UNIVERSITY of RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES, SCHOOL OF MEDICINE AND PHARMACY, INTERNAL MEDICINE DEPARTMENT

KNOWLEDGE AND ATTITUDES OF HEALTH CARE PROVIDERS TOWARDS THE USE OF TRADITIONAL AND COMPLEMENTARY/ALTERNATIVE MEDICINE IN RWANDA

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A dissertation submitted to College of Medicine and Health Sciences, School of Medicine and Pharmacy in partial fulfillment of the requirement for the award of a master's degree in Internal Medicine, University of Rwanda

DEDICATION

To the almighty God,

To my dear mother,

To my lovely wife and Son,

To my supervisors,

To my colleagues,

To the patients,

This work is dedicated with pleasure.

DECLARATION

I, NIYONSHUTI Jean Paul, to the best of my knowledge, hereby declare that the work presented in this dissertation entitled '**Knowledge, attitudes of health care providers towards the use of traditional, complementary/alternative medicine in Rwanda** 'is entirely my own and original work and it has never been presented or submitted in whole or in part to any University. It is submitted to College of medicine and health sciences in partial fulfillment of the academic requirement for the award of Master's Degree in internal medicine, University of Rwanda.

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May all receive my sincere gratitude!

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ABSTRACT

Background

The use of traditional, complementary, and alternative medicine (TCAM) is widespread around the world, especially in low-income countries due to cultural differences and difficulty accessing conventional medicine.

Aim: This study was designed to evaluate the knowledge, experience, and thoughts of healthcare providers (HCPs) towards TCAM use.

Method: It is cross-sectional research that was carried out on HCPs working in healthcare settings in Kigali and Southern Province. It involved 232 participants. The data were collected using Google forms.

Results: Among 232 participants included in this study, 76.7% were of the male gender, Seventy-seven percent were in the young age group of 18-35 years, 80% were residing in the urban area and fifty-three percent of responders were medical doctors followed by nurses (34.9%). The knowledge of HCPs on TCAM was graded moderate to low in 91.3% of respondents and they were aware mainly of diet supplements (93.53%), prayers, and spirituality (79.31%). The knowledge was acquired mainly from media (54.7%) followed by relatives/friends (53.4%) and parents (44%). Forty-six percent of the participants responded that TCAM can be used to treat musculoskeletal pain while twenty-five percent of participants responded that TCAM can be used to treat hypertension. Considering the experience of HCPs in using TCAM, nearly forty percent of the participants responded that they used TCAM as a preventive measure for themselves while 47.8% of participants reported that they ever used modalities of TCAM and among 42.6% of respondents who used TCAM for their illness, they used diet supplements (62.6%), herbal medicine (58.59%), and prayers /spirituality (24%). Of all participants, the minority (32.76%) recommended TCAM to

patients in their practice, and few of the respondents (16.3%) said that they can recommend TCAM to patients consulting conventional medicine; however, there was no connection between the characteristics of the participants and the use or recommendation of TCAM. Sixty percent of participants suggested including TCAM in the curricula of universities that teach health-related fields.

Conclusion: Although TCAM is being used by the general population and health care providers, the knowledge among HCPs on TCAM is graded from moderate to low. Diet supplements and phytomedicine are commonly used modalities and only a few HCPs would recommend TCAM to patients. But the majority of HCPs recommend that TCAM should be taught in health-related fields at universities. Furthermore, evidence-based studies are needed to assess the effectiveness and limitations of TCAM.

Keywords: Traditional, complementary, alternative medicine, attitudes, knowledge, health care providers, Rwanda.

ACRONYMS

AIDS: Acquired Immunodeficiency Syndrome

CAM: Complementary and Alternative Medicine

CI: Confidence Interval

CMHS: College Of Medicine and Health Sciences

EBM: Evidence-Based Medicine

GP: General Practitioner

HCP: Health Care Providers

HCW: Health Care Workers

HIV: Human Immunodeficiency Virus

HP: Health Professionals

IRB: Institutional Review Board

LDC: Least Developed Countries

OR: Odds ratio

SD: Standard Deviation

SPSS: Statistical Package for the Social Sciences

SSA: Sub-Saharan Africa

TCAM: Traditional Complementary and Alternative Medicine

TCM: Traditional and complementary medicine

THM: Traditional Herbal Medicine

TM: Traditional Medicine

UK: United Kingdom

UR: University Of Rwanda

US: United States

USD: United States Dollar

WHO: World Health Organization

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CHAPTER 1. INTRODUCTION

1.1. Background

As defined by WHO, traditional medicine encompasses all the knowledge, capabilities, and practices based on the theories, beliefs, and experiences indigenous to various cultures, whether explicable or not, and they are used to promote physical and mental health, and to prevent, diagnose, and treat sickness (1).

Also, complementary medicine or "alternative medicine" encompasses a wide variety of healthcare methods that are not part of country tradition or conventional medicine and are not fully integrated into the dominant health system (1).

It was found that there was an increase in CAM use in US national survey where there was an increase of 8.3% of CAM use from 1990 to 1997 and extrapolations to the US population suggested that overall visits to practitioners of alternative medicine increased up to 629 million, surpassing visits to all US primary care doctors at that time and the cost of professional services in alternative medicine grew to USD 21.2 billion (2).

According to WHO, eighty-eight percent of all countries are approximated to use traditional medicine, like acupuncture, yoga, herbal remedies, indigenous therapies, and others (3).

Also, another study revealed that the global prevalence of CAM use ranges from 9.8 to 76.0% and varies widely by nation (4). This was also revealed by the prevalence of TCAM provider use during 12 months in 32 countries which was 26.4%, ranging to more than 50% in China mainland, the Philippines, and the Republic of Korea and from under 10% in Bulgaria, Poland, and Slovenia (5).

Again, TCAM use in Sub-Saharan Africa ranged from nearly five percent in urban Ethiopian settlements to 94% in semi-urban Nigerian and Ethiopian communities, with an estimated

average of 58.2%. Phytomedicine was the most popular TCAM, the next was faith-based healing techniques (spirituality/prayers) and mind-body therapies (meditation, traditional bone setting relaxation, massage, and yoga) (6). These findings were also remarked in one Uganda sub-country where the use of TM was 68.4% (7). Furthermore, another study done in SSA on hypertensive patients showed that the reason for THM use included the ineffectiveness of allopathic medications, their comparatively expensive cost, social-cultural practices and/or knowledge of herbs, the difficulty accessing healthcare settings, and worries regarding the safety of allopathic treatment (8).

It was also found that CAM use is high, especially among a population with chronic diseases in a study conducted in Nigeria (9). This has been found in a study done in 12 African countries which revealed that 24% of hypertensive participants admitted to using TM, with usage rates varying by country from 10% in Congo to 48% in Guinea (10). This is also supported by a systematic review done on the SSA population which showed that THMs are used by more than one-third of individuals with hypertension and 50% of these patients use THMs in conjunction with allopathic medicine (8). Again, a study done in Democratic Republic of Congo on hypertensive patients found that the prevalence of CAM use was 26.1% (95% CI: 20.7% - 31.8%) and misperceptions about the ability to treat hypertension and encounters with drug side effects were factors that contributed to the usage of CAM (11). Furthermore, other findings from a systematic review showed that CAM is frequently utilized in patients with cardiac conditions and its use varies significantly (4%-61%) with a significant majority of CAM users thinking it has therapeutic advantages (12).

Indistinguishably, TCAM is used in other chronic diseases like rheumatologic conditions and cancer as revealed by a study done in Mexico which found that 59.2% of the study population with musculoskeletal diseases were using CAM (13). Similar findings were revealed by another study done on Australian women aged between 60-65 which showed that 75.2% of participants had prescribed themselves one or more CAM therapies for backache in the prior twelve months and the most common modalities utilized were supplements, minerals, vitamins, yoga/meditation, herbal remedies, and aromatherapy (14).

Another study on patients with cancer showed that conventional cancer treatment in conjunction with the use of TCAM was observed at a median of 26.7% of respondents reported combining the two systems of medicine (15) and a systematic review of patients with cancer showed that the combined prevalence for using CAM ranged 25% to 80% of participants for the management of cancers with natural products, including minerals, vitamins, herbal products, and relaxation techniques being the most common types of CAM used and the idea of using CAM was reportedly their assistance in healing and improving health (16). Furthermore, another study done on Tunisian patients with cancer found that 85% used CAM, and wild herbs were the most widely utilized alternative therapy (67.7%) and the source of information was mainly media (17). Again, non-pharmacological complementary therapy has been noted to contribute to enhancing the quality of life of patients with cancer in another study (18).

In addition, a systematic review in diabetics demonstrated the effectiveness of natural remedies for controlling blood sugar as well as a combination with an integrated approach of yoga therapy, mind-body techniques such as auditory guided imagery, tai chi exercises, qigong, and relaxation (19).

The use of TM was again observed in pregnant women, as seen in a systematic review conducted in 12 African countries where up to 80% of African women reported using TM, with herbal medicine being the most often utilized type for treating problems associated with pregnancy (20). This was also seen in Rwanda, where a study done in Nyamasheke district estimated average utilization rates of phytomedicine during pregnancy ranged from 50 to 80% (21).

Regarding health care providers, a study conducted in Trinidad and Tobago on HCPs revealed that nurses (92.4%), doctors (64.9%), pharmacists (83.3%), and other HCPs (77.1%) reported using CAM; most of them (50-75%) claimed to have a decent knowledge of spiritual, herbal alternative, and physical types of CAM (22). Again, a study done in New Zealand indicated that the prevalence of CAM practice ranged from 20.3% to 30.1% among general practitioners, and

82.3% referred patients to CAM practitioners; when treating pregnant women, 48.4% of physiotherapists practiced acupuncture and 37.3% of midwives recommended CAM (23).

Therefore, considering widespread TCAM use by both the general public and healthcare professionals, who have different perspectives on its use as found in many studies and that in Rwanda little is known about attitudes, experience, and knowledge of HCPs towards the use of TCAM, we want to conduct this study that will close this gap.

1.2. Problem Statement

TCAM is used by Rwandans mainly due to beliefs and cultural aspects but also trying other modalities of treatment rather than conventional medicine.

In Rwandan society, conventional medicine came first when a person gets sick mainly due to the availability of community health insurance but also some, before consulting the health facilities; consult nearby traditional healers is done when they think that the patient is poisoned. Besides, there is widespread information in the population that some illnesses like liver diseases, kidney conditions, infertility, erectile dysfunction, chronic musculoskeletal pain, and others are not cured by conventional medicine pain hence some prefer to first consult traditional healers or they associate conventional medicines with TCAM treatment or they first try conventional medicine treatments and if no improvement they consult TCAM practitioners. Also TCAM use has been associated with negative outcome in diseases that should have been managed in conventional health facilities.

Therefore, we performed a cross-sectional study to assess the knowledge, experience and attitudes of health care providers on the utilization of TCAM in Rwanda.

1.3. Objectives

1.3.1. Main objective

Examine the knowledge and attitudes of HCPs towards the use of TCAM in Rwanda.

1.3.2. Specific objectives

1. Evaluate the knowledge of HCPs towards TCAM.
2. Describe HCPs' experience with TCAM use.
3. Describe the attitudes of HCPs health care providers towards TCAM nowadays and in the future.

1.3.3. Research questions

1. Are HCPs aware of TCAM and its different modalities?
2. What is the experience of HCPs toward TCAM use?
3. What are the attitudes of HCPs towards TCAM nowadays and in the future?

1.4. Study Significance

It will serve as an indicator of TCAM value in our society and will reveal the perspectives of HCPs on its use.

CHAPTER 2. LITERATURE REVIEW

TCAM is used by the general population and health care providers, consequently, numerous studies have been conducted to evaluate the knowledge and perspectives of HCPs toward the use of TCAM.

There is a study done in Turkey. It revealed that physicians'CAM knowledge levels were low (60.8%), however, they wished to learn more (74.4%), and the majority (96.5%) had no training in CAM. About half of them thought CAM was effective. GPs wanted to know more about acupuncture and herbal medicine, and 29% of GPs used CAM modalities on their own (24).

Again, a study done on HCPs in Iran found that 79% of respondents felt favorable about CAM; however, 73.6% had a limited level of knowledge. Hydrotherapy (75.2%), exercise therapy (75.4%), and herbal treatment (93.2%) were the CAM therapies that were most frequently employed. Main justifications given by HPs for using CAM modalities include fewer adverse effects compared to medical therapies (57.4%), affordable than medical therapies (34.9%), a non-complicated disease not requiring clinic consultation (32.1%), and easier access rather than medical services (30.6%) (25).

Also, findings from a study done in New Zealand revealed that about 82.3% of GPs refer patients to CAM practitioners, and 25% engage in CAM practice. GPs believed that the most effective and widely used CAM modality was acupuncture. Up to 66.7% of GPs agreed that CAM ought to be included in medical curricula, and approximately 58% of GPs and plunket nurses wished to learn more about CAM (23).

A study done on Bahrain physicians revealed that the majority (64.6%) thought they had just basic knowledge of herbal remedies with experience being the main source of knowledge in 50% of the participants then the academic studies (28.1%) and extra sources such as the internet (21.9%) (26).

A study done on Hong Kong registered nurses showed that friend (57.2%), newspaper and magazines (64.2%), and books (43.9%) were their most frequent sources of CAM information. About three-quarters of participants thought that CAM ought to be incorporated into conventional medicine (27).

Another study conducted on 210 Ghanaian nurses found that the mean score for knowledge of CAM therapies was modest (mean ± SD, 38.39 ± 10.11; possible range, 18–72) and it was based on individual experiences (28).

In a study done on South Africa HCW, the majority (81%) were unsure of whether TCAM could be used or not primarily as preventive medicine and 8.9% agreed that the primary application of TCAM is in preventive medicine (29).

In a study done in US, the majority (83%) of the nurse professionals recommended CAM to their patients; the most common being nutritional therapy, herbal medicine, massage therapy, chiropractic care, and acupuncture or acupressure; with around 24% said they learned about these treatments through official nurse practitioner schooling. Instead, more than 60% turned to their own experiences, as well as lay and professional periodicals, for this information (30).

A study done in Nigeria that involved resident doctors, revealed that none of the respondents believed herbal therapy could fully heal a patient; nevertheless, some respondents (41%) believed herbal medicine was beneficial in treating chronic conditions (31).

In a national survey that involved registered health care providers in Sweden. It was found that massage and acupuncture were CAM therapies that > 40% of the participants suggested. Studies and knowledge about CAM were admired as minor or none at all by 95.7%, and 99.2% respectively. About eighty percent of respondents thought it was crucial to know CAM, and the majorities (72.8%) were interested in reading the findings of CAM studies. Over half (55.8%) of participants had a favorable attitude toward studying such therapy (32).

A study done in Germany's oncology department indicated that one-third would employ CAM on cancer patients, and 2.5% of doctors and 9% of nurses believed CAM is just as effective as a conventional cancer treatment. About three-quarters of participants felt they were not sufficiently knowledgeable about CAM for their professional work (33).

A study done in a university health facility in Beirut on physicians and nurses revealed that only 33% would transfer if there was a CAM practitioner available, but 61% have never sent a patient to one and the majority (62%) of physicians thought that incorporating evidence-based CAM therapies would increase patient satisfaction and 66% believed that providing CAM would draw in more patients. Among the nurses that answered, 50% said they would probably suggest a CAM practitioner to a patient if one was disponible, although 78.7% had never done so (34).

Another study conducted on Australian nurses revealed that the majority (67%) would transfer to a complementary practitioner. Additionally, it was shown that respondents had favorable attitudes toward complementary remedies, with 85% of them thinking they improve quality of life and nearly 1% claiming that they are useless (35).

Again, a similar study conducted in Mexico revealed that 28 percent of medical personnel, including 26 percent of doctors, have suggested or prescribed medicinal herbs to their patients. While the majority of health professionals (73%) agreed that they ought to receive academic guidance about the use and prescription of medicinal herbs. About half of doctors have used medicinal herbs as an alternative medicine for several disorders (36).

A study conducted in Trinidad and Tobago that involved 192 physicians revealed that the majority (60.4%) thought herbal medicines were good for health. Participants exhibited high acceptance levels (mean = 5.69 ± 0.29 points or 40% of total possible score) and inadequate knowledge (mean = 7.77 ± 0.56 points or 15% of total possible score). Forty percent of participants acknowledged having utilized herbs in the past and 76.9% said they were happy with the results. However, among 27.1% of participants who suggested using herbs with their patients, only 15.1% identified at least one well-known herb-drug interaction (37).

A study done in South Korea indicated that 35 medical schools (85.4%) had CAM courses that were officially taught, while 32 schools (91.4%) gave academic credit for courses related to CAM and introduction to CAM (88.6%), traditional Korean medicine (57.1%), homeopathy and naturopathy (31.4%), and acupuncture (28.6%) were the most common courses. Educational methods included lectures given by academics and practitioner demonstrations; therefore TCAM was becoming more well-liked as a result of patients' rising demand, and students' eagerness to study it (38).

CHAPTER 3. METHODOLOGY

3.1. Study setting

The study was conducted on health care providers working at health facilities and pharmacies in Kigali and the southern province.

Kigali is the capital of Rwanda and the most populated in the country, since, it is an entry location for many cultures from abroad including some modalities of complementary and alternative medicine. The southern province was selected due to its picture of the rural population.

3.2. Study design

Enrollment of health care providers was done for 2 months and looked for desired variables within that population. Therefore it was conceived as a cross-sectional study.

3.3. Variables

Independent variables include age, sex, occupation, residence, and religion.

Dependent variables include grades of knowledge of TCAM, knowledge of different TCAM modalities, knowledge of conditions that are treated with TCAM, experience with TCAM use, and attitudes towards TCAM use in the past, today, and in the future.

3.4. Sample size

We enrolled 232 HCPs who accepted to participate in the study and filled the whole questionnaire.

3.5. Study population

Health care providers including doctors, nurses, midwives, pharmacists, psychologists, physiotherapists, and nutritionists actively working in health facilities were allowed to participate in the study.

3.6. Inclusion criteria

HCPs that were actively working in health facilities in Kigali and southern province and willing take part in the research.

3.7. Exclusion Criteria

Health care providers that are not actively working

Refusal to participate in the study

3.8. Data collection

HCPs from different health facilities in Kigali and the southern province who accepted to take part in the study were given Google forms to fill out.

The Google forms were sent to HPs whom their email or phone numbers were available.

The consent was obtained by asking the participant if he/she wants to participate in the study.

Demographic data including the age, sex, residence, religion of participant, and occupation were collected from study participants.

We collected information on the knowledge of health care providers on TCAM including how they grade their knowledge on TCAM and how they acquired that knowledge.

We also collected data on whether the HCPs know some conditions that are treated by TCAM to some extent, the knowledge of different modalities of TCAM, whether participants have ever used any TCAM modality, the information on whether TCAM has been used as prevention of some diseases and TCAM modalities commonly used was also collected.

We finally collected whether the participants have ever recommended or can recommend the patients to use TCAM and whether he/she can recommend it to be included in academic curricula of health-related fields.

3.9. Data Analysis

Data were collected using online Google forms. After collecting the data, the variables were analyzed using SPSS version 25, P-value less than 0.05 was considered to indicate a difference and association between variables, and tables were used to present the results.

3.10. Ethical Considerations

Participants' confidentiality was protected; every participant was assigned a specific number.

This project was presented for review and approval by the UR ethical and research committee at

the College of Medicine and health science (CMHS/IRB) with an ethical approval notice 353/CMHS IRB/2022.

CHAPTER 4. RESULTS AND DISCUSSION

4.1. Results

In our study, we are describing a total of 232 HCPs who took part in the study and we collected their demographic characteristics, their knowledge of TCAM, their experience and attitudes toward TCAM use.

4.1.1. Demography

The age of our study population was ranging from 23 to 63 years with a median age of 32 years and the majority of the respondents (77.16%) were in the young age category of 18-35 years. Seventy-six percent of the respondents were males and 80.1% were residing in urban areas. Fifty-three percent of the respondents were medical doctors followed by 34.9% of nurses. The majority of participants (94.8%) were Christians. (Details are provided in table 1).

Table 1: Socio-demographic characteristics of study respondents

Characteristics	**N**	**%**
Age in years		
Median (Q1-Q3)	32 (29-35)	
Age categories		
18-35	179	77.16
36-45	44	18.97
46-63	9	3.88
Gender		
Male	178	76.72
Female	54	23.28
Residence		
Rural	46	19.83
Urban	186	80.17

Profession		
Midwife	4	1.72
Doctor	124	53.45
Nurse	81	34.91
Pharmacist	17	7.33
Physiotherapist	3	1.29
Psychologist	3	1.29
Religion		
Christian	220	94.83
Muslim	2	0.86
No religion	6	2.59
Other	4	1.72

4.1.2. Assessment of knowledge of HCPs towards TCAM

Ninety-one percent of the respondents were found to have a moderate to low level of knowledge of TCAM.

Ninety-three percent of the respondents were aware of dietary supplements, followed by prayers/spirituality (79%), massage (78.8%), phytomedicine (72.4%), and reflexology (67.6%). The knowledge of TCAM was acquired mainly from media (54.7%) followed by relatives/friends (53.4%) and parents (44%). (Details are provided in table 2).

Table 2: Respondents' knowledge of TCAM

Characteristics	n	%
Grade of knowledge of TCAM		
High	20	8.62
Moderate	108	46.55
Low	104	44.83
HCP awareness on TCAM modalities		
Dietary supplements	217	93.53

Prayers/Spirituality	184	79.31
Massage	183	78.88
Phytomedicine	168	72.41
Reflexology	157	67.67
Meditation	136	58.62
Yoga	130	56.03
Acupuncture	91	39.22
Chinese and oriental medicine	83	35.78
Main Source of knowledge on TCAM		
Parents	102	44
Relative/friends	124	53.4
Books	67	28.9
Media	127	54.74
Other sources	44	19

4.1.3. Assessment of knowledge of HCPs on diseases managed by TCAM

In all participants, the majority (46.5%) responded that TCAM can be used to treat musculoskeletal pain, followed by 25% who responded that TCAM can be used to treat hypertension, and 22.4% responded that TCAM can be used to treat allergy conditions and below 10% of the participants reported that TCAM can be used to treat Hepatitis B, cirrhosis, hepatitis C, and cancer. (Details are provided in table 3).

Table 3: Knowledge of HCPs about conditions that can be treated using TCAM

Condition	**n**	**%**
Hepatitis B		
No	159	68.53
Yes	17	7.33
May be	56	24.14
Hepatitis C		
No	159	68.53

Yes	17	7.33
Maybe	56	24.14
Cirrhosis		
No	177	76.29
yes	17	7.33
Maybe	38	16.38
Hypertension		
Maybe	66	28.45
No	108	46.55
Yes	58	25.00
Musculoskeletal pain		
No	56	24.14
maybe	68	29.31
Yes	108	46.55
Cancer		
No	176	75.86
May be	43	18.53
Yes	13	5.60
Allergy conditions		
Yes	52	22.41
May be	70	30.17
No	110	47.41

4.1.4. Association between HCPs' characteristics and level of knowledge

Age was found to be statistically associated with the grade of knowledge of TCAM among the study respondents where respondents who are in the age category of 18-35 years (youth) were

found to be 11.6 times more likely more knowledgeable compared to those who are in the age category of 46-63 years (OR=11.62; 95% CI: 1.42-94.8; p= 0.022).

There was no difference that is statistically significant in the grade of knowledge of TCAM across gender (p=0.948), residence (p=0.592), religion (p=0.340), and profession (p=0.367). (Details are provided in table 4).

Table 4: Association between participants' characteristics and level of knowledge about TCAM

Predictors	Grade of knowledge of TCAM		OR (95% CI)	P value
	Low	Moderate/High		
Age in years				
18-35	73 (40.78%)	106 (59.22%)	11.62 (1.42-94.8)	0.022
36-45	23 (52.27%)	21 (47.73%)	7.30 (0.81-63.42)	0.071
46-63	8 (88.89%)	1 (11.11%)	Ref	
Gender				
Male	80 (44.94%)	98 (55.06%)	Ref	
Female	24 (44.44%)	30 (55.56%)	1.02 (0.55-1.88)	0.948
Residence				
Rural	19 (41.30%)	27 (58.70%)	1.19 (0.62-2.29)	0.592
Urban	85 (45.70%)	101 (54.30%)	Ref	
Profession				
Doctor	59 (47.58%)	65 (52.42%)	Ref	
Other*	45 (41.67%)	63 (58.33%)	1.27 (0.75-2.14)	0.367
Religion				
Christian	97 (44.09%)	123 (55.91%)	1.77 (0.55-5.77)	0.34
Other**	7 (58.33%)	5 (41.67%)	Ref	

Ref: Reference category; Other: midwife, nurse, pharmacist, physiotherapist, and psychologist; Others**: Muslim, no religion, and others*

4.1.5. Evaluation of HCPs' experience and attitudes toward TCAM use

Considering the experience of health care providers in using TCAM, nearly half (47.8%) of participants reported having used TCAM modalities, and 42.6% who have used modalities of TCAM when they were sick, the majority (62.6 %) used dietary supplements followed by herbal drugs (58.6%) and prayers (54.5%). Of all participants, nearly one-third (32.7%) recommended TCAM to patients in their practice. Sixteen percent of participants responded that they can recommend TCAM to patients consulting conventional medicine. Thirty-seven percent of participants responded that they used TCAM as a preventive measure. Around 61% of the respondents recommended that TCAM can be on the curricula of the university teaching health-related fields. (Details are provided in table 5)

Table 5: HCPs' experience and attitudes toward TCAM use

Characteristics	N	%
Participants who ever used TCAM		
Yes	111	47.84
No	121	52.16
Participants who used TCAM when they were sick		
Yes	99	42.67
No	133	57.33
Type of modalities used (n=99)		
Phytomedicine (herbal medicine)	58	58.59
Dietary supplements	62	62.6
Reflexology	11	11.1
Prayers	54	54.5
Massage	28	28.3
Yoga	12	12.1
Meditation	15	15.2
Chinese and oriental medicine	4	4

Acupuncture	3	3
Participants who recommended TCAM to patients in their practice.		
Yes	76	32.76
No	156	67.24
Participants who can recommend TCAM to patients consulting conventional medicine.		
Yes	38	16.38
Maybe	121	52.16
No	73	31.46
Participants who used TCAM as a preventive measure while in a health profession.		
Yes	88	37.93
No	144	62.07.
Participants who can recommend TCAM to be in the curricula of health-related fields at university		
Yes	141	60.78
maybe	53	22.84
No	38	16.38

4.1.6. Association between participants' characteristics and TCAM use

The participants' characteristics and use of TCAM did not show any significant statistical correlation (P value >0.05)

Table 6: Association between participants' characteristics and TCAM use

Predictors	used TCAM		P value
	No	Yes	
Age			
18-35	91 (50.84%)	88 (49.16%)	0.76
36-45	25 (56.82%)	19 (43.18%)	

46-63	5 (55.56%)	4 (44.44%)	
Gender			
Male	94 (52.81%)	84 (47.19%)	0.717
Female	27 (50.00%)	27 (50.00%)	
Residence			
Rural	25 (54.35%)	21 (45.65%)	0.74
Urban	96 (51.61%)	90 (48.39%)	
Profession			
Doctor	65 (52.42%)	59 (47.58%)	0.931
Others*	56 (51.85%)	52 (48.15%)	
Religion			
Christian	114 (51.82%)	106 (48.18%)	0.66
Other**	7 (58.33%)	5 (41.67%)	

4.1.7. Association between participants' characteristics and recommendation of TCAM

The participants' characteristics and the recommendation of TCAM did not show any significant statistical correlation (P value >0.05)

Table 7: Association between participants' characteristics and recommendation Of TCAM

Predictors	Recommended TCAM		P value
	Yes	No	
Age			
18-35	116 (64.80%)	63 (35.20%)	
36-45	33 (75.00%)	11 (25.00%)	0.343
46-63	7 (77.78%)	2 (22.22%)	
Gender			
Male	118 (66.29%)	60 (33.71%)	0.576

Female	38 (70.37%)	16 (29.63%)	
Residence			
Rural	31 (67.39%)	15 (32.61%)	0.981
Urban	125 (67.20%)	61 (3.80%)	
Profession			
Doctor	84 (67.74%)	40 (32.26%)	0.862
Others*	72 (66.67%)	36 (33.33%)	
Religion			
Christian	147 (66.82%)	73 (33.18%)	0.552
Other**	9 (75.00%)	3 (25.00%)	

4.2. DISCUSSION OF FINDINGS

4.2.1. HCPs and knowledge of TCAM

The assessment of the knowledge of HCPs towards TCAM showed that the majority of participants (91.38%) graded their knowledge moderate to low and the source of their knowledge was acquired mainly from media (54.7%) followed by relatives/friends (53.4%) and parents (44%). These findings were similar to those of a study done on Kenyan HCPs which revealed that around two third (71%) thought their understanding of the safety and efficacy of TCAM was insufficient (39). Our results were almost identical to the findings of a study done on medical-surgical nurses in Australia, which revealed that more than 60% of them knew little to nothing about CAM (40). Similar findings were also obtained in a study done in Saudi Arabia on physicians from different specialties and occupations which revealed that the majority (73.7%) of participants' knowledge of CAM was inadequate and 50% of participants acquired knowledge about CAM from websites, books and EBM articles (41). The findings were also similar to those of a study done in Trinidad and Tobago, where the majority of HCPs (50–75%) reported fair knowledge of spiritual, herbal, and physical types of CAM (22).

Again, findings from our study showed similarities to one conducted on GPs from Iran, which revealed that 89% of participants had average to little information on CAM (42). Same as a national survey done on oncologists in China which showed that 80% of the participants reported insufficient knowledge of CAM (43).

Our findings on TCAM knowledge were contrary to a study done in Italy on 270 oncology nurses, which found that 60.6% of nurses claimed to know CAM, and over two third of those who know, said that their primary source of knowledge was books, followed by healthcare workers (50%), and the Internet (48.9%) (44).

All our findings, similar to many studies; showed that a higher rate of HCPs has limited knowledge of TCAM.

Again due to the reason that there is few to almost no recognized institution that can teach TCAM and the absence of seminars on TCAM in Rwanda; HCPs acquire the knowledge like other categories of the population from informal pathways like media, friends/colleagues, and parents; Contrary to South Korea study which showed that CAM was formally instructed in the majority (85.4%) of participated medical schools, and in most of the schools (91.4%), CAM courses were given academic credit (38). This was also seen also in a study done in US medical schools where 75 schools (64%) reported offering elective courses in CAM or including these subjects in required classes (45).

Our study showed that the young age range was associated with more TCAM knowledge where the participants aged between 18-35 were likely 11.6 times more knowledgeable compared to participants aged between 46-63 probably due to the fact the knowledge is acquired from media mainly the internet that is used mainly by young people but other implicated reasons may be present. But our study did not show any impact of gender, profession, residence, or religion in relation with knowledge of TCAM.

Regarding the perspective on teaching and inclusion of TCAM in curricula of health-related fields at universities, the majority (60.7%) of our respondents recommended that TCAM ought to be in the curricula of the universities teaching health-related fields while 22.84% expressed neutrality on this question. These findings were also similar to results from other studies like one done on HCPs working in Swedish University hospitals that showed that 55.8% of participants were in the favor of studying CAM (32). This is also in line with the findings of a study done on physicians in Bahrain where the majority (91.7%) expressed a desire to improve their knowledge regarding herbal therapies (26). It was also revealed by a study done on Turkey GPs, which found that most physicians (96.5%) had not been educated about CAM and 74.4% wanted to learn more (24).

Our findings were again similar to findings of a study done on Saudi Arabia physicians where 81.1 % emphasized the value of obtaining formal education regarding CAM (41). Again, another study done in New Zealand revealed similar findings in which the majority (66.7%) of GPs favor the concept that CAM should be incorporated into medical curricula (23).

Also, our findings were similar to ones from a study done in China which revealed that 82.3% of undergraduates wanted CAM to be incorporated into the curricula and desired to learn more about CAM (46).

The findings of our study and other many studies showed that HCPs want to have new knowledge and skills on TCAM that can be achieved through the integration of TCAM teachings in health-related fields at universities.

The majority of responders were aware mainly of dietary supplements (93.53%), prayers/spirituality methods (79.31%), massage (78.8%) and phytomedicine(72.41%), and at the low extent of Chinese medicine and acupuncture and this is probably attributed to the reason that the diet is not associated with many harmful effects and interest to its use may be easy and the awareness on prayers/spirituality is caused by the big impact of religion in the social life of Rwandans, then phytomedicine is recognized due to the reason of Rwandan ancestors and culture, where it was the among main therapy that was used.

The modalities from Asia are not well known because they are located in a few cities, almost none in rural regions, and are probably expensive.

4.2.2. HCPs' experience and attitudes on the use of TCAM

In our study, nearly forty percent of the respondents said they utilized TCAM as a preventive measure. This is in line with a recent study done in Turkey during covid 19 era where around 50% of medical personnel utilized TCM approaches to boost their immune system (46). It was different from a study done on South African HCWs which showed that nearly 10% said that TCAM's main utilization was as preventative medicine (29).

Our study findings showed that 25% of the participants responded that TCAM can be used to treat hypertension, and 46.5% of the respondents reported that TCAM can be used to treat

musculoskeletal pain and this is explained by TCAM use mainly in chronic diseases including diabetes mellitus, rheumatologic and cardiac conditions (12)(13)(19).

Below ten percent of our study respondents said that TCAM can be used to treat cancer. This was analogous to the results of a study conducted on clinical oncologists from Japan which showed that the majority (82%) thought that CAM products were ineffective against cancer (47). Contrary to a study done in Kenya where 33% of HCPs believed that the most effective treatment of cancer was a combination of TCAM and chemotherapy (39).

Our findings again indicate that to some extent, few HCPs still believe that there are diseases that are managed by TCAM.

In our study, around 30% of the participants responded that they recommended TCAM to patients consulting conventional medicine. This was almost similar to findings of a study done in Mexico health professionals where the minority (36.4%) of physicians has previously suggested CAM to patients (48). Again, this is consistent with a study done in New Zealand which revealed that during the treatment of pregnant women, 37.3 percent of midwives advise CAM, and GPs think the most advantageous modality and the one that patients were most often referred to was acupuncture (23).

Our study findings on TCAM use were almost similar to a national survey that involved registered health care providers in Sweden which revealed that CAM therapies including massage and acupuncture were recommended by > 40% of the participants (32). This is in line with a systematic review done in the UK where CAM was recommended by nearly half (46%) of physicians (range 38–55%) (49). But another study conducted on HCPs from Trinidad and Tobago revealed that they promote the use of CAM recommendations that are supported by evidence (22).

Our findings were contrary to a study done on US pediatricians which revealed a higher rate with 71% saying they would think about referring patients to CAM practitioners (50), as seen also in a

systematic review done on nurses that indicated that 65.9% of respondents reported the use of CAM therapies with patients (51)

Also, a low rate of TCAM recommendation in our study may be attributed to the poor collaboration between conventional health practitioners and TCAM practitioners where one part appears isolated from another, but also a low level of knowledge of what one part is capable of providing.

Our findings did not show any correlation between participants' characteristics(sex, age, profession, religion, living in the rural or urban region) and use or recommendation of TCAM contrary to a study done on HCPs from Trinidad and Tobago where the factors that influence CAM utilization were religion, profession, and sex while factors that influence CAM recommendation were sex and profession (22). Also, our results were contrary to a systematic review done in the general population where Sex, age, and education were the characteristics that were most closely related to CAM use (52).

Considering TCAM use among HCPs, nearly half of participants reported that they have used TCAM modalities, different from the findings of a study done on 262 pharmacists from Nigeria that showed that 21.3% were using TM at the time of data collection and 85.9% had used TM at least once in their lifetime (53). It was also seen in findings from a study conducted in Trinidad and Tobago which indicated that the general prevalence of CAM use among HCPs was high (82.3%) with pharmacists (83.3%), and doctors (64.9%), nurses (92.4%) (22).

Also, the same difference from our study was seen in one conducted on nurses from Australia which showed that, in the prior year, seventy-four percent of participants had utilized complementary treatments (35). Again, higher rates compared to our findings were seen in a study done on Kenya HCPs, which revealed that the use of TCAM was in 85% of participants (39).

Our findings on the use of TCAM showed a higher rate compared to a systematic review done in SSA rated TCAM utilization among professionals offering HIV/AIDS care in Durban, South Africa (23.5%) and medical doctors in Nigeria (20.7%) (6)

Our findings on the use of TCAM were similar to ones of a study done in Turkey on 560 health care personnel which revealed that during the prior month, 45.5% of the subjects employed TCM methods for COVID-19 (46).

In our study, among those who reported having used modalities of TCAM when they were sick, sixty-two percent used dietary supplements followed by herbal medicines (58.5%) and prayers (54.5%). This is similar to a study done in Nigeria on resident doctors that showed that 60% of the respondents were disposed toward the utilization of herbal medicine (31). Similar findings were remarked in another study done on Iranian HPs, which showed that the CAM practices that were most frequently used were herbal remedies (93.2%) and exercise treatment (75.4%) (25).

Our research findings were contrary to a systematic review done on UK physicians where CAM methods most commonly employed were acupuncture (23% of surveys), relaxation techniques (7.6%), and homeopathy (15.3%) (49). Also, a study done on Western Mexico health professionals showed that CAM methods that were most often employed were homeopathy, massage therapy, and herbal medicine (48).

Our study findings were again opposite to the results of a study done in South Africa HCW which revealed that they used therapeutic massage (9.68%), therapeutic aromatherapy (12.9%), homeopathy, African traditional medicine, and Ayurveda (8.06%) (29).

These differences in TCAM modalities utilization are mainly attributed to cultures where herbal medicine is commonly used in Africa and other modalities are used in Asia and Europe.

4.3. Limitations of the study

There was a lack of conventional names for traditional, complementary, and alternative medicine in the literature review. The terms like CAM, TCAM, TCM, and TM were used interchangeably.

To assess HCPs' knowledge of diseases that are managed by TCAM, not all diseases have been listed

The recall bias may be present as participants are responding to some past events.

HCPs are not represented equally in this study.

CHAPTER 5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The use of TCAM has been associated with positive and negative effects; despite that, TCAM use is still significant in general population and our study done on HCPs indicates that the knowledge on TCAM is graded moderate to low and the most commonly used modalities in HCPs are diet supplements, phytomedicine, and prayers/spirituality. The study also showed that despite being informal, a low rate of HCPs recommends this therapy to patients.

HCPs also wish that this subject should be in courses taught in health-related fields at universities.

5.2. Recommendation

TCAM should not always be seen as generally dangerous to society as its use worldwide is significant, instead, starting with HCPs, they should be aware of TCAM indications and limitations.

MOH and UR should encourage seminars/lectures on TCAM and if possible, TCAM should be part of courses learned at the university in health-related faculties.

In the future, MOH should consider the integrative medicine combining both conventional and TCAM.

UR should encourage research studying TCAM to have more evidence-based medicine on this subject as it is still a problem not only in Rwanda but worldwide.

The general population should be educated on TCAM limitations.

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APPENDIX

QUESTIONNAIRE

PARTICIPANT GENERAL INFORMATION	
Initials	
Age:	**Gender** ☐ Male ☐ Female
Residence	
Urban ☐ Rural ☐	
RELIGION:	
Christian☐ Muslim ☐ traditional religion☐ no religion ☐ other ☐	
Occupation:	
Doctor☐ nurse ☐ midwife☐ physiotherapist ☐ nutritionist ☐ psychologist☐ pharmacist ☐	
KNOWLEDGE OF TRADITIONAL, COMPLEMENTARY, AND ALTERNATIVE MEDICINE	
Grade your knowledge of traditional, complementary, and alternative medicine.	
High ☐ Moderate ☐ Low ☐	

Do you know these modalities of traditional, complementary, and alternative medicine? **Respond "YES" if you know and "NO" if you don't know**		
Phytomedicine (herbal medicine**)**	Yes ☐	No ☐
Prayers	Yes ☐	No ☐
Acupuncture	Yes ☐	No ☐
Yoga	Yes ☐	No ☐
Meditation	Yes ☐	No ☐
Massage	Yes ☐	No ☐
Dietary supplements	Yes ☐	No ☐
Chinese or Oriental medicine	Yes ☐	No ☐
Reflexology	Yes ☐	No ☐
You acquired the knowledge of traditional, complementary, and alternative medicine from:		
Parents ☐ Friends/relatives ☐ Media (radio, television, social media,…) ☐ Books ☐ Others ☐		
Generally, in your health profession, did you ever use any modality of traditional, complementary, and alternative medicine?		
Yes ☐ No ☐		
In your health profession, have you ever used modalities of traditional, complementary, and alternative medicine when you were not sick as a preventive measure?		
Yes☐ No ☐		

In your health profession, have you ever used modalities of traditional, complementary, and alternative medicine when you were sick?
Yes ☐ No ☐
If you were sick and used modalities of traditional, complementary, and alternative medicine, which modality did you use?
Phytomedicine (herbal medicines) ☐ Diet supplements ☐ Prayers/spirituality ☐ yoga ☐ massage ☐ meditation acupuncture ☐ reflexology ☐ Chinese and oriental medicine ☐
Did you recommend in your practice, traditional, complementary, and alternative medicine to patients you met?
Yes ☐ No ☐
Can you recommend nowadays traditional, complementary, and alternative medicine to patients consulting conventional medicine?
Yes☐ No ☐ Maybe ☐
To some extent, are these conditions treated by traditional, complementary, and alternative medicine?

chronic musculoskeletal pain	yes ☐ no☐ may be☐
hepatitis c	yes ☐ no☐ may be☐

hepatitis b	yes ☐ no☐ may be☐
cirrhosis	yes ☐ no☐ may be☐
Hypertension	yes ☐ no☐ may be☐
cancer	yes ☐ no☐ may be☐
allergy conditions	yes ☐ no☐ may be☐

Do you recommend that traditional, complementary, and alternative medicine courses should be included in the academic curriculum of schools teaching health-related fields (medicine, nursing, midwifery, physiotherapy, nutrition, clinical psychology, pharmacy)?

Yes☐

No ☐

Maybe ☐

CONSENT FORM

CONSENT FORM IN ENGLISH

Participant number: ……..

I am Dr. NIYONSHUTI JEAN PAUL, a postgraduate student at the University of Rwanda in the department of internal medicine who is carrying out a study on **"knowledge, attitudes of health care providers towards the use of traditional and complementary/alternative medicine in Rwanda**"

You will be required to understand its purpose, benefits, and risks before you agree to participate in it.

- **Aim:** assess the knowledge, and attitude of health care providers towards the use of traditional /complementary and alternative medicine.
- **Risks to the participants:**

  No risk.

- **Benefits:**

  Participation is voluntary; there are no financial benefits to be provided to the participants in the study; the findings from the study will be used for epidemiology purposes and in improving patient care using different modalities of treatment.

- **Confidentiality:**

  All information will be kept strictly confidential by the principal investigator

- **Questions:**

  Participants are free to ask questions or seek any clarifications about the study when they wish. My phone number: **0783866638**.

  In case of participant right-related issues, call the acting chairperson of CMHS/IRB on **0784575900**

- **Rights to withdraw from the study:**

You are free to withdraw from the study at any time even if you have consented to participate and this will not affect the care we will be given to you.

- **Statement of consent:**

I have read the information above and understood the content. I have had a full explanation of the nature and purpose of the study, risks, and benefits in a language I understand. I have understood that I have the right to withdraw from the study at any time.

By signing this consent form, I understand that I am accepting to be enrolled in this study.

I hereby sign for myself …… as proof to participate in the study.

Signature:……Date:……

I have explained the purpose of the study to the participant to the best of my knowledge and he /she has fully understood the purpose, benefits, and risks to him or her.

Signature: Date of signed consent: ……