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## RESEARCH ARTICLE

### Usage of Traditional, Complementary and Alternative Medicine and Related Factors among Patients Receiving Healthcare in Lesotho

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#### Abstract:

##### Background:

The use of Traditional, Complementary and Alternative Medicine (TCAM) is becoming apparent among many populations, particularly those suffering from chronic illnesses. Although this is a concern to clinicians, especially on safety and potential health risks, there is a paucity of data on TCAM usage and related factors among patients receiving healthcare in Lesotho.

##### Objective:

To determine the prevalence of TCAM usage and associated factors among patients receiving healthcare in a health facility in Lesotho.

##### Methods:

A cross-sectional study was conducted among 336 patients receiving healthcare in the Maseru district, Lesotho. A validated questionnaire was used to collect data on demographic and lifestyle factors, disease and treatment profile, treatment challenges, and TCAM usage, reasons/purpose, disclosure, healing system, duration, costs, sources and types. Multiple logistic regression analysis was used to ascertain any relationships with TCAM usage.

##### Results:

The response rate was 98%. The mean age of participants was 51±16years. Unemployment (63%) was high and, over half of the patients (59%) attained primary school education. Patients were mostly on treatment for sexually transmitted infections (42%), non-communicable diseases (30%) and comorbidities (19%), with 98% taking prescribed medication. TCAM usage was 15% with Traditional Herbal Medicine (THM) being the most widely used. Common THM were *Dicoma Anomala*, *Erioccephalus Punctulatus*, *Aloiampelos Striatula*, *Artemisia Afra* and *Allium Sativum*, obtained from the traditional healers (53%), followed by relative/friends (16%), pharmacists (13%), open market (12%), and accessed at low costs. TCAM was used to treat infectious (23%) and non-infectious (77%) diseases, but disclosure (7%) to healthcare workers was low. Multivariate analysis showed that TCAM usage was associated with self-employment AOR=6.3, 95%CI; 2.57-15.21, and being a student AOR=3.6, 95%CI; 0.99-12.71.

##### Conclusion:

THM was the most widespread type of TCAM among the study population in Lesotho. Prospective studies on TCAM usage are necessary to inform proper practice and safety in Lesotho.

**Keywords:** Traditional complementary and alternative medicine, Healthcare, Outpatients, Demographic and lifestyle factors, Lesotho, Patients, Diseases, Non-communicable diseases.

#### Article History

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## 1. INTRODUCTION AND BACKGROUND

Healthcare in Lesotho is in the hands of the government, the private sector (churches and private surgeries), and civil society (traditional health practitioners), with the government

support directed towards the Ministry of Health, excluding the private sector and civil society organizations [1]. The country continues to face an alarming double burden of disease, because of increases in the burden of infectious diseases (IDs), as well as, non-communicable diseases (NCDs) [2]. Lesotho has been using Traditional, Complementary and Alternative Medicine (TCAM) products from time immemorial [3]. The World Health Organization (WHO) defines TCAM as any

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diagnosis, treatment and prevention that are used in conjunction (complementary) or place (alternative) of standard medical treatment [4]. Studies in Lesotho have reported more on the use of medicinal plants or herbal medicine to treat conditions, such as HIV [5], wound care [6] and reproductive problems [7]. However, the impact of uncoordinated harvesting of medicinal plants is a serious concern to the environmentalists and the communities as a whole in the country [3]. Documented side effects due to concomitant use of TCAM products include gastrointestinal disturbances (nausea, vomiting, diarrhoea and abdominal pain), dizziness, headache and malaise [8 - 10].

In Africa, TCAM use is estimated at an average of 58.2%, ranging from 4.6% to 94% [11 - 13], and has long been widespread in developing countries with a considerable number of its population relying on TCAM to maintain their health or prevent and treat IDs and NCDs [14 - 16]. The push factors of TCAM use are mainly centered on the dissatisfaction with conventional healthcare [17]. This includes issues, such as long-distance to health facilities, unavailability of drugs, difficulty and inequity in accessing care, negative attitude of healthcare providers, long waiting time, lengthy procedures and fear of being diagnosed with a serious disease [18 - 21]. TCAM use is further motivated by the inability of conventional medicine to treat their diseases, control of symptoms, and management of drug side effects believed to be due to lack of knowledge on the potential dangers for concurrent use of TCAM with conventional medicines [22, 23]. Additionally, healthcare costs are perceived to be too much, even for state-run hospitals and clinics, where consultation and treatment are assumed subsidized [24]. To solve the problem of a drug shortage or high cost in part, many health-oriented ministries are now encouraging the use of local medicinal plants for disease treatment [24]. The lack of health care systems in rural areas forces local people to treat themselves, either by using medicinal plants or by buying high-cost medicine in the rural markets or still further, going for cheap roadside medication, predisposing themselves to health dangers caused by the unknown source of these poor medications [25].

In Africa, including Lesotho, South Africa, Uganda, and Northern Morocco, Traditional Herbal Medicine (THM) is the most common TCAM healing system used for treating chronic diseases, mainly HIV, some medical conditions that occur during pregnancy [5, 26 - 28] and later, against COVID-19 [29]. Individuals adopt TCAM to prevent or treat common diseases, such as flu and common cold, headaches, indigestion and stomach problems [30]. Furthermore, TCAM products are used by patients to treat NCDs, hypertension and diabetes [31, 32], as well as asthma [33] and paediatric conditions [34]. Literature further reports a high use of TCAM among patients with cancer in Sub-Saharan Africa (SSA) [35, 36]. Then, follow faith-based healing methods (prayer/spirituality), and mind-body therapies (massage, traditional bone setting relaxation, meditation and yoga) [37]. Homoeopathy as a TCAM modality has been reported in various African countries among university staff (South Africa) [17], prayer/spirituality mode among patients with HIV/AIDS (Nigeria and South Africa) [38, 39] and massage among cancer patients (Ghana) [36].

Several sociodemographic factors, including age, gender, marital status, and level of education, health status, income status religion and ethnicity, have been associated with TCAM use [37]. Studies conducted in urban or semi-urban areas have reported TCAM use among younger individuals [40, 41], while in the rural areas, TCAM users are older [42]. Other studies have reported TCAM use to be common among individuals with little or no formal education [40, 43], and those who are married [9] than those who are not married [40]. Another study reported that TCAM users were likely to be Christians compared to other religions [41]. On the other hand, no significant correlations between the sociodemographic characteristics of the respondents and TCAM use have been reported [44]. Other researchers have indicated contrasting results for other factors such as gender and religion [9, 45]. Both male and females have been reported to use TCAM alike [9], while no difference have been observed on TCAM use by religion [45].

The use of TCAM is a concern to clinicians, especially, on safety and potential health risks [22, 36]. Concerns that simultaneous use of conventional medicines and TCAM exposes people to pharmacokinetic and pharmacodynamics interactions have been reported, which could lead to decreased effectiveness, toxicity and non-adherence to conventional medicines [22, 36]. It is well documented that pharmacokinetic or pharmacodynamics are herb-drug interactions and may alter the concentration of a therapeutic drug in the blood, which results in the potentiated or decreased action of drugs [46, 47].

Despite these concerns, it seems as if there is a limited commitment to advise patients to ensure maximum treatment outcomes and limit complications associated with TCAM usage, such as alterations in therapeutic efficacy and/or potential toxicities. Additionally, there is a paucity of data on TCAM usage and related factors among patients receiving healthcare in a health facility in Lesotho, except for the few studies that have been conducted on medicinal plants [5 - 7]. Because of this, the study aimed to determine the prevalence of TCAM usage and associated factors among patients receiving healthcare in a health facility in Lesotho. Considering the high utilisation of TCAM across SSA [37], it becomes pertinent to find out how common the usage is in this clinic in Lesotho, to judge whether a suitable response needs to be formulated.

## **2. MATERIALS AND METHODS**

### **2.1. Study Design, Population and Setting**

A cross-sectional study was conducted in a hospital in Maseru District, Lesotho, during November 2019 and March 2020. Lesotho is located in Southern Africa and it is surrounded by South Africa [3]. Maseru District is the capital town of Lesotho, with a population of approximately 430,000. Three hospitals are forming an integral part of the Maseru District health system and permission to conduct the study was requested for the three hospitals, but we only received permission to access one hospital, which is a middle-sized of the three hospitals with 156 beds. The hospital is located 45 kilometres south of Maseru District and serves twenty-six villages with a population of approximately 12000. An estimated 77% of the Basotho (local people of Lesotho)

population live in rural areas without a reachable healthcare facility [48].

**2.2. Sample Size and Sampling**

Raosoft calculator was used to calculate a sample size taking into consideration an approximated 2000 outpatients during the study period, a 5% margin of error and a confidence level of 95%. A sampling took place at least three days (two weekdays and one weekend day) in the first and the third weeks of every month, from November 2019 to March 2020. Patients were recruited in the morning while they were in a queue in the waiting area to be called in. Recruitment took place as patients were coming in and out of the waiting area. The minimum sample size was calculated as 323 and we recruited 336 outpatients. A convenience sample of patients was drawn from those queuing in the waiting area for the morning clinic, patients being enrolled according to their availability and accessibility at the time of the study. The inclusion criteria considered outpatients receiving care at the hospital, aged 18 years and above, and able to give consent to participate in the study. The study disregarded inpatients in the wards, outpatients who were below the age of 18 years and outpatients who did not agree to participate.

**2.3. Data Collection Instruments and Procedures**

A self-administered structured and validated questionnaire was adapted from previous studies [22, 39, 49, 50] and used to collect data, with the help of the main researcher, when patients experienced challenges with questions. The questionnaire was structured into sections, namely; demographic factors (such as age, gender, marital status, and education and employment status) and lifestyle factors (*i.e.*, smoking and alcohol use), disease and treatment profile, treatment challenges, and TCAM usage, reasons/purpose, disclosure, healing system, duration, costs, sources and types.

The questionnaire was validated through content and face validity and a pilot study. Content validity was ensured through the coverage of relevant constructs of interest in the questionnaire to be measured. Face validity was achieved by phrasing the questions in a suitable way that is clear for the participants and was ensured by the questions matching the constructs to be measured. Independent translators who speak Sesotho as their mother tongue and are conversant with English did forward and backward translations of the questionnaire. During translation, the independent translator paid attention to the way Basotho viewed or interpreted the underlying meaning

of certain items, such as diseases. No difficulty in translation terms was experienced from English to Sesotho. However, there was a careful consideration to ensure alignment of the tool with the culture of Basotho, as Pena [51] advises on methodological considerations for translations. An expert committee approved the final version of the translated questionnaire [52].

To make sure that the translated items retained the same meaning as the original items and to ensure that there was no confusion regarding the translated questionnaire, a pilot study was conducted to pretest the questionnaire and determine its feasibility [52]. A pilot study was conducted among 15 patients who did not form part of the study, and the results were not included in the data analysis for the main study. After pretesting the questionnaire, there were no changes to the content except for minimal clarity of wording, and simplifying layout and style.

**2.4. Data Analysis**

Data were analysed using STATA 14 (StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX, USA). Descriptive statistics (frequencies, percentages) were used to summarize data and inferential statistics were used to study the associations of TCAM and THM usage, with demographic variables, using a Chi-square test/Fisher’s exact. Further relationships of TCAM and THM usage with selected variables were done through univariate and multivariate logistic regression analyses. The purposeful selection process began with a univariate analysis of each variable, and any variable having a significant univariate test at p-value <0.2 was selected as a candidate for the multivariate analysis. Adjusted odds ratios (AOR) with a 95% confidence interval (CI) were generated and used to determine the independent strength of the relationship. Significance was considered at p < 0.05.

**3. RESULTS**

**3.1. Characteristics of Participants**

Three hundred and thirty-six patients were eligible to participate in the study with 146 (43%) males and 190 (57%) females. The response rate was 98%. Table 1 shows the characteristics of participants, with a mean age of 51±16years. Almost two-thirds of the participants were married and 63% were unemployed. Most participants had primary school education (59%), while 22% had a secondary school education, and few had tertiary education (10%). Smoking (13%) and alcohol use (17%) were also observed among the patients.

**Table 1. Characteristics of participants.**

Variables	Categories	Frequency (n)	Percentages (%)
Age (years)	<30	40	12
	30 – 39	47	14
	40 49	66	20
	≥ 50	183	54
Gender	Male	146	43
	Female	190	57

(Table 1) contd.....

Variables	Categories	Frequency (n)	Percentages (%)
<b>Marital Status</b>	Single	53	16
	Married	209	62
	Widowed	16	5
	Divorced	58	17
<b>Employment</b>	Employed	80	24
	Self-employed	29	9
	Unemployed	213	63
	Student	14	4
<b>Education</b>	Primary school	199	59
	Secondary school	73	22
	High school	31	9
	Tertiary	33	10
<b>Smoking</b>	Yes	44	13
	No	292	87
<b>Alcohol Use</b>	Yes	58	17
	No	278	83

### 3.2. Disease and Treatment Profiles and Healing System

Participants were being treated for sexually transmitted diseases (STIs) 141 (42%), followed by NCDs 100 (30%). Other participants indicated that they were having comorbidities, 63 (19%), such as a combination of NCDs, or a combination of STIs and NCDs. Most of the participants disclosed that they were on prescribed medication (98%), and the participants preferred to disclose the use of prescribed

medication to siblings (82%), and lesser to parents (9%), and friends and family members (9%). Patients indicated that their treatment challenges were mostly due to long queues (45%), shortage of medication (27%) and travel costs to the hospital (25%), nonetheless, 95% indicated satisfaction with treatment. Out of the 52 who reported using TCAM, 85% were using THM as a healing system, followed by faith-based healing system (13%) (Table 2).

**Table 2. Disease and treatment profiles of participants.**

Variables	n	%
<b>Disease treated</b>		
STIs	141	42
NCDs	100	30
Comorbidities	63	19
Others	32	9
<b>Disclosed of use of prescribed medicine</b>		
No	7	2
Yes	329	98
<b>To whom did you disclose use of prescribed medicine?</b>		
Siblings	275	82
Parents	30	9
Friends and family members	31	9
<b>Satisfied with treatment</b>		
No	17	5
Yes	319	95
<b>Do you have challenges receiving treatment</b>		
No	265	79
Yes	71	21
<b>Type of challenges experienced</b>		
Long queues	32	45
Shortage of medicine	19	27
Transport and consultation costs	18	25
Other	2	3
<b>Healing system of TCAM used</b>		
THM	44	85
Faith-based religion	7	13
Chinese medicine	1	2
Ayurvedic medicine	0	0
Other, not mentioned above	0	0

### 3.3. TCAM use, Reasons, Types and Sources

Table 3 shows that 15% (n=52) reported use of TCAM with an average duration of 31±68 days from a minimum of two days to a maximum of 365 days, at the time of the study. Most participants were using TCAM encouraged by relatives and friends, as well to treat infectious (23%) and non-infectious diseases (77%). Among TCAM users, the most used system was THM, namely *Dicoma Anomala* (Hloenya), *Erioccephalus Punctulatus* (Sehala hala Matlaka), *Aloiampelos Striatula* (Mohalakane) *Allium Sativum* (konofolo), *Artemisia Afra* (Lengana), and others included 14 medicinal plants used less frequently. Participants indicated that they got the above-mentioned medicine mostly from the traditional healers (53%), relatives and friends (16%), pharmacists (13%) and open market (12%). Ninety-four percent (94%) indicated that they have spent ≤7.36 USD to access TCAM from various sources.

Most participants (94%) indicated that the amount spent to buy TCAM was not higher than the cost of prescribed medication, while only 6% indicated otherwise.

### 3.4. Disclosure of TCAM use to HCWs, Interaction and Counselling

Out of those who reported TCAM usage, very few (7%) disclosed use to HCWs. Over half (58%) of the participants reported that it was not important to report the use of TCAM to HCWs, while 26% did not disclose because they were told not to use TCAM, and only a few indicated that it was due to fear of HCWs (9%) and poor communication (7%). Half (50%) of the participants reported that they did not know whether there is an interaction of TCAM use with medication, yet 90% reported to have been counselled on mixing treatment (Table 4).

Table 3. TCAM use, reasons, types, sources and costs among participants.

Variables	n	%
<b>TCAM use</b>		
Yes	52	15
No	284	85
<b>Duration of TCAM use</b>		
Average (days)	31±68	40
One month	21	48
One week	25	4
One year	2	2
Two days	1	4
Two weeks	2	2
Three weeks	1	
<b>What led to use of TCAM</b>		
Encouraged by relative and friends	40	76
Was feeling weak/medication did not help	4	8
Ran out medication	4	8
It's our practice	4	8
<b>Why are you using TCAM</b>		
Infectious diseases	12	23
Non-infectious diseases	40	77
<b>Types of African THM</b>		
<i>Dicoma Anomala</i> (Hloenya)	13	23
<i>Erioccephalus Punctulatus</i> (Sehala hala Matlaka)	7	12
<i>Aloiampelos Striatula</i> (Mohalakane)	7	12
<i>Allium Sativum</i> (Konofolo)	5	9
<i>Artemisia Afra</i> (Lengana)	5	9
<i>Helichrysum Caespitium</i> (Phate ea Ngaka)	3	5
<i>Bulbine Narcissifolia</i> (Khomoe ea Balisa)	3	5
Other	14	25
<b>Source of TCAM</b>		
Traditional healers	28	53
Relative/friends	8	16
Pharmacist	7	13
Open market	6	12
Individual selling	2	4
Garden	1	2
<b>Amount spent to access TCAM</b>		
≤7.36 USD	49	94
>7.36 USD	3	6
<b>Amount spent on TCAM higher than prescription amount</b>		
Yes	3	6
No	49	94

**Table 4. Disclosing TCAM use to HCWs and counseling on mixing treatment.**

Variables	n	%
<b>Disclosure of TCAM use to HCWs</b>		
No	43	83
Yes	9	7
<b>Reasons for not disclosing use of TCAM to HCWs</b>		
Not important	25	58
Was told not to use, but I keep on using them	11	26
Fear of HCWs	4	9
Poor communication	3	7
<b>TCAM use interact with medication</b>		
No	27	39
Yes	6	11
Don't know	21	50
<b>Counselled on mixing treatment with TCAM</b>		
No	34	10
Yes	302	90

**3.5. TCAM use and Associated Factors**

In Table 5, employment status ( $\leq 0.0001$ ) and alcohol use

( $\leq 0.0001$ ) were associated with TCAM use. No significant association was observed between TCAM and several demographics, as well as the disease treated.

**Table 5. Association of TCAM use with selected independent variables.**

Variables	All n=336	TCAM non-users n=284	TCAM users n=52	P-value
<b>Age (Yars)</b>				0.101
<30	40	29 (73)	11 (28)	
30-39	47	41 (87)	6 (13)	
40-49	66	54 (82)	12 (18)	
$\geq 50$	183	160 (87)	23 (13)	
<b>Gender</b>				0.902
Females	190	161 (85)	29 (15)	
Males	146	123 (85)	23 (15)	
<b>Marital Status</b>				0.360
Single	53	46 (87)	7 (13)	
Married	209	172 (82)	37 (18)	
Divorced	16	13 (81)	3 (19)	
Widowed	58	53 (91)	5 (9)	
<b>Education level</b>				0.305
Primary school	199	174 (87)	25 (13)	
Secondary school	73	60 (82)	13 (18)	
High school	31	24 (77)	7 (23)	
Tertiary education	33	26 (79)	7 (21)	
<b>Employment status</b>				$\leq 0.0001^{**}$
Unemployed	213	193 (91)	20 (10)	
Self-employed	29	17 (59)	12 (41)	
Student	14	10 (71)	4 (29)	
Employed	80	64 (80)	16 (20)	
<b>Smoking</b>				0.154
No	292	250 (80)	42 (14)	
Yes	44	34 (77)	10 (23)	
<b>Alcohol use</b>				$\leq 0.0001^*$
No	278	244 (89)	34 (12)	
Yes	58	40 (69)	18 (31)	
<b>Diseases Treated</b>				0.075
NCDs	100	89 (31)	11 (21)	
STIs	141	116 (4)	25 (48)	
Comorbidities	63	56 (20)	7 (14)	
Other	32	23 (8)	9 (117)	

\*significant difference ( $p < 0.05$ ).

**Table 6. Association of TCAM and THM usage with selected variables.**

Variables	AOR	95%CI	P-value
<b>TCAM usage</b>			
<b>Employment status</b>	1[Reference]		
Unemployed			
Employed	2.0	0.96 – 4.19	0.066
Self-employed	6.3	2.57 – 15.21	≤0.001*
Student	3.6	0.99 – 12.71	0.051*
<b>Alcohol use</b>	1[Reference]		
No			
Yes	2.8	1.38 – 5.58	0.004*
Variables	AOR	95%CI	P-value
<b>THM usage</b>			
<b>Employment status</b>	1[Reference]		
Unemployed			
Employed	2.4	1.11 – 5.10	0.027*
Self-employed	5.1	1.88 – 13.76	0.001*
Student	3.1	0.74 – 12.55	0.122
<b>Alcohol use</b>	1[Reference]		
No			
Yes	2.9	1.42 – 6.16	0.004*

\*Significant difference (p<0.05).

Univariate analysis (unadjusted) showed that at p<0.20, TCAM usage was associated with age (40-49 years and ≥50 years), an education level (high school), employment status (being a self-employed, student and employed) and alcohol use. While THM usage was associated with age (≥50 years), education level (high school), employment status (being self-employed, student and employed), smoking and alcohol use (results not shown). In Table 6, the adjusted model showed that self-employed participants were 6.3 times more likely [AOR=6.3, 95%CI; 2.57 – 15.21], and students were 3.6 times more likely [AOR=3.6, 95%CI; 0.99 – 12.71] to use TCAM than the unemployed, while alcohol users were 2.8 times more likely [AOR=2.8, 95%CI; 1.38 – 5.38] to use TCAM than non-users. Similar to THM usage, employed participants were 2.4 times more likely [AOR=2.4, 95%CI; 1.11 – 5.10] and self-employed participants were 5.1 times more likely [AOR=5.1, 95%CI; 1.18 – 13.76] to use THM than the unemployed, while alcohol users were 2.9 times more likely [AOR=2.9, 95%CI; 1.42-6.16] to use THM than non-users.

#### 4. DISCUSSION

This study determined the prevalence of TCAM usage and related factors among patients receiving healthcare in a health facility in Maseru District, Lesotho. Poor sociodemographic status in terms of education and employment status was observed. About 57% of the people are living below the national poverty line in Lesotho [53], with an unemployment rate estimated at 25.3%, roughly the same as South Africa's unemployment rate (25.2%) reported in the first quarter of 2013 [54], but now has increased to 32.5%, according to Statistics South Africa [55]. Despite gains made in the past two decades in improving education access rates, Lesotho continues to suffer from high dropout rates at the primary level and poor access rates at the secondary level, particularly in the rural

areas [56], in addition, to gender discrimination reported in the country, concerning education access [57]. Therefore, depressed socioeconomic status is still evident in Lesotho.

Most participants in this study were taking treatment for STIs, NCDs, comorbidities, and were on prescribed medication. Lesotho is highly affected by the HIV pandemic [58] and the country has an estimated adult HIV prevalence rate of about 23% and a high burden of NCDs [59]. Studies in Lesotho have reported a 42% of the patients living with HIV had at least one NCD [60], as well as hypertension, estimated at 35%, and diabetes at 2.5% [61]. Research on the management of STIs and NCDs has reported that 90% of the patients have received a combination of antihypertensive therapy [62] and 32% of patients having NCDs were on antiretroviral therapy [60]. Coexistence and management of STIs and NCDs have been confirmed in Lesotho [60], similar to South Africa [63, 64]. As well, tobacco and alcohol use have been reported in Lesotho [65, 66] and South Africa [67], lifestyle factors reported in the current study. Similar to other sub-Saharan countries, Lesotho is also experiencing its share on the convergence of IDs and NCDs, in addition to unhealthy lifestyle factors.

Our study showed a low prevalence of TCAM usage among patients receiving healthcare in Maseru, Lesotho. Almost a similar lower than 10% prevalence of TCAM use has been reported in several African countries, such as South Africa [40], and Ethiopia [11]. On the other hand, a high prevalence of TCAM use has been reported in South Africa, among patients attending primary health care facilities in KwaZulu Natal [49], while Peltzer *et al.* [39] reported 51.3% of TCAM use in the same province (KwaZulu Natal) and 29.6% reported to use herbal therapies. Variabilities in study designs, recall periods and seasonal variations in disease

frequency and the associated choice of treatment options may have influenced the prevalence of TCAM use in various countries, settings and population [37]. In addition, the method of data collection, and the type of sample chosen affect the prevalence estimates [68]. Under-reporting of TCAM use based on several reasons like the community's belief that traditional practice is an unlawful act or high prevalence of illnesses is believed to be treatable by modern care [11], which might be the case in the current study. Therefore, it could be that the participants in the current study did not want to tell the researchers that they were using TCAM because they were aware that the facility disapproves concurrent use of TCAM with western treatment.

The current study also observed a very low disclosure rate of TCAM use to HCWs. This might impact negatively on the prevalence estimate in this population, considering that medicinal plants are used extensively in Lesotho, especially for the treatment of STIs [48]. In SSA, the non-disclosure rate of TCAM use to healthcare providers ranged from 55.8% to 100%, with an average of 83.0% [37]. Reasons for non-disclosure of TCAM usage by patients in this study were because they were told not to use TCAM, fear of HCWs, and poor communication. Fear of receiving improper care has been reported as the main reason for not disclosing their TCAM use status to their healthcare provider [69]. Another reason for the non-disclosure of TCAM use was the conventional medicine provider's negative attitude with perceived lack of support and understanding that lead to mistrust and stigma from conventional providers in Nigeria [70] and South Africa [71]. Patients in other countries, such as in Ethiopia was that their conventional healthcare providers lack knowledge about TCAM was another reason for not divulging their TCAM use status [35]. Healthcare providers' lack of enquiry about TCAM use was also cited among patients in Nigeria [8]. Given the potential for adverse reactions and drug interactions related to TCAM use, health care providers' awareness of TCAM use is crucial to optimize patient care [72]. Hence, health care providers should be informed about this to include inquiring about herbal and TCAM use for both HIV-related illnesses and other comorbid conditions as part of their history taking and clinical assessments, as Langlois-Klassen *et al.* [27] have suggested.

The vast majority of patients in our study reported a high degree of satisfaction with the medical treatment they were receiving, similar to the findings in a study of Petzer *et al.* [39] in South Africa. However, treatment challenges due to long queues, shortage of medication and travel costs to the hospital were reported in this study, similar to other studies in Ghana [20], Uganda [19, 21] and Nigeria [18]. In the rural areas, one sometimes travels for several days before finding the nearest dispensary and pharmacy or health clinic for consultation. In addition to losing working days, transport fares the high cost of medicine must also be taken into consideration [24].

THM was a widely used healing type of TCAM system in this study, which might be centered on the dissatisfaction with conventional healthcare [17]. The current study further showed that the most used THM were *Dicoma Anomala*, *Eriocephalus Punctulatus*, *Aloe Ferox mill*, *Allium Sativum* and *Artemesia*

*Afra*. In Lesotho, a considerable proportion (69.9%) of HIV-positive people use medicinal herbs, and *Allium sativum* and *Dicoma Anomala*, have been reported to be the most commonly used medicinal herbs in this population [5]. *Allium sativum* is known to pharmacokinetically reduce the serum concentration of protease inhibitors (PIs), such as saquinavir and indinavir [27, 73]. *Dicoma Anomala* has been reported as an inhibitor of cytochrome-P enzymes and may interact with drugs that use these cytochrome-P enzymatic pathways [5, 74]. In addition, the use of *Aloiampelos Striatula* and *Bulbine narcissifolia* reported in the current study have been previously reported in Lesotho for the treatment of several ailments [6]. Similar to South African studies, traditional medicines such as *Aloe ferox mill*, *Hypoxis hemerocallide* (*i.e.* African potato) and *Aloe vera* have been reported to be used to meet primary health care needs [75, 76]. These results suggest the possibility of the interaction between TCAM usage, especially with THM, and conventional medicine, considering the high use of THM, while half of the participants did not know whether there is an interaction of TCAM use with conventional medication. This poses a serious concern in this facility because the use of THM is implicated to decreased effectiveness, toxicity and non-adherence to conventional medicines, although the use of TCAM was low in this study.

The sources of these medicinal plants reported in this study were mostly traditional healers, followed by friends/relatives, pharmacists and open market. Traditional healers remain popular because they are accessible, affordable, adaptable and culturally familiar, and thus acceptable and respected in the wider community [3]. Herbalists and traditional healers in Lesotho continue to dispense a wide range of topical herbal medicinal preparations for various treatments [5, 7, 48, 60], while the role of the pharmacist is to provide medical information on these compounds to promote the safe use of herbal products in combination with conventional medicine [6]. These medicinal plants were used to treat ailments, such as IDs and non-IDs, including STIs, hypertension, body discomfort, bile, and flu in our study. Adoption of TCAM by individuals to prevent or treat common diseases, such as flu and common cold, headaches, indigestion and stomach problems, has been reported in Africa [30]. TCAM products have been utilized to treat NCDs, such as hypertension and diabetes in South Africa [31], and Guinea [32], as well as, cancer [8, 36], asthma [33], and HIV/AIDS [5, 39, 71]. The fact that medicinal plants are still viewed as the most cost-effective and accessible therapy by many rural dwellers in Lesotho cannot be denied, as mentioned before [6]. Our findings suggested low costs for TCAM, which was indicated to be lower than purchasing prescribed medication.

Chi-square and univariate analyses showed that age, education level, employment status, smoking and alcohol use were associated with TCAM and THM usage. These results might reflect access issues among the older persons, as well as the cultural significance of some TCAM modalities. Although contrary results exist on education as a predictor of TCAM, in this study, the more educated participants seem to be using TCAM. This could be because participants were more likely to be able to afford TCAM, as well as their prescribed medications. On the other hand, in the adjusted model, both



TCAM and THM usage was associated with employment and alcohol use. Self-employed participants were 6.3 times more likely, while students were 3.6 times more likely to use TCAM than the unemployed were. This might be because these participants, especially those who were self-employed, had income, which allowed them to buy the product than the unemployed.

Similarly, with THM usage, employed participants were 2.4 times more likely, while self-employed participants were 5.1 times more likely, to use THM than the unemployed. This also indicates the possibility of income enabling them to purchase THM, same as the above suggestion. In addition, the participants might have had access to herbal medicines freely from the bush. Literature documents that generally, Basotho are knowledgeable on the usage of numerous medicinal plants in the treatment of various disorders [77, 78].

Age, gender, marital status, and level of education, health status, income status, religion and ethnicity have been associated with TCAM use [37], including a lower socioeconomic status [40, 78] and those who are unemployed and unskilled [40, 41] when compared with non-users. Both males and females have been reported to use TCAM alike [9]. In rural areas, TCAM use is associated with older age [42]. Literature documents that TCAM users reported in many studies to be more common in individuals with a lower socioeconomic status [9, 40]. Other studies have reported TCAM users to have little or no formal education [40, 42]. Alcohol users were 2.8 times more likely to use TCAM than non-users, while alcohol users were 2.9 times more likely to use THM than non-users. Data on TCAM usage and lifestyle factors, such as tobacco and alcohol use is limited.

#### 4.1. Limitations of the Study

The current study had some limitations. First, the data came from a survey in one health facility limited by permission to access the other two hospitals in the district, which would not be representative of the entire population of patients seeking healthcare in Lesotho. Additionally, the findings may not be generalizable to the general population because this study used hospital patients. Second, the cross-sectional study design did not permit an investigation of the cause-effect relationship between TCAM usage and related factors. Third, many of the findings were self-reported, which might have led to under-reporting; hence, these variables should be interpreted with caution. Fourth, convenience sampling might have introduced some form of bias. Probably it would be suitable if we could have used a larger sample size than what we have used in the current study, to give greater relevance to the variability of TCAM usage. Finally, recall bias might have limited patients to report on some questions related to TCAM usage, or they may not have revealed the real extent of TCAM usage mainly. This might be due to social desirability, or fear of disclosing to a researcher, since very few versus many disclosed TCAM usage to HCWs. In addition, the fact that the first author (TM) is an HCW in this facility and was in charge of project management, including data collection, might have encouraged non-disclosure and under-reporting from the participants. This might be the case with the use of

dichotomous questions in this study. Studies with follow-up design are needed to determine the association of TCAM usage and demographic factors and diseases in Lesotho. However, the study has shed light on TCAM usage and related factors among patients receiving healthcare in a hospital in Maseru District, Lesotho.

#### CONCLUSION

TCAM usage appears relatively low in the study population. However, the THM system was widespread and this emphasizes the substantial role as a source of basic healthcare in the study populations in Lesotho. This study reported several medicinal plants used by patients for treatment. Stakeholders involved in healthcare should be mindful of the critical role of TCAM usage in healthcare service delivery in Lesotho. Prospective cohort studies on TCAM usage are urgently required to provide information regarding proper practice, safety, efficiency and harmonized healthcare in the country. Furthermore, it is worrying that most participants in this study reported have been counselled on the use of TCAM, yet a significant number did not know or consider TCAM to interact with medication.

In addition, patients' disclosure rate of TCAM usage to HCWs was low and this warrants concern over communication between patients who are using TCAM, and their healthcare providers. Barriers to the disclosure of TCAM usage should be established, as well, HCWs need to improve communication with patients as a routine. The facility should be less harsh on TCAM use and encourage patients to disclose exactly what they are using so that they can be advised over whether there is a conflict between the prescribed and herbal medications they are taking. The study further showed associations of TCAM usage among participants who were employed and using alcohol, in addition to other factors, such as older age and high school education level. It is clear that although Western medicine is generally accepted throughout Africa, it has not replaced, but rather augmented indigenous health approaches, concurring with Mushapa *et al.* [3].

#### ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All procedures involving human subjects were approved by the sefako makgatho health sciences university research and ethics committee [SMUREC/H/22/2019: PG], South Africa. Further permissions to conduct the study were obtained from the Lesotho Ministry of Health (REF: ID169-2019), and the governance of a hospital used in this study.

#### HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All human research procedures were followed in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

#### CONSENT FOR PUBLICATION

Written informed consent was obtained from each participant before the study.

## STANDARDS OF REPORTING

STROBE guidelines and methodologies were followed in this study.

## AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available from the corresponding author [P.M.] upon reasonable request.

## FUNDING

None.

## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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