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Covid-19 Vaccination Uptake and Knowledge among Professional Footballers in Yenagoa, Bayelsa State

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Abstract
This study assessed the extent of COVID-19 vaccination uptake among footballers within the Yenagoa LGA of Bayelsa State. A structured research instrument was employed to collect data from 397 participants representing two football clubs in Bayelsa State. Analytical methods included descriptive statistics, Fisher's exact test, and ANOVA with Post Hoc testing. A predominant proportion of participants exhibited intermediate educational qualifications (53%) and fell within the age range of 15 to 25 years (59%). Awareness levels of COVID-19 were 32.6% on transmission, 80.91% on prevention, and 30.5% on complications. Most respondents reported receiving 1 to 2 doses of COVID-19 vaccines (79%), predominantly the Oxford/AstraZeneca vaccine (98%). Principal sources of COVID-19 information were television ($p=0.393$, $F=0.943$), newspapers ($p=0.065$, $F=2.810$), public talks, and seminars ($p=0.056$, $F=2.78$). Age-related differences were observed in contributions to understanding COVID-19 transmission, prevention, and complications. Highly significant relationships ($p<0.001$) were reported between knowledge levels regarding COVID-19 transmission (OR=99.485, CI=23.079 to 428.84), prevention (OR=12.250, CI=2.779 to 54.008), and complications (OR=114.33, CI=26.441 to 494.39) and COVID-19 vaccine uptake. Despite a lower level of knowledge concerning COVID-19 transmission and complications, a commendable level of awareness regarding prevention was noted. The study underscores the necessity for comprehensive knowledge enhancement regarding COVID-19 and related conditions, with recommendations for improvement to effectively manage potential resurgences of the virus.

Keywords: *COVID-19, Vaccination Uptake, Knowledge, Professional Footballers, Yenagoa*

Introduction

COVID-19 is an infectious disease caused by the SARS-CoV-2 virus, first identified in Wuhan, China, in late 2019 [1]. The disease rapidly spread globally, prompting the World Health Organization (WHO) to declare it a pandemic in March 2020 [1]. The impact of COVID-19 has been profound, affecting millions worldwide, leading to significant morbidity, mortality, and socioeconomic disruptions [2]. Vaccination has been identified as one of the most effective strategies for mitigating the severity and spread of COVID-19. It plays a crucial role in reducing hospitalization rates and mortality, particularly among high-risk populations [3].

Professional footballers represent a unique demographic group with significant exposure risks due to their frequent travel, close-contact training, and competition environments [4]. These factors increase their vulnerability to infection and necessitate targeted public health interventions [5]. Studies have shown that athletes, including footballers, exhibit varying levels of knowledge and attitudes towards COVID-19 and vaccination, influenced by factors such as education, misinformation, and peer influence [6,7].

Despite global efforts to promote vaccination, hesitancy remains a significant challenge [8]. Factors such as concerns about vaccine safety, potential side effects, and misinformation have contributed to vaccine reluctance among different population groups, including athletes [9,10]. Understanding the extent of COVID-19 vaccination uptake and knowledge among professional footballers is essential for designing effective intervention programs.

This study aims to assess the level of COVID-19 vaccination uptake among footballers in Yenagoa, Bayelsa State. It also examines their knowledge of COVID-19 transmission, prevention, and complications, as well as the factors influencing vaccine acceptance and hesitancy. By identifying key determinants of vaccination behavior among footballers, this research provides insights that can inform targeted public health strategies to improve vaccine uptake and overall awareness within this demographic.

2. METHODOLOGY

2.1 Study Design/area

The study employs a descriptive cross-sectional design to assess COVID-19 vaccination uptake among footballers in Yenagoa, Bayelsa State. A structured and pre-tested questionnaire was used to collect data on vaccination status, influencing factors, awareness levels, and hesitancies. This ensures data reliability and validity.Yenagoa, the capital of Bayelsa State, is located at 4°55′29″N and 6°15′51″E, covering 706 km² with a population of 352,285 (2006 census). The city has a strong sports culture and is home to Bayelsa United (Nigeria National League) and Bayelsa Queens (NWFL Premiership), both of which won the 2021 Aiteo Cup.

2.2 Study Population/sampling

A stratified random sampling technique was employed, categorizing participants by club type and gender to ensure proportional representation. Larger clubs had more participants included, while key players from smaller clubs were randomly selected to minimize bias. This approach ensured comprehensive representation of all football clubs in Bayelsa State, aligning with the study's objective of analyzing COVID-19 vaccination uptake and knowledge among footballers. The study focused on footballers in Bayelsa State, including male and female players aged 15 and above who were actively registered in football clubs. A total of 29 registered clubs were identified—18 male and 11 female—comprising 790 registered players. Using the Taro Yamane formula, a minimum sample size of 259 participants was determined. Bayelsa United (60 players) and Bayelsa Queens (55 players) were recognized as the two mother clubs. The study sampled 55 members from Bayelsa United and 45 from Bayelsa Queens, while selecting 11 key players from each of the remaining 27 clubs, resulting in a total of 397 participants.

2.3 Instrumentation

The study utilized a pre-tested, validated questionnaire, systematically structured into three sections:

- **Section A**: Collected socio-demographic information, capturing essential background variables.
- **Section B**: Assessed COVID-19 vaccination status and knowledge, including transmission, prevention, and complications.
- **Section C**: Examined factors influencing vaccination decisions, exploring perceptions and determinants of uptake or non-uptake.

To ensure reliability, the questionnaire was pre-tested on 10 footballers in Delta State, yielding a Cronbach's alpha of 0.79. Content and construct validity were established through literature review and expert evaluation by supervisors and community medicine specialists, confirming alignment with the study's objectives.

2.4 Data Collection/analysis

The researcher collected data directly by distributing the questionnaire to football players who agreed to take part in the study. Participants were asked to verbally assent before the questionnaire was given out, and they were made aware that they might withdraw from the research at any time. The study tool was distributed to the participants on the days of their football games and collected from them at the next football match in their individual camps. In the football camps included in the study, at least two occurrences are typically reported to occur each month. The investigation was conducted between February 1st and February 28th, 2023.

Data collected was analyzed using the Statistical Package for Social Sciences (SPSS) software window version 25. Descriptive statistics were to describe the data while inferential statistics were done to test the study hypothesis.

2.5 Ethical Considerations

The Ministry of Sports and Culture in Bayelsa State and the Research and Ethics Committee of Niger Delta University provided their ethical clearance and permission for this study. The participants' verbal informed agreement was then obtained prior to the questionnaire being distributed. Before the study started, the subjects were also guaranteed secrecy and anonymity.

3. RESULT

3.1 Demographic Characteristics and Source of COVID19 Information

The study witnessed the participation of 397 fulltime career athletes (89%) in twenty-seven football clubs in Bayelsa state. Most of the participants were middle educated (53%), within the ages of 15 to 25 (59%), married (82%), living in hostels (72%), earning monthly income between N100,000 and N299,000 (65%). This is shown in Table 1 below. The highest source of information on COVID19 was from television (89%). This is shown in figure 1 below.

Table 1: Demographic Characteristics of Respondents (N = 397)

Item	Category	Frequency (n)	Percentage (%)
Education	Primary	16	4%
	Secondary	210	53%
	Diploma	103	26%
	BSc	67	17%
Marital Status	Single	326	82%
	Married	67	17%
Age Group (years)	15-25	234	59%
	26-35	147	37%
	46-55	16	4%
Location	Hostels	286	72%
	With family	95	24%
	With friends	4	1%
	Alone	4	1%
	With relatives	8	2%
Gender	Male	199	50%
	Female	199	50%
Football Club	Bayelsa United	199	50%
	Bayelsa Queens	199	50%
Type of Football	Full-time	353	89%
	Part-time	28	7%
	Leisure	16	4%
Occupation (if part-time)	Business	64	16%
	Health worker	16	4%
Religion	Christianity	306	77%

	Islam	91	23%
Monthly Income (₦)	50,000 - 99,000	36	9%
	100,000 - 199,000	111	28%
	200,000 - 299,000	147	37%
	300,000 - 399,000	56	14%
	400,000 - 499,000	40	10%
	500,000 and above	8	2%

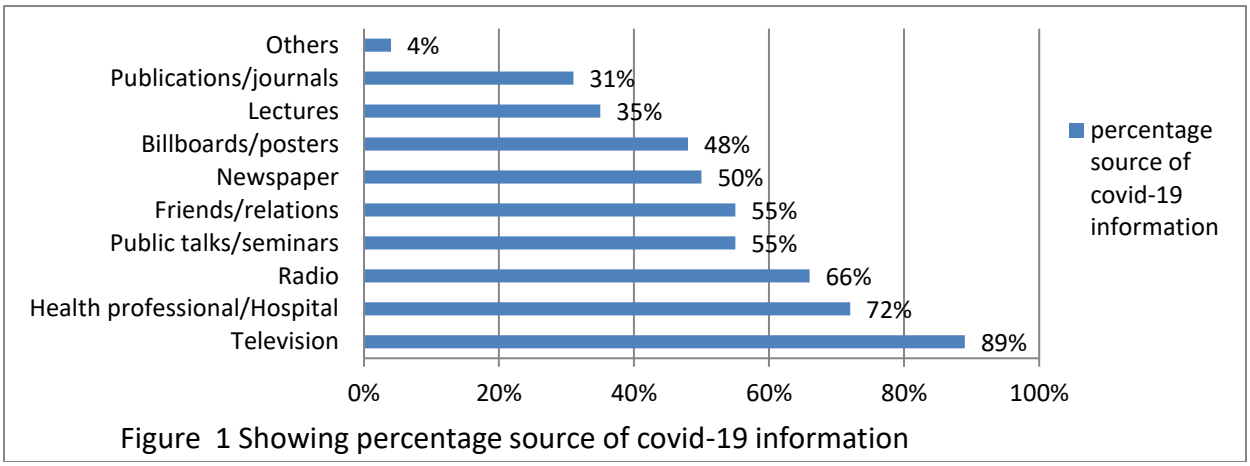
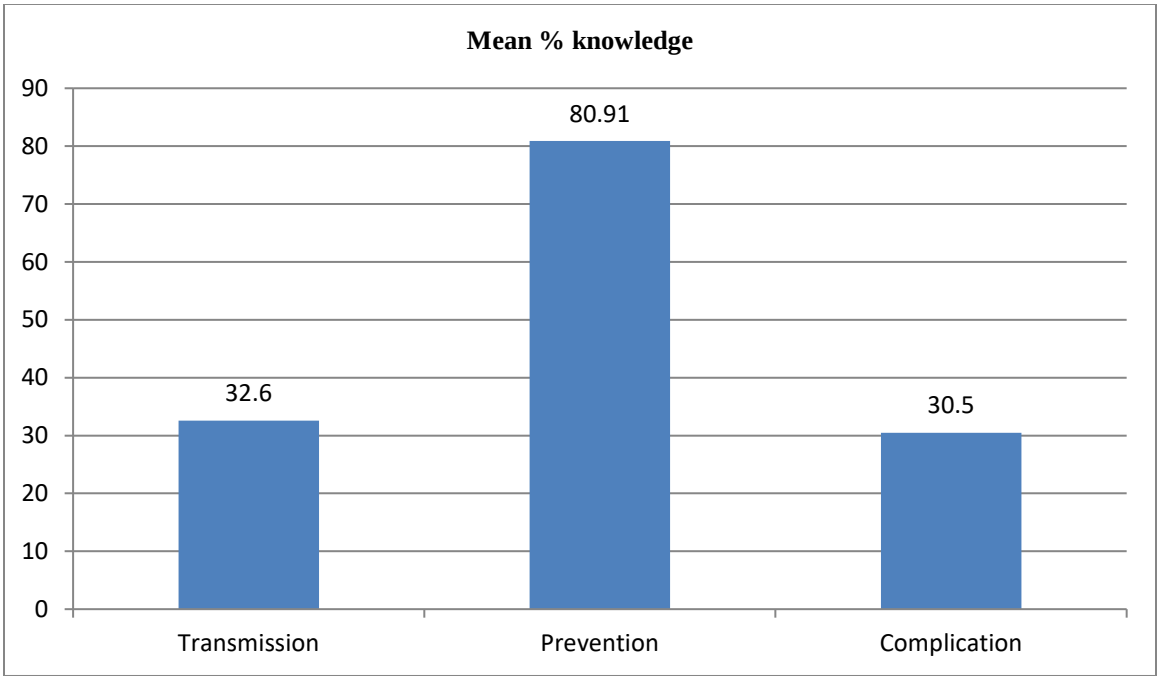


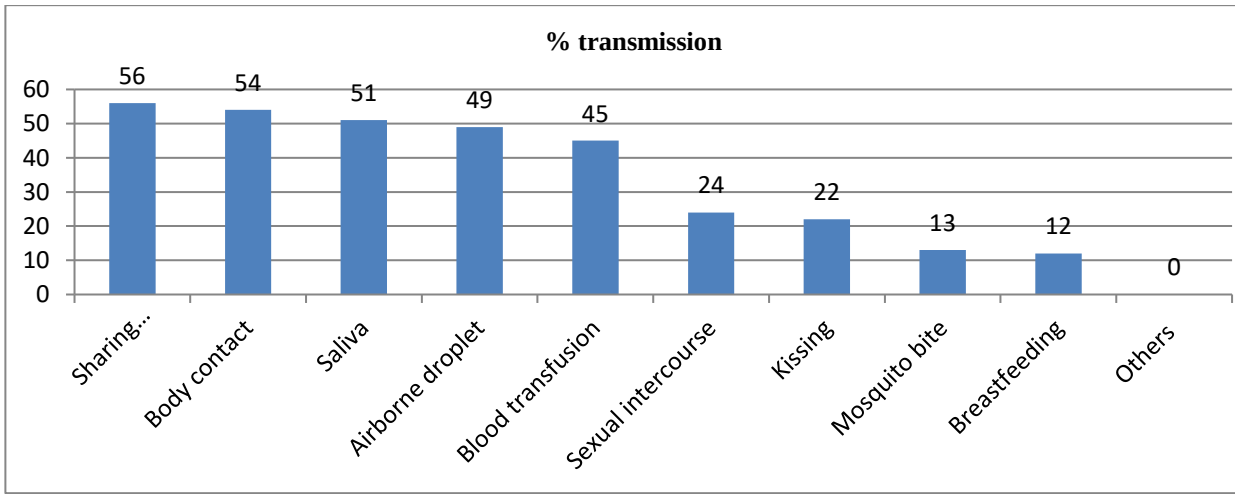
Figure 1 Showing percentage source of covid-19 information

3.2 Knowledge on COVID19 transmission, prevention and complication

There was reported a 32.6% knowledge of COVID19 transmission among participants in the study population. Few highest reported patterns of knowledge on COVID19 were those concerning sharing contaminated sharp objects, body contact, saliva, airborne droplet, and blood transfusion. Average 80.91% knowledge on COVID19 prevention was reported in the study. The mostly known and reported methods of COVID19 prevention that were reported were wearing face mask, social distancing, avoiding crowded places, getting vaccinated, hand washing with soap, and hand sanitizing with alcohol based sanitizer. Average of 30.5% knowledge on COVID19 complications was reported. According to the study, the common complications known to the participants were higher risk of death, acute respiratory failure, pneumonia, and acute respiratory distress syndrome (ARDS). This is shown in table 2 below.



Mean knowledge=48.003+/- 16.464, P=0.1003, t = 2.916, df=2, 95%CI=-22.843 to 118.85
Figure 2. Mean knowledge of covid19 in Bayelsa State



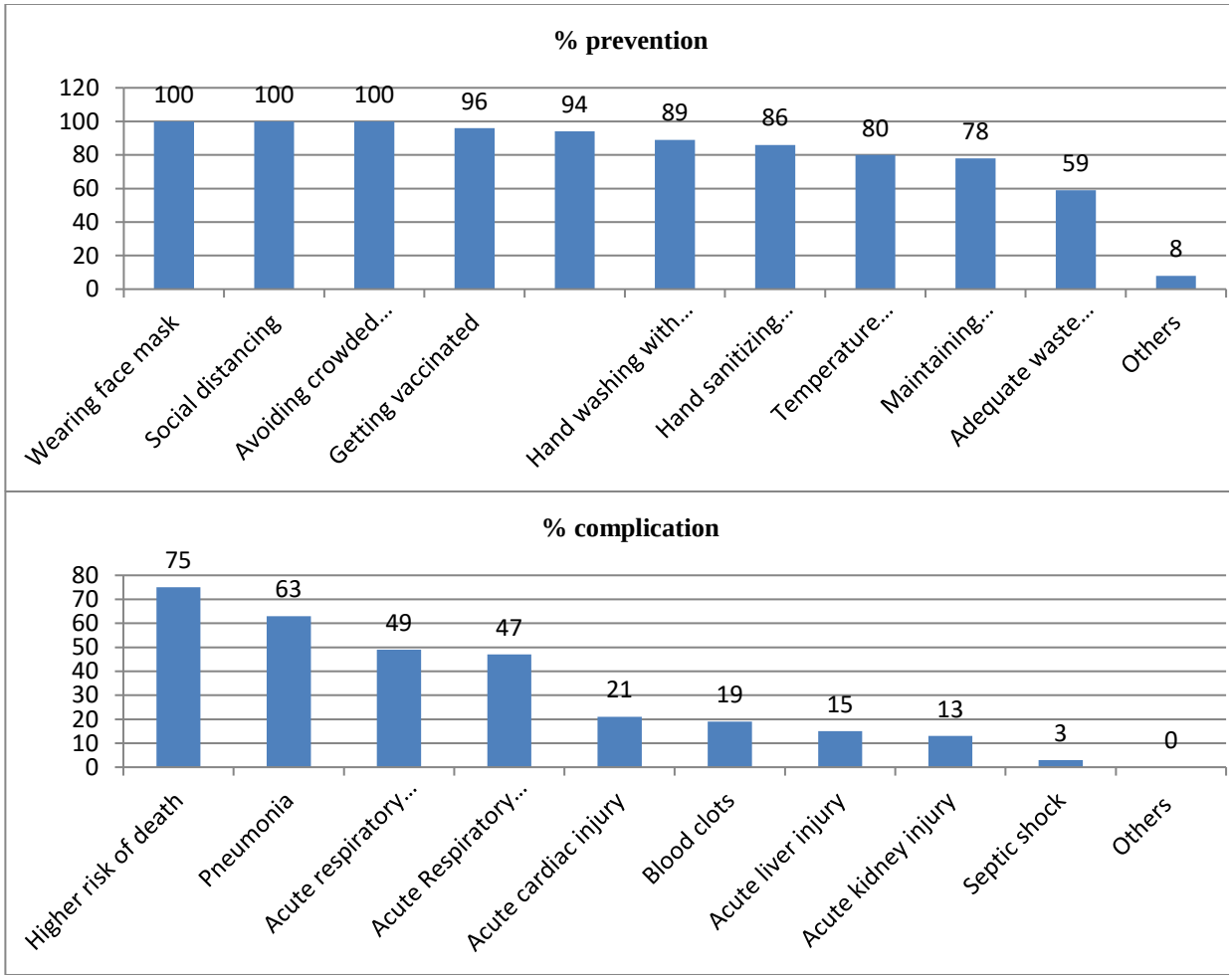


Figure 3. Infograph showing the % of covid19 transmission, prevention and complication in Bayelsa State

3.3 **Vaccination status of respondents**

Most of the respondents reported to have taken 1 to 2 shots (79%) of the COVID19 vaccines (98%) with a proof of possession of their vaccine cards (85%). Most of the participants reported that their COVID19 injections were taken at the hospital (56%) at the left arm (82%) of the body. The most administered COVID19 injection brand was the Oxford/Astrazenega Vaccine (80%)

Table 3. Vaccination history of respondents (N=397)

		Count	%
Have you been vaccinated?	Yes	98	389
	No	2	8
Do you have the COVID19 vaccination card?	Yes	85	337
	No	2	8
	Lost	13	52

Where is the vaccination card?	Home	40	159
	In players camp	33	131
	With the club secretariat	12	48
Where did you take the vaccine?	Hospital	56	222
	health centre	33	131
	Mobile COVID19 health workers	9	36
	Airport	0	0
	Others	0	0
Which part of your body were you given the vaccine?	right arm	16	64
	left arm	82	326
	Left lower limb	0	0
	right lower limb	0	0
	other regions of the body (specify	0	0
What type of the vaccine were you given?	Oxford/Astrazenega Vaccine	80	318
	Moderna Vaccine	0	0
	Johnson and Johnson Vaccine	15	60
	PfizerBioNTech vaccines	3	12
	Others	0	0
How many doses of the COVID19 vaccine have you taken?	1	38	151
	2	41	163
	3	15	60
	4	4	16
	None	2	8

3.4 Reasons for uptake/non uptake of vaccination

Reasons reported against the uptakes of the COVID19 shot included those of fear of side effects from the vaccines, lack of trust for the vaccines, long waiting line to obtain the vaccines in hospital, and that the vaccines could make one weak to play football. Common reasons given for the uptakes of COVID19 were due to the fear of COVID19 disease, to protect my family and relatives, seen it as a civic responsibility to take the vaccine, because the vaccine is free of charge, and that participants have Confidence in health care providers.

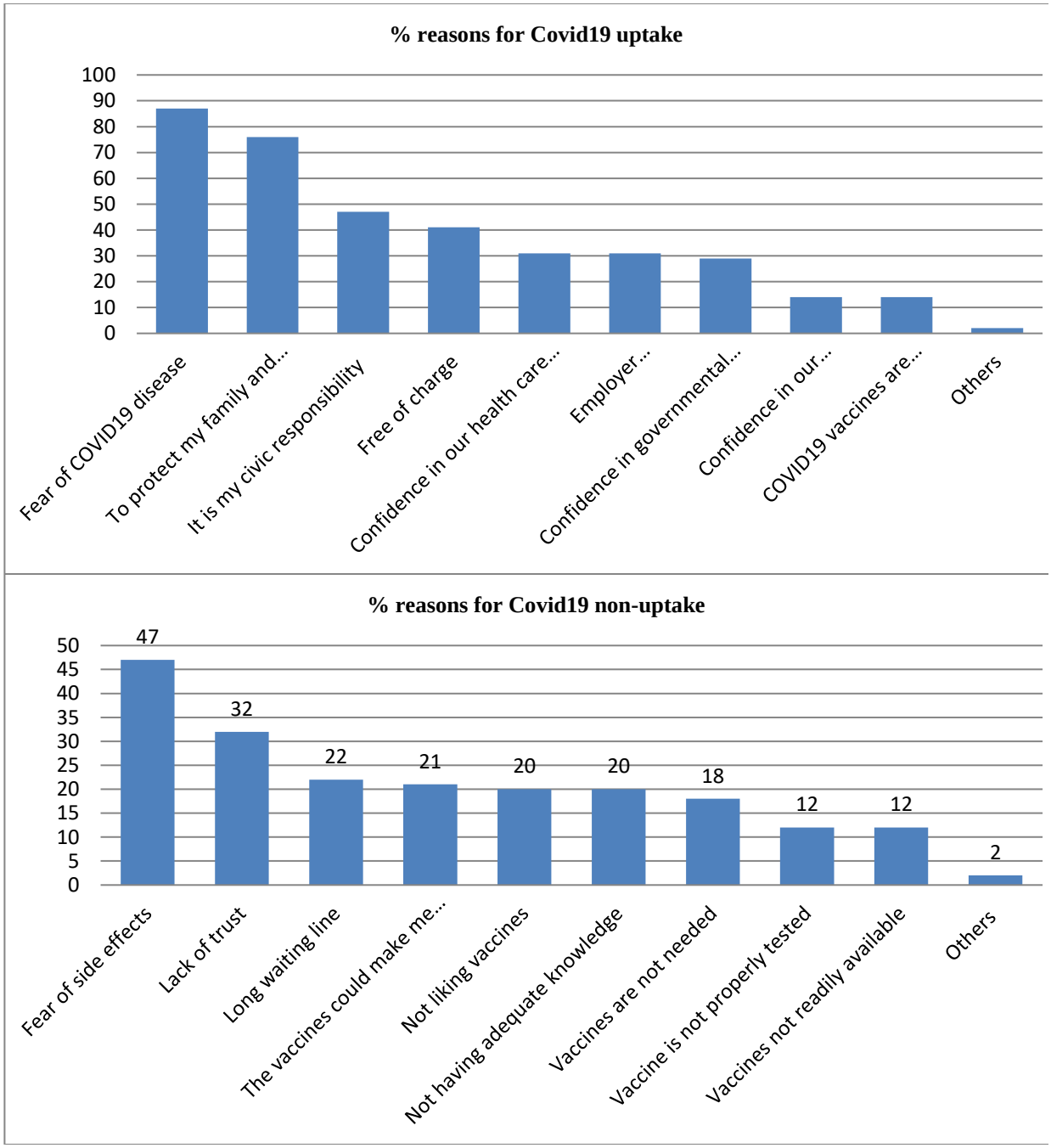


Figure 4. Infograpg showing % reasons for Covid19 uptake and non-uptake in Bayelsa state

4. Discussion

The study involved 397 full-time career athletes in 29 football clubs in Bayelsa State. Most participants had a middle level of education (53%), were aged 15 to 25 years (59%), married (82%), lived in hostels (72%), and earned a monthly income between N100,000 and N299,000 (65%). The primary source of information on COVID-19 was television (89%).

The study revealed generally poor knowledge of COVID-19 (48%), with knowledge of transmission at 32.6%, prevention at 80.91%, and complications at 30.5%. Most respondents (79%) had received one to two doses of the COVID-19 vaccine, with a high vaccination rate of 98% and 85% possessing vaccine cards as proof. The majority received their vaccinations in hospitals (56%), administered in the left arm (82%). The Oxford/AstraZeneca vaccine was the most administered brand (80%).

Reasons for vaccine uptake included fear of COVID-19, protecting family members, civic responsibility, free vaccine availability, and confidence in healthcare providers. Conversely, reasons against vaccination included fear of side effects, lack of trust, long waiting lines at hospitals, and concerns about vaccine effects on physical performance.

The findings of this study align with other research. The high COVID-19 vaccination rate (98%) among Bayelsa athletes is comparable to the German Bundesliga (90%) and Van-Tam's study on Premier League players [11]. Across various populations, common drivers of vaccine uptake include awareness of the disease, trust in healthcare providers, and a sense of civic duty. Additionally, television was the dominant information channel (89%), similar to findings among pharmacy students (91.5%) and in Mozambique, where media played a crucial role in information dissemination [12,13].

Vaccine hesitancy due to safety concerns was also observed in studies from Bulgaria, Nigerian undergraduates, and Ugandan women [14,15,16]. The influence of demographic and socioeconomic factors on vaccination uptake was similar to previous research [17,18].

Despite these similarities, notable differences exist. The vaccination rate among Bayelsa athletes (98%) was significantly higher than among Bulgarian students (73.5%), Ugandan women (11.26%), and Nigerian undergraduates (18.7%), suggesting that occupation and workplace mandates play a role in vaccine acceptance [19].

Differences were also noted in vaccine barriers. While Bayelsa athletes cited concerns about side effects and physical performance, misinformation was the primary barrier among Nigerian students, while political factors and conspiracy theories were major concerns in other Nigerian studies [20]. The preferred sources of information also differed, with social media being dominant in academic populations [21].

Another difference was in knowledge gaps. Despite high vaccination rates, Bayelsa athletes demonstrated poor knowledge of COVID-19 complications (30.5%), unlike participants in Mozambique, where 98.2% had strong knowledge of prevention and transmission [22]. These differences likely reflect variations in educational outreach efforts.

Vaccination policies and administration processes also varied. In Greece, no structured vaccination guidelines were available for football players, whereas Bayelsa athletes received vaccines under structured protocols in hospitals (56%) [23]. This highlights the importance of clear policies in facilitating vaccine administration.

COVID-19 vaccination uptake among professional footballers in Yenagoa is relatively high, but gaps in knowledge and vaccine confidence persist among unvaccinated players. Public health interventions focusing on athlete-targeted educational campaigns and peer-led advocacy may enhance vaccine acceptance.

5. Recommendations

The study recommends the **i**mplementation of targeted health education programs within football clubs to dispel myths about COVID-19 vaccines, encouragement of team physicians and sports organizations to facilitate vaccine awareness sessions, and promotion of peer advocacy by engaging vaccinated players to influence teammates positively.

6. Limitations

The study had several limitations which include the reliance on self-reported data, which may introduce response bias, the limitation of the sample size to footballers in Yenagoa, which may affect generalizability, and the non-assessment of post-vaccination adverse effects among respondents.

7. Acknowledgement

The authors appreciate the support of the participating football clubs, research assistants, and study participants.

8. Conflict of Interest

The authors declare no conflict of interest.

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