

# The governance of traditional medicine and herbal remedies in the selected local markets of Kenya

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## Research

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# Abstract

## Background

A lot of emphasis has always been placed on modern governance systems and little or no attention is given to traditional governance practices which remain largely undocumented. This study aimed at finding out important traditional and modern governance practices that regulate traditional medicine sector. There is a growing demand for traditional medicine in urban settings in spite of its proximity to conventional health care centres and access to modern medicine. However, questions about their safety and efficacy still remain to be adequately addressed

## Materials and Methods

The study was carried out in selected market centres in the Western part of Kenya where the identified traditional medicine practitioners sell their traditional medicine and treat patients who come for medication. All the identified Professional Experts upon attaining an oral prior informed consent were interviewed at their offices in Nairobi, Kenya. The market centres were located at Eldoret, Kitale, Moi's Bridge, Makutano, Arror, Kakamega, Luanda and Yala which are actually spread out in eight different administrative counties. Purposive sampling design with elements of snow ball techniques were employed in tracing competent traditional medicine 'experts' and relevant professional experts. Interviews were conducted upon obtaining prior oral informed consents using semi structured questionnaires. The data collected was entered in Microsoft Excel where descriptive statistics namely, averages/mean, frequencies and percentage descriptive statistics were conducted. The Pearson's Chi square statistics was performed on the traditional and modern governance data sets using the STATA software and data presented using tables, bar and column graphs.

## Results

Modern governance practices were not significantly different in all the market centres surveyed ( $p=0.080$ ). Equally, the traditional governance practices were also not significantly different in all the selected market centres ( $p=1.000$ ). Most traditional medicine practitioners (65%) purely survived on traditional medicine as a source of livelihood with few practitioners (35%) selling beads, calabashes, tobacco and even sweets/candy alongside traditional medicine. There was low level of (27%) awareness on the existing laws and policies despite having high levels of compliance on county by-laws (100%) and payment of charged market fees (96%).

## Conclusions

Traditional governance practices are as important as the modern governance practices and should receive heightened attention and interest both by the national and county systems of government. In most cases, the traditional governance practitioners determine eligibility for traditional medicine practice even before the practitioner acquires a formal certificate of recognition or registration. The traditional governance practices are closely guided by the socio-cultural beliefs of the local communities. Modern governance practices are often seen as top down regulation of the traditional medicine sector where the traditional medicine practitioners feel alienated from the making of laws that affect them directly. Good laws and policies are not enough, education awareness campaigns to increase awareness among the traditional medicine practitioners and gather feedback is much needed in order to meet their needs and aspirations and ultimately grow the traditional medicine sector.

## Background

Governance as used in the health systems refer to how decisions are made and implemented. It entails both governance of healthcare and policy and the key domains of governance include transparency, participation, accountability, integrity and capacity. On a socio-ecological and environmental viewpoint, governance refers to means and ways on how collective decisions and goals are made and achieved [1, 2].

Traditional medicine (TM) is a sub-set of ethnomedicine and it entails the use of available local resources (minerals, animal and plant materials) including medicinal plants for treatment of various diseases. This study focused on the broader context of TM practiced by the Traditional medicine Practitioners (TMPs) that are used to treat patients in the selected market centres in Western Kenya [3, 4, 5]. Indigenous communities also employ traditional medicine in the purification of spirits [6]. African Traditional Medicine (ATM) is a holistic health care system comprised of divine, spiritualism and herbalism where treatment involves incantations, animal sacrifice, exorcism and herbs [7].

The resurgence of interest in TM has been attributed to the challenges experienced in the use of conventional medicine in the treatment of some chronic diseases and health complications [6, 8, 9, 10]. Other users prefer traditional and complementary medicine (TCM) as an additive to conventional medicine oblivious of the little researched drug interactions, safety and efficacy that may exist [11]. The popularity of herbal medicines have been also attributed to the cultural belief that people are closer to nature, accessibility, less cost and less side effects [12].

The provision of quality healthcare continues to be a nightmare despite incredible advances made in modern medicine and therefore TM fills this gap particularly in rural and remote places. It has been estimated that nearly 75% of plant based therapeutic entities were drawn from traditional or folk medicine [13]. TM is also important for socio-economic, cultural and environmental purposes and also in the supporting livelihoods of the TMPs [14]. The renewed interest in TM draws impetus from increasing human population, changing lifestyles and standards of living. In addition, various cultural practices promote the use of traditional medicine (4, 15]. Bhardwaj et al., 2018 reported the increasing popularity of herbal medicine in the rich and developed world just as in the poor developing regions citing their safety, efficacy, minimal side effects and better patient tolerance [16]. Herbal medicines enjoy high acceptability among communities as they are considered cheap, of intense cultural attachment and its favourable outcome [12, 17].

Traditional knowledge (TK) in herbal remedies covers aspects of nutrition, management of simple diseases and a myriad of health problems. However, there is growing concern that these indigenous knowledge (IK) and practices are gradually lost due to factors such as poor documentation, overharvesting, modernization, urbanization and cultural shifts. On a positive note, IK on traditional medicine has more often been orally transferred to successive generations but un-quantified amount of traditional knowledge still remain unpublished. Lack of documentation contributes to continued loss of ethnomedical information as a result from continued loss of tribal cultures and customs [18, 19, 20]. Local market centres have become increasingly important in the trade of the traditional medicine. However, the magnitude of trade in traditional medicine and the existing governance and management systems are still not clear and remain largely undocumented [21]. Regular supply of traditional medicine can only be assured through sustainable practices ranging from growth, harvesting, trade and use. This will require a well-structured sustainable governance and management systems [15].

On governance of medicinal and genetic resources, the 2010 Nagoya Protocol building on the Convention on Biological Diversity, advocates for exchange and sharing of indigenous knowledge held by local communities and acknowledges the importance of fair and equitable sharing of locally available genetic resources and ensuring their sustainability. The Nagoya Protocol also promotes sustainable development and conservation of biological diversity and in addition recognizes the importance of customary law and prior informed consent of the local community members who are the source of IK or TK [22]. However, in Kenya the practice of traditional medicine has not been effectively mainstreamed in the overall health sector and thus still lack clear, universal legal and policy frameworks. In a considerable review of the current trends of the traditional herbal practices, three pertinent issues emerged: first, clear documentation to preclude loss of indigenous herbal knowledge, secondly, the strengthening and development of regulatory policies and legal framework, and lastly, the mainstreaming of the traditional medicine in the national health care system [23]. Sen & Chakraborty, 2017 holds a positive view that mainstreaming of traditional medicine and the use of medicinal plants is beneficial to the people [13].

From a lucrative biological prospecting viewpoint, concerns have been raised on the issue of compensation of local people for sharing their indigenous ethnobotanical knowledge. Other major concerns raised were on indigenous rights, cultural knowledge and the use of traditional resources [24].

Little is known about the traditional governance practices that govern and regulate the trade and practice of traditional medicine. Emphasis has always been attached to modern governance practices ranging from constituted laws to policies that regulate traditional medicine. The governance of traditional medicine practitioners and traditional medicine trade in the devolved county market structures is also not known. The study attempted to find out the traditional and modern governance practices that regulate traditional medicine and to assess the knowledge, attitudes and perceptions (KAP) of the traditional medicine practitioners drawn from the selected market centres in Kenya. Finally, there was need to evaluate the relevance of the traditional governance practices and whether they should be harmonized with modern governance practices.

#### Governance and Management of the Traditional Medicine in Kenya

Governance expresses the organization of people, exercise of power whether formally or informally and the ability to lay rules on how to attain their objectives and goals at local, social, institutional, national or global level [25]. Traditional medicine practice can be governed to some extent through local customs and indigenous knowledge normally transferred via cultural means in various stages namely collection, consumption and trade. However, there is need to harmonize the traditional systems of governance with the modern formulated policies and legal regulatory frameworks passed by national government jurisdictions. The push for integration of traditional medicine into the general health care has been compounded by the inability of the modern health facilities in meeting the health demands of the increasing population [26].

The increasing demand for medicinal plants opens avenues for conflict caused by over-harvesting and thus the need to have sustainable means of plant resource management [15]. Therefore strong governance is critical for controlled harvesting of medicinal plants particularly from the wild [27]. Functional local institutional policies also play a vital role in the transfer of indigenous knowledge [28]. It has been observed that traditional knowledge is important in the management of natural resources and the decline in the sharing of this traditional knowledge has been blamed on the absence of robust functional regulations [29, 30]. The problematization of traditional medicine has been conceptualized in terms of health and safety, threats to sovereignty and their role in national development. Sovereignty defilement has been registered through non-procedural access to plant and genetic resources and incidences of biopiracy. It has been reported that proper documentation aids in curbing biopiracy and preservation of intellectual property rights. Therefore, quality of traditional medicine can be sustained through robust legislations [13, 31].

[22]Dutfield, 2014 re-stated and re-defined biopiracy as 'theft, misappropriation or free-riding on genetic resources and traditional knowledge'. Article 11 of the Constitution of Kenya (CoK) recognizes culture with respect to the "role of science and indigenous technologies in the development of the nation" and entrusts parliament with powers to enact legislation to "recognize and protect the ownership of indigenous seeds and plant varieties, their genetic and diverse characteristics and their use by the communities of Kenya". CoK 2010 also provides for the right to health [32]. Nagoya Protocol advocates for fair and equitable sharing of genetic resources and utilization of the existing knowledge, institutions and practices as held by the members of the local community. The legal and regulatory frameworks so far set in place are thought to be ambiguous and less effective and there is need for clear and definitive legislation [33]. The leading challenges to good governance were reported to include transparency, accountability and leadership [34].

#### Traditional Knowledge And Intellectual Property Rights

[22]Dutfield, 2014 claimed that there is no intellectual instrument or tool on traditional knowledge (TK) but remained optimistic that a functional instrument can be found in the near future. On the other hand, there are many international instruments (for instance, good laws) on intellectual property rights that protect inventions, innovations and plant varieties. Many jurisdictions have recognized and protected traditional knowledge in their laws, for instance, Peru and Panama. Dutfield posits that India has shown great strides in the recognition and protection of traditional knowledge through its well established Traditional Knowledge Digital Library (TKDL) containing information on uses of plants.

## Modern Governance Practices

Modern Governance practices are guided and shaped by good laws and policies. Three key things to consider in formation of good policies include having the right definition of traditional medicine, creation of rules and robust regulations and preservation of intellectual property rights [9].

### Evolution of Laws, Policies and Regulatory Frameworks on Traditional Medicine and Practice in Kenya (Sources, Appendix 1)

#### Witchcraft Act, 1925, Cap 67 Laws of Kenya

The Witchcraft Act of 1925 outlawed any forms of witchcraft practices that was detrimental to the administration of colonial government and any traditional medicine practitioner labelled a witchdoctor or suspected to be in possession of charms risked being convicted, punished or slapped with a hefty fine or even imprisonment. Lawful traditional practices were vetted by the local administrative authorities. Witchcraft laws created fear among traditional medicine practitioners and thus slowed down the growth of traditional medicine. Regrettably, witchcraft law is still active and has not been repealed.

#### Alma Ata Declaration, 1978

The international conference held in Alma Ata in the former USSR advanced the agenda for primary health care for all people in the world and declared health a fundamental human right. It referred to gross inequality in health care as unacceptable and a cause of great concern. The declaration tasked governments with a responsibility to formulate policies, strategies, and plans of action that promote sustainability of the primary health care. The provision of a comprehensive health care can be achieved using both local and external resources. Alma Ata recognized and acknowledged the contribution of midwives, community workers and traditional practitioners in the provision of primary health care at local levels.

#### Convention on Biological Diversity, United Nations, 1992

The 1992 Convention on Biological Diversity (CBD) advocates for the use of indigenous and traditional knowledge harboured by local communities in the conservation of biodiversity, equitable sharing of benefits and sustainable use of natural resources. Annex I of the convention highlights the importance of identification of medicinal plants and more so key indicator species that may be useful in research, conservation or sustainable use.

#### Kenya National Drug Policy, 1994

The Kenya National Drug Policy acknowledges traditional medicine as a key ingredient of Kenya's culture and thus the need to mainstream it into the general health care system.

#### Registration/Recognition of Traditional Medicine Practitioners and Medicinal Plant Conservationists, Form DC1, 2003

The Ministry of Gender, Sports, Culture and Social services tasked the Department of Culture with the responsibility to register and recognize traditional birth attendants, bone setters, traditional surgeons, users of herbal extracts and medicinal plant conservationists. The Department of Culture spelt out the eligibility criteria which included approval, appraisal and recommendations from local administrative authorities and submission of three to six drug samples, medicinal plant preparations or plant specimens to recognized government and research institutions or universities for laboratory analyses. The Department of Culture also outlines the registration guidelines for foreign groups or individuals and also establishes a local mechanism of assessing traditional medicine practitioners.

#### National policy on traditional medicine and regulation of herbal medicines, 2005

A World Health Organization (WHO) global survey report on Traditional Medicine/Complementary and Alternative Medicine (TM/CAM) of 2005 involving 141 member states of the overall 191 member states raised concerns on safety, drug efficacy and quality control. Notable challenges were also reported in the development of a competent regulatory framework of TM/CAM. Only few member states (32%) had developed a policy on TM/CAM and majority (61%) had a registration system for herbal medicines. Kenya reported significant progress on the regulation of traditional medicine by setting up of Kenya Medical Research Institute (KEMRI) in 1984 but still lacked a national programme, national office, an expert committee, clear regulatory framework, national pharmacopoeia, national monograph, registration system, and solid manufacturing requirements.

#### Sessional paper on Traditional Medicine in Kenya (2009)

The Sessional Paper of 2009 on traditional medicine in Kenya anchored five key objectives that promoted traditional medicine namely: regulation, setting up of relevant institutions, contribution of traditional medicine in health care delivery, safety and efficacy, and finally the ex situ and in situ conservation of medicinal plant materials. The paper pointed out the information gap on the trade of medicinal plants, manufacturing practices for herbal remedies/products, and standardization.

The Sessional Paper also highlighted the enforcement of ethical principles in traditional medicine practice which includes: equity, fairness and rights to access of medical care. It also recognized the contribution of communities and stakeholders in the use of medicinal plants and benefit sharing. Finally, the paper proposed commercialization of traditional medicine, management of information disclosure, and setting up of robust institutional and policy interpretation.

#### Registration of Herbal and Complementary products. Guidelines to submission of applications. Pharmacy and Poisons Board (2010).

The document provides guidelines for submission of traditional herbal and complementary products for registration and licensing. Applicants are required to present three drug samples, accompanying certificate of analysis, certificate of the pharmaceutical product and brief descriptions of the dosage forms (macerate, infusion, ash, solutions...), plant part utilized, means of harvesting/collection, drying, storage and preservation methods, efficacy of the product over time and lastly the applicant declaration.

#### The Traditional Medicine and Medicinal Plants Bill, 2010

The Traditional Medicine and Medicinal Plants Bill of 2010 laid out proper definitions for traditional medicine and medicinal plants. Traditional medicine was defined as a finished and labelled medicinal product that contain an active ingredient, aerial or underground plant parts or in combination either in crude or processed form. On the other hand, a medicinal plant was defined as a plant that contain a substance that is therapeutic or a precursor for synthesis of useful drugs.

The bill proposed the creation of a Traditional Medicine Management Council that was to oversee the practice of traditional medicine in Kenya and draw representation from the Ministry of Agriculture, National Environment Management Authority (NEMA), Kenya Bureau of Standards (KEBS), Kenya Plant Health Inspectorate Services (KEPHIS), Kenya Medical Research Institute (KEMRI), National Council for Science and Technology (NCST) and Kenya Industrial Property Institute (KIPI).

The bill underscored the importance of domestication of wild medicinal plants, protection of intellectual property rights (IPR) and indigenous knowledge. It also set out the eligibility criteria for recognition and certification of Traditional Medicine Practitioners. Eligible candidates must have acquired formal knowledge in traditional medicine or undergone relevant training. The bill also proposed a penalty or punishment for rogue Traditional Medicine Practitioners.

#### The Health Bill, 2012

The Health Bill of 2012 recognized the role of traditional and complementary medicines in the health care sector. It defined a Health Care Professional as an individual with professional training or qualifications for provision of medical services. It also defined Traditional Medicine as products extracted from plants, animals or mineral sources, prepared and administered based on traditional teaching.

The bill also proposed the appointment of a traditional and complementary 'expert' as a member of a proposed Kenya Health Services Authority advisory board and further empowered the Cabinet Secretary in consultations with the proposed Kenya Health Services Authority to provide regulations for better management of traditional medicines and mechanisms to maintain databases for herbalists in the country.

#### The Traditional Health Practitioners Bill, 2014

The Traditional Health Practitioners Bill of 2014 provided provisions for training, registration and licensing of the traditional health practitioners and set regulations of the practice. It defined Traditional Health Practice as the utilization of traditional medicine with the aim of diagnosis, treatment or prevention of an illness. It also proposed the establishment of the Traditional Health Practitioner Council of Kenya of which three experienced traditional health practitioners (over 5 years of practice) were to serve in the council. The bill provided eligibility criteria for practice of which applicants were expected to have accomplished a well supervised training employment for over one year.

#### The Health Bill, 2015

The Health Bill of 2015 explicitly expressed the richness of traditional medicine in terms of transfer of knowledge, skills and practices through generations in provision of healthcare. Furthermore, it expresses optimism of the ability of traditional medicine in prevention, diagnosis and treatment of diseases. It also expresses the need for sound policies that may help guide the practice of traditional medicine through the Department of Health or national government. The bill advocated for traditional healers to introduce patients' referrals to modern health facilities during emergencies. Lastly, the bill proposed the creation of a National Research for Health Committee of which one representative must be a traditional medicine 'expert'.

#### Protection of Traditional Knowledge and Cultural expressions Act, No. 33 of 2016

The act makes provisions for the protection of traditional medicine knowledge, genetic resources and biological diversity of which mostly are orally passed from one generation to another.

#### The Health Act No. 21 of 2017

The Health Act No. 21 of 2017 empowers the Department of Health to provide policies and regulatory bodies that guide the practice of traditional and alternative medicine. The regulatory bodies created shall provide guidance on registration, licensing and standards compliance. The act provides mechanisms and systems of referrals of patients from Traditional Health Practitioners to modern health facilities.

#### The Health Laws (Amendment) Bill, 2018 Kenya Gazette Supplement No. 36, National Assembly Bills, No. 14.

The bill recognized traditional and alternative medicine as a health product.

#### Traditional and Alternative Medicine policy draft, 2018, Ministry of Health

The policy draft made provisions for the mainstreaming of the Traditional and Alternative Medicine into the National Health care system to boost access to health care for all. The policy set strategies that underscored the need and importance of biodiversity conservation, sustainable harvesting and cultivation; safety, efficacy and quality; education and training; proper use and quality assurance; standardization of traditional medicine; good manufacturing practices; ethical principles; equity; protection of intellectual property rights; access and benefit sharing; commercialization of TM and lastly disclosure and

secrecy. The policy draft acknowledged that a huge chunk of traditional medicine still remains a secret mostly through retention of knowledge. However, the policy draft encouraged documentation and recording of traditional medicine knowledge and setting up of digital traditional medicine libraries. Disclosure of information can be achieved through codification or formalization, extensive use and popularity of traditional medicine, collections and publications.

The policy draft made provisions for the setting up of legal and institutional frameworks of traditional and alternative medicine, and National Traditional and Alternative Practitioners Council tasked with core duties of registration, regulation and development of standards.

The Traditional and Alternative Health Practitioners bill, 2019

The bill provided for training, registration and licensing of traditional and alternative health practitioners and how the practice is regulated and disciplinary measures instituted. The bill made provisions for the development of the Traditional and Alternative Health Practitioners Council where two registered traditional health practitioners with over 10 years experience qualify for membership.

The Health Laws (Amendment) Act, No. 5 of 2019

The recently passed Health Laws Act No. 5 of 2019 identified traditional medicine as a health product.

Traditional Governance Practices

The space for Traditional Health Practitioners in Kenya is provided for by the increasing demand for medicinal trees and shrub products as reflected in diverse cultural and traditional practices. These cultures and traditions are a representation of various ethnic groupings in Kenya and how differently they utilize medicinal plants [3]. In India, traditional health care systems are relevant and aid in the treatment of various chronic illnesses. Traditional health systems are nurtured and shaped by government policies and medicinal plants are at the centre of it. On the same breadth, traditional health care systems provide space for institutional networking, bio-prospecting and fighting biopiracy. Traditional health systems of India are mainly composed of local health traditions and classical scientific systems of medicine. Local health tradition practitioners include traditional birth attendants, bone setters, experts of snake bite treatment and many more, whereas popular classic scientific system consists of Ayurveda (where therapy accompanies regular diet, exercise and prescribed behavior). Ayurvedic systems favours holistic treatment represented by a union of body, senses, mind and soul with a balance of earth, water, fire, air and vacuum which are said to constitute a functional human body. Family traditions and culture influences choice and selection of an appropriate health care system [9].

Practices of traditional and complementary systems of medicine are deeply rooted in the cultural environment, community beliefs, emotions, life experiences, spiritual considerations and even religion [35, 36].

Standardization requirement

Standardization of traditional medicine refers to the development and application of standards to critical elements of traditional medicine that include medical care, research, industry and culture in order to ensure maintenance of quality, safety, and modernization. Standardization is measured using the quality of raw materials, process controls, manufacturing process and validation. The quality of raw materials is affected by geographical origin, parts of medicinal plants used, collection period and hygiene. China has made significant progress in terms of setting up proper standardization measures for its traditional medicine popularly dubbed Traditional Chinese Medicine (TCM) which has over the years gained global prominence and stable market. Rapid advancement in Chinese TCM standardization enjoys direct state involvement via the State Council of China and the Ministry of Science and Technology in tackling safety and efficacy [8, 37, 38].

Challenges and concerns in traditional medicine

The growing use of traditional medicine coupled with limited knowledge on their medicinal properties has continued to pose health and safety concerns. China and Japan lead the way in the integration of herbal medicines (herbs, plant parts and preparations, processed herbal products, active ingredients) into the primary health care system. It was reported that patients do not disclose their use of herbal remedies to physicians when seeking conventional therapies bearing in mind that herbal medicines interactions and herbal-conventional drugs interactions may be a serious health risk. Herbal interactions may alter drug efficacy or cause adverse reactions, whereas herbal-conventional drug interactions may disrupt drug absorption and metabolism [39, 13]. In Africa, a case study in Ghana (Kumasi South Hospital) revealed that most biomedical practitioners are skeptical about integration of traditional medicine. Positive integration of traditional medicine needs robust regulatory policies and protocols for integration [40].

Table 1  
Problems and Issues associated with the use of herbal medicines (Drawn from [6, 13])

<b>Problem/Challenges</b>	<b>Issues to be sorted out</b>
Quality and purity	Adulteration, plants misidentification, faulty collection and preparation, formulations
Processing and harvesting	Poor harvesting practices and processing techniques, contamination
Quality control	Standardization, poor manufacturing practices
Administrative issues	Regulation and control, proper monitoring efforts
Infrastructure	Processing techniques, trained personnel, product approval, post-market surveillance
Pharmacovigilance	Adverse reactions, contraindications, drug interactions
Clinical trials	Safety and efficacy
IPR & Biopiracy	Proper documentation of traditional and folk knowledge
Research & Development	Mode of Action of drugs
Others	Unethical practice, quacks, inadequate funds, poor marketing, knowledge sharing, biodiversity protection, protection of medicine plants

Lack of cooperation and collaboration between traditional healers and biomedical practitioners is a huge impediment towards integration of traditional medicine and explains the absence of patients' referrals. Most consumers prefer traditional medicine because the patients tend to share common traditional culture, beliefs, relationships, social life and environment. Users of traditional medicine believe traditional healers are more approachable, accessible and their drugs cheaper as compared to modern medicine, although some seek traditional medicine as a last resort [41].

Cooperation between traditional and allopathic practitioners is touted to be beneficial and complementary to health care delivery despite hanging atmosphere of negative attitudes between the two health care systems that hampers collaboration [42]. It has been reported that cultural and spiritual beliefs play a crucial role in the conservation and protection of traditional medicine. Although efforts to encourage people or traditional medicine practitioners cultivate or domesticate medicinal plants is still low [43]. On drug management, toxicity of traditional medicine has been reported. There are cases of herbal drugs possessing hepatotoxic and cardiotoxic substances [8, 36, 44]. It is hard to quantify the actual trade in medicinal trees and shrub products in market centres based on its complexity and informal nature. It is also hard to project the economics involved in such a subsistence-based trade largely conducted in open air markets in urban locations [3].

Mechanisms of drug action of herbal remedies are not clear and thus several jurisdictions, for instance, Britain strictly regulate the use of herbs. Poisoning cases have been reported in circumstances where plants have wrongly been identified

or inappropriately used or prepared [36].

In South Africa, significant progress has been made on the perception of traditional healers from a derogatory witchcraft viewpoint supported by a colonial Witchcraft Suppression Act (3 of 1957) to a more accommodative status supported by a regulatory framework [44]. The association of traditional medicine with witchcraft was meant to discourage the users and slow down the growth of indigenous health care system. Although some patients suffering chronic ailments, for instance, HIV/AIDS prefer combination of allopathic and traditional medicine [45].

In most countries of the Sub-Sahara Africa, the problem of decreasing agricultural and rural land sizes has affected the supplies of traditional medicines [3]. Major threats emanates from an increasing extraction of construction materials (wood, timber, poles) and fuel wood [43].

#### Secrecy and suspicion

Secrecy of the traditional medicine trade or practice is an impediment to free sharing of traditional knowledge and thus a major challenge in the advancement of traditional knowledge [14, 43]. However, secrecy can be violated by traditional medicine practitioners themselves for survival and livelihood [46]. On the other hand, secrecy may be fuelled by mistrust and failure to acknowledge the cumulative indigenous medical knowledge of traditional medicine practitioner [47].

## Methods

#### Study area and Selection criteria

The study was conducted in the selected market centres in the Western part of Kenya where the identified traditional medicine practitioners ply their trade and practice. The lead traditional medicine practitioners were identified by professional experts drawn from the Department of Culture, Ministry of Health, KEMRI and representatives from the National Traditional Health Practitioners Association (NATHEPA). The lead practitioners referred me to other competent traditional medicine practitioners in the selected market centres where other practitioners were added to the survey through a competent snow balling exercise. All identified Professional Experts were interviewed in their offices at Nairobi, Kenya.

The selected market centres comprised of nine localities spread in seven counties as follows: Kitale & Moi's Bridge (Trans Nzoia County), Makutano (West Pokot County), Eldoret (Uasin Gishu County), Aror & Kaptabuk (Elgeyo Marakwet County), Luanda (Vihiga), Yala (Siaya County) and Kakamega market (Kakamega County). The sampling map (Fig. 2) was generated in QGIS 3.6.4 by importing field acquired GPS location coordinates (Appendix 2) using Garmin etre 20X version where the oral/ semi-structured interviews were undertaken upon establishing prior informed consents.

#### Research design

The study used a purposive sampling where a sample of respondents picked were knowledgeable on traditional medicine as professional experts or traditional 'experts' and were willing to share information in their field of expertise and experience. Snow ball technique was used in identifying the willing respondents to be interviewed [3, 31, 42]. All willing respondents were interviewed upon attaining an oral prior informed consent. Purposive sampling takes care of situations where some members of the target population may not be willing to participate in the subject, in this case, the fear of losing their unpatented traditional knowledge and medicinal products [48]. In this study, a flexible semi-structured questionnaire was used to gather the data from the willing respondents in all the identified market centres in the country and in the capital city, Nairobi, Kenya [41, 49, 50].

#### Sampling frame and Target population

The willing respondents interviewed include 13 professional experts knowledgeable in traditional medicine and 26 traditional medicine practitioners plying their trade in the selected market centres. This sampling frame was designed to

capture the professional and traditional knowledge, attitudes and practices in the governance of traditional medicine (Table 2, Table 3) and also capture their divergent interests in traditional medicine.

Table 2

Professional experts and traditional 'expert' respondents drawn from a diverse array of specializations relevant to traditional medicine.

<b>Professional expert/Traditional expert</b>	<b>Institution/Ministry</b>	<b>Number interviewed</b>
Pharmacist	Ministry of Health (MoH)	1
Cultural Officer	Ministry of Culture, Sports and Arts (MoCSA)	1
Conservation expert	Kenya Forest Service (KFS)	1
Herbalist	National Traditional Health Practitioners Association (NATHEPA)	1
Plant Taxonomist & Botanist	University of Nairobi	1
Pharmacognosy expert	University of Nairobi	1
Medical physiologist	University of Nairobi	1
Scientist	Kenya Forest Institute (KEFRI)	1
Scientist	Kenya Medical Research Institute (KEMRI)	1
Phytochemist	Kenya Forestry Institute (KEFRI)	1
Branding specialist	Kenya Industrial Property Institute (KIPI)	1
Environmentalist	National Environment Management Authority of Kenya (NEMA)	1
Quality Assurance Officer	Kenya Bureau of Standards (KEBS)	1
Traditional Medicine Practitioners	Ministry of Culture, Sports and Arts	26

#### Data collection

Data was collected through a mixture of methods which included field observations, photographs, field visits and re-visits, interviews using a semi-structured questionnaire after getting an oral prior informed consent. The field interviews were conducted from February 2019 to September 2019 [4, 15, 43, 51, 52, 53, 54, 55]. Open ended questions were also employed so as to gather more information on the study thematic categories [43, 56].

Table 3

Selected market centres, willing respondents, their sex and ethnic affiliation. The number of respondents who refused to be interviewed was also captured.

Market centre (County)	Interviewed respondents (Sex)	Ethnic affiliation (Frequency)	Number of persons who refused to be interviewed
Eldoret (Uasin Gishu)	3 (All females)	Kalenjin (3)	1
Kitale (Trans Nzoia)	5 (All males)	Luhya (4), Swahili (1)	0
Makutano (West Pokot)	3 (All females)	Kalenjin (3)	6
Moi's Bridge (Trans Nzoia)	1 (Male)	Maasai (1)	0
Error (Elgeyo Marakwet)	2 (1 Male, 1 Female)	Kalenjin (2)	0
Kakamega (Kakamega)	5 (1Female, 4 Males)	Luhya (5)	2
Luanda (Vihiga)	6 (1 Male, 5 Females)	Luhya (6)	13
Yala (Siaya)	1 (Female)	Luo (1)	0

#### Data analysis

The data collected was entered in Microsoft Excel where descriptive statistics: averages/mean, frequencies and percentage descriptive statistics were conducted [43]. The Chi square statistics was performed on the traditional and modern governance data sets using the STATA software version 13.0 and data presented using tables, bar charts, column graphs and a pie chart [3, 18].

## Results

Socio-economic and demographic characteristics of the Traditional Medicine Practitioners

Table 4  
Socio-economic and demographic variables used in the survey and their responses.

Variables	Survey response (percentage, numbers and averages)
Mean age of TMPs	64 years
Average years of practice of TMPs	25 years
Percentage of willing interviewees	54%
Sex:	
Males	46%
Females	54%
Average age of traditional medicine clients	Reproductive age
Mean practicing fee charged per day in KES.	KES. 30.00
Awareness of existing laws and policies on TM	27%
TMPs recognized/registered by the Department of Culture	15%
Average monthly earnings	KES. 14, 269.00
TMPs with extra income generating activities: Selling calabash, bead, sweets, cigarettes, honey, tobacco powder for sniffing, imported and packaged herbal products, crop and livestock farming)	35%

Most of the Traditional Medicine Practitioners (73%) were not aware of the existing laws and policies that regulate the traditional medicine but were fully aware of the county regulations, for instance, the mandatory practicing fee and punishment for defaulters. The average daily trading fee for all the selected market centres was KES. 30. Eighty five percent (85%) of the sampled Traditional Medicine Practitioners did not provide evidence of the certificate of recognition or registration but fully complied with the county by-laws.

The mean age of the Traditional Medicine Practitioners was 64 years with the average years of practice of 25, where the oldest practitioner was 85 years old with 48 years of experience. The youngest Traditional Medical Practitioner was 30 years old with only 5 years of practice. Most of the Traditional Medicine Practitioners (65%) had no additional income sources and solely depended on traditional medicine for livelihood.

#### Modern Governance Practices

Table 5

The Modern Governance Practices of traditional medicine. The number of interviewed respondents from each locality are indicated in brackets.

<b>Modern Governance Practices (MGPs)</b>	<b>Nairobi (13)</b>	<b>Eldoret (3)</b>	<b>Kakamega (5)</b>	<b>Makutano (3)</b>	<b>Kitale (5)</b>	<b>Luanda (6)</b>	<b>Moi's Bridge (1)</b>	<b>Yala (1)</b>	<b>Aror (2)</b>	<b>Total responses</b>
Designated market locations	0	0	1	0	0	6	0	0	0	7
Drug Analysis Reports	13	0	3	0	1	3	1	0	0	21
Certificate of Recognition	13	0	3	0	1	3	1	0	0	21
Practicing Rooms	0	0	2	0	0	6	0	0	0	8
Regular Monitoring and Checks	13	3	5	3	5	6	1	1	2	39
Market Trading Fee	13	3	5	3	5	6	1	1	0	37
County By Laws	13	3	5	3	5	6	1	1	0	37
<b>Total</b>	<b>65</b>	<b>9</b>	<b>24</b>	<b>9</b>	<b>17</b>	<b>36</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>170</b>
Pearson's Chi square (48) = 62.3438, p = 0.080										

The modern governance practices were not significantly different in all the market centres surveyed,  $p(0.080) > 0.05$  in the surveyed market centres.

Descriptively, most respondents (100%) perceived that county-by-laws were fully observed by all practicing Traditional Medicine Practitioners in order to be allowed to freely practice in the counties. In addition, the practitioners also observed total compliance (96%) to meeting the market trading fee in order to avoid unnecessary punishment or penalties from the county government authorities. Majority of the respondents (88%) were in favour of regular monitoring and checks in the area of traditional medicine and quality control. However, lack of designated market spaces (23%) and practicing rooms (4%) were notable bottlenecks for the Traditional Medicine Practitioners.

Traditional governance practices

Table 6

The Traditional Governance Practices of traditional medicine. The numbers of interviewed respondents from each market location are indicated in brackets.

Traditional Governance Practices (TGPs)	Eldoret (3)	Kakamega (5)	Makutano (3)	Kitale (5)	Luanda (6)	Moi's Bridge (1)	Yala (1)	Arror (2)	Total
Bars menstruating women	3	1	3	0	3	0	1	2	13
Bars breastfeeding mothers	3	1	3	0	3	0	0	2	12
Transfer of TM knowledge	3	5	3	5	4	0	1	2	23
Bars uprooting of solitary MedPI	3	3	3	4	3	1	1	2	20
Sex is prohibited before treatment	3	2	3	4	2	0	0	2	16
No fixed treatment charges	3	2	3	0	1	1	1	2	13
Cover exposed roots	3	4	3	2	4	1	1	2	20
Care for main roots	3	4	3	2	4	1	1	2	20
TMPs free from crime or curse	3	2	3	0	3	0	1	2	14
Closed diary	2	2	3	1	3	1	1	2	15
No or limited treatment charges	3	2	2	1	5	1	1	2	17
Bars re-harvest of MedPI	1	1	2	0	3	1	1	2	11
Total	33	29	34	19	38	7	10	24	194
Pearson's Chi square (77) = 34.3683, p = 1.000									

The Traditional Governance Practices were not significantly different in all the market centres surveyed,  $p(1.000) > 0.05$ . Descriptively, majority of the Traditional Medicinal Practitioners (Fig. 5) are against re-harvesting of freshly harvested medicinal plants (92%) and backed limited or no disclosure of traditional medicine knowledge (85%) and thus maintain secrecy of the TM practice. The conservative nature of traditional medicine practice bars breastfeeding mothers (19%) and menstruating women (15%) from practice. Some Traditional Medicine Practitioners were guided by environmentally conscious decisions: discouraging uprooting of solitary medicinal plants (35%), care for main roots (62%) and covering of exposed roots with mounds of soil (65%). These traditional governance practices touched on morality, purity and cultural beliefs, for instance, not having sexual intercourse when a traditional medicine practitioner has a patient (50%), not imposing fixed treatment charges (58%) to allow patients pay what their spiritual conscience dictates, freedom from curse or crime (69%) and lastly having a close diary in gathering of traditional medicine (69%).

#### Secrecy/Limited or no disclosure of traditional medicine knowledge

Semi-structured interviews, field observations and photographic collections revealed that few Traditional Medicine Practitioners (15%) in the surveyed market centres were willing to disclose important traditional medicine knowledge. However, the willing respondents could not divulge a lot of important information, for instance, medicinal plant local name and the collection site, but would rather disclose information about the parts used, the disease treated and the mode of preparation. Most of the medicinal plants displayed in the open air markets (Fig. 6a & 6b) lacked proper identifying traits

(morphological and floral taxonomic characters) therefore making it difficult for users/patients and researchers to easily identify the traditional medicine plants traded. This was deemed to retain the traditional medicine knowledge in some families.

Figure 6 (a) Displayed traditional medicine plants on the roadsides of Kitale, Trans Nzoia County showing crushed leaves, roots and twigs; (b) Packets of herbal remedies used to treat various ailments, the label details the name of the disease and a predetermined dose, the plant name is often omitted.

### Preferences and liking for traditional medicine

Based on experience and feedback from customers/patients (Fig. 7), most Traditional Medicine Practitioners believe that people prefer traditional medicine to conventional medicine because they are considered better, faster in action and efficient (62%), natural, organic and safe (50%) and some think they are affordable and accessible (46%).

### Sources of Traditional Medicine knowledge

Most of the Traditional Medicine Practitioners learnt their traditional medicine knowledge (Fig. 8) from their grandmothers (57%) and some learnt from their fathers (13%), mothers (11%), aunts (8%) and few claimed they learnt by themselves (3%) and others learnt traditional medicine from researchers of traditional medicine (3%).

### Major Challenges that affect Traditional Medicine in Kenya

The Professional Experts and TMPs showed divergent opinions based on what afflicts traditional medicine sector (Fig. 9). Most Traditional Medicine Practitioners perceived that lack of market spaces (92%) and suspicion as a result of mistrust (96%) were the main challenges. On the other hand, the Professional Experts perceived that lack of adequate documentation in traditional medicine knowledge (100%), inadequate financial capital (100%) and existence of incompetent TMPs or quacks (92%) were glaring challenges.

## Discussion

In this study, women and more so elderly women dominated the traditional medicine practice. This can be attributed to the silent, informal and yet powerful traditional governance practices that by design excludes younger and inexperienced women. The exclusion of the younger practitioners boosts credibility and confidence among the customers or patients and mitigates safety fears among the consumers of traditional medicine. These traditional governance practices include barring of breastfeeding women and those undergoing menstruation from practicing traditional medicine (Fig. 5, Table 6). In Othman & Farooqui [11], and Peltzer & Pengpid [57] women also dominated the survey. Umair et al. [12] presented a unique gender representation where men were dominant in the survey for religious and cultural reasons that discouraged women from publicly interacting with male strangers. The mean age of practitioners (64 years) with an average experience of 25 years revealed that the sector is driven by experienced and knowledgeable practitioners who have accumulated enormous traditional knowledge in traditional medicine. Most of the Traditional Medicine Practitioners acknowledged growing interest among the younger people in consuming traditional medicine (reproductive age category). Sex, gender and cultural inclinations had a bearing on the overall representation in some market centres, for instance, the Makutano (West Pokot County) and Eldoret (Uasin Gishu County) market centres where all Traditional Medicine Practitioners interviewed were women and in Kitale (Trans Nzoia County) where all Traditional Medicine Practitioners interviewed were men (Table 3).

Most Traditional Medicine Practitioners learnt their traditional medicine knowledge from their grandmothers (57%) than from other family members. This is to ensure a continuous flow of the traditional knowledge in traditional medicine from one generation to another, and more so sustain the practice within the family tree. Suspicion and secrecy seemed to be a common phenomenon with most of the Traditional Medicine Practitioners' refusing to disclose vital traditional medicine knowledge and others (46%) refused to be interviewed. The relationship between professional experts and Traditional

Medicine Practices continued to be strained with suspicion and Traditional Medicine Practitioners' choose to have limited or no disclosure of traditional medicine knowledge. This suspicion is exacerbated by the fear of losing their hard earned traditional knowledge, inheritance and family livelihood.

The modern governance practices in the surveyed market centres were found not to be significantly different despite having devolved administrative structures as provided by the CoK 2010. It is clear that proper recognition of traditional medicine through clear sound policies and legal frameworks is not enough, what really matters is close and regular monitoring of the traditional medicine sector for quality controls and safety. A series of awareness campaigns is needed to educate the Traditional Medicine Practitioners on these laws and policies, given that only 27% of the Traditional Medicine Practitioners are aware of the laws and policies that regulate traditional practice in Kenya [58]. Standardized regulatory policies on herbal medicines are much needed for its global acceptance [16]. The existing laws and policies do not clearly capture the needs and aspirations of the Traditional Medicine Practitioners and does not outline the most important steps in the preparation of traditional medicine or herbal drugs, trade and practice guidelines and completely excludes the Traditional Governance Practices. Meke et al., 2016 [59] expressed the need for robust laws and policies that covers domestic and international trade, conservation of medicinal plants and sustainable resource management. The presence of unregistered or unrecognized TMPs (58%) heightens the need for stringent monitoring, tight checks and proper vetting of the practicing Traditional Medicine Practices to rid the market centres of quacks or incompetent traditional medicine practitioner

In most parts of the African continent, the traditional medicine practice is curtailed by perceptions of witchcraft. These perceptions hinder the development and progress of the traditional medicine sector. The Witchcraft Act of 1925, cap 67 Laws of Kenya regrettably created more harm than good in the advancement of traditional medicine and sadly enough this act still exists in our laws. In Peltzer & Pengpid [57], two traditional practitioners were excluded from their study for allegedly practicing witchcraft.

The traditional governance practices varied with notable cultural differences seen in the surveyed market centres but were not statistically significant. In this study, the traditional governance practices were more pronounced in Aror, Makutano and Eldoret market centres and were less pronounced in Kakamega and Kitale market centres. These differences can be attributed to varying cultures and presence of different ethnic and tribal groupings. The demand for traditional medicine is growing and it is not only utilized by rural population but also in the urban population and also as a last resort for many people when modern medicine fails. Thus underscoring the need to integrate traditional medicine into the general health care and even promote patient referrals [22]. Lack of designated market spaces or practicing rooms for Traditional Medicine Practitioners forces practitioners to practice on the roadsides and face imminent exposure to dusty or wet street spaces and real danger of contamination.

## Conclusion

Modern governance practices have continually received a lot of attention as compared to the much traditional governance practices. Traditional governance practices play a big role in traditional medicine as it determines who is eligible to practice, where to practice, what to avoid when practicing, how to practice and any other delicate questions that surrounds traditional medicine. Traditional governance practices are silent but yet powerful system of informal and unwritten rules that forms the backbone of traditional medicine. Traditional governance practices are closely associated with the socio-cultural beliefs of the local communities.

The existence of good laws and policies alone is not enough, there is need for education and awareness campaigns on these regulations taking into consideration of the needs and aspirations of the Traditional Medicine Practitioners. However, despite limited awareness on the current laws and policies, the Traditional Medicine Practitioners showed unwavering compliance on the enforced county-by-laws. Most legal and policy frameworks are general jurisprudence and rarely cover traditional medicine, medicinal plants, processing of herbal products, safety and efficacy.

Lastly, there is need to integrate traditional governance practices into our formal regulatory frameworks and consider harmonizing the traditional and modern governance practices in order to have a vibrant traditional medicine sector. The feeling of exclusion by the traditional medicine practitioners heightens suspicion, mistrust and slows development of the TM sector.

For the improved governance of traditional medicine, I recommend that:

- Traditional Medicine Practitioners be included in the process of making laws and policies governing the traditional medicine
- Stringent regulatory procedures and monitoring should be observed to ensure safety and efficacy
- Integrate traditional medicine in the primary health care and encourage referrals to modern health centres
- Practicing/trading spaces should be set up for Traditional Medicine Practitioners to prevent contamination of the traditional medicine
- Practicing Traditional Medicine Practitioners should be thoroughly vetted to rid the market centres of incompetent, unqualified and unethical practitioners popularly dubbed 'quacks'
- Traditional governance practices should be integrated in the legal and regulatory frameworks for traditional medicine and be given some importance just like the extra attention given to modern governance practices

## **Declarations**

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### **Availability of data and materials**

All the data is included in the manuscript.

### **Authors' contribution**

WKC conducted the fieldwork and prepared both the first draft and final manuscript, JKM and KK guided the research and ensured necessary corrections are implemented. All authors endorsed the final manuscript for submission and publishing.

### **Ethics approach and consent to participate**

The research was purely based on fieldwork and no human experiments were done.

Oral prior informed consents were obtained before proceeding with field interviews and photography.

### Consent for publication

All authors approved the final manuscript for publication.

### Competing interests

The authors have no competing interests.

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## Figures

  
**REPUBLIC OF KENYA**  
**DEPARTMENT OF CULTURE**  
**MINISTRY OF GENDER, SPORTS,**  
**CULTURE AND SOCIAL SERVICES**

Form DC1. (Revised 2003)

20/=

AFFIX  
PHOTO (S)  
HERE

**APPLICATION FORM FOR REGISTRATION/RECOGNITION OF TRADITIONAL MEDICAL PRACTITIONERS AND MEDICINAL PLANT CONSERVATIONISTS**

Those who are eligible for registration/recognition with the Department of Culture include traditional birth attendants, nutritionists, bone-setters, traditional surgeons, users of herbal extracts and medicinal plant conservationists. Bone setters, traditional surgeons and birth attendants shall be required to attach recommendations from relevant government authorities.

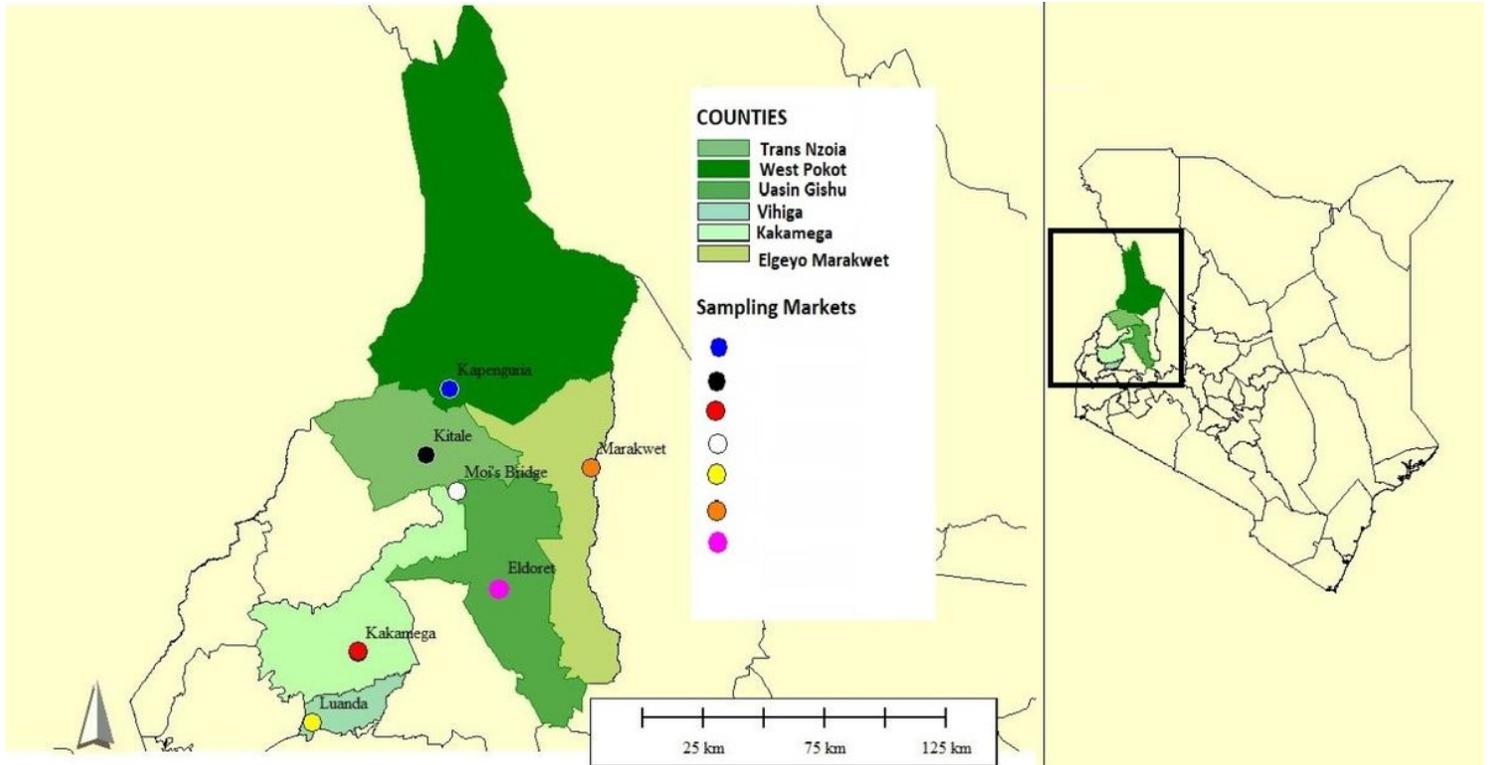
**CONDITIONS FOR REGISTRATION/RECOGNITION**

- 1.0 **KENYAN GROUPS/INDIVIDUALS**
- 1.1 Applicants are required to submit drug samples to recognized research organizations (Kenya Drug Mitishamba Research Centre, University of Nairobi, Kenyatta University; etc) Only original letter acceptable.
- 1.2 Applicants are expected to abide by Government regulations relating to practice of traditional medicine, public health, licensing, etc.
- 1.3 Every group / organization seeking registration must attach a copy of its constitution and minutes. The minutes must refer to the election of officials and discussion of registration of the group

23/02/2019

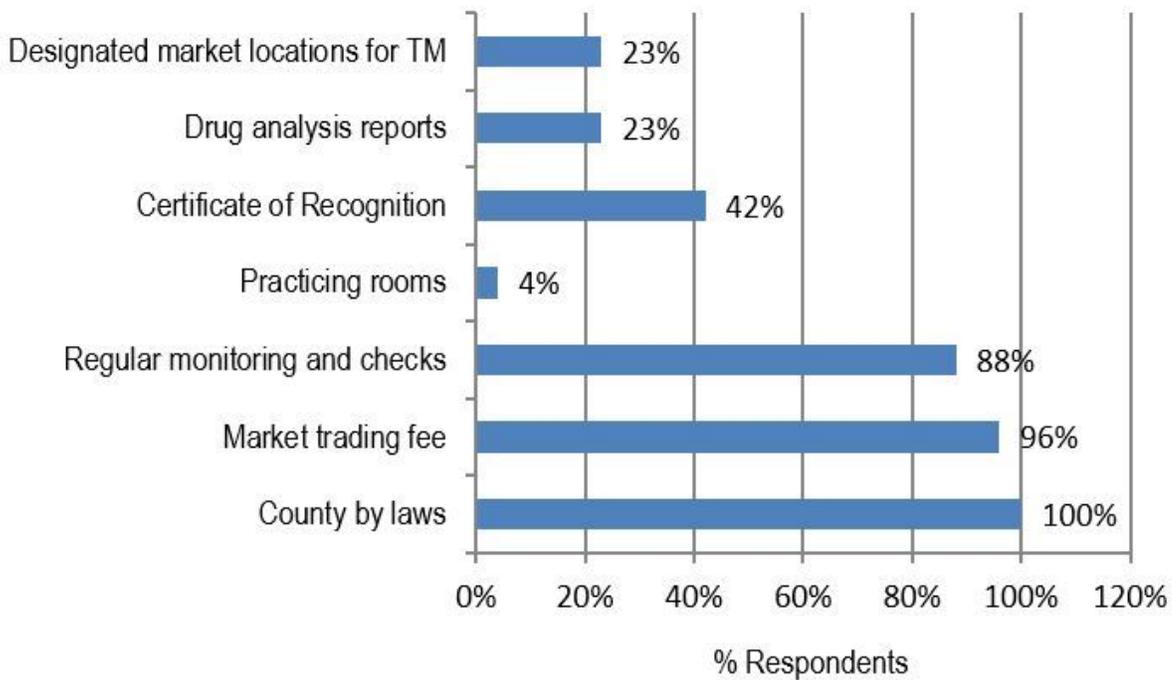
**Figure 1**

A snapshot of a registration or recognition form issued by the Department of Culture to traditional medicine practitioners.



**Figure 2**

A map showing adjacent counties where selected market centres are located.



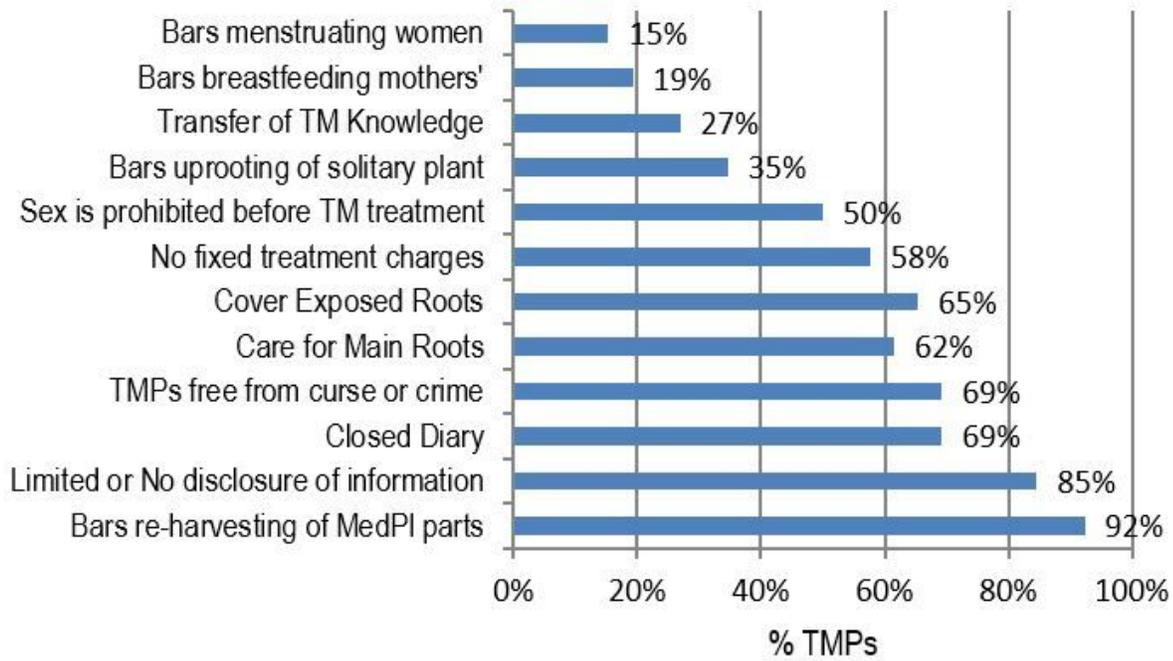
**Figure 3**

Modern governance practices observed in the sampled market centres.



**Figure 4**

A sheltered traditional medicine market in Luanda, Vihiga County, Kenya.



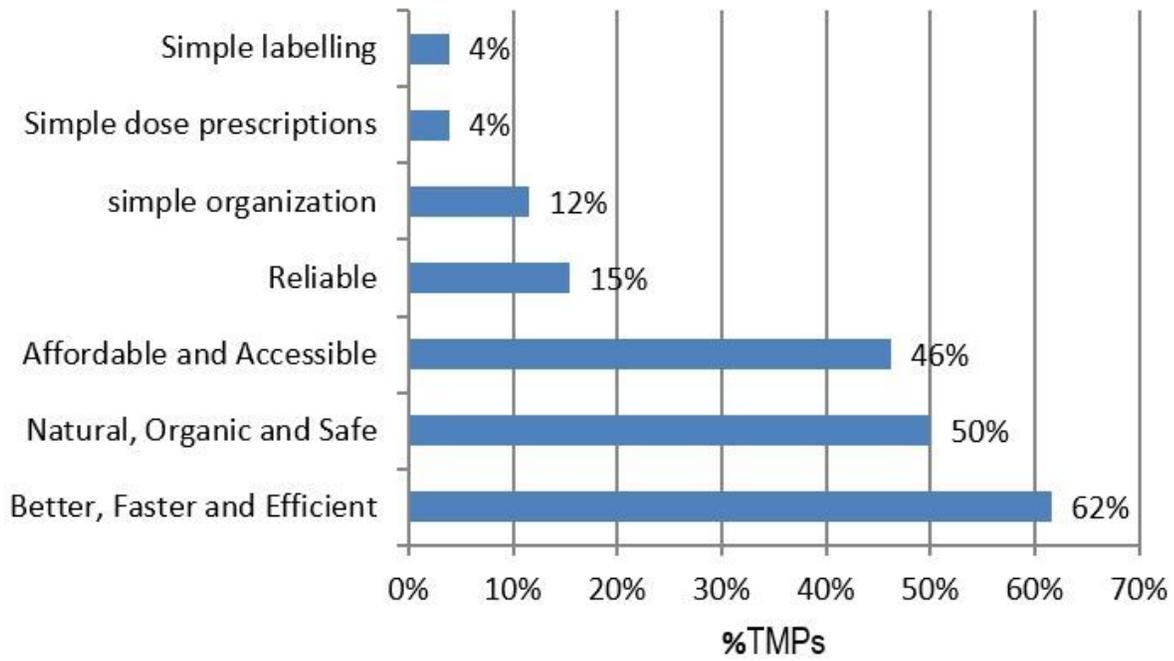
**Figure 5**

The traditional governance practices that regulate the trade and practice in traditional medicine.



**Figure 6**

(a) Displayed traditional medicine plants on the roadsides of Kitale, Trans Nzoia County showing crushed leaves, roots and twigs; (b) Packets of herbal remedies used to treat various ailments, the label details the name of the disease and a predetermined dose, the plant name is often omitted.



**Figure 7**

Perceptions of Traditional Medicine Practitioners on customers/patients preferences on the use of TM despite access to modern medicine in the selected market centres.

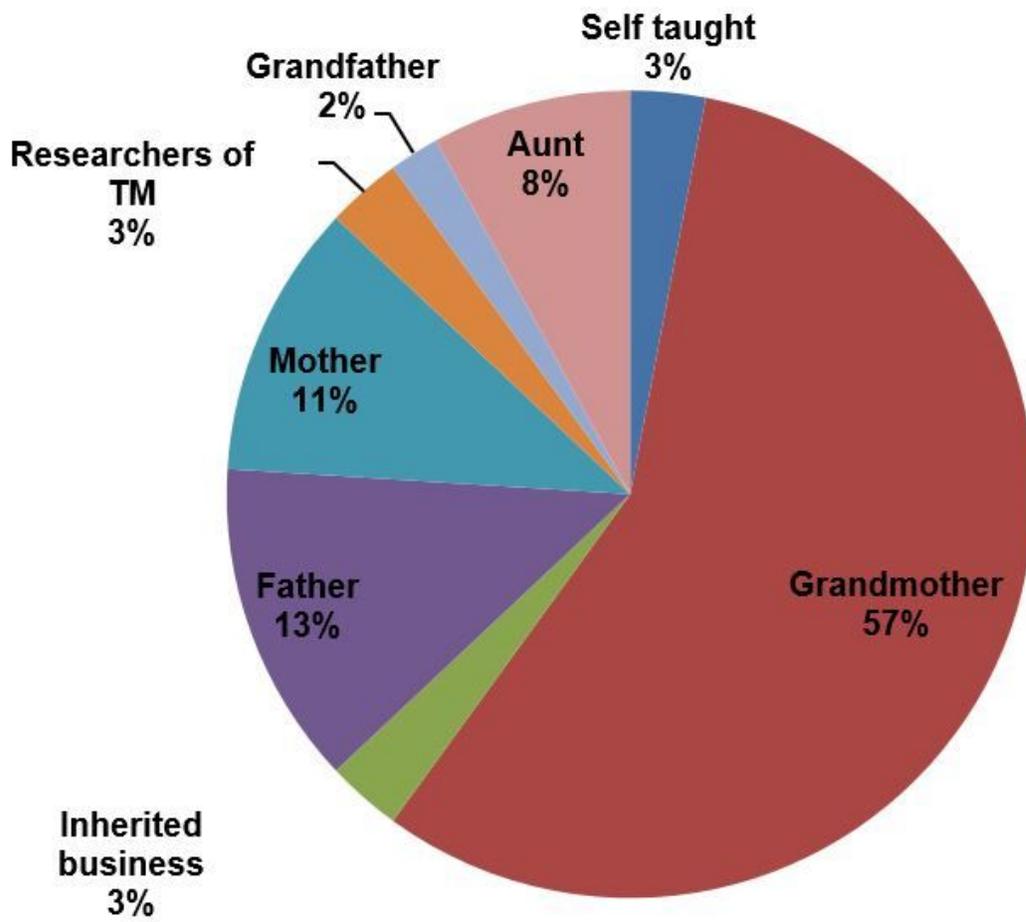
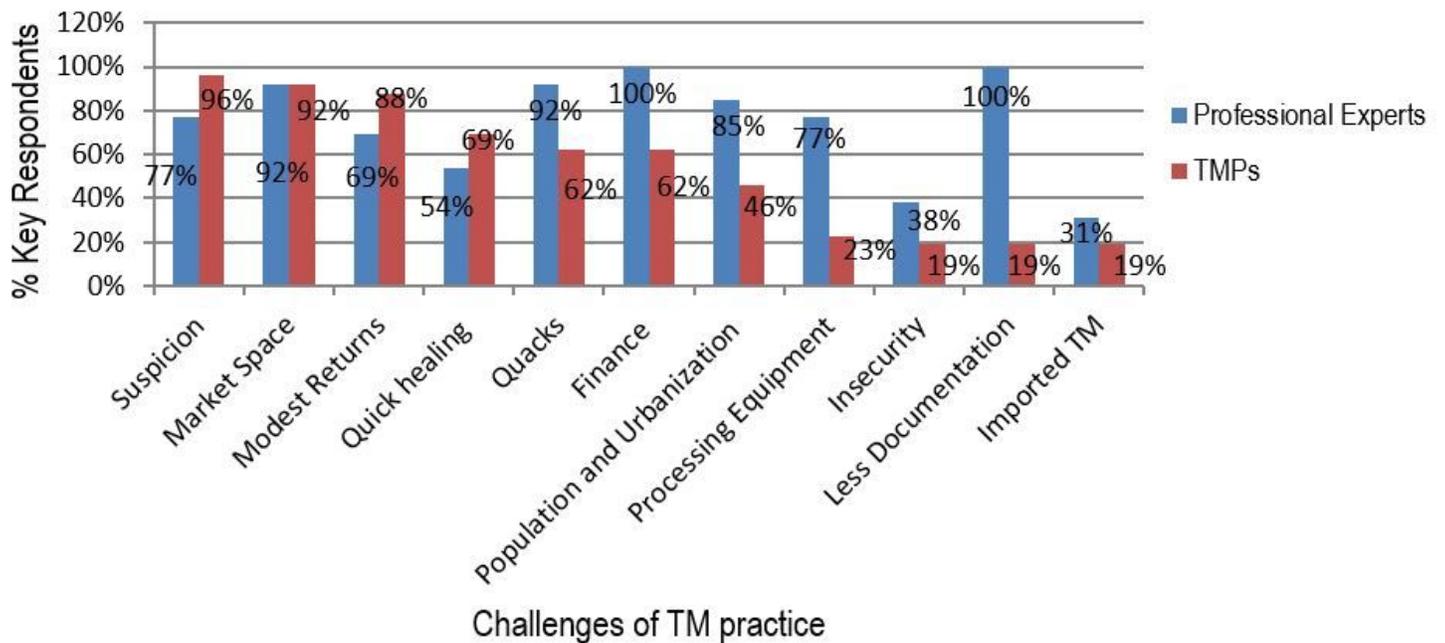


Figure 8

Sources of traditional medicine knowledge for most of the Traditional Medicine Knowledge.



**Figure 9**

The main challenges afflicting traditional medicine sector in Kenya as perceived by both professional experts (regulators) and Traditional Medicine Practitioners (practitioners).



**Figure 10**

A leading traditional medicine practitioner, Mzee Ole Ndinya, in the Trans boundary market centre of Moi's Bridge showcasing his traditional medicine.

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [QUESTIONNAIREGovernanceofTM.docx](#)