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Complementary and Alternative Medicine (CAM) Use for Prevention of COVID-19 Among Nigerian Healthcare Professionals

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ABSTRACT

Background and Objective: The emergence of COVID-19, was too numerous challenges including a lack of effective pharmacotherapy for prevention and cure. The approved vaccines and public health preventive measures offer hope to the public. Members of the public rely on some self-care services including the use of complementary and alternative medicine (CAM). This study aimed to assess and compare the knowledge of types of CAM used for COVID-19, attitudes towards its use, identify previous and current CAM use and document the efficacy and safety perception of CAM use among Nigerian Healthcare Professionals for the prevention and cure for COVID-19. **Materials and Methods:** A descriptive cross-sectional study design that employed a random sampling technique to select 345 respondents among health care professionals in Sokoto, North-West Nigeria. Data was collected using a pretested semi-structured questionnaire. Preliminary analysis with frequency and summary statistics was done, Chi-square, two sample *t*-test and Mann-Whitney U test was used to test the significant relationship. Using 95% confidence level. **Result:** About 77% of all respondents know the types of CAM used for COVID-19. Zogale (moringa leaves) was the most used CAM and herbs and concoction was the most form of CAM used at 67%. The use of CAM was prevalent before and during the outbreak. The efficacy perception among less experienced healthcare workers was significant when tested based on years of experience $p = 0.004$ and no harmful effect of CAM $p = 0.004$, however, safety perception was not significant $p = 0.7$. **Conclusion:** Healthcare Professionals in Sokoto use CAM irrespective of their cadre and years of experience in the medical profession before and during the outbreak. There was high efficacy and safety perception with little or no side effects.

KEYWORDS

Prevalence, safety and efficacy perception, knowledge, Healthcare professionals, Sokoto

INTRODUCTION

The coronavirus outbreak caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) occurred in Wuhan, Hubei, China[1], in December, 2019. WHO declared COVID-19 a public health

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emergency in January, 2020 and later a pandemic responsible for the current global health crisis[1,2]. As of August, 2021, over 200 million cases just 6 months after reaching 100 million were recorded and over 4.2 million related deaths globally have been recorded. So much effort has been made to develop effective treatment and vaccines[3], currently approved vaccines and other public health preventive measures adopted including social distancing, washing of hands in running water and wearing face masks remain the only mitigating measures that continue to offer hope to the government, scientific community and the general public[4]. The use of some proposed treatments earlier like remdesivir has shown no effectiveness in a clinical trial[5], however, the use of dexamethasone reduced mortality and length of hospital stay[6]. No effective pharmacotherapy for prevention and treatment has been established as of now. Members of the public rely on self-care practices including the use of complementary and alternative medicine (CAM) to prevent and manage symptoms of COVID-19.

Complementary and alternative medicine (CAM) refers to a broad set of healthcare products and practices that are not part of conventional medicine and are not fully integrated into the dominant healthcare system[7]. These products and practices include among others, herbal medicines, chiropractic, naturopathic, acupuncture, yoga and meditation techniques.

There is a global rise in the use of CAM for health care needs in both developing and developed countries[7] more than 70% of the population in low and middle-income countries depend partly or entirely on CAM to meet their health needs[8]. Over ninety-seven WHO member states have a national policy on the use of CAM[8]. The lack of effective treatment options for COVID-19 has raised concern worldwide and shifted focus on the use of CAM for COVID-19. India and China with a rich history of traditional medicine are exploring the use of CAM for COVID-19[9]. Traditional Chinese Medicine (TCM) has been extensively utilized to treat COVID-19[10] and was reportedly effective in reducing mortality and relieving symptoms such that 15 TCM are currently recommended for COVID-19 management[3]. In India, over 25% of patients in isolation centres admitted to having used different forms of CAM for COVID-19 in a tell survey[9]. In the Middle East, 22% of respondents in a survey, used herbal products during the rapid viral spread of COVID-19 prevention and treatment in Saudi Arabia[11]. The WHO estimated that more than 80% of Africans rely on CAM for healthcare needs[12,13], however, there is no adequate information on the use of CAM for COVID-19 in Africa except for the Madagascar-Artemisia finding. In Nigeria, at the moment, there is only one documented piece of information on the use of CAM for COVID-19 among students in the Western part of the country, however, there is widespread use of CAM for the prevention and management of COVID-19. The broad objective of this study was to document the frequency and perception of Nigerian health professionals on the efficacy and safety of complementary and alternative medicine (CAM) in the prophylaxis or treatment of COVID-19 infection. The study also aimed to assess and compare the knowledge of healthcare professionals on the use of CAM for COVID-19, assess the attitude of healthcare professionals toward the use of CAM for COVID-19, identify previous and current CAM use by the health professionals and assess the efficacy and safety perception of CAM use for COVID-19 and compare with selected variables.

MATERIALS AND METHODS

Study area: The study employed a descriptive cross-sectional design among the health care professionals in Sokoto irrespective of their cadre. Data was collected using a semi-structured self-administered questionnaire developed and validated by the researchers. Data were collected from November, 2020 to April, 2021.

Research protocol: A pilot study was carried out using 30 health workers from women and children welfare clinics which were excluded from the study and were found to be easy to fill.

Data analysis: Data collected were analyzed using the statistical software package (STATA version 17). Quantitative and qualitative data were presented using graphs and tables for frequencies and percentages of the variables. The level of significance was set at 5%. The proportions of respondents using various forms of CAM were calculated. Two sample *t*-tests and a Mann-Whitney U test were used to compare the mean years of work experience and the perception of safety and efficacy. A Chi-square test was used to compare the proportion of the knowledge of CAM use for COVID-19. Ethical clearance was obtained from the Sokoto State Ministry of health.

RESULTS

Socio-demographic data: A total of 345 respondents participated in the study. The average age of the respondents was 35.8±8.6, 72.2% were male and 73.9% were married. 84.4% practice Islam, 98% of the respondents have attained the tertiary level of education and about 97% of them are not smokers. Most respondents are doctors and the average income of respondents per month is 888,996 thousand Nigerian Naira Table 1.

Table 1: Socio-demographic variables of the respondents

N = 345	F (%)
Sex	
Female	96 (27.8)
Male	249 (72.2)
Age	
21-30	102 (29.6)
31-40	146 (42.3)
41-50	84 (24.4)
51-60	10 (2.9)
61-70	3 (0.9)
Mean age = 35±8.6	
Marital status	
Married	255 (73.9)
Single	87 (25.2)
Widowed	3 (0.9)
Religion	
Christianity	51 (14.8)
Islam	291 (84.4)
Traditional	3 (0.9)
Education	
Quranic	6 (1.7)
Tertiary education	339 (98.3)
Designation	
Doctor	135 (39.1)
Nurse	78 (22.6)
Lab scientist	69 (20.0)
Pharmacist	33 (9.6)
Others	30 (8.7)
Tribe	
Hausa	222 (64.4)
Igbo	21 (6.1)
Yoruba	33 (9.6)
Others	69 (20.0)
Smoking	
No	336 (97.4)
Yes	9 (2.6)
Income	
1,000-50,000	3 (0.87)
51,000-100,000	60 (17.39)
101,000-250,000	126 (36.52)
251,000-500,000	123 (35.65)
501,000-1,000,000	33 (9.57)

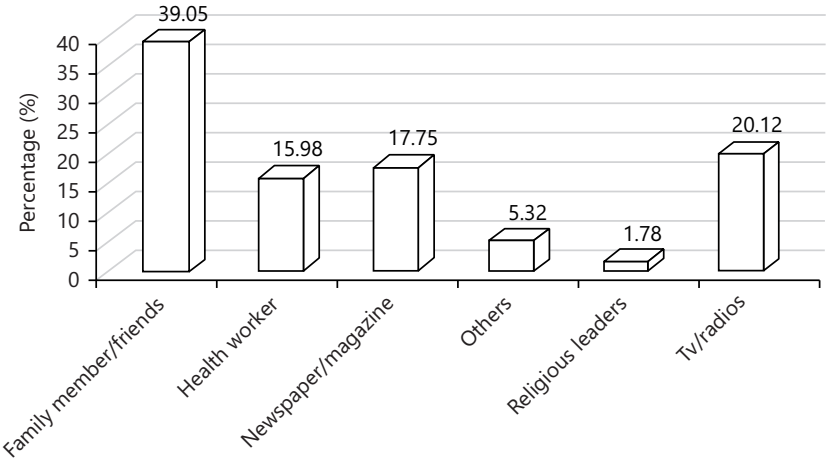

Fig. 1: Source of information on CAM use for COVID-19

Table 2: Comparison of CAM knowledge for COVID-19 among healthcare professionals

CAM knowledge	Doctors	Med. lab scientists	Pharmacists	Nurses	Others	p-value
Do you know any CAM used for COVID-19?						
Yes	87 (33.0)	61 (23.1)	25 (9.5)	66 (25.0)	25 (9.5)	0
No	48 (59.26)	8 (9.88)	8 (9.9)	12 (14.8)	5 (6.2)	
Is there a harmful effect of CAM use on COVID-19?						
Yes	33 (30.6)	19 (17.6)	13 (12.0)	30 (27.8)	13 (12.0)	0.188
No	90 (41.3)	45 (20.6)	19 (8.7)	48 (22.0)	16 (7.3)	
Do you know that CAM/ORTHODOX combination for COVID-19 can result in unwanted interactions?						
Yes	33 (64.7)	3 (5.9)	6 (8.6)	9 (17.7)	0 (0.00)	0.007
No	42 (40.0)	18 (17.1)	9 (8.6)	24 (22.9)	12 (11.4)	
Have you had any promotional information on CAM use for COVID–19?						
Yes	30 (43.5)	12 (17.4)	9 (13.0)	15 (21.7)	3 (4.4)	0.323
No	39 (50.0)	9 (11.5)	6 (7.7)	15 (19.2)	9 (11.6)	
Do you think CAM can cure COVID-19?						
Yes	27 (37.5)	9 (12.5)	12 (16.7)	15 (20.8)	9 (12.5)	0.02
No	42 (58.3)	9 (12.5)	3 (4.17)	15 (20.8)	3 (4.2)	
Do you combine CAM can orthodox medicine?						
Yes	37 (46.8)	6 (7.6)	13 (16.5)	13 (16.5)	10 (12.7)	0.002
No	36 (35.3)	31 (30.4)	11 (10.8)	18 (17.7)	6 (5.9)	
Sometimes	24 (38.1)	6 (9.5)	9 (14.3)	18 (28.6)	6 (9.5)	

Knowledge and attitude towards CAM used for COVID-19 among respondents: About 77% of respondents knew about CAM used for COVID-19. Among the health care professionals, Doctors knew more about CAM use for COVID-19 (30%, p = 0.000), agreed more that CAM has no harmful effect 30.6% and thinks that CAM can cure COVID-19 (43.5%, p = 0.02). Doctors believe that combining orthodox and CAM may cause serious adverse effects and unwanted interaction (64.7%, p = 0.007), however, they combine both more than other health professionals (46.8%, p = 0.002) Table 2.

Most respondents 39.05% knew about CAM used for COVID-19 through their family and friends Fig. 1. The most frequently used form of CAM for COVID-19 is herbs and concoctions (67.52%) Fig. 2 and the most perceived benefits of use of CAM are to promote health and prevent and treat COVID-19 Fig. 3. On treatment preference for COVID-19, over 21% prefer the use of CAM alone or 35% in combination with orthodox medicine Fig. 4, the most reason given for preference is that CAM is more available and affordable and works faster compared to orthodox alone Fig. 5.

Predictors of CAM use: About 76.64% of the respondent would use CAM for COVID-19 if it is registered with the National Agency for Food and Drug Administration and Control. About 73.2 and 64.8% would use CAM if culture and religion promote its use respectively. About 58.4% of the health professionals have

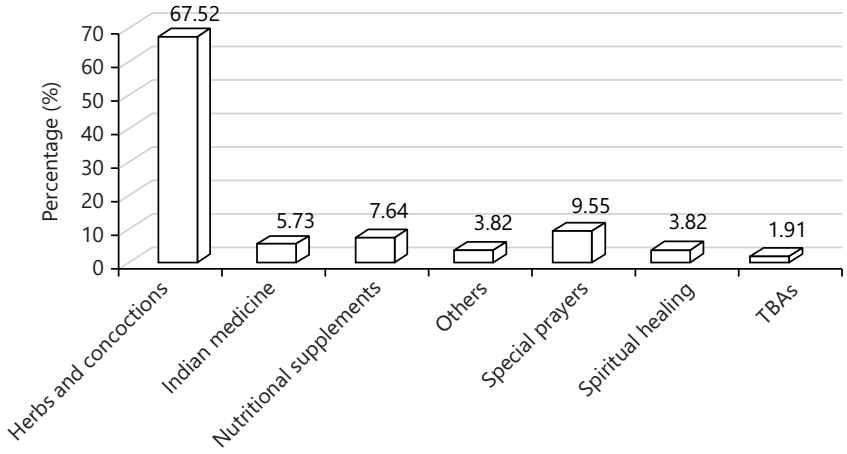

Fig. 2: Forms of CAM used for COVID-19

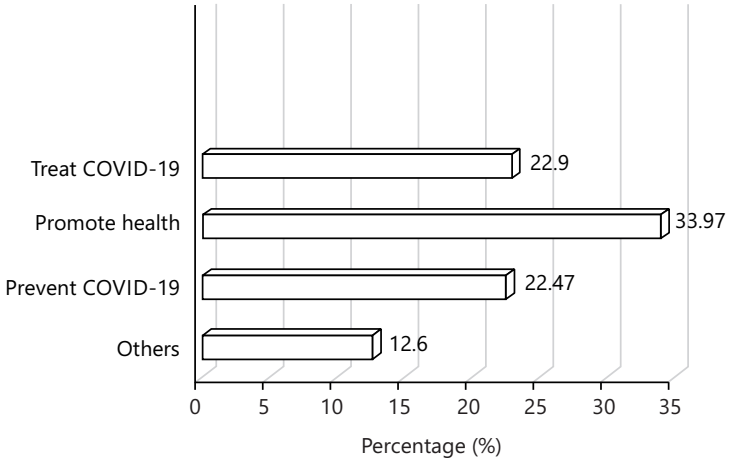

Fig. 3: Benefits of CAM use for COVID-19

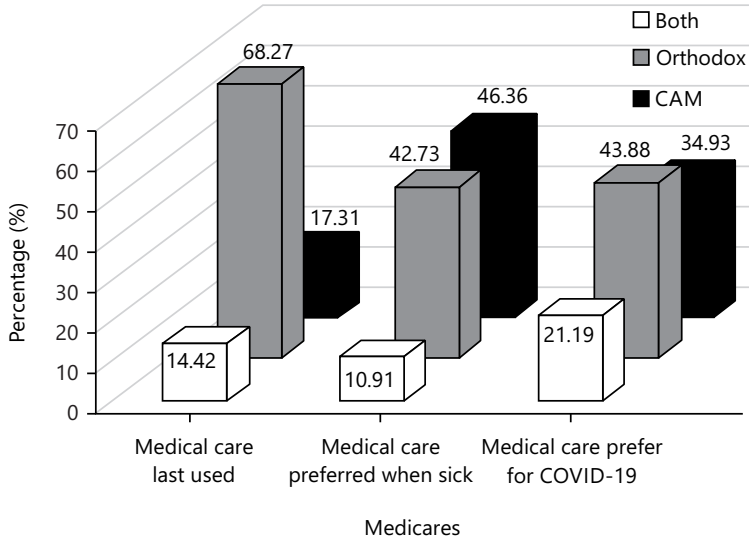

Fig. 4: Treatment preference for COVID-19

plans to use CAM in the future and are more than willing to advise others to use CAM for COVID-19 Fig. 6. The most common type of CAM used are plants, plant products like zogale (*Moringa oleifera* leaves), ginger, garlic, cinnamon and medicinal tea among others Fig. 7. Over 73% use of CAM is to boost

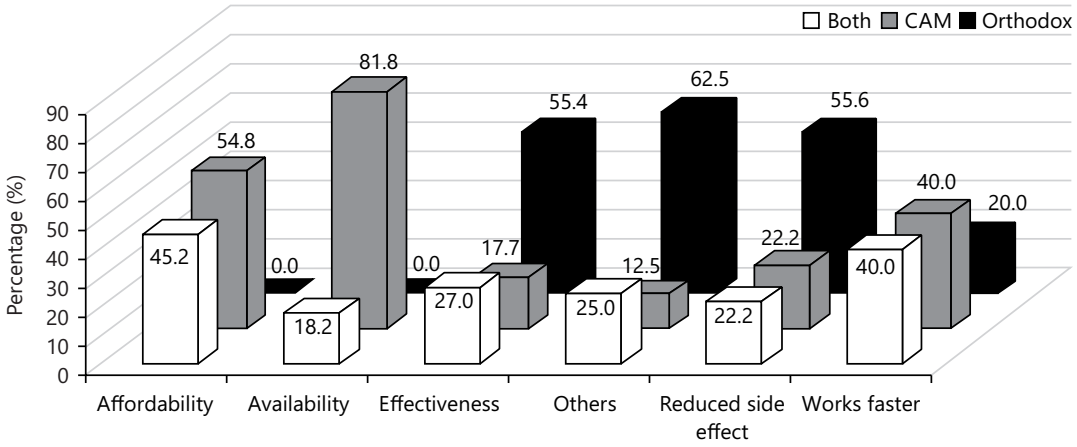

Fig. 5: Reason for preference for CAM

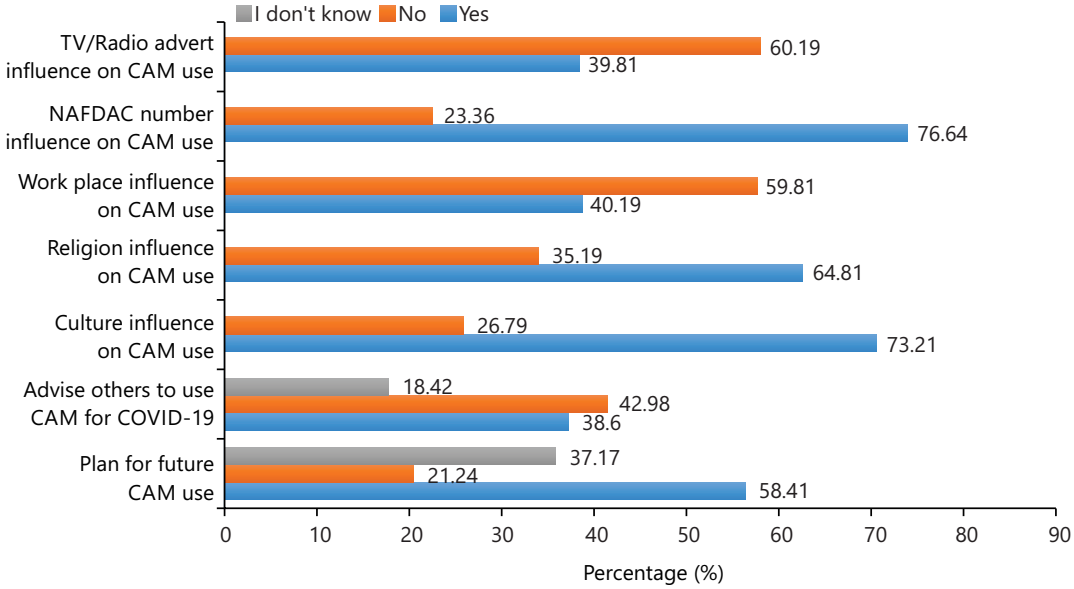

Fig. 6: Predictors of CAM use

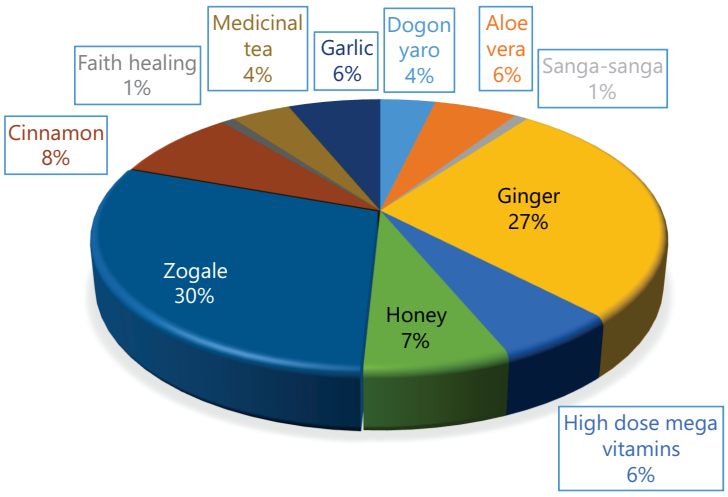

Fig. 7: CAM used for COVID-19

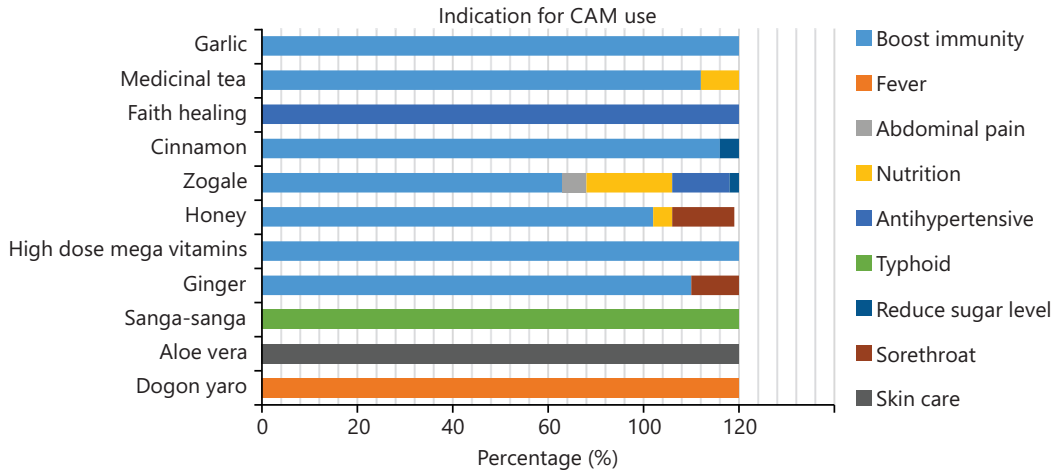

Fig. 8: Prevalence of CAM use for COVID-19

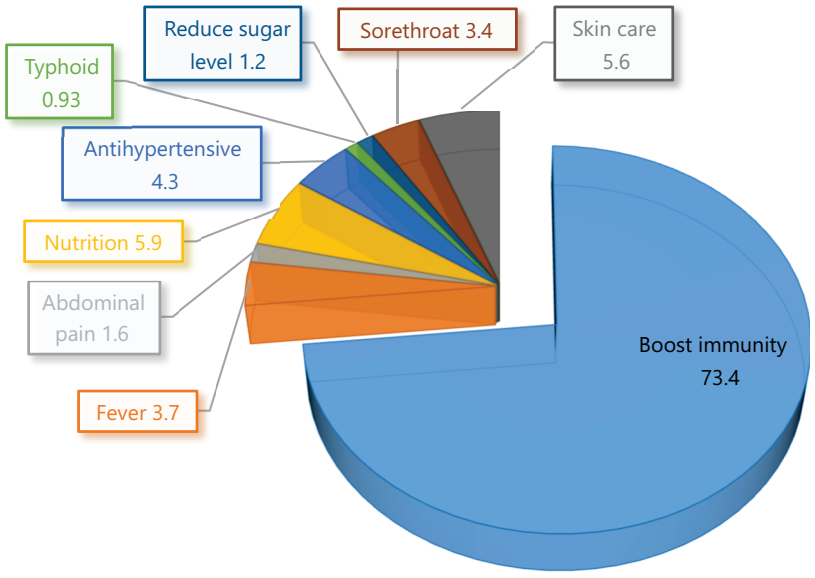

Fig. 9: Reported reason for current CAM use

Table 3: Comparison of safety and efficacy perception of CAM use for COVID-19 based on years of experience

	Years of work experience		
	≤8 Years	≥9 Years	p-value
CAM is safe	87 (53.1)	80 (62.5)	0.7[a]
CAM is effective	108 (65.1)	70 (54.3)	0.004[a]
No experience of side effects with CAM	152 (98.1)	115 (95.8)	0.05[a]
CAM is more effective than orthodox medicine	24 (14.3)	12 (9.8)	0.03[a]
Have used CAM for more than 12 years	36 (40.5)	25 (40.3)	0.002[b]
Have used CAM more between 14-90 days in the last 3 months	22 (17.5)	21 (20.8)	0.3[b]

a: Two sample *t*-test and b: Mann-Whitney U test

immunity against COVID-19 Fig. 8-9. The major collective indication reported (73.4%) for CAM use is to boost immunity Fig. 9, specifically, garlic 100%, medicinal tea 92%, cinnamon 96%, zogale 64%, ginger 90%, high dose vitamins 100% and honey 82% were all reported to be used to boost immunity Fig. 8.

Safety and efficacy perception: When asked to rate the safety and efficacy of CAM, 41.53% said it is effective and 53.36% it is safe Fig. 10-11, respectively. Comparing health professional's perceptions of the safety and efficacy of CAM based on their years of experience, there was a strong association between

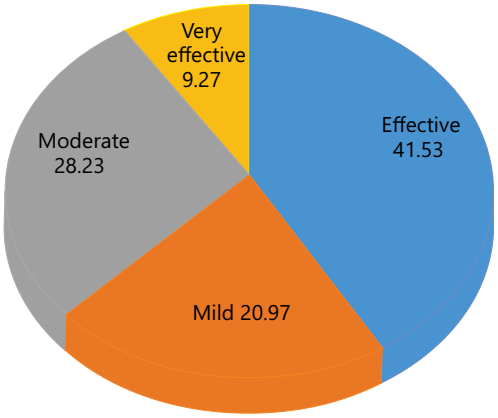

Fig. 10: Rating of CAM efficacy for COVID-19

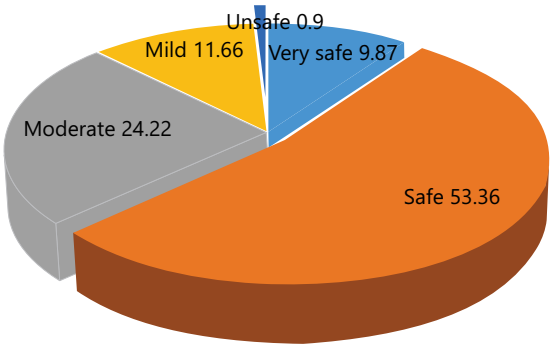

Fig. 11: CAM safety rating for COVID-19

Table 4: Determinants of safety and efficacy

Characteristics	Frequency	Percentage
Reasons for safety perception		
Efficacy	47	20.9
Lack of adverse effect	20	8.9
Natural origin	144	64
Others	12	6.2
Types of side effects after using CAM		
Diarrhoea	9	27.3
Headache	3	9.1
Nausea and vomiting	6	18.2
Others	15	45.5
Greatest concern about the safety of CAM use		
Adverse effect	63	22.1
Content label	6	2.1
Hygiene	72	25.3
Lack of dose	135	47.4
Others	9	3.2
Factors that affect the use of CAM		
Incompatibility with culture	3	1.1
Lack of dosing	72	26.7
Lack of scientific evidence	162	60.0
Religious barriers	6	2.2
Unhygienic preparations	27	10.0

less than 8 years of experience and the perception that CAM is effective and have never experienced any side effects (65.1%, p = 0.04 and 14.3%, p = 0.03). Those with over 9 years of experience used CAM between 14-90 days in the last 3 months Table 3. The most reported reason for safety perception among

respondents 64% is that CAM is of natural origin. The most frequent side effect of CAM reported are effects other than 45.5% headache, diarrhoea, nausea and vomiting. The greatest concern about the safety of concern reported was lack of dose 47.4% while lack of scientific backing was the most reported factor that affects the use of CAM (60%) Table 4.

DISCUSSION

This study reported the knowledge, attitude and perception of safety and efficacy of CAM use by healthcare professionals for COVID-19. Despite the high level of education and professionalism, the use of CAM was high as was reported[12]. It was observed that a reasonable proportion of the respondent used at least one form of CAM during the pandemic as was observed in a similar study in Hong Cong[3].

There is an only hand full of studies that have looked into the use of CAM for COVID-19[11]. The information on CAM used for COVID-19 was mostly recommendations from family and friends, this is similar to the report by Lam *et al.*[3], however[11], studies reported that most respondents from Saudi Arabia got their information from social media and the internet[13] and through a radio program. The top benefits of CAM used during the pandemic were the promotion of health and prevention of COVID-19, similar studies documented similar benefits[3,7].

Works faster, availability and affordability were the most frequent reason for their preference for CAM. this is consistent with a systematic review where among other reasons, accessibility and affordability are the top most reason for use of CAM, however, affordability is related to Africa, as the accessibility of CAM in most European Countries is not easy[7]. Registration of CAM products with the national regulatory body (NAFDAC) will improve acceptance and in addition alignment of the CAM used with cultural and religious beliefs will increase the prevalence of CAM use. This corroborates findings on predictions of the future use of CAM[14]. Over one-third of health professionals will advise others to seek CAM for COVID-19 as is the case[13].

The prevalence of CAM use among respondents was higher during the pandemic, but this was not the case in a similar study that reported there was a decline in the use of CAM during the pandemic[3]. The most reported reason for current CAM use was to boost immunity. Evidence also suggests that CAM is effective in boosting immunity[9] as the most respondent in the Saudi survey did so to boost immunity. The most frequently used CAM was zogale (moringa leaves). Moringa leaves were reported to be richer in vitamin C than the well-known vitamin C-rich fruits like lemon and mosambi[15] this could be the reason for its use as reported by Lam *et al.*[3], that the most consumed CAM were vitamin C rich dietary supplements.

On safety and efficacy perception, a greater percentage of respondents perceived that CAM is safe and effective. This perception was because they believed CAM is from natural sources and as such should be safe, a review study by Tangkiatkumjai *et al.*[7] agrees with this finding but a similar study in the same setting before the Pandemic documented otherwise[16]. There was a strong association between less number of years of experience to efficacy perception of CAM $p = 0.03$, in the same manner, CAM is perceived not to have side effects $p = 0.05$. This could be a result of less exposure to CAM use for a long and probably, this group of respondents may not have used a variety of CAM and as such have limited knowledge on the subject however several studies agree with this assertion[7,9,13]. Although respondents are aware that combining CAM and orthodox medicine can lead to undesired interactions and affect health, there is a strong indication that most health professionals combine CAM and orthodox medicine $p = 0.002$. This has been reported by Duru *et al.*[17] and is the case in the US, where the National Centre for Complementary and Alternative Medicine found that a common reason for use of CAM is that it improves health when combined with orthodox[18]. Most respondents rated CAM to be more effective

than orthodox medicine as was the case in another survey[13]. Safety concern to the use of CAM is lack of dose and the most reported barrier to the use of CAM is the lack of conclusive scientific evidence and unhygienic practices as was also reported by James *et al.*[18]. The sample size was not properly delineated to include the proportion assigned to different health care professionals.

CONCLUSION

This study shows that Health care professionals in Sokoto State have good knowledge of CAM and had used it before and during the outbreak of COVID-19, however, its use during the heat of the pandemic was to promote health and prevent COVID-19 infection by boosting immunity with these products that were previously used at nutritive additive. There was a strong indication that the health workers perceived that CAM is effective and safe as it is of natural origin and despite them knowing that combining CAM and orthodox medicine can produce unwanted interaction or affect health, the practice is common.

SIGNIFICANCE STATEMENT

This study documents the prevalence of CAM use for the prevention of COVID-19 and the perception of its safety and efficacy among healthcare professionals in Nigeria. The findings can be beneficial for empirical prophylaxis. This study will help the researcher to understand the pattern of CAM use for the prevention of COVID-19 that many researchers were not able to explore.

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