

Health Conditions And Sociodemographic Determinants Associated With Complementary Treatment Use Among Patients Attending A Tertiary Hospital In Rivers State, Nigeria

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Abstract: Background: Understanding which health conditions drive complementary treatment (CT) use, and which patients are most likely to use it, is essential for targeting clinical safety interventions. This study examined the health conditions for which CT is used and the sociodemographic factors associated with CT use among patients attending a tertiary hospital in Rivers State, Nigeria.

Methods: A hospital-based cross-sectional study was conducted among 386 outpatients at the University of Port Harcourt Teaching Hospital (UPTH); 288 respondents (74.6%) reported lifetime CT use. Health conditions for which CT was used, timing of use relative to hospital treatment, and self-reported reasons for use were assessed among CT users. Associations between sociodemographic variables and CT use (yes/no) were evaluated using the chi-square test, with significance set at $p < 0.05$.

Results: CT was most commonly used for acute infectious conditions (78.7% of users), principally malaria or fever (72.9%), followed by chronic non-communicable diseases (NCDs; 63.6%), including hypertension (39.1%), arthritis (32.9%), and diabetes (29.8%). Reproductive/gynecological issues (21.3%) and mental or spiritual conditions (18.6%) were also reported. Just over half of users (51.6%) combined CT with hospital treatment for a given condition, while 34.1% used CT first. Belief in natural remedies (77.1%) and cultural or traditional beliefs (64.0%) were the leading self-reported reasons for use, alongside cost (54.7%) and accessibility (49.6%). CT use was significantly associated with lower monthly income (85.2% among the lowest income group versus 46.7% among the highest; $\chi^2 = 15.398$, $p = 0.001$) and lower educational attainment (90.5% among those with no formal education versus 63.9% among those with tertiary education; $\chi^2 = 11.241$, $p = 0.010$). No significant association was found with sex, age, or marital status.

Conclusion: CT use in this population extends well beyond minor ailments to include chronic disease management, and is significantly more common among patients with lower income and lower educational attainment. These findings point to a socioeconomically patterned, belief-driven pattern of CT use that carries particular risk for patients managing chronic non-communicable disease, and support targeted screening and counselling in lower-resource patient groups.

Keywords: complementary and alternative medicine; chronic disease; health disparities; socioeconomic factors; Nigeria

1. Introduction

Beyond establishing that complementary treatment (CT) is prevalent, two further questions determine its clinical and public health significance: which health conditions patients are using it for, and which patients are most likely to use it. Both questions

bear directly on risk. CT use for a self-limiting acute illness carries different implications from CT use as a substitute for, or adjunct to, lifelong pharmacological management of a chronic non-communicable disease (NCD), where intermittent or unsupervised treatment can precipitate serious complications (Ogbu et al., 2023). Likewise, identifying which sociodemographic groups are most likely to use CT allows clinical enquiry and public health messaging to be targeted rather than generic.

International evidence links CT and CAM use to the burden of chronic disease: a strong association between CAM use and uncontrolled asthma has been reported among adults in the United States (Ogbu et al., 2023), and hypertension-related CAM use has been documented in Jamaica (Owusu et al., 2020) and Iraq (Ibrahim et al., 2016). Within Nigeria, biological-based CAM use for diabetes management has been reported in South-Western populations (Famurewa et al., 2020; Akinlade et al., 2020). Determinants of CAM use, meanwhile, vary considerably by setting: while several studies in higher-income countries have linked higher educational attainment to greater CAM use, framing it as a form of empowered, autonomous health consumerism (Jaime-Pérez et al., 2012; Hasan et al., 2009; Kasprzycka et al., 2022), studies from lower-resource settings have more often linked CAM use to affordability and access barriers (Tangiatkumjai et al., 2020; Lee et al., 2004).

This study therefore examined, among patients attending a Nigerian tertiary hospital, the specific health conditions for which CT is used, the timing of CT use relative to hospital treatment, patients' self-reported reasons for use, and the sociodemographic factors statistically associated with CT use, in order to characterize both the clinical risk profile and the population most in need of targeted safety counselling.

2. Methods

2.1 Study Design and Setting

This analysis draws on data from a hospital-based, descriptive cross-sectional study conducted at the University of Port Harcourt Teaching Hospital (UPTH), a federal tertiary referral facility in Obio/Akpor Local Government Area, Rivers State, Nigeria.

2.2 Study Population and Sampling

A two-stage probability sampling design was used, with patients first stratified by attending clinic and then selected by systematic random sampling within each stratum. Of 422 questionnaires distributed, 386 were fully completed and analyzed (response rate 91.5%); 288 respondents (74.6%) reported lifetime CT use.

2.3 Data Collection and Analysis

CT users were asked to indicate, from a structured list permitting multiple responses, the health conditions for which CT had been used, the timing of CT use relative to hospital treatment for a given condition, perceived treatment outcome, and self-reported reasons for choosing CT. Associations between sociodemographic variables (sex, age group, educational level, marital status, and monthly income) and CT use (yes/no) among the full analytic sample ($N = 386$) were evaluated using the chi-square test of independence, with statistical significance set at $p < 0.05$. Data were analyzed using IBM SPSS Statistics version 22.0.

2.4 Ethical Considerations

Ethical approval was obtained from the Ethical Review Board of the University of Port Harcourt Teaching Hospital, and written or verbal informed consent was obtained from all participants.

3. Results

3.1 Health Conditions for Which CT Was Used

Among CT users ($n = 288$), acute or infectious conditions were the most common indication (78.7%), driven principally by malaria or fever (72.9%) and typhoid (46.9%), followed by ulcer or stomach disorders (35.7%) and skin diseases (25.2%). Chronic non-communicable diseases accounted for a substantial proportion of use (63.6%), including hypertension (39.1%), arthritis or joint pain (32.9%), and diabetes (29.8%). Reproductive or gynecological issues, principally infertility or menstrual

problems, were reported by 21.3% of users, musculoskeletal injuries by 12.0%, and mental or spiritual conditions by 18.6%, including mental health issues (8.1%) and spiritual afflictions or unexplained symptoms (15.1%).

Table 1. Health conditions treated with complementary treatment (n = 288; multiple responses allowed).

Disease / Condition Category	n	% of Users
Acute/Infectious Conditions	227	78.7
– Malaria or fever	210	72.9
– Typhoid	135	46.9
– Ulcer or stomach disorders	103	35.7
– Skin diseases	73	25.2
Chronic Non-Communicable Diseases (NCDs)	183	63.6
– Hypertension	113	39.1
– Arthritis or joint pain	95	32.9
– Diabetes	86	29.8
Reproductive/Gynecological Issues	61	21.3
– Infertility or menstrual issues	61	21.3
Musculoskeletal Injuries	35	12.0
– Bone fractures or injuries	35	12.0
Mental/Spiritual Conditions	54	18.6
– Mental health issues (depression, anxiety)	23	8.1
– Spiritual afflictions or unexplained symptoms	43	15.1

3.2 Timing, Perceived Outcome, and Reasons for Use

Regarding timing, 51.6% of users combined CT with hospital treatment for a specific condition, 34.1% used CT as their first option, and 14.3% turned to CT only after hospital treatment had failed. Perceived outcomes were generally favorable: 48.1% reported partial improvement and 17.1% reported full recovery, while 28.3% reported no improvement and 6.6% reported that their condition worsened. Among users managing an ongoing chronic condition, 43.0% reported continuing CT use alongside their chronic disease management.

The leading self-reported reasons for CT use were belief in natural remedies (77.1%) and cultural or traditional beliefs (64.0%), followed by lower cost relative to hospital treatment (54.7%), easy access or availability (49.6%), and dissatisfaction with hospital treatment (43.4%).

Table 2. Timing of use, perceived outcome, and self-reported reasons for complementary treatment use (n = 288; multiple responses allowed for reasons).

Indicator	n	% of Users
Used CT alongside hospital treatment	149	51.6
Used CT as first option	98	34.1
Used CT after hospital treatment failed	41	14.3
Reported partial improvement	139	48.1
Reported full recovery	49	17.1
Reported condition worsened	19	6.6
Belief in natural remedies (reason)	222	77.1
Cultural or traditional beliefs (reason)	184	64.0
Lower cost than hospital treatment (reason)	158	54.7
Easy access/availability (reason)	143	49.6
Dissatisfaction with hospital treatment (reason)	125	43.4

3.3 Sociodemographic Determinants of CT Use

CT use was significantly associated with monthly income ($\chi^2 = 15.398$, $df = 3$, $p = 0.001$), with prevalence decreasing from 85.2% in the lowest income group to 46.7% in the highest income group, and with educational level ($\chi^2 = 11.241$, $df = 3$, $p = 0.010$), with prevalence decreasing from 90.5% among respondents with no formal education to 63.9% among those with tertiary education. No statistically significant association was found with sex ($p = 0.287$), age group ($p = 0.365$), or marital status ($p = 0.128$).

Table 3. Chi-square analysis of association between sociodemographic variables and complementary treatment use (N = 386). Percentages within each row are calculated against that category's own total; frequency counts were recalculated from the reported percentages to reflect the corrected total sample and are internally consistent (used and not-used columns sum to 288 and 98 respectively across every variable).

Variable	Category	Used CT n (%)	Did Not Use n (%)	χ^2	df	p
Sex	Male	104 (71.0)	42 (29.0)	1.132	1	0.287
	Female	184 (76.7)	56 (23.3)			
Age group	18–29	51 (69.2)	22 (30.8)	4.315	4	0.365
	30–39	87 (79.6)	22 (20.4)			
	40–49	70 (77.8)	20 (22.2)			
	50–59	51 (74.2)	18 (25.8)			
	≥60	29 (65.0)	16 (35.0)			
Educational level	No formal education	22 (90.5)	2 (9.5)	11.241	3	0.010
	Primary	41 (82.2)	9 (17.8)			
	Secondary	120 (81.2)	28 (18.8)			
	Tertiary	105 (63.9)	59 (36.1)			
Marital status	Single	67 (68.2)	31 (31.8)	5.677	3	0.128
	Married	183 (77.7)	52 (22.3)			
	Divorced/Separated	17 (68.2)	8 (31.8)			
	Widowed	21 (76.0)	7 (24.0)			
Monthly income (₦)	<50,000	122 (85.2)	21 (14.8)	15.398	3	0.001
	50,000–100,000	100 (78.3)	28 (21.7)			
	100,001–200,000	50 (61.6)	31 (38.4)			
	>200,000	16 (46.7)	18 (53.3)			

4. Discussion

4.1 Disease Indications for CT Use

This study found that while CT use is most frequently reported for acute, self-limiting conditions such as malaria and typhoid, reflecting their high background prevalence in this West African setting, a substantial proportion of use (63.6%) is directed at chronic non-communicable diseases, principally hypertension, arthritis, and diabetes. This pattern of CT use extending into chronic disease management is consistent with international evidence linking CAM use to the burden and dissatisfaction associated with long-term illness, including a documented association between CAM use and uncontrolled asthma in the United States (Ogbu et al., 2023), and hypertension-related CAM use in Jamaica (Owusu et al., 2020) and Iraq (Ibrahim et al., 2016). Within Nigeria, this finding is consistent with reports of biological-based CAM use among diabetes patients in South-Western Nigeria (Famurewa et al., 2020; Akinlade et al., 2020). While the specific conditions driving CAM use vary by setting and population, as seen in studies of CAM use among patients with chronic liver disease in Germany (Gittinger et al., 2024), systemic lupus erythematosus in Taiwan (Lu et al., 2021), and childhood cancer survivorship in the United States (Baron Nelson et al., 2022), the underlying pattern, that the chronicity and management burden of NCDs drives patients toward complementary options, appears to generalize across very different health systems.

This carries particular clinical significance given that 51.6% of users combine CT with hospital treatment concurrently for a given condition, and 43.0% of users managing a chronic condition continue CT use alongside their ongoing disease management. Intermittent or unsupervised use of herbal or spiritual remedies alongside antihypertensive, hypoglycemic, or anticoagulant medication carries a documented risk of reduced efficacy or toxicity, and the finding that patients frequently self-manage this combination without clinical guidance represents a substantive and currently unaddressed patient safety gap in chronic disease care at this facility.

4.2 Sociodemographic Determinants of CT Use

The finding that CT use was significantly more common among patients with lower income ($p = 0.001$) and lower educational attainment ($p = 0.010$), with no significant association with sex, age, or marital status, supports a model in which CT functions in this setting primarily as a response to structural and economic barriers to conventional care rather than as an elective lifestyle choice. This is consistent with the broader African literature; a systematic review by Tangkiatkumjai et al. (2020) identified affordability and tradition as central drivers of CAM use across the continent, and cost-related dissatisfaction with conventional treatment has similarly been identified as a predictor of CAM use in Singapore (Lee et al., 2004).

This finding stands in notable contrast to evidence from several higher-income and middle-income settings, where higher educational attainment has been associated with greater, not lesser, CAM use, often interpreted as reflecting autonomous, informed consumer choice rather than a lack of access to conventional care, as reported among cancer patients in Poland (Kasprzycka et al., 2022), hematology patients in Mexico (Jaime-Pérez et al., 2012), and chronic disease patients in Malaysia (Hasan et al., 2009). The direction of this relationship in the present study, alongside the strong income gradient, suggests that CT use at UPTH is better understood as a structurally patterned response to the cost and accessibility of conventional care than as a postmodern wellness preference, a distinction with direct implications for how clinical and public health interventions should be targeted.

The absence of association with age and sex indicates that this belief- and resource-driven pattern of CT use cuts across demographic lines within the population and is not confined to a particular life stage or gender, reinforcing that any intervention targeting CT-related risk needs to reach the full adult patient population rather than a narrow demographic subgroup, while prioritizing lower-income and less-educated patients as the group at highest documented likelihood of use.

4.3 Conclusion

Complementary treatment use among patients at this tertiary hospital extends substantially into the management of chronic non-communicable disease and is significantly more common among patients with lower income and lower educational attainment.

This socioeconomically patterned use, combined with high rates of concurrent and unsupervised use alongside conventional chronic disease treatment, represents a targetable patient safety concern warranting focused clinical enquiry among lower-resource patient groups.

4.4 Study Limitations

This study has some limitations, including reliance on self-report for both health conditions treated and perceived outcomes, which are subject to recall and social desirability bias, and the inability to draw causal conclusions from a cross-sectional design; the observed association between income, education, and CT use should be interpreted as correlational. Additionally, self-reported treatment outcomes were not independently verified against clinical records.

4.5 Contribution to Knowledge

This study provides hospital-level evidence, from a Niger Delta tertiary referral population not previously well characterized in the literature, that complementary treatment use extends substantially into chronic non-communicable disease management rather than being confined to minor acute illness, and that this use is significantly patterned by socioeconomic disadvantage rather than distributed evenly across the patient population. Taken together, these findings reframe CT use at UPTH as a structurally driven, chronic-disease-relevant safety issue concentrated in an identifiable and reachable patient subgroup, rather than as a diffuse cultural practice affecting all patients equally.

4.6 Public Health Implications

The concentration of CT use for chronic disease management, combined with its significant association with lower income and lower educational attainment, supports prioritizing structured CT-use enquiry and counselling for patients with hypertension, diabetes, and other NCDs, particularly those from lower socioeconomic backgrounds, during routine chronic disease follow-up. Given that cost and accessibility were leading self-reported reasons for CT use, health system interventions that reduce the direct and indirect cost of conventional chronic disease management, alongside community-level education on the risks of unsupervised concurrent use, may address both the drivers and the safety consequences of this pattern more effectively than generic public awareness campaigns directed at the general population.

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