Afya Jumuishi : towards Interprofessional collaboration between traditional and modern medical practitioners in the Mara Region of Tanzania

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CHAPTER IV RESEARCH SETTING: THE MARA REGION IN TANZANIA

4.1 Tanzania: A Developing Country at a Glance

In this chapter, an overview of Tanzania and the Mara Region as the research area is presented. The first part covers the country's geography, and the historical and political background, followed by the nation's general health status presented by the current health indicators. Further, the Tanzanian medical system is explored with historical health services charting from the pre-colonial, colonial and post-independent Tanzania. The Mara Region's sociography is described with emphasis on geo-ecological factors, socio-demographic and an economic profile of the region. Lastly, the chapter embarks on underscoring the sample population profile of this study, including the medical practitioners from both traditional and modern medical systems in Mara Region of Tanzania. The traditional medical systems, life style and cultural attributes of the research setting are given in the proceeding Chapter V.

4.1.1 Geography and Historical Background

Tanzania is located in East Africa with a total area of approximately 943,000 sq km of which 2,640 sq km is the Zanzibar archipelago (Map 4.1). The largest part consists of the central highland plateau lying between the eastern and western branches of the Great Lift Valley. The north-eastern part and the southern highlands have the main mountain ranges where Mount Kilimanjaro, the highest mountain in Africa (5,896m), can be found. In the western branch lies Lake Nyasa, and Lake Tanganyika, which marks the lowest point in Africa? The largest river is Rufiji, drains the southern highlands region. However, there are other major rivers flowing into the Indian Ocean, such as Ruvu, Wami, Pangani and Ruvuma. The largest lake in Africa (Lake Victoria) extends within the three East African countries, Uganda, Kenya and Tanzania, of which Tanzania has the largest area

These features form Tanzanian ecology with rich varied ecosystems. Among the most biodiverse areas of Africa, it includes tropical forests of the eastern arc mountain ranges with a variety of plant species like *celtis africana* and birds, the dry central plateau, covered with Savannah bush-land and the grassland in the Serengeti plain. Along the coast is an extensive mangrove growth, such as the one found at the Rufiji River delta. The coastal area and offshore Islands of Pemba and Unguja display pristine coral reefs with diverse marine life. The three lakes also host numerous marine species of fishes, molluscs and crustaceans.

The government has set aside about one fourth of the land as protected parks, game and forest reserves. The major ones include the Ngorongoro Conservation Area, Serengeti National Park, Mikumi National Park, Tarangire National Park, Gombe Stream National Park, Udzungwa Mountains National Park, Ruaha National Park, Katavi National Park, Lake Manyara National Park, Selous Game Reserve, Uwanda Game Reserve, Rungwa Game Reserves, Ugalla River Game Reserves, Moyowosi Game Reserves, Mkomazi Game Reserves, and Kigosi Game Reserves, among others.

In these areas, apart from different flora species, there are more than four million wild animals representing about 430 species and subspecies of mammals, 60,000 species of insects, 25 types of reptiles 100 species of snakes and numerous species of birds. Reserves and parks represent ways of reserving the national heritage, however, the Wildlife Conservation Society of

Tanzania (WCST) through its newsletter known as *Miombo* has frequently reported about the endangered species and environmental degradation issues due to factors discussed later.

Map 4.1 The United Republic of Tanzania Administrative Regions
Source: Tanzanian Ministry of Land, Housing and Human Settlement (http://www.ardhi.go.tz/sites/default/files/TANZANIA.pdf)

Following their outstanding universal values, the following properties of Tanzania are inscribed on the UNESCO World Heritage either as cultural or natural:

- Cultural: Kondoa Rock-Art Sites (2006), Ruins of Kilwa Kisiwani and Ruins of Songo Mnara (1981), Stone Town of Zanzibar (2000);

- Natural: Kilimanjaro National Park (1987), Ngorongoro Conservation Area (1979), Selous Game Reserve (1982), Serengeti National Park (1981).

Other properties, tentatively submitted include, Oldonyo Murwak (1997), Gombe National Park (1997), Jozani-Chwaka Bay Conservation Area (1997), Kondoa Irangi Rock Paintings (2000),

Eastern Arc Mountains Forests of Tanzania (2006), The Central Slave and Ivory Trade Route (2006), Ngorongoro Conservation Area (nominated under cultural criteria 2009). The country also possesses a variety of soils ranging from the fertile, volcanic soils of the central plateau to less fertile, loamy soils of the central plateau.

At every place on earth, people's health, a decent livelihood and economy are heavily dependent on ecosystem resources. Many areas of high biodiversity also provide important ecosystem resources such as carbon storage, fuel wood, freshwater flow and fish stocks. However, human activities are affecting the continued provision of these services. On the environmental assessment, like many other nations, Tanzania faces some challenges of land degradation and deforestation. The *Global Footprint Network*[1] reveals that since the 1970s, humanity has been in ecological overshoot with annual demand on resources exceeding what the earth can regenerate each year. Tanzania is not an exception to the global situation.

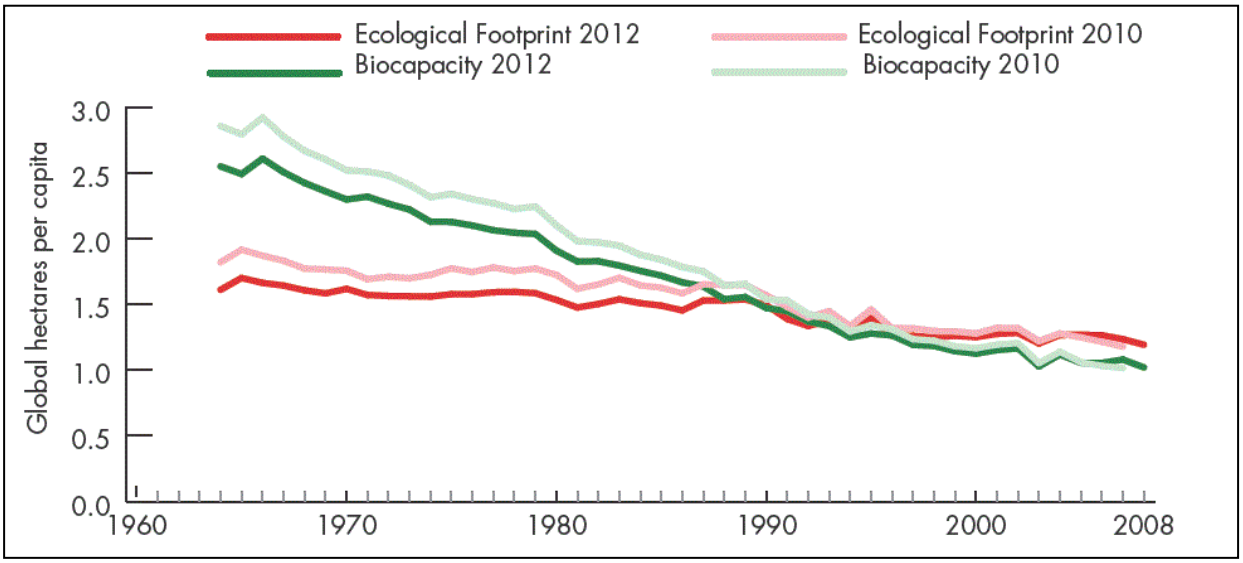


Figure 4.1 The Ecological Foot-Print and Biocapacity Trends of Tanzania
Source: Global Footprint Network (2012)

Based on the recent National Accounts for the year 2008, the total Earth's *biocapacity* is estimated at 12 billion global hectares (gha), or 1.8 gha per person. However, humanity's *ecological footprint* has reached 18.2 billion gha, or 2.7 gha per person. Correspondingly, the number of planets demanded by all humans has increased to 1.52 planets, which represents an increment of 2.5 times the demand for nature's renewable resources since 1961. It now takes the earth one year and six months to regenerate the resources humans use in one year. The adverse consequence of such an overshoot on our well-being and health cannot be underestimated as we continue depleting Earth's resources.

No wonder, humankind continues to speak of 'nature on the run'. Issues such as deforestation, increased carbon emission, land degradation and other unnecessary and irresponsible utilisation of our natural resources must be addressed. Figure 4.1 shows tracks of the per-person resource demand (ecological footprint) and resource supply (biocapacity) in Tanzania between 1961 to 2008 in a comparison of reports from 2010 and 2012.

Biocapacity varies each year with ecosystem management, agricultural practices (such as fertilizer use and irrigation), ecosystem degradation, and weather. The graph shows that while biocapacity of Tanzania has declined, the ecological footprint has steadily increased.

4.1.2 Socio-Cultural and Political Profile

Tanzania is running a multi-party system. The mainland has 24 political administrative regions, with 120 ethno-cultural groups of varying origins including Bantu, Cushitic, Nilotic and Khoisan speaking peoples. The population also includes the small but economically significant Asian and Arabic minorities. According to the 2002 census, the population estimate for 2010 is 43,188,000 people, with a young, broad based population structure; 46% are below 15 years of age, and the majority (about 89%) stay in rural settings with limited social services. Agriculture remains the main backbone of Tanzanian economy, employing about 88% of the workforce. Quite a number of societies practice mixed farming economy.

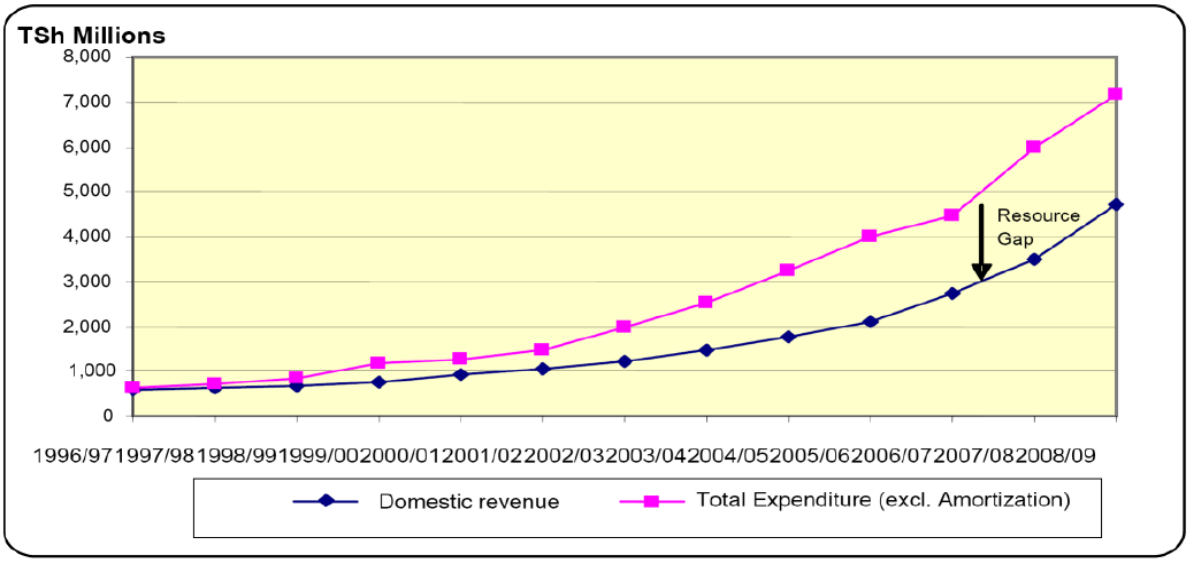


Figure 4.2 The National Financial Resource Gap (1996-97 to 2008-09)
Source: The Tanzanian Five Year Plan (2011/12 - 2015/16); an extract from the Tanzanian Ministry of Finance Report of 2010

Although each tribe has its vernacular, Kiswahili is the national spoken and uniting language. Still with some elements of socialism, respect (especially to elders), communal socialisation, hospitality and politeness are highly valued in the society. Major religious groups are Christian and Muslim, and the rest will follow traditional religion, Hindu, along with few non-believers.

The Tanzanian Five Year Plan of 2011-12 to 2015-16, shows that the government relies on two main sources of revenue to finance its recurrent and public investment expenditures: domestic tax revenue and foreign assistance, such as grants and bilateral and multilateral loans from both sources. However, the larger share of development expenditure is through foreign financing (over 80 percent of total capital) rather than domestic revenues. Despite the increase in the overall budget over the years, there is an alarming trend in the growing financial resource gap between revenue and expenditure, inferring growing expenditures as compared to available financial resources as shown in Figure 4.2.

Subsequently, mobilization of financial resources coupled with (unnecessary) cuts in government spending become a mandatory crosscutting agenda in the parliamentary budget resolutions from a session concluded on 17 August 2012. The actual total budget for health for the year 2012/13 is Tshs. 103,100,021,600 (Euro 57,277,790). Tshs. 52,003,350,600 (Euro 28,890,750) is for current expenditure while Ths. 51,096,671,000 (Euro 28,387,039) is set aside for health developmental projects. Tshs. 3,552,448,200 (6.9%) shall come from internal revenues while Tshs. 47,544,222,800 (93.1%) shall depend on other external sources (The Ministry of Health and Social Welfare budget speech 2012-13)

4.2 The Mara Region and its Sociography

4.2.1 Geography and Ecology

Administratively, Mara Region is one of the 30 administrative regions of the United Republic of Tanzania (mainland and Island of Zanzibar). Alphabetically arranged names of all regions with their headquarters in parentheses are:

Arusha (Arusha), Dar es Salaam (Dar es Salaam), Dodoma (Dodoma), Geita (Geita), Iringa (Iringa), Kagera (Bukoba), Katavi (Mpanda), Kigoma (Kigoma), Kilimanjaro (Moshi), Lindi (Lindi), Manyara (Babati), Mara (Musoma), Mbeya (Mbeya), Morogoro (Morogoro), Mtwara (Mtwara), Mwanza (Mwanza), Njombe (Njombe), Pemba North (Wete), Pemba South (Mkoani), Pwani (Kibaha), Rukwa (Sumbawanga), Ruvuma (Songea), Shinyanga (Shinyanga), Simiyu (Bariadi), Singida (Singida), Tabora (Tabora), Tanga(Tanga), Zanzibar Central/South (Koani), Zanzibar North (Mkokotoni), Zanzibar Urban/West (Zanzibar)

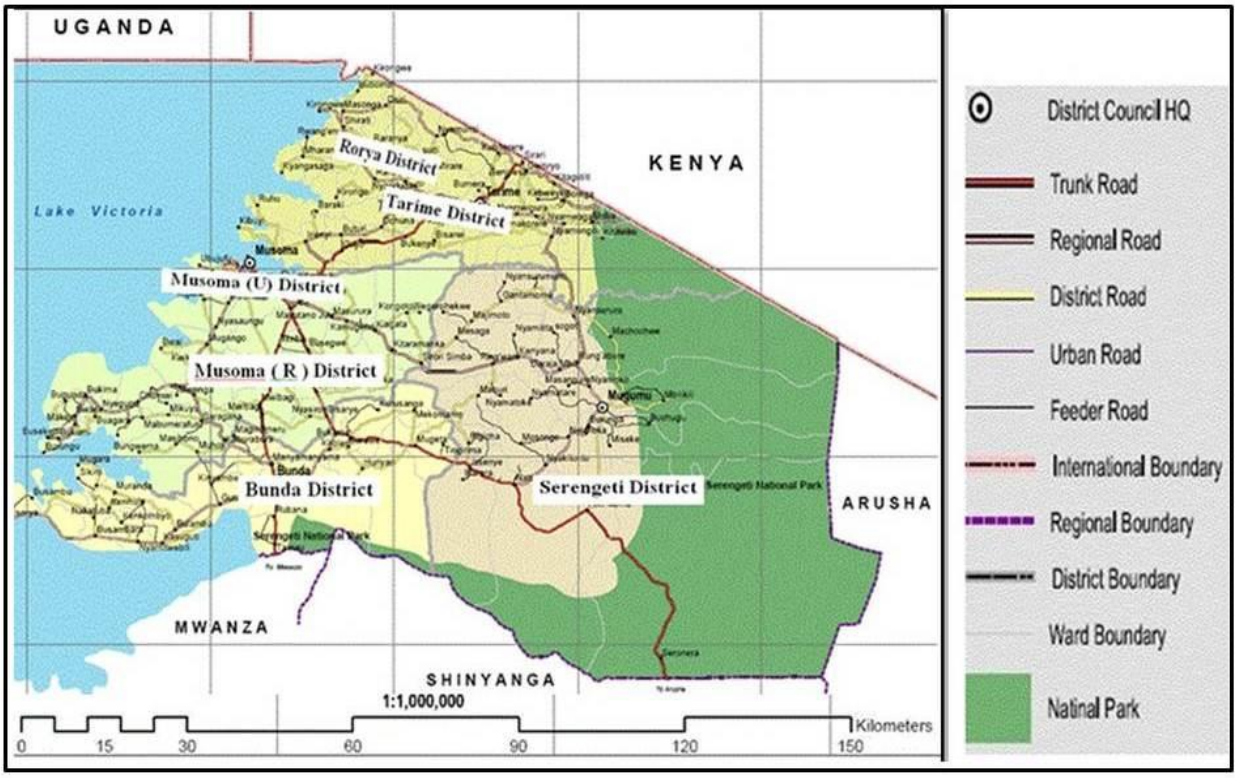
The Mara Region has six councils of local government namely, Musoma, Musoma Municipal, Tarime, Rorya, Bunda and Serengeti. This study covers the Mara Region administrative area which covered the then four districts (see Map 4.2), namely Musoma (rural and urban), Bunda, Tarime, Rorya and Serengeti. Most of the area is within the lowlands, with some in the midlands and a very small portion in highland. This area is in the northern part of Tanzania mainland and borders the Republic of Uganda and Kenya in the north, Arusha to the east, Shinyanga in the South, Mwanza in the South West and Kagera in the West over the waters of Lake Victoria. Geographically it lies between Latitudes 1˚ 0’ and 2˚ 31’ south of the equator and between longitudes 33˚ 10’ and 35˚ 15’ east of Greenwich. In the government’s administrative year of 2010/11, the Mara Region has been divided into six councils, made up of 20 divisions, in turn subdivided into 154 wards and further down to 487 villages and 57 streets as shown in the Table 4.1.

Table 4.1 District Profiles of the Mara Region

District	Council	Division	Ward	Villages	*Mitaa*
Musoma	Musoma Municipality	1	13	-	57
	Musoma Rural	3	34	115	-
Serengeti	Serengeti	4	28	91	-
Bunda	Bunda	4	28	106	-
Tarime	Tarime	4	30	95	-
Rorya	Rorya	4	21	80	-
Total		20	154	487	57

Source: The Mara Regional Commissioner Office Regional Profile of 2011

Climate, Soil and Topography
Mara has an average annual temperature of 28˚C. The region can be categorized in climatic zones as follows. The Northern Zone includes Tarime district and part of Serengeti. This zone has an annual rainfall of 1250 – 200 mm.



Map 4.2 The Mara Region and its Administrative Districts
Source: Regional Administration and Local Government Authority (2008)

The Central Zone, found in Musoma and the eastern part of Serengeti. The average annual rainfall ranges between 900 to 1300 mm. The Lowland Zone is Bunda and the places at the lake shores with an annual average rainfall of 700 – 900 mm. The rainy seasons are *Short Rainy Season*: September – November or December and *Long Rainy Season:* February – May.

Presently, the Mara Region has six councils of local government namely Musoma, Musoma Municipal, Tarime, Bunda, Serengeti and the recently added, Rorya and Butiama. The gathering of granite rocks forms the regional soil texture. The ground composition varies from gravel, to red sandy soil, light sandy loams, grey clay and black calcareous clay. The region falls in the Lake Victoria basin. With its perennial river Mara, the region also has seasonal steams like Suguti, Lyarano,Tigitai, Mori and Rubana. Of the 30,150 sq km of the Mara Region 10,942 sq km (36%) is water and 19,566 sq km (64%) is land. Among the highest hills are Ryamakongo (1259m), Kibayo (1254m) and Nyabisonga. The topography of the region manifests wide valleys and occasional steep-sided hills.

4.2.2 Socio-Demography and Economy

Population
The regional population has increased 2.5 times in the period between 1967 and 2002, with the projected growth rate for the period 2002-2012 expected to be 2.7%. The Mara Region has a

population density of 43.7 persons per square kilometre. In 2002, the regional average household size has been 5.5 persons.

Table 4.2 The Population and Square Area of the Mara Region Districts

		Area coverage (in sq km)		
District	Population	Total km	Land	Water
Bunda district	335,355	3,762	2,782	980
Musoma rural district	407,227			
Musoma urban district	170,411	4,309*	1,957*	2,352*
Rorya district	270,237	9,345	7,252	2,093
Serengeti district	220,344	10,942	10,942	-
Tarime district	352,855	1,792	1,792	-
Total	1,756,429	30,150	24,725	5,425

*includes Musoma Rural

Source: The Mara Regional Commissioner Office Regional Profile of 2010

Serengeti District is the largest of the six districts geographically, though its population is smaller than some districts. This is because more than half of the district area is what is known as Serengeti National Park. The regional population growth is estimated at 2.9 per annum. The last Census reports a substantial increase of the elderly group in the community. It has been noted that most of them are retired, and some have degenerative disorders due to various reasons. At the same time some are compelled to continue on as the household breadwinners because the most productive age groups are eroded by the complications of AIDS.

Ethnicity

The region is multi-ethnic with the following dominant ethnic groups:

- Wakuria – Wakuria, Wangoreme, and Wakiroba
- Waikoma – Waissenye, Wanatta and Ikoma
- Wajaruo – Wajaruo
- Wazanaki – Wazanaki, Waikizu, Wasizaki and Wakabwa
- Wajita – Wajita, Waruri and Wakwaya

Each ethnic group is identified by unique traditions and culture. However, they all share a common value; showing respect for and continuing to utilize traditional medicine. Furthermore, all traditional societies in the Mara Region are patriarchal, thus practising male domination over females.

Health:

Tanzania continues to be among the countries with a high burden of diseases, especially communicable diseases. According to Mara Regional Medical Office Report of 2010, the ten most common diseases of the Mara Region are Malaria, Acute Respiratory Infections, Pneumonia, Diarrhoea Diseases, Intestinal Worms, Schistosomiasis (caused by Schistoma Mansoni, found in Lake Victoria and other water bodies), Anaemia, Upper Tract Infections, Minor Surgical conditions and HIV/TB.

With the exception of Musoma, each Council has a District Hospital. The Mara Regional Medical Office Report of 2012 shows there are a total of 259 health facilities in the Mara Region in the following categories shown in Table 4.3.

The region suffers from insufficient physical resources including infrastructure, medical equipment and drugs, as well as inadequate human resources.

Table 4.3 Available Health Facilities by Ownership in the Mara Region

Facility/Owner	Government	Religious	Private/ NGO	Total # of Beds	Total # of Facilities
Hospitals	3	3	2	1098	8
Health Centre	14	8	6	402	28
Dispensary	171	30	22	146	223

Source: The Mara Regional Medical Office Report (2012)

Unfortunately, without considering the medical practitioners from the traditional and alternative systems, it is estimated that the entire region has less than 50% of the required qualified manpower for health service delivery. The documented ratios of modern health care practitioners to the population are as follows: Doctor (Medical Officer) 1:58,000; Assistant Medical Officer 1:22,000; Clinician (Clinical Officer) 1:4,000; Dental Officer 1:1,500,000; Assistant Dental Officer: 1:56,000.

For quite some time, through an established memorandum of understanding, there have been few visiting specialized Chinese doctors who offer their services mainly at the regional headquarters in Musoma Regional Hospital.

Reproductive and Child Health (RCH) services are given throughout the region from 183 clinics. Vaccination coverage to pregnant women and children is quite promising. In 2006, about 95.5% of the target population completed their vaccination doses. However 14% of the children attended to at the clinics were malnourished. The leading causes of death to the under five children are, Malaria, Anaemia, Diarrhoea and AIDS-related diagnoses. Public health education continues to educate the masses especially on the use of treated mosquito nets and seeking out health services in a timely manner.

Contrary to the government's emphasis on deliver babies at the health facilities, some pregnant women have continued birthing at home. Though lack of physical and human resources are often cited as the reason, it is irrefutable that some like to be assisted by traditional birth attendants. In all District Councils of the Mara Region, there are reported cases of *uvulectomy* and *'plastic teeth'* extraction on children. A regional health survey conducted in 2004 and 2008 reveals HIV infections have increased from 1.8% to reach 5.3%.

Major reasons for the spread of HIV/AIDS, include female genital mutilation practices, wife 'inheritance' traditional customs, traditional death cleansing rituals, poverty and dislike of the use of condoms. The highest incidences are found in concentrated areas with mining and fishing activities. The establishment and running of Voluntary Counselling and Testing Centres (VCTCs) as well as Care and Treatment Centres (CTCs) for HIV/AIDS control and care is a challenge undertaken by the regional authorities.

Education

Primary education continues to be considered as a universal public good to all eligible kids without discrimination in line with the Tanzanian development vision up to the year 2025 (2025 (United Republic of Tanzania 1998).

In 2008, pupils in primary schools numbered 410,166 (208,342 boys and 200,526 girls) with a total of 6,921 teachers. By the year 2002, the average total enrolment went up to 214 per 1000 population at the start of the Primary Education Development Programme.

Table 4.4 Number of Primary School Facilities in the Mara Region

	Number of Primary Schools		
District Council	Government	Private	Total
Bunda	154	3	157
Musoma Rural	154	-	154
Musoma Municipality	35	6	41
Serengeti	96	2	98
Tarime	124	5	129
Rorya	113	-	113
Total	629	16	692

Source: Regional Commissioner – the Mara Region Profile (2011)

The total enrolment reached 292,707. Students are typically in the age groups of 10-14 or 25-29. In primary and secondary schools, students are typically between 7-25 years old, while students older than 25 years are attending institutions of higher learning.

A deficit in the number of teachers in the region exists, as the average teacher ratio for primary school has been projected to be 58:1. Also the region had a deficient of about 47% for available classrooms. (Table 4.5 shows the number of primary schools in the region). This meant the average class size has been 84 pupils per room. The same report from RC Office showed deterioration in the number of girls relative to boys in the population of primary school between 1978 and 2002. Despite the efforts of every local council, the average number of pupils' per desk in the region has been six, another facility shortfall in the system.

Serengeti and Tarime have had the poorest record in the enrolment of girls. The 2002 compiled data from Regional Commission Office shows a sex ratio of 106:100 for primary school, while in secondary school the 2002, the girls counted only for 28% of the total enrolment. A total of 161 secondary schools exist in the region, of which 15 belong to the private sector while 156 are public (see Table 4.7), all with a total of 32,300 students (12,754 girls and 19,546 boys). The Mara Region has three teaching colleges. Tarime has two certificate level colleges, and Bunda has one diploma level college. The Mara Institute of Adult Education and Open University continue to enrol students for the level of Diploma, Advanced Diploma and Degree programs.

Table 4.5 Number of Secondary Schools and Colleges in the Mara Region

District	Secondary Schools	Colleges
Bunda	27	2
Musoma Rural	37	-
Musoma Urban	22	7
Serengeti	25	1
Tarime	25	2
Total	161	13

Source: Regional commissioner- the Mara Region Profile 2011

Many primary and secondary graduates who cannot join universities and colleges join one of the seven Vocational Training Centres. (Musoma has three, Serengeti has two, Tarime has one, and Rorya has one). In Vocational Training Centres, skills acquired include those of mechanics, masonry, carpentry and joinery, fisheries, accounts, tailoring, secretarial studies, etc.

The Mara Region has few learning institutions for special needs students. These include *Mwisenge 'B'* (for the vision impaired); *Mwembeni 'B'* (for the mentally challenged as well as for the hearing and speech impaired).

As in other regions of Sub-Saharan Africa, the literacy rate and poverty lines are regarded as determinants to poor health status due vulnerability to communicable diseases, HIV and Sexual Transmitted Infections (STIs) in particular, poor utilisation of the available health services, etc. Education efforts in Mara Region tend to be aimed towards boys, putting girls at a disadvantage. Only when they are married are girls considered to benefit their newly linked families. Therefore, the tendency has been to support boys, as they are usually regarded as heirs of the family. However, in 2002, the Tanzanian government has waived off all enrolment setbacks to primary school, which includes the Universal Primary Education (UPE) annual fees. Once this is successfully implemented, it will help along the road towards equal education opportunities for both boys and girls in all regions. However, other remaining challenges include; procurement of uniforms, exercise books, textbooks, other necessary materials, and the changing attitudes of parents, and especially elders in the villages towards girls.

Patriarchal Social Life

Most of the economic resources in the Mara Region are planned, managed, administered and distributed by men. This is because the cultural and social thinking of all the ethnic groups in the Mara Region is male oriented. Female contributions are not welcomed justly, and unless there is enough critical mass to bring about changes, it is not likely all men will change in the near future. However, as more women get educated and have a stronger representation in decision-making bodies such as in the Local Government Authorities and the National Parliament, changes may occur as they will be in a better position to influence men and possibly fight for their own rights.

The culture in the Mara Region dictates that women work in very difficult environments and conditions labouring in the gold mines of Mara Region. It is the women who graze and look after herds of cattle (e.g. among the Kurya, Ngoreme, Ikoma, Issenye and other ethno-cultural groups) while village men live a relative live of leisure, which may include excessive drinking and sleeping idly. It is the women who sell fish (fish mongers), while men sleep after their fishing work. It is the women who do a lot of peasantry work for both food and cash crops. Generally speaking, women are the key actors of the communal economic activities, but unfortunately they do not enjoy equally the fruits of their labour. They do not have access to the revenue from their toil because of the existing patriarchal system of social life. Both males and females in the Mara Region are economically active from a very young age of approximately 10-14 years old, until 60-64 years of age (President's Office 1988).

Natural Resources

Abundant natural resources and biodiversity in the Mara Region contribute immensely to the region's economy and employment opportunities (see Figure 4.3). Lake Victoria, with an area of 68,880 sq km, the world's second largest fresh water lake, is shared by Kenya (6%), Uganda (43%) and Tanzania (51%).

Fishing activities from Lake Victoria provide for Tanzania's domestic fish consumption, for income generation (both domestic and abroad). Two main challenges in the fishing industry are irresponsible illegal fishing and black market exports to the neighbouring countries. However, the region has collaborated with the government's Fishery Management Department to ensure protection, conservation and sustainable use of natural resources.

In general, the governmental departments in charge of natural resources and the Tanzania National Parks authority both continue to encourage community-based approaches as well as local participative protection and conservation strategies of natural resources for the present and future generations.

Additional Economic Activities

The Mara Region recorded a gross domestic product (GDP) of Tshs. 245,495 million in 2002. The per capita GDP in 2000 has been US$190 while the average percentage of Mara Region contribution to the National GDP has been 3.45%, making the Mara Region the 13th position in the country. Mara Region industries include agriculture, fishing, hunting, tourism, mining, and bee keeping.

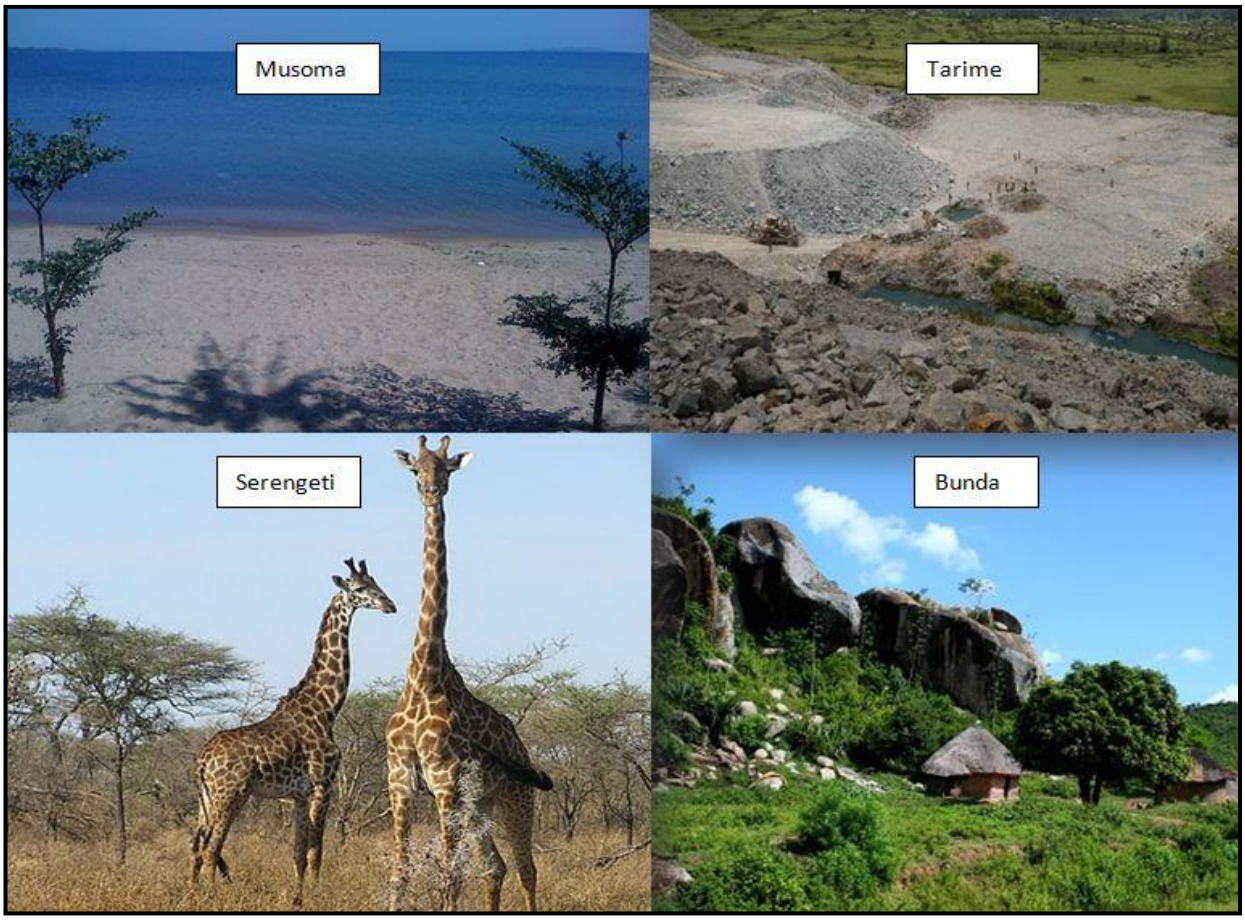


Figure 4.3 Diverse Natural Resources and Biodiversity of Mara Region.
Source: Fieldwork (2009).

Cooperative and Economic Capacity Building

Until 2008, the Mara Region had 334 Cooperative Societies, including 193 *Saving and Credits Cooperative Societies* (SACCOS) and 141 *Agricultural and Marketing Cooperative Societies* (AMCOS). The increase in the number of societies and members is due to the 4th term government robust encouragement especially the establishment of SACCOS.

The establishment of Cooperative Societies as financing sources is evidenced as a tool for poverty reduction in developing countries (Sizya 2001);

however there is a need to review governmental policies and find more efficient approaches on how to better establish and run these cooperatives.

Infrastructure: Transportation and Communication

Roads:

Most roads are gravel, making them vulnerable to harsh weather conditions especially torrential rains, rendering them seasonal. However there is a paved road which connects the area from Tarime, Musoma Township, Bunda and Mwanza.

Table 4.6 Road Network by Grade and District in Mara Region

District	Grade (km)				
	Trunk	Regional	District	Feeder	Total
Musoma	96	196	265	327	884
Tarime	139	273	215	270	897
Bunda	91	126	167	254	638
Serengeti	79	131	174	117	501
Total	405	726	821	968	2,920

Source: Regional Commissioner- the Mara Profile 2011

Water:

For passengers and goods, water is the second-most used means of transport, mainly used by lakeshore residents and islanders who travel by sailboats, motorboats and paddled boats. The condition of water borne transport is usually good with the exception of fierce wind and heavy rains. The situation is worse at points where the river and tributaries enter the lake. Safety measures are not widely applied, and the residents are less sensitised on proper use.

Airways:

Musoma Airport serves commercial and non-commercial chartered flights for passengers and cargo. Additionally, there are small airstrips for emergency medical care and evacuations as well as for Flying Doctors' Services.

Telephones, Telefax and E-mail:

All district headquarters are connected to an automatic phone system, thus able to use other electronic communication means like fax, e-mail. With the fast-growing Information Communication Technology (ICT) networks in the area, it is now possible to use electronic media, mainly in public service buildings and in fee-based Internet cafes, although the limited bandwidth is often overloaded and slow.

Electricity

All district headquarters are connected to the national electrical grid. Although, there is ample potential for renewable energy like photovoltaic, wind and thermal energy, these kinds of energy sources have not been substantially tapped.

Water Supply

Most areas in the Mara Region rely on natural water sources; Musoma and Bunda being endowed with Lake Victoria and the Mara River, while the Serengeti District has rivers such as the Mara, Grumeti and seasonal tributaries. Nonetheless, most people far from the lake and rivers use shallow wells, dams and springs for humans and livestock to drink. Unfortunately, due to sanitation problems the safety of water for human consumption is not guaranteed.

4.3 Study Population and Sample

4.3.1 Professional Groups in the Study Area

The sample size in this study includes medical practitioners from both Traditional and Modern Medical systems. The Modern Medicine (MM) system is comprised of professionals with various modern titles, while for Traditional Medicine (TM); professionals are identified by specific indigenous tribal names. Since the Mara Region of Tanzania is composed of different ethno-cultural groups, and for convenience as well as statistical relevance, professional grouping has been used to identify medical practitioners who perform related functions and services for clients. Table 4.7 summarizes the different professional groups differentiated in accordance with their medical systems.

Table 4.7 Professional Groups in the Study Sample Population

Modern Medical system Professional group	Cadres included from the sample population
Doctor	Surgeon, Medical Officer, Asst. Medical Officer,
Clinician	Clinical Officer, Asst. Clinical Officer, Dental Officer
Nurse	Nursing Officer, (Enrolled) Nurse, (Enrolled) Midwife
Allied Health	Practitioner in Pharmacy, Radiography, Laboratory, Orthopaedic
Community Health Worker	Health Officer, Community Health Volunteer, Village Health Worker, HIV/AIDS Counsellor
Support Worker	Chaplain, Medical Attendant, Nursing Student, Clinical Officer Student
Traditional Medical system Professional group	
Traditional Healer	Traditional Healer, Herbalist, Bonesetter
Traditional Birth Attendant	Traditional Midwife, Birth Attendant
Male Circumciser	Male Circumciser
Faith Healers	Spiritualist, Prayer warrior
Predictor	Predictor, Fortune Teller, Soothsayer
Traditional Medicine (TM) Vendor	Traditional Medicine (TM) Vendor

Source: Survey Fieldwork 2006

4.3.2 Socio-demographic Profiles

Sample Population with Age Distributions

The sample population of this study comprises both traditional and modern medical practitioners giving either Traditional Health (TH) services or Modern Health (MH) services. This study shows that those of Modern Medicine (MM) population are more with young and middle-aged adult practitioners while those from Traditional Medicine (TM), in contrast are mainly of middle-aged and older adults from, as shown in the population distribution in Figure 4.4. This means while the ages of modern medical practitioners range from 20 to 59; those of traditional health practitioners are 40 years old and above, as defined in the age grouping shown in Table 3.1. A major explanation for this is that most Modern Medicine (MM) workers retire at 55 years of age, while Traditional Medicine (TM) practitioners tend to continue giving services as long as they are physically able.

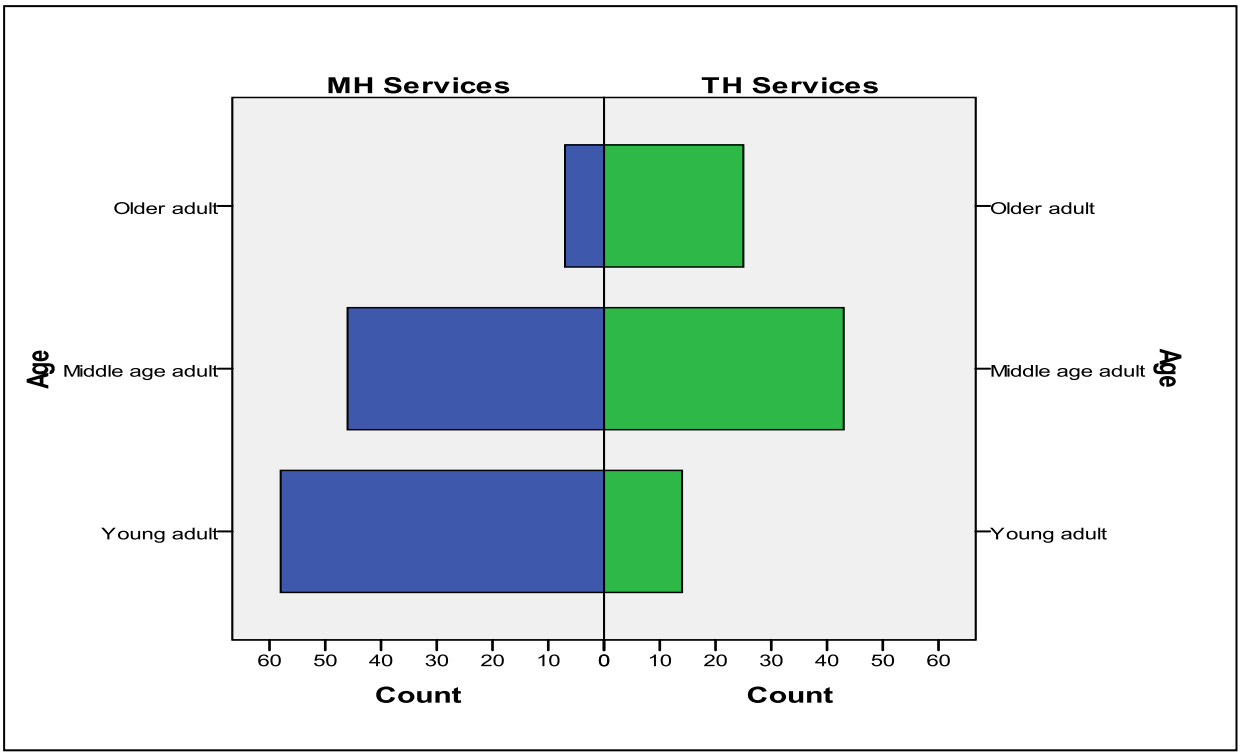


Figure 4.4 Medical Practitioners Age Population Distribution
Source: Fieldwork (2006)

Sample Population with Their Religious Affiliation

The sample population of male and female medical practitioners from both Traditional and Modern Medicine displays their different professions and religious affiliations are shown in Table 4.8 and 4.9. Religion is one of the most fundamental and influential aspects in most African's lives. Religious beliefs and practices affect the way Africans and their social groups collaborate or refuse to collaborate with others (Mbiti 1993).

The distribution of the sample population shows that only community health workers and traditional medical practitioners are affiliated with traditional African religion. Modern medical practitioners are affiliated with either Christianity or Islam. It is therefore not a coincidence that traditional medical practitioners are also considered as preservers of indigenous traditions, including the traditional African religion, which has been often mistaken and dubbed by early Missionaries as 'ancestral worshipping'.

Education Level of the Sample Population in each Medical System

It is observed that Modern Medicine (MM) system has more people with formal education on the tertiary (26.4%) and even university level (24.5%), while traditional medical practitioners have only less participants with secondary educations (15.7%) and very few with tertiary educations (3.6%). This supports the argument of the historical difference in the medical knowledge acquisition methods which differentiated the Traditional Medicine (TM) and Modern Medicine (MM) systems. While most of the traditional healers, birth attendants and circumcisers inherit such professions through oral and on-the-job training, modern medical practitioners spend several years in formal schooling in colleges and universities.

Table 4.8 Male Sample Population with their Professional Group and Religion

Professional Group	Religion								Total Males	
	Non-Believer		Muslim		Christian		Traditional African religion			
	N	%	N	%	N	%	N	%	N	%
Doctor	0	.0	6	66.7	3	3.3	0	.0	9	100.0
Clinician	0	.0	4	25.0	12	75.0	0	.0	16	100.0
Nurse	0	.0	4	40.0	6	60.0	0	.0	10	100.0
AHW	1	8.3	5	41.7	6	50.0	0	.0	12	100.0
CHW	0	.0	3	30.0	6	60.0	1	10.0	10	100.0
Support Worker	1	11.1	3	33.3	5	55.6	0	.0	9	100.0
Traditional Healer	2	8.7	7	30.4	9	39.1	5	21.7	23	100.0
Circumciser	1	10.0	2	20.0	4	40.0	3	30.0	10	100.0
Faith Healer	1	20.0	2	40.0	2	40.0	0	.0	5	100.0
Predictors	2	100.0	0	.0	0	.0	0	.0	2	100.0
TM Vendor	0	.0	5	100.0	0	.0	0	.0	5	100.0
Total	8	7.2	41	36.9	53	47.7	9	8.1	111	100.0

Key: AHW- Allied Health Worker; CHW- Community Health Worker; TBA- Traditional Birth Attendant; TM- Traditional Medicine
Source: Survey Fieldwork 2006

This study sample population profile shows in Figure 4.5, that no one in the Traditional Medicine (TM) system had a university education. This is a vivid difference to be explored later as a challenge in the Ministry of Health and Social Welfare of Tanzania, should it follow the WHO strategy of 2002 towards achievement of a fully nationally integrated health care sector where formal training is also provided to traditional and alternative medicine practitioners.

Table 4.9Female Sample Population with their Professional Group and Religion

Professional Group	Religion								Total Females	
	Non-Believer		Muslim		Christian		Traditional African religion			
	N	%	N	%	N	%	N	%	N	%
Doctor	0	.0	1	33.3	2	66.7	0	.0	3	100.0
Clinician	0	.0	2	40.0	3	60.0	0	.0	5	100.0
Nurse	0	.0	7	38.9	11	61.1	0	.0	18	100.0
AHW	0	.0	2	50.0	2	50.0	0	.0	4	100.0
CHW	1	6.7	2	33.3	3	50.0	0	.0	6	100.0
Support Worker	0	.0	2	25.5	5	62.5	1	12.5	8	100.0
Traditional Healer	0	.0	7	46.7	5	33.3	3	20.0	15	100.0
TBA	0	.0	3	27.3	5	45.5	3	27.3	11	100.0
Faith Healer	0	.0	1	50.0	1	50.0	0	.0	2	100.0
Predictors	0	.0	1	100.0	0	.0	0	.0	1	100.0
TM Vendor	0	.0	1	11.1	3	33.3	5	55.6	9	100.0
Total	1	1.2	29	35.4	40	48.8	12	14.6	82	100.0

Key: AHW- Allied Health Worker; CHW- Community Health Worker; TBA- Traditional Birth Attendant; TM- Traditional Medicine
Source: Survey Fieldwork 2006

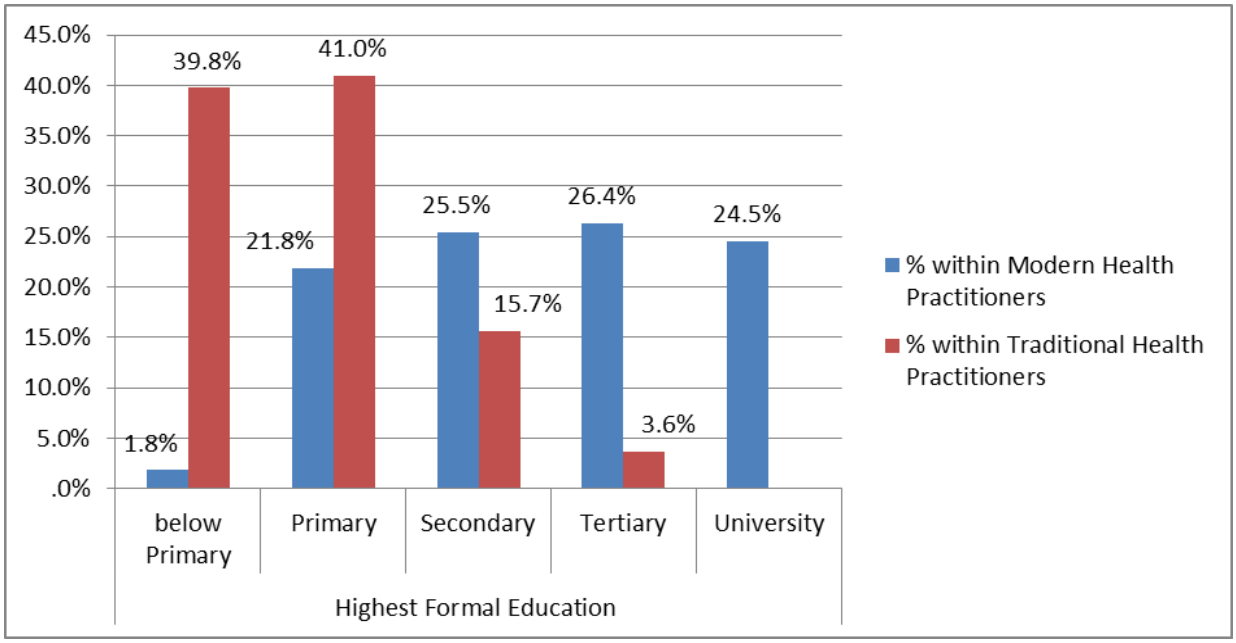


Figure 4.5 Highest Formal Education Reached Among Health Practitioners
Source: Survey Fieldwork 2006

4.3.3 Socio-Economic Status (SES)

Socio-Economic Status in Accordance to Professional Groups

The socio-economic status (SES) of individuals in the sample population is a computed average derived from six variables, all related to socially recognized personal and household wealth indicators accepted in the region. These variables are; income, building materials used for the house, type of roof, size of land, type of transportation, and total value of domesticated animals. The individual's average indication is translated into a *poor*, *average* or *rich* economic status. Table 4.10 shows the individual socio-economic status among the identified professional groups. Generally speaking, Traditional Medicine (TM) practitioners have a lower SES as compared to their counterparts in Modern Medicine (MM). The discrepancy is even wider when Traditional Medicine (TM) practitioners are compared to Complementary and Alternative Medicine (CAM). Such practitioners are ahead in terms of acquisition of organisational inputs such as medical package materials, decent workspaces and information resources when compared to traditional healers.

The major differences could be due to differentiations in terms of income, government intervention on resource allocations among the available medical systems and of course the overall national economic strength. While most of the modern medical practitioners are employed and always get their monthly salary, in Traditional Medicine (TM), the practitioner's income depends on how many clients one has. Few (4.7%) among the selected medical practitioners in this study have high socio-economic status. Those with low and middle socio-economic status are 62.7% and 32.6% respectively. The professional group of (modern health) doctors has the highest percentage (16.7%) of practitioners with high socio-economic status within the group, while 100% of the professional group of traditional predictors, namely soothsayers and fortune tellers, falls within the lowest socio-economic status.

Individual Socio-Economic Status (SES) in accordance to gender

Female practitioners have almost the same percentage of individual SES as males (4.9% & 4.5% respectively) in the high level of socio-economic status within the same groups. Females have lower percentage level in the middle level of SES as compared to males (22% and 40.5% respectively). Following the same trend, the females show a lower level of SES compared to the males (73.2% and 55.0%), as shown in Figure 4.6.

Table 4.10 Individual Socio-economic Status and % within the Professional Groups

Professional Group	Individual Social-economic Status						Total	
	Low		Middle		High			
	N	%	N	%	N	%	N	%
Doctor	5	41.7	5	41.7	2	16.7	12	100.0
Clinician	15	71.4	5	23.8	1	4.8	21	100.0
Nurse	21	75.0	6	21.4	1	3.6	28	100.0
AHW	9	56.3	6	37.5	1	6.3	16	100.0
CHW	11	68.8	5	31.3	0	.0	16	100.0
Support Worker	12	70.6	5	29.4	0	.0	17	100.0
Traditional Healer	22	57.9	14	36.8	2	5.3	38	100.0
TBA	5	45.5	5	45.5	1	9.1	11	100.0
Circumciser	6	60.0	4	40.0	0	.0	10	100.0
Faith Healer	5	71.4	2	28,6	0	.0	7	100.0
Predictors	3	100.0	0	.0	0	.0	3	100.0
TM Vendor	7	50.0	6	42.9	1	7.1	14	100.0
Total	121	62.7	63	32.6	9	4.7	193	100.0

Key: AHW- Allied Health Worker; CHW- Community Health Worker; TBA- Traditional Birth Attendant; TM- Traditional Medicine

Source: Survey Fieldwork 2006

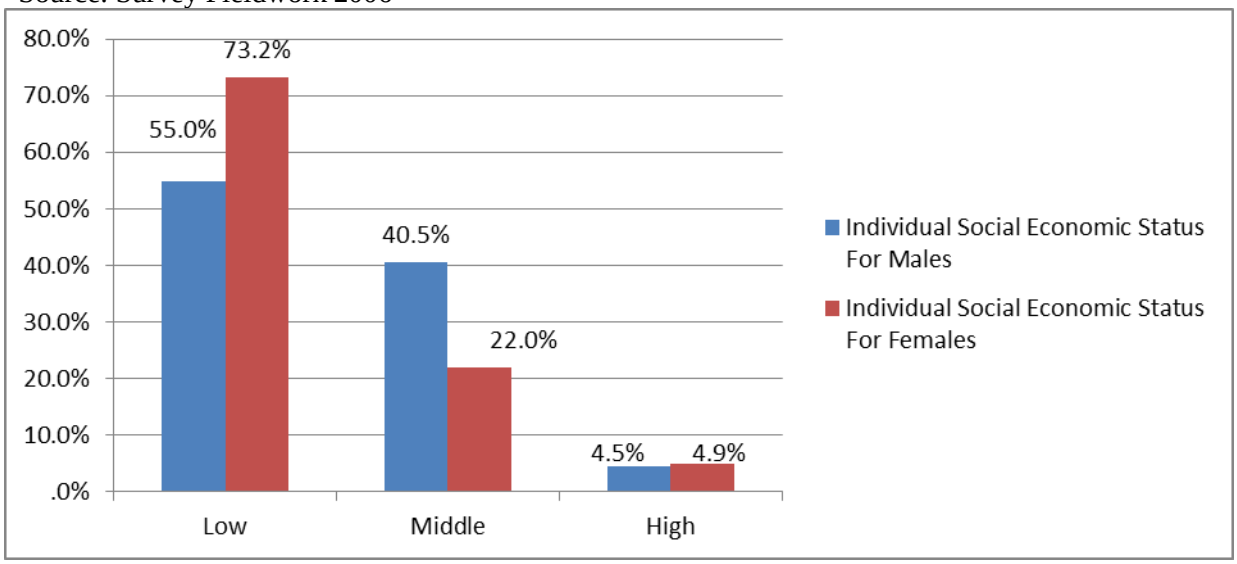


Figure 4.6 Socio-economic Statuses as % Level within the Same Sex Group

While income may not vary much, the socio-economic status of females becomes lower mainly because few women own land, domesticated animals and houses. This is true despite the judicial understanding on family property sharing ownership; the traditional patriarchal system of the Mara Region compels the masses to believe and consider those properties (land, domesticated animals and houses) to belong mainly to men. Gender equality is a crosscutting, continuous agenda to be addressed with affirmative actions in all the Tanzanian ministries and departments.

Notes:

1. The *Global Footprint Network* is an international non-profit organisation established in 2003, with the aim of advancing the use of science for sustainable livelihood where people will have satisfying health and livelihood within the means of one planet. This organisation measures human impact on earth, and displays it to the public to enable people to make informed choices. Reports are distributed worldwide. The *footprint* trends was surfed on August 18th, 2012. at:
   http://www.footprintnetwork.org/en/index.php/GFN/page/world_footprint/