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ORIGINAL RESEARCH

Pattern and Determinants of Utilisation of Complementary and Alternative Medicine Among Pregnant Primary Healthcare Centre Attendees in Sagamu, Nigeria

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Abstract

Background: Complementary and Alternative Medicine (CAM) remains a popular choice among pregnant women in many communities despite the widespread practice of conventional orthodox medicine.

Objective: To assess the patterns and determinants of complementary and alternative medicine usage among pregnant women in selected primary healthcare centres in Sagamu, Nigeria.

Methods: A descriptive, cross-sectional design was employed, utilising an interviewer-administered questionnaire to collect data from 130 pregnant women from two primary healthcare centres.

Results: The mean age of the respondents was 27.6±5.6 years. All the respondents (100.0%) utilised CAM therapies for their health and foetal development. Common CAM practices included natural supplements (88.5%), prayers (86.2%), and herbal medicine (83.8%). Cultural and religious beliefs (50%), affordability (50%), spiritual protection (53.8%), and accessibility (57.7%) were identified as the key determinants of CAM usage. There was a positive association between these determinants (affordability, accessibility, positive effect in previous pregnancies, and advice from family and friends) and CAM usage (t-value >1.96).

Conclusion: The findings highlight the widespread use of CAM among pregnant women in Sagamu despite the availability of conventional orthodox healthcare. To ensure safe and effective maternal and child health practices, interventions are needed to address the determinants which encourage the use of CAM in pregnancy.

Keywords: Antenatal Clinic, Alternative medicine, Complementary medicine, Primary healthcare.

Introduction

Pregnancy is a unique condition that significantly impacts the biological systems of a woman's body. [1] During this time, the body undergoes changes to support the developing foetus, influencing various bodily systems, particularly the immune system. The

pregnancy can be either stable or unstable. It may be predictable or unpredictable based on medical and surgical history and obstetric and gynaecological background. [2] The approach to managing pregnancy in many communities is rooted in conventional medicine, encompassing antenatal care services, routine iron supplementation, and management of pregnancy-related disorders. Nevertheless, despite the prevalent use of traditional care methods, pregnant women frequently turn to Complementary and Alternative Medicine therapies, like herbal remedies and natural supplements, to enhance their immunity and safeguard their babies until they reach the age of five years. [3]

According to the World Health Organization, complementary or alternative medicine refers to a broad set of healthcare practices that are not part of that country's tradition or conventional medicine and are not fully integrated into the dominant healthcare system. In many populations, complementary and alternative medicine is popularly known as traditional medicine, the mainstream treatment for the sick and ill. [4] Complementary and Alternative Medicine is termed "complementary" when used with conventional medicine and termed "alternative" when used in place of conventional medicine. [5] This shows that CAM therapies are utilised independently or simultaneously with conventional medicine, such as pharmaceutical drugs, surgeries, and medical therapies.

Complementary and Alternative Medicine (CAM) use among pregnant women has rapidly increased globally over the last decade. In Japan, 90% of pregnant women used some CAM independently or as self-care; this may be because pregnancy is usually associated with certain conditions or illnesses that influence the usage of CAM by pregnant women, including hyperemesis gravidarum, uterine contractions, induction of labour, pedal oedema, and backache. [6, 7] The utilisation and preference of CAM therapies during pregnancy are associated with socioeconomic conditions, cultural beliefs, ethnic backgrounds, and health behaviour of pregnant women (towards preventing pregnancy-related illnesses, treating illnesses during pregnancy, or promoting the normal growth and development of the baby). [8] Complementary and Alternative Medicine is used at different stages or phases of pregnancy, related to the symptom presentation and health needs. The usage of CAM is significantly related to the stages of pregnancy, with pregnant women during their first and second trimesters having a higher rate of CAM usage. [9]

In African communities, there is an enormous perception among populations that CAM therapies provide a smooth course of pregnancy and enhance the birth of healthy babies. Traditional medicine remains the primary form of health care for more than 80% of African populations. [10] Complementary and Alternative Medicine therapies are still commonly sought for health management among many pregnant women, especially across rural communities in Africa. The use of complementary and alternative medicine among pregnant women is increasingly high in many low-income and high-income countries, such as Nigeria, due to its cost-effectiveness and convenient access. [11] Nigeria is heavily plagued by socio-cultural and religious beliefs, which make it a fertile ground for the propagation of CAM during pregnancy. The major factors contributing to the widespread usage of CAM among pregnant women in Nigeria include the influence of individuals in the community, advertisements, and easy accessibility. [12]

However, it is crucial to ensure that long-term usage of CAM therapies by pregnant women, especially those with other comorbidities, is unsafe due to the potential adverse effects and drug-herb interactions with their ongoing conventional medications. [13] Critically, many pregnant women continue to utilise CAM therapies as herbal medicines in the management of pregnancy despite potential maternal-foetal risks. [14] The use of CAM in pregnancy was linked to poor outcomes of

maternal and foetal health, such as low haemoglobin concentration, maternal complications, high Caesarean section rate, low birth weight, low APGAR score, large placental weight, and high hospital admission rate of babies; compared with pregnant women who were non-CAM users. [7]

In most rural communities, especially in Southwest Nigeria, where the Yoruba tribe is predominant, CAM usage is perceived as a norm during pregnancy. Most pregnant women attending primary healthcare centres for antenatal care view CAM therapies as a usual practice in the management of their pregnancy. [9] The ability to recognise patterns of CAM usage during pregnancy will enhance the health education of pregnant mothers by healthcare professionals and create a strong foundation for future health policies in Nigeria. In recent times, similar studies have been conducted in Nigeria that have only focused on using complementary and alternative medicine among pregnant women, especially in the southwest region. However, there is a paucity of data regarding the determinants and patterns of complementary and alternative medicine usage among pregnant women in southwest Nigeria. Hence, this study assessed the determinants and patterns of complementary and alternative medicine usage among pregnant women in selected primary health care centres in Sagamu, Ogun State.

Methods

Study setting

This study was carried out in Sagamu, Ogun State. Sagamu is a Local Government Area (L.G.A) in Ogun State, Nigeria. The study was conducted in two selected primary healthcare centres in Sagamu, Ogun State: Ajaka Primary Healthcare Centre, with an average of 25 pregnant women attending the antenatal clinic, and Sabo Agura Primary Healthcare Centre, with an average of 143 pregnant women attending the antenatal clinic. Both centres are licensed by the Nigerian Ministry of Health with facility codes 27/18/1/1/1/0001 and 27/18/1/1/1/0013, respectively.

Study design

A descriptive cross-sectional study was adopted to obtain information on the patterns and determinants of complementary and alternative medicine usage among pregnant women in selected primary healthcare centres in Sagamu, Ogun state.

Ethical considerations

Ethical approval for the study was obtained from the Olabisi Onabanjo University Teaching Hospital Health Research Ethics Committee (HREC) with Registration Number: OOUTH/HREC/613/2023AP.

Informed consent was obtained from each participant. The researcher(s) also adhered to the ethical principles that guided the study.

Study population and eligibility

The target population was pregnant women attending selected primary healthcare centres (PHCs) in Sagamu, Ogun State.

Inclusion criteria: All consenting pregnant women attending antenatal clinics at the selected PHCs.

Exclusion criteria: Pregnant women attending antenatal clinics at the selected PHCs but not residing in Sagamu, Ogun State.

Sample size determination

The sample size was determined using the Taro Yamane formula with a known population of 168 pregnant women.

$n = N/(1+N(e)2$

With the margin of error (e) of 0.05, the calculated sample size (n) was 118. An additional 10% was added for non-response, thus making a total of 130. Using proportionate sampling, 19 subjects were recruited at Ajaka and 111 at Sabo.

Sampling technique

The multi-stage sampling technique was used.

Selection of PHCs: A purposive sampling technique was used to select two major comprehensive primary healthcare centres in

the Sagamu community – Ajaka Primary Healthcare Centre and Sabo Primary Healthcare Centre.

Selection of samples per PHCs: The proportionate stratified sampling technique was used to determine the number of respondents per primary healthcare centre.

Selection of study samples: At each PHC, the systematic sampling technique was used with a sample interval of one across the registers for pregnant women attending the two selected PHCs.

Data collection

A structured and adopted questionnaire was designed to gather information from the respondents. The items in the questionnaire were derived from literature reviewed in accordance with the research objectives. It was divided into five sections.

Section A covered the socio-demographic characteristics of respondents, including age, marital status, trimester, monthly income, and occupation. This section contains eight questions intended to outline the key features of the target population for the study.

Section B addressed the respondents' perceptions of complementary and alternative medicine in managing pregnancy. The questions were taken from two sources, using positive and negative scales. [15, 16] This section also consisted of eight questions, which included those related to perceived satisfaction and benefits of CAM, where the positive response was assigned 2 points and the negative response was assigned 1 point.

Section C focused on respondents' usage patterns of complementary and alternative medicine. It incorporated questions from the literature about the frequency and types of CAM therapies. [9] This section had eight questions, rated on a four-point Likert scale: Always (4 points), Sometimes (3 points), Rarely (2 points), and Never (1 point).

Section D examined the determinants of CAM usage among the respondents. Questions were adapted from two literature sources, focusing on the accessibility and affordability of CAM therapies. [15,17] This section consisted of eight questions measured on the Likert scale, with the options as Strongly Agreed (4 points), Agreed (3 points), Disagreed (2 points), and Strongly Disagreed (1 point).

Validity and Reliability of the Instrument

The validity of the questionnaire was determined through the face and content validity criteria. The adopted and structured instruments were pre-tested among pregnant women attending Latawa PHC, Sagamu, to determine their reliability. The reliability coefficient was 0.736.

Method of data collection

An interview-administered questionnaire was used. Four research assistants who were undergraduates in either 300 or 400 levels of study and could use English and Yoruba languages were recruited and trained over two days. The questionnaire was translated into Yoruba language, and back translation was done to ensure that the instrument details were maintained. The translation was necessary for respondents who did not understand English. The data collection was done between 9th January 2024 and 26th January 2024.

Data analysis

The data was presented using tables, percentage scores, frequency, and bar charts and computed using descriptive and inferential statistical tools. The hypotheses and relationship between determinants and usage of CAM in pregnancy were tested and measured using a one-sample t-test to determine if the mean of a single sample differs significantly from a known or hypothesised population mean. Using this test, the null hypothesis is rejected when t-calculated is greater than the critical t (1.96) value.

Results

Socio-demographic characteristics of the respondents revealed that 65 (50.0%) were within the age of 18-27 years, the mean age

(±SD) was 27.6±5.6 years, 124 (95.4%) were married, 84 (64.6%) had secondary school education, 96 (73.8%) were self-employed, 82 (63.1%) had a monthly income range of 30,000 - 60,000 Naira, but only 16 (12.3%) had at least three children. Fifty-five (42.3%) were in the third trimester of pregnancy, and 74 (56.9%) were attended to by midwives (Table I).

Table I: Socio-demographic characteristics of respondents

Characteristics	*Frequency*	*Percentage*
Age range (Years)		
18-27	65	50.0
28-37	56	43.1
38-48	9	6.9
Mean age ± SD = 27.6 ± 5.6 years		
Marital status		
Single	6	4.6
Married	124	95.4
Education status		
Higher education	38	29.2
Secondary School Leaving Certificate	84	64.6
Primary School Leaving Certificate	8	6.2
Occupation		
Government Worker	9	6.9
Private Organisation	12	9.2
Self Employed	96	73.8
Student	4	3.1
Unemployed/Housewife	9	6.9
Monthly income (Naira)		
30,000 - 60,000	82	63.1
61,000-90,000	36	27.7
90,000 and above	12	9.2
Number of Children		
Nil	54	41.5
One	37	28.5
Two	23	17.7
Greater than or equal to 3	16	12.3
Pregnancy status		
First trimester	25	19.2
Second trimester	50	38.5
Third trimester	55	42.3
Antenatal care Provider		
Midwife	74	56.9
Nurse	40	30.8
Physician	16	12.3

The perception of respondents on CAM, as shown in Table II, revealed that 103 (79.2%) reported that they had 'less fatigue and slept better' when they used CAM therapies, 100 (76.9%) reported being satisfied with the effects of CAM on them and the growing baby, 97 (74.6%) reported CAM therapies such as herbal medicine 'gave them more energy'. In comparison, 95 (73.1%) reported CAM therapies prevented complications in pregnancy.

Tables II and III display the utilisation, frequency, and patterns of CAM usage among respondents, categorised into daily, weekly, monthly, and never. One hundred and nine (83.8%) used CAM therapies such as herbal medicine, prayers, or natural supplements in the current pregnancy, 41 (31.5%) have ever used CAM therapies during pregnancy, 79 (60.8%) have ever used CAM therapies during the first trimester, 55 (42.3%) used one therapy at a time, 82 (63.1%) used the oral method of consumption of CAM, 59 (45.5%) sometimes used CAM with conventional orthodox medicine, 72 (55.4%) frequently used CAM four times.

Table II: Perception of Complementary and Alternative Medicine

Perception	*Positive (%)*	*Negative (%)*
CAM therapies give me more energy	97 (74.6)	33 (25.4)
CAM causes less fatigue and sleep	103 (79.2)	27 (20.8)
CAM therapies, such as herbal medicine, give more energy	48 (36.9)	82 (63.1)
Less fatigue and sleep better with CAM therapies	69 (53.1)	61 (46.9)
Less nausea/vomiting, fever, or other disorders of pregnancy with CAM therapies	57 (43.8)	73 (56.2)
CAM therapies are more effective than conventional medicine	64 (49.2)	66 (50.8)
CAM therapies have fewer side effects than conventional medicine	95 (73.1)	35 (26.9)
CAM therapies are safer to use than conventional medicine	100 (76.9)	30 (23.1)

The most commonly practiced form of CAM was manipulative and body-based methods, such as massaging painful joints with herbal ointments. This category recorded the highest frequency, with 30.8% of respondents using it daily, 47.7% weekly, and only 8.5% never engaging. Herbal medicine (such as drinking herbal extracts (also known as "*agbo*") or applying herbal extracts topically) and natural supplements (such as mixtures of leaves and milk or Chinese medicine) revealed polarised patterns of use. While 22.3% and 30.0% of respondents reported daily use, over half (55.4% and 56.9%) never used these methods. Faith or spiritual healing, including practices such as spiritual concoctions (aseje), rituals, and reading "*surahs*" in water, was also largely unpopular, with 65.4% of respondents never using and only 6.9% used them daily. The usage of CAM was shown in Figure 1, where 115 (88.5%) used natural supplements (mixtures of leaves, Chinese medicine), 112 (86.2%) engaged in prayers, and 109 (83.8%) used Herbal medicine ("*agbo*").

Table V shows the analysis of determinants influencing the use of CAM among the respondents. The table shows that the t-calculated values of four items (affordability, accessibility, family/friends' advice, and prior pregnancy outcomes) were greater than the t-table values. Hence, identified determinants showed a positive and stronger association with the use of CAM (Table VI).

Discussion

There is still a high prevalence of CAM usage among pregnant women despite the advancement of conventional orthodox medicine within most communities. The socio-demographic characteristics revealed that half of the respondents were between the ages of 18 and 27 years, suggesting a relatively younger age of the respondents who indulged in CAM usage due to the ethnocultural factors in Nigeria. Also, most women in the study were self-employed and worked full-time in their respective work settings. This is consistent with the findings of Aljofan *et al*, where a majority of the women were those who worked full-time and those with high school diplomas or above. [14] This can be associated with the high level of integration into their work environment, which includes communities where CAM usage is perceived as the norm.

The perspectives of pregnant women on CAM varied in this study. Most respondents reported having less fatigue and sleeping better after using CAM therapies. This is in line with the findings of a study carried out among women in Türkiye, which showed most pregnant women used CAM therapies to reduce pregnancy-related symptoms, such as fatigue, and they had a positive attitude towards the usage of CAM. [19]

Table III: Utilisation of complementary and alternative medicine usage

Variables	*Frequency*	*Percentage*
Have you ever used CAM therapies such as herbal medicine, prayers, or natural supplements in your current pregnancy?		
Yes	109	83.8
No	21	16.2
Usage in a previous pregnancy		
First pregnancy	41	31.5
Second pregnancy	23	17.7
Third and above	11	8.5
None	55	42.3
The trimester where it is most commonly used		
First trimester	79	60.8
Second trimester	27	20.8
Third trimester	24	18.5
Types of CAM used at a time		
No regular pattern	54	41.5
One at a time	55	42.3
Two or more	18	13.8
Different at a time	3	2.3
Route of CAM consumption		
Oral	82	63.1
Recitation/ reading	42	32.3
Massage on the body	2	1.5
Others (bathing, steaming, etc.)	4	3.1
CAM usage with conventional medicine		
Always	43	33.1
Sometimes	59	45.4
Rarely	10	7.7
Never	18	13.8
Frequency of complementary and alternative medicine used per week		
1.00	29	22.3
2.00	25	19.2
3.00	4	3.1
4.00	72	55.4

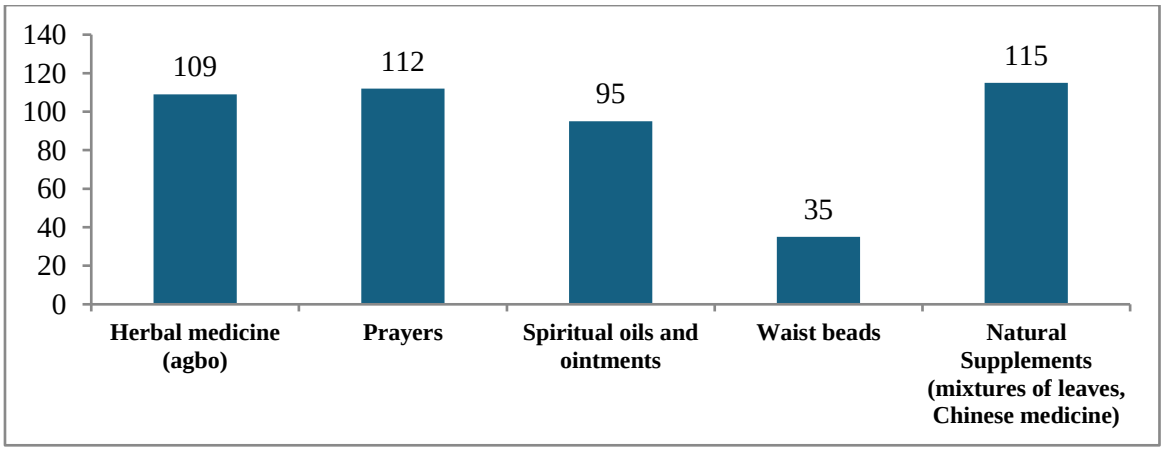

Figure 1: Types of Complementary and Alternative Medicine usage in pregnancy

Table IV: Patterns of complementary and alternative medicine usage

Forms of CAM Therapies	*Daily*	*Weekly*	*Monthly*	*Never*
Herbal Medicine, such as leaf extract ("*agbo*"), topical use of water-based leaf extracts on body parts	29(22.3)	25(19.2)	4(3.1)	72(55.4)
Faith/Spiritual healing such as deliverance prayers, spiritual concoctions ("*Aseje*"), rituals/sacrifices, reading "*surah*" in water	9(6.9)	25(19.2)	11(8.5)	85(65.4)
Natural supplements such as drinking mixtures of leaves and milk, Chinese medicines, and herbal supplements	39(30.0)	13(10.0)	4(3.1)	74(56.9)
Diet therapy, such as avoiding foods with beliefs to cause sickness or death (palm wine, okro, or snails)	5(3.8)	20(15.4)	10(7.7)	95(73.1)
Manipulative and body-based methods, such as massaging painful joints with herbal ointments	40(30.8)	62(47.7)	17(13.1)	11(8.5)

Table V: Relationship among the determinants of usage of Complementary and Alternative Medicine

Determinant	**Mean**	**SD**	**Response Direction**	**T-critical**	**df**	**p-value**	**T-calculated**
Mostly used in my community	1.96	0.85	Negative	1.96	3	0.000	> 1.96
Culture and religion	1.64	0.78	Negative	1.96	3	0.000	> 1.96
Affordability	3.10	0.85	Positive	1.96	3	0.000	< 1.96
Warding off evil spirits and witches	1.67	0.87	Negative	1.96	3	0.000	> 1.96
Accessibility and affordability	3.10	0.78	Positive	1.96	3	0.000	< 1.96
Positive effect in previous pregnancies	3.09	0.72	Positive	1.96	3	0.000	<1.96
After poor outcomes from conventional treatments	1.62	0.77	Negative	1.96	3	0.000	> 1.96
Advice from family and friends	3.08	0.69	Positive	1.96	3	0.000	< 1.96

The perception of CAM being effective, as viewed in most Nigerian communities, could trigger a psychological response to CAM usage, such as feeling more energetic and less tired. Most of the respondents reported a negative perception of the statement that they do not have frequent nausea/vomiting after CAM usage. This is consistent with the findings of Tan *et al*. [20] that CAM therapies alleviated nausea and vomiting during pregnancy, and natural supplements had the same effect as drugs in relieving vomiting. [20]

This shows that pregnant women either perceived CAM therapies to be more effective than conventional medicine for nausea and vomiting or perceived it to have the same effectiveness as conventional medicine or anti-emetic medication. Also, most respondents are satisfied with the effects of CAM on themselves and their growing babies. A similar result was reported in other studies, revealing that pregnant women use CAM therapies because they believe CAM is not harmful to them or their babies during pregnancy. [3, 16] Overall, the respondents positively perceived complementary and alternative medicine usage during pregnancy.

In addition, all the respondents reported using complementary and alternative medicine therapies in their current pregnancy. This is in line with the findings of Ahmed *et al*. [21] that nearly two-thirds of respondents used at least one herbal remedy during their previous and current pregnancy. [21] Most respondents mostly used CAM during the first trimester of pregnancy. This can be related to physical symptoms associated with early pregnancy, such as fever, fatigue, nausea, and vomiting, and also psychological symptoms, such as anxiety and sleep disturbances. This is similar

to the reports of a study conducted in the Niger Delta area of Nigeria [17], where there was a significant association of CAM usage with women during their first and second trimesters of pregnancy.

Almost half of the respondents reported using CAM therapies with conventional medicine obtained from their healthcare facilities. This is in line with the findings of a survey of pregnant women who use CAM during pregnancy, of which half of them concomitantly use CAM and modern medicine, while the other half use CAM separately. [22] The concomitant use of CAM and conventional medicine by pregnant women may cause negative interactions unknown to them. The common types of CAM used in this study were faith healing, such as prayers and herbal medicine during pregnancy; other studies also reported the same. [11, 16]

Half the respondents agreed that their culture and religion supported complementary and alternative therapies, such as herbal medicine and faith healing practices. They also agreed that CAMs were affordable to prepare or purchase and more accessible and available to them than conventional medicine. This is similar to the findings of Uzobo [17], who reported that reasons for CAM usage by pregnant women included cultural beliefs, accessibility, and easy availability. This may be related to the demographic factors of the pregnant women who mostly live in communities where herbs and faith healing materials are accessible within the environment, and ethno-religious beliefs align with CAM usage. Most of the respondents practiced manipulative and body-based methods as a form of CAM. This widespread adoption suggests that physical, hands-on treatments are accessible and culturally acceptable and are perceived as effective symptom relief.

In contrast, diet therapy, which includes avoiding certain foods believed to cause sickness (e.g., palm wine, okra, or snails), was the least used CAM practice, with 73.1% of respondents never practising it. This finding indicates that food-related cultural taboos or traditional dietary beliefs are not widely observed among this population.

Seven in ten respondents used complementary and alternative medicine because it was believed that it helps in warding off evil spirits. There were also similar reports of warding off evil spirits as the reason for the use of CAM therapies by pregnant women. [9, 17] In most communities in Nigeria, spiritual beliefs are the norm, and there is a preconception that evil spirits can gain access to a pregnant womb and negatively affect the course of pregnancy and labour. Thus, using CAM therapies such as herbal medicine and prayers was thought to protect the baby from evil spirits and prevent spiritual harm.

The correlation results provided important insights into the relationship between the study variables, which assisted in understanding the patterns and determinants of complementary and alternative medicine usage among pregnant women in PHCs in Sagamu, Ogun state. This revealed that determinants like affordability, availability, accessibility, and advice from friends and family influenced the usage of CAM therapies by pregnant women.

Limitations

This study was limited by the reliance on self-reported data which may introduce recall bias and social desirability bias, particularly concerning culturally sensitive or stigmatized CAM practices. Participants might have over- or under-reported their use of specific CAM modalities. Secondly, the cross-sectional design limits the ability to establish causal relationships between the identified determinants and CAM usage patterns. Longitudinal studies would be necessary to assess how these determinants influence CAM practices over time. The study was also conducted within a specific geographic and cultural context, which may limit the

generalizability of the findings to other populations with different socio-cultural, economic, or healthcare backgrounds.

Conclusion

This study discovered a high prevalence of usage of CAM in pregnant women despite the spread of conventional orthodox medicine in the communities. The study provided an insight into the patterns and determinants of CAM utilisation among pregnant women, which could be particularly useful for health care professionals.

Recommendations

There is more to be done by nurses and midwives in educating and enlightening pregnant women regarding the utilisation of CAM to promote health during pregnancy. Interventions to improve maternal health outcomes should focus on reducing financial barriers, increasing service accessibility, and strengthening community health education based on personal and shared experiences rather than relying on traditional belief systems. Further studies can be conducted using a larger number of subjects that will provide deeper insights into the reasons for utilising CAM during pregnancy.

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Authors' Contributions: AOE and SO conceived and designed the study. AOM, SO and AOE2 did the literature review. OOM, SO, and AOO analysed the data, while AOE and OTT interpreted it. OTT, SO and OOM drafted the manuscript. AOE1, AOE2 and AOO revised the manuscript for sound intellectual content, while AOE1 and OTT approved the final version.

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