Not at all	19(12,5)	133(87,5)	146,7	1	68(26,3-156,4)	0.000
belief in vaccine necessary?	Not	9(6,3)	133(93,7)				
	Yes	97(91,5)	9(8,5)	180	1	11(7-25)	0.000
COVID-19 Vaccine availbility	Available	80(83,3)	16(16,7)				
	Not at all	26(17,1)	126(82,9)	105	1	24(13,7-56,1)	0.000
Trust in political administrative authority	Less trust/ not	101(44,1)	128(55,9)	2	1	2 (0,77-6,34)	0.132
	Trust	5(26,31	14(73,69)				

From findings, bivariate, belief in vaccine safety (chi-square 202, p-value 0.000<0.05; OR = 13.4 [6,85; 26,037], vaccine effectiveness (chi-square 146.714, p-value 0.000< 0.05; OR=68[26,3; 156,41], vaccine necessity (chi-square 180, p-value 0.000<0.05; OR=11[7;25], vaccine availability in Oicha health district (chi-square105; p-value 0.000<0.05; OR= 24[12;60] were significantly associated with hesitancy of COVID-19 vaccine.

Trust in political administrative authority (Chi-square 2, p-value 0.132>0.05; OR=2[0,77;6,34] was not significantly associated with vaccine hesitancy. This implies that they are determinants and if belief in vaccine safety, effectiveness, necessity, trust in political administrative authority and vaccine availability in Oicha health district is higher, the level of vaccine hesitation will decrease.

Furthermore, most of the time, there was vaccine shortage for 3-5 months while the vaccine applicant was registered.

Table 3 Association between vaccine hesitancy with belief in Oicha immunization system, Vaccination geographical accessibility and Belief in vaccine procurement and cold chain (VACCINE CONVINIENCE)

		No hesistant(n=106)	Hesitant (n=142)	Bivariate analysis			
vaccine convenience	Description	%	%	Chi-square	Df	OR(95%CI)	P-value
Believe in Oicha immunization system	Bad	39(22,1)	138(77.9)	108	1	13,8(6.5-60)	0.000
	Good	67(94,4)	4(5,6)				
Vaccination site is geographically accessible	+5km	37(0,9)	140(79,1)	120,476	1	28,1(11.0-65.6)	0.000
	-5km	69(7,2)	2(2,8)				
Belief in vaccine procurement and cold chain	No	15(23,1)	50(79,9)				
	Yes	91(49,7)	92(50,3)	13,919	1	1,5(1.2-1.8)	0.000

On bivariate analysis, the findings show COVID-19 belief in Oicha immunization system with chi-square test 108, df 1, p-value 0.000 < 0.05, OR=14 [7;60], distance from vaccination site to health care facility (Chi-square=120; df=1; p-value = 0.000 < 0.05), OR=28[11;66], vaccine belief in Oicha in vaccine procurement and cold chain with a chi-square test 14, df 1, p-value 0.000 < 0.05, OR = 1,5 [1,25;1,8] were significantly associated with hesitancy of COVID-19 vaccine. This implies that if belief level of Oicha immunization system, vaccine procurement and cold chain is higher, the distance from vaccination site to facility is less than 5 km, level of vaccine hesitation will decrease. That is to means that they are determinants of vaccine hesitancy.

Table 4 Association between COVID-19 vaccine hesitancy with disease severity perception, perception of risk getting COVID-19 and vaccine necessity (Vaccine complacency).

		No hesitants (n=106)	hesitants (n=142)	Bivariate analysis			
Vaccine complacency).	**Description**	%	%	Chi-square	Df	OR(95%CI)	p-value
Belief in COVID-19 existence in Oicha	No	46(34,6)	87(65,4)	7.795	1	1,36(1,1-1,65)	0,005
	Yes	60(52,2)	55(47,8)				
Perception of disease severity	Not severe	14(10,3)	122(89,7)	129,6	1	5,02(3,46-7,780)	0.000
	Severe	92(82,1)	20(17,9)				
Risk perception of getting COVID-19	risk	76(86,4)	12(13,6)				
	no risk	30(18,7)	130(81,3)	117	2	6,33(2,32-17,3)	0.000
Perception of vaccine necessity	Not	9(6,3)	133(93,7)	179,9	1	11(6,79-21,31)	0.000
	Yes	97(91,5)	9(8,5)				
Antecedent in vaccine hesitation(Ebola)	No	21(23,3)	69(76,7)	21,74			
	Yes	85(53,8)	73(46,2)		1	1,66(1,38-2,02)	0.000

From the table above, on bivariate analysis , belief in COVID-19 existence in Oicha Health District (chi-square 8,p-value 0,000, OR =1,4[1,1;1,6]) , disease severity perception (Chi-square=130; df=1; p-value = 0.000 < 0.05), OR=5[3,5;8]) , perception of own risk of getting COVID-19 with (chi-square test 117, df 2, p-value 0.000 < 0.05, OR=6[2;17]) , Perception of vaccine necessity perception with (chi-square test 180, df 1, p-value 0.000 < 0.05, OR= 11[7;21]) , antecedent in vaccine hesitation with (a chi-square test 22, df 1, p-value 0.000 < 0.05, OR =2[1;3]) were significantly associated with vaccine hesitancy among healthcare worker in Oicha Health district.

This implies that if belief in COVID-19 existence in Oicha health, disease severity perception, and perception of own risk of getting COVID-19 are higher and perception of vaccine necessity is higher, the level of vaccine hesitation will decrease as well as vaccine antecedent hesitancy.

Table 5 Association between level of engagement in search for COVID-19 vaccine information, vaccine recommendation and conspiracy issues as related to vaccine hesitancy

Issue	Description	No hesitancy n= 106 (%)	Hesitancy n=142 (%)	Bivariate analysis			
				Chi-Square	df	OR(95%CI)	p-value
Searching information	Engaged	43(59.7)	29(40.3)				
	Not at all	63(35.8)	113(64.2)	11.9	1	2.66(1.55- 4.89)	0.001
Vaccine recommendation	No	10(14.3)	60(85.7)				
	Yes	96(53.9)	82(46.1)	32.3	1	1.861(1.54-2.28)	0.000
Negative information about COVID-19 vaccine	No	2(18.2)	9(81.8)				
	Yes	104(44.0)	133(56.0)	216	1	1167(231-5900)	0.000

Table 5 reveals no association between hesitancy with level of searching COVID-19 vaccine information a chi-square test 11.95, df 1, p-value 0.001< 0.05, OR =2.66[1.55; 4.89]. This implies that if healthcare workers were hesitant and not engaged in searching for COVID-19 vaccine information, they should be able to better understand its benefits and risks in COVID-19 prevention strategies.

Also, a significant association between hesitancy and vaccine recommendation based on a chi-square test with 32 df and a p-value of 0.000 to 0.05. This implies that if healthcare workers were not hesitant, they would likely be willing to recommend vaccine uptake to their colleagues as part of their collective responsibility to prevent COVID-19 spread to the community, especially their colleagues.

Regarding conspiracy issue as related to vaccine, findings show association with Vaccine hesitancy (chi-square test 216, df 1, p-value 0.000 > 0.05, OR 1167[131; 5900]). This implies that if misinformation around COVID -19 vaccine is low; the level of vaccine hesitation will decrease.

Table 6. Vaccine recommendation (collective responsibility)

		No Hesistant (n=106)	Hesitants (n=142)	Bivariate analysis			
Vaccine recommendation	**Description**	%	**%**	Chi-square	Df	OR(95%CI)	P-value
	No	10(14,3)	60 (85,7)				
	Yes	96(53,9)	82(46,1)	32.3	1	1,861(1,54-2,28)	0.000

The findings show a significant association between hesitancy and vaccine recommendation based on a chi-square test with 32 df and a p-value of 0.000 to 0.05. This implies that if healthcare workers were not hesitant, they would likely be willing to recommend vaccine uptake to their colleagues as part of their collective responsibility to prevent COVID-19 spread to the community, especially their colleagues.

IV. Discussion

The study established that 58.0% of the health workers were hesitant to take up COVID-19 vaccine. Hesitancy among the health workers in Oicha is higher compared with 41.0% the prevalence of hesitancy among Healthcare worker found in Cape Town (2) , which was quite similar to Yasmin's result (40.8%) for vaccine hesitancy among healthcare worker in the US (3). Conversely, a study conducted between September and November 2020 in Taiwan found a high (76.6%) prevalence of vaccine hesitancy among healthcare workers (4). Hesitancy lead to low vaccine up take. According to Plans-Rubió, the percentages of vaccination coverage required to establish herd immunity against SARS-CoV-2 should be ≥ 90% COVID-19 vaccination coverage in all countries worldwide(5) . This is the mean vaccine hesitancy was a major barrier to achieving herd immunity among healthcare workers.

In addition, this low acceptance was observed in Nigeria, Ghana, the Democratic Republic of Congo and Saudi Arabia prior to the availability of the vaccine(6) (7) (8). In these studies, participants were vaccine hesitant for instance, either would refuse or were unsure whether they would accept COVID-19 vaccination.

Broadly respondent was complacent. They did not feel threatened by infectious diseases and had no impetus to change their prevention behavior (7). As a result, complacency should, however, be negatively related to perceived risks of diseases. Individuals who lack confidence have negative attitudes towards vaccination, which guide behavior(9). We therefore expect a positive correlation between confidence and attitudes toward vaccination(10) correct knowledge about vaccination (11), trust in the health care system , beliefs about benefits of vaccine, and a negative correlation with beliefs about harms of vaccines (12) and conspiracy mentality ruder(13). The high hesitancy found in this study were associated with confidence in COVID-19 vaccination. This result is in contrast with higher confidence of the COVID-19 vaccine ([92% (95% CI= 91, 92]) among the healthcare worker interviewed in Nigeria, who were already vaccinated at the time of the survey(14). Otherwise, it is similar to the result observed among healthcare worker in Cape Town which indicated that healthcare workers did not believe that COVID-19 vaccines are effective and were the most hesitant (p = 0.038). (2). Furthermore, the findings show a strong association between COVID19 vaccine hesitancy with vaccine availability. Most of the time, there was vaccine shortage for 3-5 months while the vaccine applicant was registered.

Overall, the system that delivers COVID-19 vaccine in Oicha was bad. As consequence it was associated with vaccine hesitancy. In fact, the whole immunization system is under sponsoring for all kind of vaccine (BCG, Polio pentavalent, etc.). Geographically, vaccination site is far from households, and most of the time, vaccine is not available. Travel time or inconvenient procedures were acting as barriers. Holm EJ, Holroyd K., 1992 found that we expect positive correlations with perceived time pressure and daily hassles, and a negative correlation with perceived access to health care (15).

Furthermore, for long time, in Oicha Health District, only AstraZenaca vaccine was available. Lack of vaccine choice was one of stated reason in hesitancy. This implies that if choice were performed within vaccine or were higher, level of vaccine hesitation will decrease.

(16) founded that, choices performed within the vaccine procurement process (both at national and supranational level) might have important consequences on the vaccine ecosystem and can indirectly affect public health. Furthermore, their results accrued allow to state that vaccine procurement is an intricate process and several aspects such as vaccine safety, quality of the product, costs, needs and supply, as well as transparency, competitiveness, and high-value based investments, should be considered. All these aspects, if well balanced, concur synergistically in building sustainable vaccine procurement systems able to prevent vaccine shortage risk and lower costs, increasing overall accessibility and equity(17).

Simular result was founded in Israel, where significantly, some of the capacities and strategies that helped Israel address vaccine hesitancy and geographic access barriers are different from those that enabled it to procure, distribute and administer the vaccines (18).

Searching COVID-19 vaccine information was very low compared to Wiysonge 's results which found that 77.0% of participants stated that it was important to fully understand the topic of vaccination before taking COVID-19 vaccines.(19).

Furthermore, collective responsibility also emerges as an important factor. The majority of the respondents stated that they can never recommend vaccine. This was quite higher than the results found in a cross sectional survey conducted in Cape Town in South Africa and which showed that 68.0% of participants indicated that even if most people are vaccinated against COVID-19, they would still get the vaccine(20) . In contrary, our results are closer to that of Ghana where 69.0% were willing to recommend COVID-19 vaccine to others (21). Healthcare providers' intention to use and to recommend the vaccine to their patients depends on their knowledge and attitudes about vaccines. Arda et al.,(22) reported that healthcare professionals who have an unfavorable attitude, aversion or hesitation towards vaccinations transmit these hostile attitudes to vaccination to patients and tend to recommend vaccination less frequently. Furthermore, vaccine hesitancy observed in the general population has been consistently linked to the level of vaccine hesitancy among healthcare workers(23). Significant association was found between hesitancy and misinformation toward COVID-19 vaccine. Misinformation, belief in conspiracies, and increased perceptions of vaccine-related risks contribute to the negative attitude. Among negative information the respondents stated that COVID-19 was man-made; it should be lead to disability in 10 years; it should cause infertility, it was for business; it is satanic; it was for killing Oicha citizens and it is the punishment of God. Similar statement were found by Wonodi in Nigeria (24) where they elicited a total of 33 different conspiracy theories or misinformation that participants had heard about the COVID-19 virus, pandemic response, or vaccine.

Wilson & Wiysonge (19) in a cross-country regression framework showed that at a country-by-country level, the use of social media to organize offline action is highly predictive of the belief that vaccinations are unsafe, with such beliefs mounting as more organization occurs on social media. In addition, disinformation campaigns online are associated with an increase in negative discussion of vaccines on social media and a drop in mean vaccination coverage over time (25)

Thus, disinformation on social media in the context of COVID-19 may increase the number of healthcare workers who are hesitant about getting a vaccine, even if their fears have no scientific basis.

In addition, disinformation campaigns online are associated with an increase in negative discussion of vaccines on social media and a drop in mean vaccination coverage over time.

Indeed, for more than two decades, the town of Oicha has experienced a savage massacre of the population by foreign armed groups without effective international intervention.

This situation fuels the feeling of being abandoned by the international community.

During the first episode of the Ebola outbreak in the Oicha area, with the arrival of a multitude of humanitarian aid workers with substantial resources, we observed an increase in the feeling of mistrust and even violence towards the humanitarian aid workers, who were also considered to be accomplices in the misfortune that was befalling the area.

Thus, during Ebola outbreak, there were too much information including false or misleading information in digital and physical environments. These mixed messages cause confusion and risk-taking behaviors that can harm health. It also led to mistrust in health authorities and undermines the public health response.

Furthermore, when COVID 19 arrived in Oicha, it was under an infodemic that include too much information including false or misleading information in digital and physical environments which include social networks, the politico-administrative authorities, the religious leaders in even the university professors, so as national as foreigners.

Thus, in this environment of multiple information, it is often difficult to identify the true messages from the false ones. This causes a reluctance to adhere to the vaccination campaign programs by the authorities, which are not very credible with the population.

Moreover, among those who understand the necessity and effectiveness of the vaccine, some say why get vaccinated and be killed savagely.

In interventions in favor of the population, it is always appropriate/important to involve the population in the search for solution. Otherwise, interventions that are considered outside of them are bound to fail. This is what Mahatma GHANDI and Nelson Mandela concluded by saying << whatever you do for me but without me, you do against m>>.

Most of the time humanitarian development projects often fail because of the way decisions are made.

Oicha Health District is being experienced two 2 decades of terrible massacre of the people through foreign armed groups without any accurate international intervention to stop such situation. Thus, this area is under an infodemic that include too much information including false or misleading information in digital and physical environments. During a disease outbreak, it causes confusion and risk-taking behaviors that can harm health.

Disinformation on social media in the context of COVID-19 may increase the number of Healthcare workers who are hesitant about getting a vaccine, even if their fears have no scientific basis.

Limitations

One of the limitations in this study was the unequal distribution of respondents from the different professional category and healthcare facilities and the relatively low sample size compared to the total number of healthcare workers in these healthcare facilities. This was due to the difference in the total number of healthcare worker category.

Strengths of the study

The study provides results from a particular setting which have underwent during more than three decades' instability, massacre. ….. Also it can help policies makers to get view point of one the educated category toward Outbreak management in an infodemic context.

V. Future directions/research

Further research should be done on other determinants of COVID-19 vaccine hesitancy other than confidence, convenience, complacency, calculation, collective responsibility, conspiracy theories and misinformation in instable study settings.

VI. Conclusion

In conclusion, this study has shown high levels of hesitancy toward COVID-19 vaccine among healthcare workers which poses an evident risk on the battle towards vaccination companies and establishing herd immunity. There is a lot of complacency towards COVID19 with low perceived risk, vaccine necessity among healthcare workers. Also, we found vaccine confidence, convenience toward vaccine with less trust in vaccine safety, effectiveness and the majority has been corrupted by mixted information on socio media that stayed them hesitating vaccination. Furthermore, vaccine availability as well as great distance between vaccination site and facility assign to were among determinants of hesitation.

Much efforts needs to be geared towards healthcare workers to take up the vaccine and searching /providing information about the safety and effectiveness of COVID-19 vaccines.

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DECLARATIONS

Ethics approval and consent to participate

We sought ethical clearance from the Research Ethics of University of the assumption in the Congo Research Centre Ethics Committee (Reference Number: UAC/CRID-UAC/JBKAM/001/22) and permissions from relevant authorities in the Oicha health district and different responsible healthcare facilities.

The Healthcare workers were informed that participation in the study was voluntary and informed consent was sought and signed by participants. The ethical principles of involvement of human research subjects as outlined in the Nuremberg Code and the Declaration of Helsinki were strictly adhered to.

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