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Vaccine Perception: Factors that Fuel the Perception of People about the Coronavirus Infection and Measures to Promote and Sustain the Acceptance of the COVID-19 Vaccine

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ABSTRACT

The COVID-19 pandemic has had a devastating effect on individuals, communities and nations all over the world. The best minds around the globe worked hard to produce vaccines, which are considered to be humans' best chance against the virus. Unfortunately, vaccine hesitancy has been reported in many parts of the world. These hesitancies are large due to the perceptions people have about COVID-19 vaccines. This study aimed to determine the perception of people in Pantang regarding the COVID-19 vaccination, the factors that fuel these perceptions, and the possible interventions that could be implemented. The researchers employed a quantitative approach. A cross-sectional study was used to determine the perception of the people of Pantang about the COVID-19 vaccination. The researcher used online questionnaires to collect the study data. The researchers employed a convenience sampling technique to select research participants. The people of Pantang had a good perception of the COVID-19 vaccination. The people of Pantang had a good perception of COVID-19 Vaccination. The research revealed that the people of Pantang had a good perception of the COVID-19 vaccination. The study identified trust in COVID-19 vaccination as a major factor that affects COVID-19 vaccine acceptance. Education, public engagements and involving religious leaders are the three main ways to enhance COVID-19 vaccine acceptance.

INTRODUCTION

The Coronavirus disease (COVID-19) is a deadly disease that continues to affect many countries in the world. The World Health Organisation declared the COVID-19 outbreak a pandemic in March 2020. The COVID-19 pandemic has caused challenges to healthcare systems, the economy, and education (Malik *et al.,* 2020). It put billions of people in quarantine during national lockdowns, magnifying pre-existing psychological and health issues and affecting various aspects of life (Rzymski, 2020; Mancini, 2021). By mid-March 2021, nearly 120 million cases of Coronavirus infection had been confirmed globally, with a death toll exceeding 2.6 million (WHO, 2021). In Ghana, there are over 95,000 reported cases with about 819 deaths (GHS, 2021). Despite the challenges posed by the pandemic, the scientific community all over the world have been working around the clock to produce efficient and effective vaccines that can be used to fight the COVID-19 virus (Jesus *et al.,* 2020). In their bid to develop vaccines against the virus, many countries and organisations have been able to develop vaccines which include: BNT162b2 by BioNTech, which was authorised on 21 December 2020, followed by mRNA-1273 by Moderna and AZD1222 by Oxford/AstraZeneca, approved on 7 and 29 January 2021, respectively, with many vaccines still under development and trial stages.

Despite these challenges, the government of Ghana faces in their bid to secure the COVID-19 vaccines, a final major hurdle remains to be crossed even after these vaccines have been secured, that is, convincing many sceptical Ghanaians that the COVID-19 vaccines are safe and effective. One of the major threats to the COVID-19 vaccine rollout and successful mitigation of the pandemic is vaccine hesitancy resulting from various perceptions some people have about the COVID-19 virus and the vaccines as a whole (Kimble & Maxik, 2021). There are several general factors influencing the reluctance to vaccinate, including experience with vaccines, level of education and knowledge, risk perception and trust, perceived importance of vaccination, subjective norms, and religious and moral convictions, as well as misinformation (Larberge *et al.,* 2021).

Problem Statement

Vaccine hesitancy, resulting in certain perceptions about the vaccine, is a major threat to the success of COVID-19 vaccination programs. Despite the government's efforts to procure vaccines to ensure that most Ghanaians are vaccinated, most Ghanaians are hesitant to receive the vaccines due to certain perceptions they have about the virus and the vaccine as a whole. A report by AdomTv (2021) showed that many Ghanaians are not willing to receive the COVID-19 vaccines for various reasons, some of which are the perception that the COVID-19 vaccine is a scheme that the West is trying to use to depopulate Africa, some say it is the mark of the devil, among other

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reasons. It is in the light of these claims that this study seeks to assess the perception of the coronavirus disease vaccine among the people of Pantang.

Purpose of the Study

The purpose of this study is to find out the kind of perceptions the people of Pantang have about the COVID-19 vaccines and to identify the various contributing factors that fuel these perceptions so that we can devise the appropriate strategies that can be used to fight those perceptions that are not backed by science and data to promote the acceptance of the COVID-19 disease vaccines which will at the end help in our collective fight against the COVID-19 pandemic

Objectives of the Research

The main objective of this study is to assess the vaccine perception in Pantang.

Specific Objectives

1. To understand how the people of Pantang perceive the Coronavirus disease vaccine
2. To identify the factors that fuel these perceptions
3. To develop strategies that can be used to promote the acceptance of coronavirus disease vaccines among the people of Pantang

Limitations

The major limitations in this study were that not enough research has been done about the perception people have about the COVID-19 disease vaccine which makes information from secondary data scanty and difficult to get, also, the study adopted quantitative research method and closed-ended questions which lack details, therefore making it difficult to understand the context in which respondents answered the questions.

LITERATURE REVIEW

The Global Picture Of Coronavirus Disease

Coronavirus disease has been said to be one of the most infectious diseases that has challenged global leaders in human history. According to the World Health Organisation (WHO), 2015, infectious diseases kill approximately 50,000 people daily and claim over 17 million lives yearly, making them one of the leading causes of death. The coronavirus, which is currently incurable, has killed over 50,000 people and claimed over 1.3 million lives in less than a year (Worldometer,2020). The virus continuues pose a threat to global population. By estimation, the Coronavirus is one of the most brutal killers of persons and a primary cause of the greatest economic destruction in the 21st century (WHO, 2020). The Coronavirus disease started in Asia, specifically Wuhan, in the last quarter of 2019. The disease has caused several deaths all over the globe and continues to cause economic despair. It is projected that the disease will progressively cause more distractions in developing countries like Ghana because they have weak public healthcare systems. The World Bank suggests that the Coronavirus pandemic would push about 49 million people into extreme poverty in 2020, out of which 23 million are expected to be in sub-Saharan Africa.

Coronavirus Disease in Ghana

The novel coronavirus disease 2019 hit Ghana on the 12th of March 2020. In less than a week, the incidence rate of the coronavirus disease increased by 300% and resulted in two deaths. Before the coronavirus disease was identified in Ghana, all neighbouring countries, Togo, the Ivory Coast and Burkina Faso had recorded cases of coronavirus. According to the Ghana Ministry of Health (2020), the origin of the disease in Ghana was due to an infected person who returned from Norway and Turkey. The Ministry of Health and Ghana Health Service put tracer teams together to trace the contacts of the infected persons, and as of 20th March 2020, 300 contacts were identified. There's little evidence on the impact of COVID-19 in Ghana, as there is little research on the impact in the Ghanaian context, and there is insufficient research on this topic. Most of the studies conducted in Ghana, about 19, focused on health, education and very little on poverty. The few studies that exist in Ghana largely focused on urban areas and therefore, are limited in terms of content and geographical coverage.

Effects of Coronavirus on Health Care Delivery Systems

Healthcare delivery systems in the world are under enormous pressure because of the Coronavirus pandemic (Tulenko & Vervoort, 2020). International hospitals and healthcare facilities are facing catastrophic financial challenges related to the COVID-19 pandemic (Vingilis *et al.,* 2020). The COVID-19 pandemic has shown that vulnerabilities in healthcare delivery systems can have profound implications for health, economic progress, trust in governments, and social cohesion (Escalante, 2020). Containing and mitigating the spread and infection rate of the Coronavirus continues to be essential. But so is strengthening the capacity of health systems to respond swiftly and effectively.

Healthcare delivery systems need to prepare for a surge in hospitalised patients with coronavirus. Hospitals need to create more negative pressure rooms, hire a backup workforce, pay overtime to staff, educate staff, obtain PPE, and address PPE shortages (Goldberg, 2021). All non-emergent and elective surgeries and procedures were cancelled to free up essential hospital staff and hospital beds. Social distancing practices and patient anxiety related to COVID-19 led to the cancellation of nearly all outpatient appointments and a transition to virtual telemedicine appointments. This includes administering COVID-19 vaccines. After lightning-speed development and testing, vaccine campaigns are rolling out in many countries. But questions about production, delivery and equitable access remain, not least for low and middle-income countries (Gostin, 2021). Access to healthcare is a fundamental human right, but the strain

that the COVID-19 pandemic placed on healthcare systems everywhere affected many people's primary care providers (İkiışık, 2021). Due to fears relating to the spread of the new coronavirus, healthcare providers around the world were minimising in-person contact with their patients (Iyengar, 2020). This affected prenatal care, a crucial aspect of ensuring that pregnant women and developing babies stay healthy throughout pregnancy (Jęśkowiak *et al.,* 2021). When the Coronavirus disease was first recorded in Ghana, it created a lot of panic among health workers in Ghana (Ruan, 2020). It became obvious that most health care workers and health care delivery settings in Ghana were not adequately prepared to fight the Coronavirus disease. The default attitude of health workers in Ghana was to do their best and let God do the rest. With increased costs related to COVID-19 and the lost revenue from the cancellation of outpatient office visits, elective procedures, and elective surgeries, hospitals throughout the country became financially strained (Jewett, 2020).

Psychosocial Impact of Coronavirus

The Coronavirus pandemic has caused panic, fear, anxiety, uncertainty, and mass hysteria among many people (Jewett, 2020). Disorders involving anxiety and depression have gone up since the onset of the pandemic (Kadali *et al.,* 2021). A survey conducted by the Centres for Disease Control reported that at least 40.9% of participants experienced at least one adverse mental health condition. This included symptoms related to increased substance abuse, anxiety, depression, suicidal ideation, trauma and stressor-related disorders.

Approximately 25% of participants in the survey who reported suicidal ideation were between the ages of 18 and 24. This survey also revealed a disproportionate negative psychological impact on African Americans, Hispanic populations, unpaid caregivers for adults, individuals with pre-existing psychiatric conditions, and essential workers. The survey's overall results showed that there was an overall increase in suicidal ideation, substance abuse, and mental health conditions in June 2020 in the United States. Healthcare workers associated with COVID-19 patients are at a higher risk of stigmatisation. Stigmatisation can provoke discrimination and marginalisation, leading to victims feeling stereotyped, treated differently, heightened suspicion, and a loss of status. Indeed, this is concerning as stigmatised groups can lead to unhelpful behaviour such as seeking medical care late, which can lead to a higher probability of spreading the virus. Healthcare professionals are at a higher risk of stigmatisation. Social media has exacerbated the negative psychosocial impact of COVID-19. Soon after the onset of COVID-19, information on social media regarding COVID-19 was on the rise as misinformation and possibly fear-mongering had spread out of control. Rumours, propaganda, and increased false information on multiple social media platforms quickly lead to increased panic, anxiety, and hysteria (Zou *et al.,* 2020)

Effect of Coronavirus on Educational Systems

The Coronavirus disease has had enormous effects on the educational systems of many countries (Kim *et al.,* 2021). There has been an incidence of complete closure of schools in many nations in an attempt to reduce the spread of the disease (Toquero, 2020). Many educational institutions have begun to adopt online teaching methods to reduce physical contact with students (Pragholapati, 2020). The problem is that, in most rural communities in Ghana, students cannot afford most of the devices to let their wards take part in online learning (Toquero, 2020). The Ghana government realised this and introduced nationwide broadcasting of educational materials on television. This, however, did not account for children who do not have access to television.

Vaccination

Since the start of the COVID-19 outbreak, the World Health Organisation has worked with countries and leaders in the Western Pacific Region on public health measures to slow or stop the spread of the virus (World Health Organisation, 2020). Safe and effective vaccines are an important tool, in combination with other measures, to protect people against COVID-19, save lives and reduce widespread social disruption (Gostin, 2020). Countries and areas in the Western Pacific Region have already completed regulatory approval and started introducing one or more COVID-19 vaccines (Escalante, 2020). Vaccines for COVID-19 are critical to bringing the pandemic under control when combined with other safety protocols such as regular handwashing with soap under running water, wearing of masks in all public places and physical distancing (Dharmaraj *et al.,* 2021). With several promising vaccine candidates in the pipeline, some under review for approval and the Pfizer/BioNTech, Moderna and Oxford-AstraZeneca vaccines approved for use by several stringent national regulatory bodies, the race for a safe and effective vaccine has entered into a new phase (Nhamo & Sibanda, 2021; Li *et al.,* 2020). COVID-19 vaccination in Ghana began on Monday, 1 March 2021, after the country became the first recipient of the Oxford-AstraZeneca COVID-19 vaccine as part of the COVAX initiative. As of 6 June 2021, Ghana has administered 1,230,000 vaccine doses (Ministry of Health, 2021).

Possible Side Effects Of Vaccination

The vaccination is to help protect people against contracting the disease (Kim *et al.,* 2021; İkiışık *et al.,* 2021; Williams *et al.,* 2020). Some people who take shots of the vaccinations may experience some side effects, which is a normal sign that the body is building protection (Goldberg, 2021). These side effects can inhibit the person's ability to do daily activities that should go away in a few days (Zou *et al.,* 2020; El-Shitany *et al.,* 2021). Some people do not experience side effects after vaccination (Wadman, 2020). The public needs to prep for vaccine side effects. Persons who take the shot of COVID-19 vs the nation may experience pain, redness and swelling

at the site of injection (Jęśkowiak, 2021). They may also experience tiredness, headache, muscle pain, chills, fever and nausea (Kadali *et al.,* 2021). To reduce pain and discomfort at the site of the shorts, the person should apply clean, cool, wet washcloths over the area or use or exercise the arm (Kadali *et al.,* 2021). The person can drink a lot of fluids, slightly to reduce discomfort from fever (André & DHANP, 2020).

Benefits of Vaccination

The COVID-19 vaccinations are safe (Li,2021). Devices were developed based on science that has been in existence for around decades. The vaccinations are not experimental. The vaccinations have gone through all the stages of required clinical trials. Extensive testing and monitoring have proven that definitions are safe and effective ways of protecting oneself against the infection. The vaccines are effective against the virus. Omaha devastation is a safer way to build protection against disease. Studies indicate that a nation provides a strong boost in protection for people who have recovered from coronavirus.

Vaccination Hesitancy

At least 60% of Ghana's 31 million residents will need to be vaccinated for the population to attain herd immunity (MOH, 2021). But a timeline for this remains elusive. One of the major threats to the COVID-19 rollout and successful mitigation of the pandemic is vaccine hesitancy. Vaccination resistance is defined as the delay in acceptance, reluctance or refusal of vaccination despite the availability of vaccination services. Vaccination resistance has been identified by the World Health Organisation (2019) as one of the top 10 threats to global health. Their decision to refuse to take a vaccination despite its availability is a complex decision-making process that involves several contexts, including individual and group factors specific to cultural and media historical influences on the way this religion's agenda, socioeconomic politics, geographic factors, and years of experience with other vaccinations, rest of perception and the design of vaccination programs.

The vaccine refusal among the healthcare workers may affect the general public's decision to be vaccinated. Ghana faces a potentially bigger stumbling block: Public scepticism about COVID-19 vaccines. Anxieties and uncertainties about the safety of the vaccines underlie considerable hesitancy in Ghana towards the COVID-19 vaccines. The proliferation of fake news and misinformation on social media and in certain quarters of the popular press is fanning the embers. To meet this challenge, public health authorities will have to be laser-focused on identifying and addressing both legitimate apprehensions and conspiracy theories. They will also have to be proactive in monitoring digital platforms because of the dynamic and viral nature of vaccine misinformation. It will also be important to measure progress towards public acceptance of the vaccines. One route would be to conduct a series of public surveys to assess the evolving landscape of knowledge and attitudes about vaccines. This would enable the government to identify specific misinformation that allows for more focused communication about vaccine safety and efficacy. Much of that will also depend on media coverage. It is, therefore, crucial to engage the media in its role in combating misinformation. Studies conducted by Walid and Anan (2021) concluded that participants reported high resistance to COVID-19 vaccination. The study identified several barriers to vaccination resistance and indicated that efforts should be intensified to overcome these barriers. The results of the study indicated that the participants knew about government incentives, transmission method, protective measures, and availability of cure were high. The main reason for vaccine resistance among the participants was concerns regarding the use of vaccines and the lack of trust in the vaccine. Soares et al (2021 studied the factors that are associated with governance in vaccination hesitancy in Portugal.

Interventions to Increase Vaccine Uptake in Minority Ethnic Communities

It is critical to develop strategies that are tailored to increase the acceptability of the Covenant in fascination and decrease hesitancy. The impact of interventions to increase vaccine uptake in minority ethnic communities will require a multifaceted and multimodal approach, as minority ethnic communities experience different barriers to vaccine uptake. Broad 'catch-all' type interventions that are not designed to meet the specific needs of a community may not be as effective for some groups and may exacerbate health inequalities A rapid review of interventions to promote vaccine uptake in minority ethnic groups indicates tailored interventions targeting minority ethnic groups can increase vaccine uptake using the following mechanisms and strategies: Trust and confidence can be improved through trusted general practitioners and community health centres recommending and offering vaccines. Therefore, it is important to understand vaccine uptake among healthcare workers from minority ethnic communities and to develop interventions that target concerns in this group. Including community leaders and community champions as partners and having visible representation at all levels can increase confidence in health systems where trust is low. Community engagement can identify strategies to make the vaccine more accessible, including in settings outside of formal health service provision, and increase trust between formal organisations and community members. This requires involving community leaders as partners to promote local buy-in and develop community plans.

Community forums that address the cultural and historical context of vaccine research mistreatment and include diverse representation of stakeholders can increase trust. The genetic mRNA process should be explained, as this has provoked mistrust around the appropriateness and safety of vaccines for different

populations. Clear information should be provided on potential vaccine side effects. Using educational videos in multiple languages can increase awareness leaflets that address misperceptions and narrative films using characters that the target community can identify with to increase the perceived severity of the virus and the perceived response efficacy of the vaccine, i.e. belief that getting the vaccine would reduce risk Access and convenience will vary for different communities and engagement work is required to identify the appropriate settings and local barriers to accessing the vaccine. The workplace, community centres, and religious venues may be important settings for facilitating uptake. Practical support is important to ensure no financial disadvantage is incurred, e.g. loss of earnings due to travel or waiting time to obtain the vaccine, transportation costs, etc. Providing immunisations in community-based settings, religious and community sites, including their general practice, outside of formal health service provision, and including workplace settings can improve access.

This enables reach into communities that distrusted government and medical professions, or were not registered with local services; it includes places of worship, school-based programmes, community-based organisations, and door-to-door efforts. Efforts with physical barriers, such as booking appointments and transportation, can improve uptake. Prompts and reminders in the form of letters and text messages, and the perception of support from family and friends, can improve vaccine uptake. Culturally tailored communication, shared by trusted sources, is vital for minority communities (Williams *et al.,* 2020). It will also be important to communicate the importance of the two doses of the vaccination programme (Paul *et al.,* 2021). Training for healthcare staff includes strategies for culturally tailored conversations to address vaccine beliefs, recognising their distinctive role as the most trusted source of health information among many minority ethnic groups and the value of their making vaccine recommendations for improving uptake (Palattiyil *et al.,* 2020). Training for faith leaders to increase their understanding of vaccine research (Ojikutu *et al.,* 2021).

MATERIALS AND METHODS

Study Design

In this study, A cross-sectional quantitative study was conducted among the people of Pantang. A cross-sectional design was selected for this study because it is good for answering questions on the prevalence of belief, situation or norm. This type of design provides a quick, cost-effective snapshot of a population's characteristics and prevalence of conditions at a specific time, allowing for the identification of correlations and potential areas for further research without the time and expense of longitudinal studies

Research Setting

The study was conducted at Pantang, a community in the Ga East Municipal District located in the Greater Accra region of Ghana. The district is famous for the Psychiatric Hospital called the Pantang Psychiatric Hospital and the Pantang Psychiatric Nursing Training College. The residents of Pantang are primarily traders with few public servants posted to the community. The community has a population of about 2600 people.

Study Population

In this study, the target population is residents of the Pantang community who are above the age of 18 years old.

Sample and Sampling Technique

Convenience sampling is a type of nonprobability sampling in which participants are sampled because they are convenient sources of data for the research. The convenience sampling technique was adopted because it is quick and easy to use without investing too much money.

The sample size was calculated as per Cochran's formula:

$n = Z^2pq/e^2$

Z = value is obtained from the Z table at a given value of precision, 1.96 for a confidence level of 95%

p = estimated proportion of the population which has the attribute in question (i.e. Standard deviation); for this research assumed less variability of 30%, so p = 0.3

q = 1 − p = 1 − 0.3 = 0.7

e = desired level of precision (i.e. the margin of error) = 5% = 0.05

Including these values in the formula

n = 1.962 * 0.3 * 0.7/0.052

n = 286.944 ~ 287

Tool for Data Collection

Questionnaires were used to collect data for this research. The questionnaire was in four (4) parts. Part one had closed-ended questions on the socio-demographic information, part two is made up of closed-ended questions and questions in the form of the Likert scale, parts three and four consisted of closed-ended questions.

Validity and Reliability

The researcher ensured the validity and reliability of this research by ensuring that; questionnaires used in this research covered all the contents that were supposed to cover the purpose and objectives of this research, the questionnaires for data collection were pretested to identify flaws and ambiguities to be corrected.

Data Collection Procedure

Both primary and secondary data sources were used in this study as articles and publications from both mass and electronic media were used to obtain the secondary data. Primary data was collected through the administration of questionnaires to the participants of the study.

Data Analysis

Data from the questionnaire were coded and entered into SPSS version 26.

Ethical Considerations

Certain ethical considerations were made during this survey to protect the study participants of this research. These include participants´ right to informed consent, confidentiality and the right to free consent.

RESULTS AND DISCUSSION

Overall, the respondent had a good perception of the COVID-19 vaccination (49.36%). 67.60% did not trust that the COVID-19 vaccine, only 33.45% did not trust the government about COVID-19 vaccination, 78.05% were not sure if COVID-19 vaccine will work, 43.90% felt they did not need COVID-19 vaccine, 38.33% thought other people needed the COVID-19vaccination more than them, 49.83% of the respondent did not just like the COVID-19 vaccination, 46.86% felt that the COVID-19 vaccine is not safe, 66.55% felt the COVID-19 vaccine was not effective. 60.98% did not have enough information about the COVID-19 vaccination, 50.87% believed the vaccination could lead to possible side effects, and 39.37% did not believe in vaccines in general. 39.37% said they will not receive the COVID-19 vaccination due to religious reasons, 31.91% will not receive the vaccination because of cultural reasons. 44.25% preferred traditional remedies.

Table 2: Research question 1

Statements	Agree	Disagree	Cumulative percentage
I do not trust the vaccines	194	93	67.60%
I do not trust the government about thevaccine	96	191	33.45%
I do not know if the vaccine will work	224	63	78.05%
I do not believe I need the vaccine	126	161	43.90%
I do not believe other people need vaccine more than me	110	177	38.33%
I do not like the vaccines	143	144	49.83%
I do not believe the vaccine is safe	144	143	46.86%
I do not believe the vaccine is effective	96	191	66.55%
I do not believe I have adequate information on the vaccine	112	175	60.98%
I do not believe the vaccine has possible side effects	146	141	50.87%
I believe I am against vaccines in general	112	175	39.02%
I will not receive the vaccine because of religious reasons	113	174	39.37%
I will not receive the vaccine because of cultural reasons	82	205	31.91%
I will not receive the vaccine because I believe in traditional remedies	127	160	44.25%
Overall Perception of the respondent about vaccination	49.36%		

Research Question 2

What are the factors that fuel these perceptions about the Coronavirus disease vaccine?

50% of the respondent said that their religion affects

Table 2: Factors that affected vaccination

Statements	Yes	No	Percentage
Does your religion affect your decision not to be vaccinated?	144	143	50%
Does your trust in the coronavirus vaccination affect your decision to get vaccinated?	223	64	78%
Does your level of information about the vaccine affect your decision to get vaccinated?	190	97	66%
Does your fear of injection affect your decision to get vaccinated?	82	190	30%
Does your doctor's recommendation COVID-19 vaccine affect your decision to get vaccinated	113	174	39%
Does the cost of the vaccine affect your decision to get vaccinated?	113	174	39%
Are you concerned about the news around blood clots?	68	219	24%
Are you concerned about the information you have seen in the media (TV, newspapers, Radio)?	69	218	24%
Are you concerned about the information you have seen on social media	194	93	68%
Are you concerned about the information you received from a health care professional?	108	179	38%
Are you concerned about the information you heard from family and friends?	180	107	63%

their decision to receive vaccination, 78% said their trust in vaccination affected their decision to receive vaccination. 66% said that the level of information they have about COVID-19 affects their decision to receive COVID-19 vaccination, 30% said their fear of infection affected their decision to receive vaccination, 39 per cent said the recommendation front their doctors affect their decision to receive COVID-19 vaccination and 39% of the respondent said the cost of COVID-19 vaccination affected their decision to get vaccinated. Information that people of Pantang saw in the mass media did not influence their perception about vaccination (24%). The respondent was also not concerned about the news about blood clots (24%). The information they received from their healthcare professionals did not have a significant effect on their perception of the COVID-19 vaccination. However, information from social media and friends and families about vaccination significantly influenced their perception of the vaccination.

Research Question 3

What are the strategies that can be put in place to promote and sustain acceptance of the Coronavirus disease vaccine?

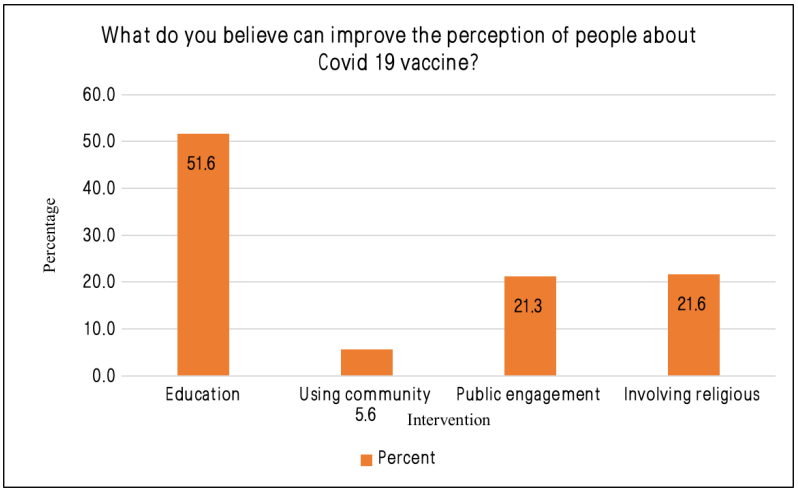

Figure 1: What are the startegies that can be put in place to promote and sustain acceptance of the Coronavirus disease vaccine

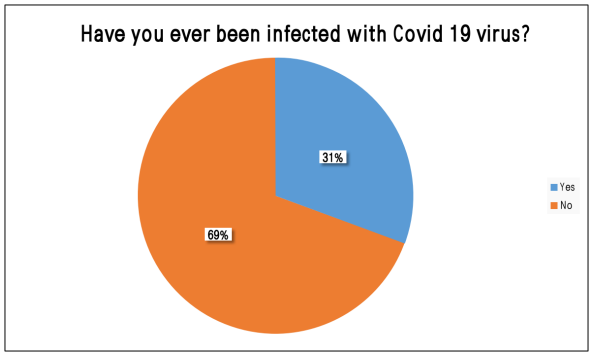

Figure 2: Have you ever been infected with the COVID-19 virus?

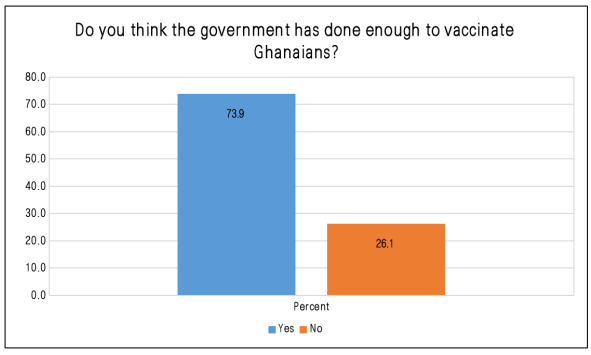

Figure 3: Do you think the government has done enough to vaccinate Ghanaians?

The above shows what the respondent thinks can improve the COVID-19 vaccine acceptance. 51.6% think education can improve vaccine acceptance, 21.6% think involving religious leaders can improve COVID-19 acceptance, 21.3% believe public engagements and communication can improve COVID-19 acceptance and only 5.6% think using community champions will improve COVID-19 vaccine acceptance.

Shows the percentage of the population that has ever been infected with COVID-19 disease. 69% of the respondents had never been infected by the coronavirus disease 2019.

73.9 percent thought the government had done enough to vaccinate Ghanaians while 23.1 pecent said otherwise.

CONCLUSION

The results generally showed that the people of Pantang have a good perception of the COVID-19 vaccine, as seen in Table 1, with 49.36% reporting a positive overall perception. However, individual perceptions varied, ranging from excellent to poor. These are discussed below:

From the data analysis, 67.60% of respondents do not trust the COVID-19 vaccine, which falls within the 'good'

category per Table 1. This contrasts with findings from research in Portugal by Soares *et al.* (2021), which showed poor results for trust in the COVID-19 vaccine. Trust in the vaccine in this research may stem from recommendations by trusted general practitioners, community health centers, and involvement of community leaders and champions in the vaccination program (Williams *et al.,* 2020). Additionally, 33.45% of respondents reported distrust in the government regarding the COVID-19 vaccine, which is considered excellent—indicating that most respondents actually trust the government on this issue. Furthermore, 78.05% of participants indicated uncertainty about the vaccine's efficacy, a poor perception per Table 1. This could be due to inadequate information, as the vaccine is new. Moreover, 43.90% of participants do not believe they need the vaccine, 49.83% reported not liking the vaccine, and 38.33% believe others do not need it more than they do. While these results are considered good on the research's scale, they fall short of the Ministry of Health's (MOH) target that at least 60% of Ghana's population needs to be vaccinated for herd immunity (MOH, 2021).

Regarding Vaccine Safety and Effectiveness

46.86% do not believe the vaccine is safe, meaning the majority believe it is. Meanwhile, 66.55% do not think the vaccine is effective—results that are good per Table 1. This aligns with Li (2021), where 68% agreed the vaccine is safe. Many studies, including Walid & Anan (2021), attribute concerns about safety/effectiveness to misinformation in the media. As for information about the vaccine, 60.98% feel inadequately informed. This indicates good information dissemination per Table 1, but highlights a need for improvement. 50.87% believe the vaccine has possible side effects, similar to findings by Zou *et al.* (2020), El-Shitany *et al.* (2021), and Goldberg (2021). Furthermore, 39.02% are generally against vaccines, which is excellent per Table 1, showing most are not. 39.37% cited religious reasons for not taking the vaccine (excellent), showing little religious resistance overall; this contrasts with Larberge *et al.* (2021). 31.91% cited cultural reasons, also contrasting with Larberge *et al.* (2021). 44.25% cite belief in traditional remedies as a reason (good).

Factors Affecting Vaccine Perceptions

50% of participants said religion influences their decision not to vaccinate (good), confirming that religion can negatively affect vaccine perception, in line with Larberge *et al.* (2021) and Saied *et al.* (2021). Table 2 responses show slight differences. 78% said their trust in the vaccine affects their decision, indicating trust is a major factor; concerns about the vaccine itself are the main reason for hesitancy (Soares *et al.,* 2021). 66% said information levels affect their decision, aligning with literature that true or false information shapes perceptions. Fake news and misinformation, especially on social media, fuel vaccine hesitancy. Public health efforts must focus on addressing both concerns and conspiracies (Walid & Anan, 2021). 30% cited fear of injection, showing it is relatively insignificant. 39% said their doctor's recommendation affects their decisions, while 38% are not swayed by healthcare professionals in general. This suggests healthcare recommendations may have limited impact here, contrary to WHO (2020) findings. 24% were concerned about blood clot reports, showing this is not a major factor; similarly, 24% are influenced by traditional media information. However, 68% are concerned about social media information, making it a major factor in fueling perceptions of the vaccine.

Recommendation

51.6% of respondents believe education can improve vaccine acceptance, 21.6% favor involving religious leaders, 21.3% endorse public engagement/communication, and 5.6% support using community champions. Literature and results show education is key (Malik *et al.,* 2020). Although only 21.6% support involving religious leaders, research shows this could help as religion is a significant factor (Larberge *et al.,* 2021; Nkansah *et al.,* 2020). Public engagement can increase accessibility and trust, especially for minorities (Williams *et al.,* 2020). Community champions are also crucial in promoting trust and vaccine confidence (Nkansah *et al.,* 2020).

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