Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Prevalence of Complementary and Alternative Therapies Use and Associated Factors among Patients with Mental Illness at Mawenzi Regional Referral Hospital, Kilimanjaro, Tanzania: a cross-sectional study

Regan Salvatory Kimario

regankimario@mhti.ac.tz

KCMC University

Kilaye Karino

KCMC University

Research Article

Keywords: Complementary and alternative medicine, mental illness, prevalence, associated factors, Tanzania, cross-sectional study

Posted Date: November 25th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11548268/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background

Complementary and alternative medicine (CAM) use is common among people with mental illness worldwide, but data on its prevalence and correlates among this population in Tanzania remain limited.

Methods

An analytical cross-sectional study was conducted among 204 patients with mental illness attending the Psychiatric Unit of Mawenzi Regional Referral Hospital, Kilimanjaro, Tanzania, between April and July 2024. Data were collected using a structured, interviewer-administered questionnaire adapted from the NAFKAM International CAM Questionnaire (I-CAM-Q) and analysed in STATA v17 using descriptive statistics and modified Poisson regression to identify factors associated with CAM use.

Results

The mean age of participants was 44.3 years (SD 14.3) and 59.3% were female. The prevalence of CAM use was 55.9%. The most common types were herbal medicine (41.1%), traditional healers (25.2%), meditation (15.2%) and spiritual healers (15.2%). Male sex was associated with lower CAM use (adjusted prevalence ratio [aPR] 0.73, 95% CI 0.57–0.93; p = 0.012), while being widowed (aPR 4.83, 95% CI 1.59–14.70; p = 0.006) and employed (aPR 1.42, 95% CI 1.06–1.92; p = 0.020) were associated with higher use. Personal belief (44%) was the leading reason cited for using CAM, followed by cultural belief, cost, lack of access to conventional treatment, and availability of practitioners.

Conclusions

More than half of patients with mental illness attending Mawenzi Regional Referral Hospital use CAM, most commonly herbal medicine. Sex, marital status and employment status were significant correlates of use. Clinicians should routinely and non-judgementally ask about CAM use to identify potential interactions with conventional psychiatric treatment and to strengthen patient-centred mental health care.

Background

Complementary and alternative medicine (CAM) encompasses a diverse set of healthcare practices, products and systems that fall outside conventional biomedicine. Complementary therapies are used alongside conventional treatment, while alternative therapies are used in its place; CAM is broadly grouped into natural products (herbal medicine, vitamins and supplements) and mind–body practices (spiritual healing, prayer and meditation) [1, 2].

CAM use is prevalent among people with mental illness, most often as an adjunct to conventional treatment [3]. Globally, self-reported CAM use among mentally ill patients ranges from 10% to 76% [4], and use restricted to formal CAM providers ranges from 2% to 49% [5]. In Europe, CAM use rose from about 10% in 1987 to 24% in 2021, with a plateau between 2010 and 2017 [6]; in Norway, 62.2% of respondents reported CAM use in the preceding 12 months, with higher use among women and younger people [7].

In sub-Saharan Africa, traditional medicine remains a common route to primary health care, with CAM typically grouped into traditional, faith-based and mind–body practices [8, 9]. In southwest Ethiopia, around half of patients sought a religious healer (30.2%) or herbalist (20.1%) before presenting to hospital [10]. In Tanzania, CAM is used for a wide range of conditions, including chronic illnesses such as mental disorders [11], against a backdrop in which an estimated 10% of the population lives with a mental disorder and faces poverty, limited access to care, and stigma as barriers to treatment [12, 13].

Concurrent CAM use among people with mental illness is not without risk: it has been linked to non-disclosure to providers, potential drug interactions with psychotropic medication, delayed presentation and reduced adherence to conventional treatment [14, 15]. Despite this, published data on the prevalence and determinants of CAM use among people with mental illness in Tanzania remain scarce. This study therefore determined the prevalence of CAM use and its associated factors among patients with mental illness attending Mawenzi Regional Referral Hospital, Kilimanjaro, Tanzania, to inform clinical practice and mental health policy.

Methods

Study design and setting

This was an analytical, hospital-based cross-sectional study conducted from April to July 2024 at Mawenzi Regional Referral Hospital, Kilimanjaro, Tanzania, one of two facilities offering specialised mental health care in Moshi Municipal Council, which serves the wider Kilimanjaro region and neighbouring areas of northern Tanzania.

Study population and eligibility

The study population comprised all patients attending the Psychiatric Unit during the study period. Eligible participants were patients with mental illness who attended the clinic during the study period and consented to participate. Patients under 18 years, those unwilling to participate, and those with impaired communication skills or who were psychologically unfit were excluded.

Sample size and sampling technique

The minimum sample size was calculated using the Kish and Leslie formula for cross-sectional studies, based on an expected CAM-use prevalence of 22.2% [16], a 95% confidence level and a 5% margin of error, giving a minimum of 265 participants; after adding 10% for non-response, the target sample size was 292. A convenience sampling technique was used, enrolling eligible patients attending the clinic on each working day (07:30–13:30, excluding weekends) until data collection ended; 204 patients were ultimately enrolled (response rate 69.9%).

Variables

The outcome variable was CAM use among patients with mental illness. Independent variables included age, sex, marital status, occupation, religion, education level, tribe, income, residence, satisfaction with conventional treatment, and duration since diagnosis.

Data collection

Data were collected using a structured questionnaire adapted from the validated NAFKAM International CAM Questionnaire (I-CAM-Q) [17], with additional items, administered in English or Swahili according to participant preference. The tool captured sociodemographic and clinical characteristics, CAM use and types, reasons for use, and reasons for non-disclosure to providers. It was pretested among patients at the KCMC psychiatric clinic (who were not included in the final study) before use. Trained researchers administered the questionnaire directly to eligible, consenting participants in a private room, reading questions aloud for participants who were unable to read.

Data management and analysis

Completed questionnaires were checked daily for missing or inconsistent data before secure storage. Data were entered and analysed in SPSS v25.0 and STATA v17.0. Categorical variables were summarised as frequencies and percentages, and numerical variables as means and standard deviations. Modified Poisson regression was used to estimate crude and adjusted prevalence ratios (CPR/APR) with 95% confidence intervals for factors associated with CAM use, with statistical significance set at $p < 0.05$.

Ethical considerations

Ethical clearance was obtained from the KCMU College Research and Ethics Review Committee (CRERC) on 12 April 2024 (certificate No. UG 84/2024), and permission was granted by the medical officer in charge of Mawenzi Regional Referral Hospital. Written informed consent was obtained from all participants prior to enrolment, and confidentiality was maintained throughout by excluding participant names from questionnaires and using numeric codes.

Results

Enrollment and demographic characteristics

Of the patients attending the Psychiatric Unit during the study period, 204 were enrolled (response rate 69.9%). The mean age was 44.3 years (SD 14.3; range 19–77), and 121/204 (59.3%) were female. Most participants (72.5%) had a pre-existing mental illness diagnosis, while 27.5% were attending for the first time. Only 46/204 (22.5%) had completed secondary education. Full demographic characteristics are shown in Table 1.

Table 1
Demographic characteristics of patients with mental illness attending Mawenzi Regional Referral Hospital (N = 204)

Variable	Frequency (n)	Percentage (%)
Gender		
Female	121	59.3
Male	83	40.7
Age group (years)		
18–24	10	4.9
25–34	46	22.5
35–44	59	28.9
45–54	45	22.1
55–64	11	5.4
65+	33	16.2
Education level		
No formal education	15	7.4
Primary school	118	57.8
Secondary school	46	22.5
College/University	25	12.3
Marital status		
Divorced	18	8.8
Married	92	45.1
Single	83	40.7
Widowed	11	5.4
Employment status		
Student	11	5.4
Employed	59	28.9
Unemployed	123	60.3
Retired	11	5.4
Monthly income (TSHS)		

Variable	Frequency (n)	Percentage (%)
Gender		
< 100 000	151	74.0
100 001–500 000	46	22.5
500 001–1 000 000	7	3.4

Prevalence and pattern of CAM use

The overall prevalence of CAM use was 55.9% (114/204): 87 participants used one type of CAM, 17 used two types, and 10 used three types. Among the 151 reported instances of CAM use, herbal medicine was most common (62/151, 41.1%), followed by traditional healers (38/151, 25.2%), meditation (23/151, 15.2%), spiritual healers (23/151, 15.2%), and massage/acupuncture combined (3.3%). Among CAM users, 97/114 (85.1%) reported discussing CAM use with a healthcare provider, of whom 81/97 (83.5%) received a supportive response. Daily use was the most common frequency of use (39.5%); further detail is shown in Table 2.

Table 2
Rate of CAM use among patients with mental illness who reported using CAM (N = 114)

Rate of CAM use	Frequency (n)	Percentage (%)	Cumulative (%)
Daily	45	39.47	39.47
Monthly	11	9.65	49.12
Occasionally	26	22.81	71.93
Rarely	32	28.07	100.00

Factors associated with CAM use

On modified Poisson regression, male patients were significantly less likely to use CAM than female patients (APR 0.73, 95% CI 0.57–0.93; p = 0.012). Widowed patients were significantly more likely to use CAM than divorced patients (APR 4.83, 95% CI 1.59–14.70; p = 0.006), as were single patients relative to divorced patients (APR 3.03, 95% CI 1.23–7.48; p = 0.016). Employed patients were significantly more likely to use CAM than unemployed patients (APR 1.42, 95% CI 1.06–1.92; p = 0.020). Age, education level and monthly income were not significantly associated with CAM use after adjustment. Full results are presented in Table 3.

Table 3
Factors associated with CAM use among patients with mental illness (modified Poisson regression)

Variable	CPR (95% CI)	P-value	APR (95% CI)	P-value
Gender				
Female	1		1	
Male	0.86 (0.66–1.12)	0.265	0.73 (0.57–0.93)	0.012
Age (years)				
18–24	1		1	
25–34	1.63 (0.74–3.59)	0.225	1.77 (0.89–3.52)	0.101
35–44	1.48 (0.67–3.27)	0.328	1.78 (0.87–3.66)	0.117
45–54	1.44 (0.65–3.22)	0.368	2.03 (0.99–4.18)	0.053
55–64	1.14 (0.42–3.09)	0.802	1.20 (0.50–2.88)	0.679
65+	0.98 (0.41–2.35)	0.973	0.95 (0.40–2.26)	0.916
Education level				
Secondary school	1		1	
No formal education	0.09 (0.01–0.59)	0.012	0.16 (0.02–1.10)	0.062
Primary school	0.69 (0.55–0.87)	0.002	1.01 (0.75–1.37)	0.938
College/University	0.79 (0.55–1.13)	0.195	0.74 (0.52–1.06)	0.101
Marital status				
Divorced	1		1	
Married	2.05 (0.84–5.03)	0.115	2.37 (0.97–5.84)	0.060
Single	3.25 (1.35–7.82)	0.008	3.03 (1.23–7.48)	0.016
Widowed	2.86 (1.08–7.59)	0.034	4.83 (1.59–14.70)	0.006
Employment status				
Unemployed	1		1	
Student	1.80 (1.28–2.52)	0.001	1.55 (0.86–2.80)	0.147
Employed	1.56 (1.21–2.01)	0.001	1.42 (1.06–1.92)	0.020
Retired	1.20 (0.67–2.13)	0.538	1.36 (0.58–3.21)	0.481
Monthly income (TSHS)				

Variable	CPR (95% CI)	P-value	APR (95% CI)	P-value
Gender				
< 100 000	1		1	
100 001–500 000	1.03 (0.77–1.38)	0.852	0.80 (0.59–1.09)	0.154
500 001–1 000 000	1.04 (0.54–2.01)	0.908	0.96 (0.54–1.70)	0.898

Among CAM users, personal belief was the most frequently cited reason for use (44%), followed by cultural belief (27%), cost (16%), lack of access to conventional treatment (11%), and availability of practitioners (2%).

Discussion

More than half of patients with mental illness attending Mawenzi Regional Referral Hospital reported using CAM (55.9%), with herbal medicine the most common type, consistent with patterns reported in other African and European studies of CAM use among people with mental illness [6, 8, 9]. A comparable Tanzanian study similarly found that a large proportion of the population continues to access traditional healers or CAM providers alongside conventional care [11].

Male sex was associated with lower CAM use than female sex, consistent with evidence that women are generally more likely than men to use CAM, possibly reflecting greater engagement with holistic and preventive health approaches [7]. Widowed status was strongly associated with CAM use, which may reflect a search for emotional and spiritual support in coping with bereavement, needs that CAM practices such as spiritual healing and meditation may address. Employment was also associated with higher CAM use, independent of income; this may reflect employed patients seeking accessible strategies to manage work-related stress within demanding schedules.

Personal belief was the leading reason for CAM use, followed by cultural belief, cost, and limited access to conventional treatment, consistent with prior evidence that economic burden and inadequate access to conventional health services drive CAM use, and that cultural and spiritual beliefs strongly shape treatment-seeking behaviour in this setting [12, 13, 18].

This study has several limitations. Reliance on patient self-report of CAM use may have led to under-reporting given social sensitivities around disclosure, and the achieved sample (204) was smaller than the calculated target (292), which may have reduced precision for some subgroup estimates. As a cross-sectional, single-institution study, it cannot establish causality or track CAM use over time, and findings may have limited generalisability beyond Mawenzi Regional Referral Hospital. Strengths include the use of a validated, adapted data collection tool and the ability to assess both CAM use and its correlates concurrently in a defined psychiatric outpatient population.

Conclusions

CAM use is common among patients with mental illness at Mawenzi Regional Referral Hospital, with more than half reporting use, most often herbal medicine. Female sex, widowed status and employment were significantly associated with higher CAM use, while age, education and income were not. Personal and cultural beliefs were the leading drivers of use. These findings support routine, non-judgemental clinical enquiry about CAM use to identify potential interactions with conventional psychiatric treatment, and highlight a need for culturally sensitive strategies, including possible collaboration with traditional healers, to strengthen adherence to conventional mental health care. Further multi-site and community-based research is recommended to better characterise CAM use and its timing relative to conventional treatment initiation among people with mental illness in Tanzania.

Abbreviations

APR
Adjusted Prevalence Ratio
CAM
Complementary and Alternative Medicine
CI
Confidence Interval
CPR
Crude Prevalence Ratio
CRERC
KCMU College Research and Ethics Review Committee
I-CAM-Q
International Complementary and Alternative Medicine Questionnaire
KCMC
Kilimanjaro Christian Medical Centre
KCMUCo
Kilimanjaro Christian Medical University College
SD
Standard Deviation
TSHS
Tanzanian Shillings.

Declarations

Ethics approval and consent to participate

This study was approved by the Kilimanjaro Christian Medical University College Research and Ethics Review Committee (CRERC), certificate No. UG 84/2024 (approved 12 April 2024), with additional

permission from Mawenzi Regional Referral Hospital. Written informed consent was obtained from all participants prior to enrolment.

Consent for publication

Not applicable, this manuscript does not contain any individual person's identifiable data.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors; it was self-funded by the authors.

Authors' contributions

RSK conceived and designed the study, collected and analysed the data, and drafted the manuscript. KK supervised the study design and data collection, and critically revised the manuscript for important intellectual content. Both authors read and approved the final manuscript.

Acknowledgements

The authors thank the staff of the Psychiatric Unit at Mawenzi Regional Referral Hospital, the Community Health Department at KCMC University formerly known as KCMUCo, and all patients who participated in the study.

Clinical trial number

Not applicable

References

1. Eardley S, Bishop FL, Prescott P, Cardini F, Brinkhaus B, Santos-Rey K, et al. A systematic literature review of complementary and alternative medicine prevalence in the EU. Forsch Komplementmed. 2012. doi:10.1159/000342708.
2. National Center for Complementary and Integrative Health. Complementary, alternative, or integrative health: what's in a name? 2018. https://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name. Accessed 6 March 2024.
3. Abou-Rizk J, Alameddine M, Naja F. Prevalence and characteristics of CAM use among people living with HIV and AIDS in Lebanon: implications for patient care. Evid Based Complement Alternat Med. 2016;2016:5013132. doi:10.1155/2016/5013132.
4. Kemppainen LM, Kemppainen TT, Reippainen JA, Salmenniemi ST, Vuolanto PH. Use of complementary and alternative medicine in Europe: health-related and sociodemographic determinants. Scand J Public Health. 2018;46(4):448-55.
5. Harris PE, Cooper KL, Relton C, Thomas KJ. Prevalence of complementary and alternative medicine (CAM) use by the general population: a systematic review and update. Int J Clin Pract. 2012. doi:10.1111/j.1742-1241.2012.02945.x.
6. Møller SR, Ekholm O, Christensen AI. Trends in the use of complementary and alternative medicine between 1987 and 2021 in Denmark. 2024.
7. Kristoffersen AE, Quandt SA, Stub T. Use of complementary and alternative medicine in Norway: a cross-sectional survey with a modified Norwegian version of the international questionnaire to measure use of complementary and alternative medicine (I-CAM-QN). BMC Complement Med Ther. 2021;21(1). doi:10.1186/s12906-021-03258-6.
8. Onyiapat JLE, Okoronkwo IL, Ogbonnaya NP. Complementary and alternative medicine use among adults in Enugu, Nigeria. BMC Complement Altern Med. 2011;11. doi:10.1186/1472-6882-11-19.
9. James PB, Wardle J, Steel A, Adams J. Traditional, complementary and alternative medicine use in Sub-Saharan Africa: a systematic review. BMJ Glob Health. 2018;3(5). doi:10.1136/bmjgh-2018-000895.
10. Girma E, Tesfaye M. Patterns of treatment seeking behavior for mental illnesses in Southwest Ethiopia: a hospital based study. BMC Psychiatry. 2011;11. doi:10.1186/1471-244X-11-138.
11. Stanifer JW, Patel UD, Karia F, Thielman N, Maro V, Shimbi D, et al. The determinants of traditional medicine use in northern Tanzania: a mixed-methods study. PLoS ONE. 2015;10(4). doi:10.1371/journal.pone.0122638.
12. Mbatia J, Jenkins R. Development of a mental health policy and system in Tanzania: an integrated approach to achieve equity. Psychiatr Serv. 2010;61(10):1028-31.
13. Jenkins R, Mbatia J, Singleton N, White B. Prevalence of psychotic symptoms and their risk factors in urban Tanzania. Int J Environ Res Public Health. 2011;8(6).
14. Akuoko CP, Armah E, Sarpong T, Quansah DY, Amankwaa I, Boateng D. Barriers to early presentation and diagnosis of breast cancer among African women living in sub-Saharan Africa. PLoS ONE. 2017;12(2):e0171024. doi:10.1371/journal.pone.0171024.

15. Wang C, Preisser J, Chung Y, Li K. Complementary and alternative medicine use among children with mental health issues: results from the National Health Interview Survey. BMC Complement Altern Med. 2018;18(1):228. doi:10.1186/s12906-018-2307-5.
16. Bahceci B, et al. Complementary and alternative medicine use in patients with mental disorders in Turkey. Complement Ther Clin Pract. 2013;19(4). doi:10.1016/j.ctcp.2013.06.005.
17. Kristoffersen AE, Stub T, Musial F, Fønnebø V, Løkken A. The NAFKAM International CAM Questionnaire (I-CAM-Q): a validation study in Norway. BMC Complement Altern Med. 2018;18(1):1-12.
18. Ozioma Ezekwesili-Ofili J, Okechukwu Ogbonna A. African traditional and complementary therapies. Available from: www.intechopen.com.