Spatio-temporal characteristics and the distribution of Older Persons in Lamu and Turkana districts in Kenya

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This paper emanates from a study on population ageing in rural and urban Kenya conducted by the author in 2008[1]. Its thrust lies on the need to understand the roles, if at all, of spatial and temporal factors in explaining the observed distribution of the older persons in both the leading ageing district of Lamu and lagging ageing district of Turkana in Kenya. The study population constituted all old persons aged 60 years and above in both Lamu and Turkana districts. A sample of 100 older persons from Lamu district and a similar one from Turkana district was selected for the study using both respondent-driven and random sampling procedures. To realize the desired outcomes, data was analyzed using both descriptive and inferential methods. This paper gives an analysis of peoples' perceptions regarding aspects such as rocks, soils, water, vegetation and climate as they relate to the distribution of the older persons and the general population. It is concluded that spatio-temporal factors namely lithology related aspects, climate variability, water availability and conflict induced migrations are important considerations in explaining the distribution of the older persons in these areas.

Key words: Older persons**,** Spatial, temporal, characteristics, districts

INTRODUCTION

The influence of place on health is not a new idea. This is because from as far back as 500 BC, Hippocrates had described swamps as unhealthy places and sunny, breezy hillsides as healthy places [6]. The physical and environmental factors, as characterized by lithologic aspects such as geology, topography, soils, as well as climatic variability and water availability are important to the older persons as they affect their quality of life, impact on their attitudes and behaviour as well as their physical and psychological health [1]. A poor physical environment makes life more difficult for the elderly, causes more psychological stress, leads to a loss of the sense of hope and therefore causing chronic strain, and makes the elderly[2] feel more socially isolated. In addition, poor housing conditions and hygiene, as well as noisy and crowded living environments lead to poor health of the elderly persons. Generally, the living environment of the elderly affects their physical health and self image hence their psychological well-being. Environmental

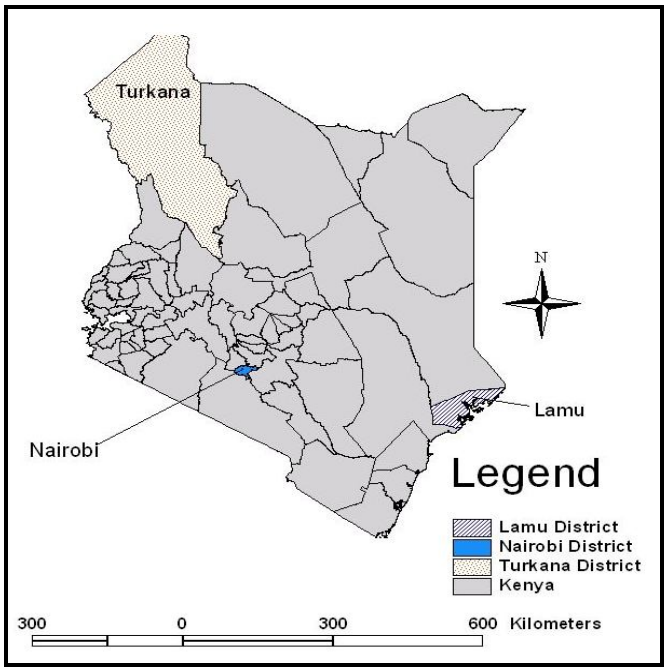
[1] The study was carried before the 2009 Kenya Population and Housing Census was conducted.
[2] The terms 'elderly' and 'older persons' are used interchangeably in this paper

characteristics, whether objective or perceived tend to impact on the quality of life of people.

Spatial variations mainly in lithologically related aspects such as geology, topography, soils and vegetation, as well as climate and water availability tends to affect temporal considerations such as resource conflicts and food security or insecurity. This paper takes the view that spatial factors which are mainly physical in nature coupled with temporal considerations such as conflict induced migrations help to explain the prevalent variability of the elderly in both Lamu and Turkana districts.

MATERIALS AND METHODS

The requisite data for this study was collected from both primary and secondary data sources in 2008 and all persons aged 60 years and over in Lamu (3455) and Turkana (11438) [13] constituted the unit of analysis. A sample of 100 old persons from Lamu district and a similar one from Turkana district was obtained using both respondent-driven sampling and simple random sampling approaches [10]. Whereas in Lamu district the respondents were drawn from the Amu, Hindi/Kiunga, Matondoni/Mpeketoni and Witu clusters, in Turkana district they were drawn from the South (Lokichar, Katilu), North (Kakuma, Oropoi), Western (Turkwel), Eastern (Kerio, Kalokol) and Central (Lodwar town) areas [9]. Given that the collected data was both qualitative and quantitative in nature, data processing and analysis made use of a diversity of skills which included qualitative and quantitative analysis techniques.



Map Location of Lamu and Turkana districts in Kenya
Source: Compiled from Survey of Kenya

RESULTS AND DISCUSSION

Distribution of Older Population In Lamu and Turkana Districts

Generally, variations in the numbers of the elderly across the administrative divisions in the study areas are indicative of the underlying explanatory spatial and temporal considerations [9]. As depicted in Figure 1 for Lamu district, whereas Mpeketoni division with 1,030 elderly persons and Amu division with 803 elderly persons have the highest numbers of the elderly, Hindi division with 245 elderly persons and Kiunga division, with 149 elderly have the lowest numbers of the elderly. In terms of areal characteristics, Mpeketoni division, which occupies 1429 square kilometers, is the largest division in the district and Amu division, covering 151 square kilometers is the smallest. Amu division, in which Lamu town is situated, is mainly urban in character [9].

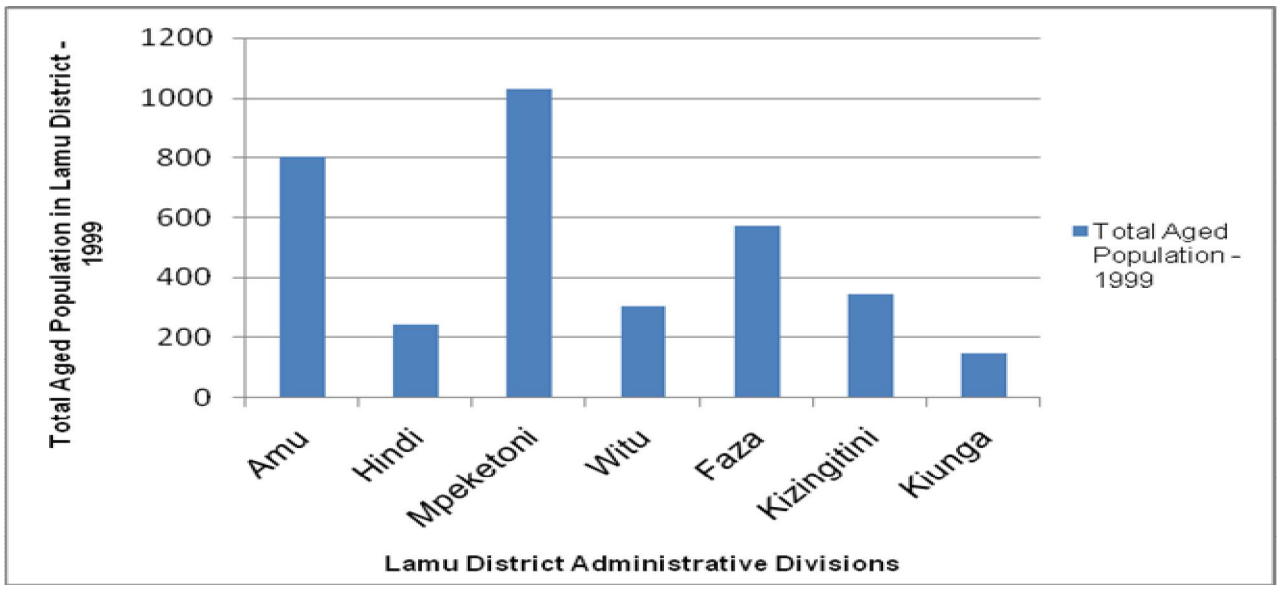


Figure 1. Distribution of Aged Population in Lamu District, 1999
(Source: Compiled from Kenya Population Census 1999)

From figure 2, it is observed that in Turkana district, the elderly populations are mostly concentrated around Turkwel (1,456 persons), Central (1,143 persons) and Kakuma (1,013 persons) divisions. The people in Turkwel division mainly practice irrigated agriculture along the Turkwel River as well as some pastoral activities. Also, Lomelo (138 persons) and Kibish (60 persons) divisions have the least number of elderly persons in Turkana district [9].

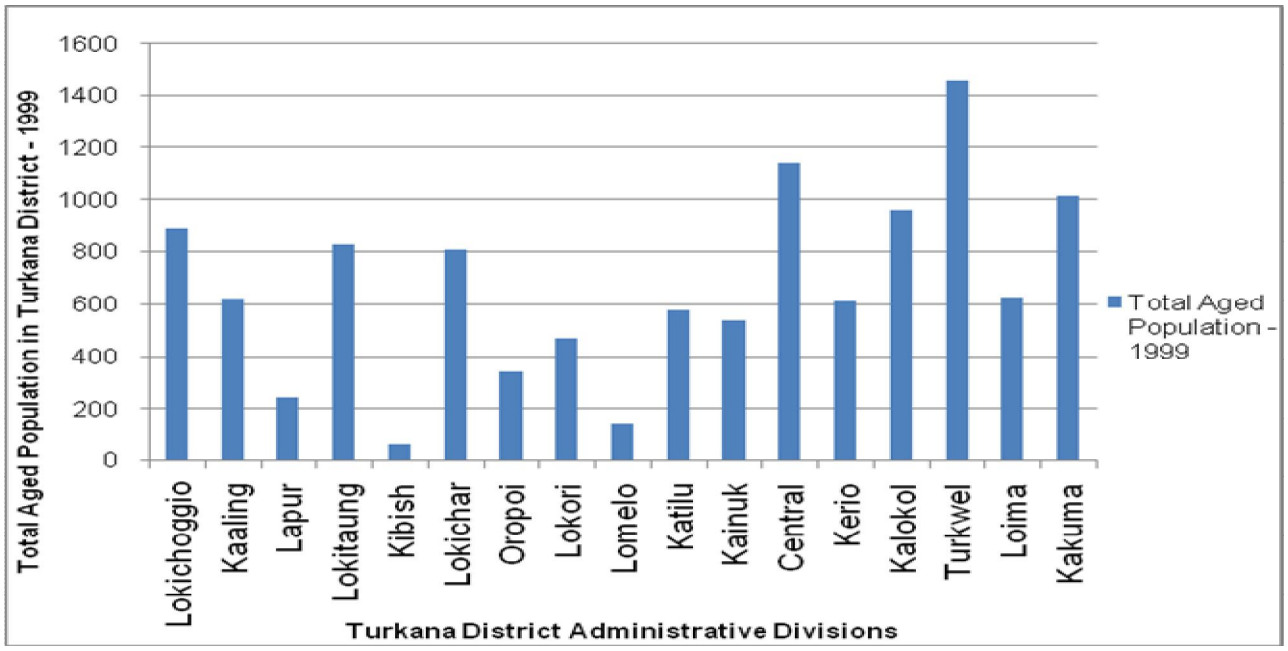


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Figure 2. Distribution of Aged Population in Turkana District, 1999
(Source: Compiled from Kenya Population Census 1999)

Spatial Characteristics and Distribution of older Population

As already indicated, the elderly population in Lamu and Turkana districts is distributed with some areas having more elderly people than others. This variability is probably explained by the underlying differences in the spatial characteristics namely lithology, climate and water availability. These spatial characteristics, as they relate to the distribution of the elderly population, are discussed starting with Lamu district in Coast Province and then Turkana district in Rift Valley Province.

Lithology and the Distribution of Older Persons

Lithology encompasses aspects such as geology, topography, soils and vegetation. These are deemed to influence the elderly in their distribution. Figure 3 portrays the lithology of Lamu district in Coast province.

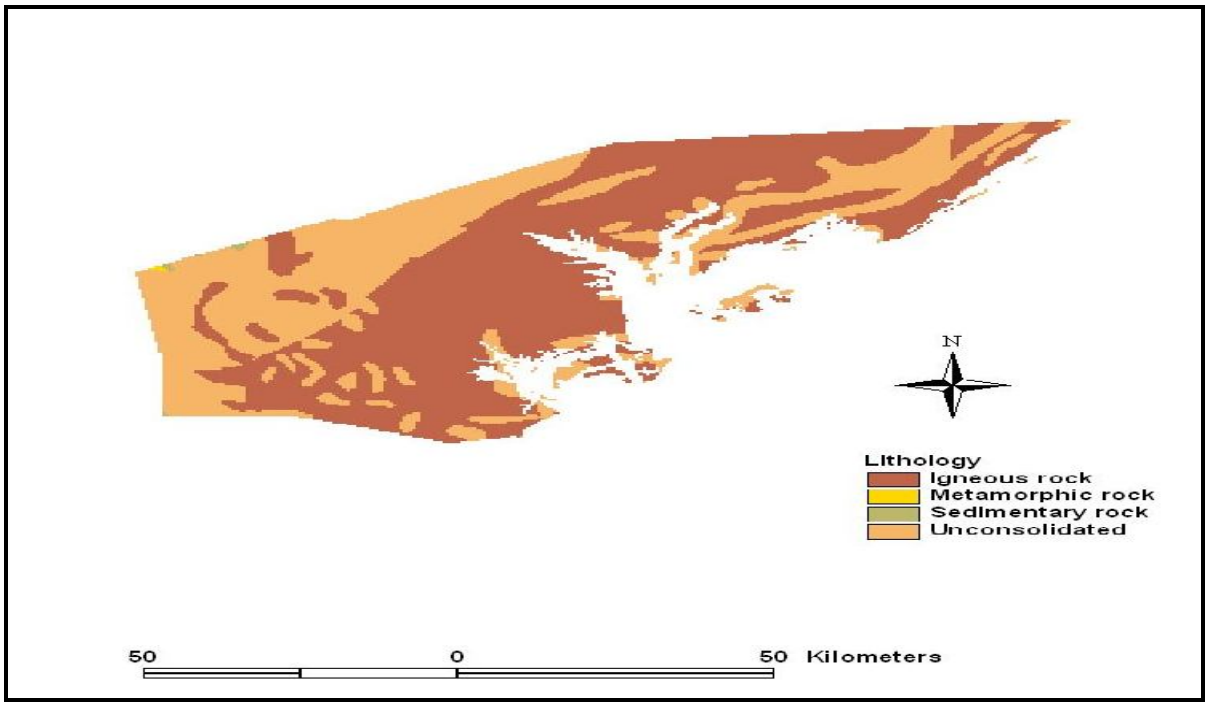

Figure 3. Lithology of Lamu District (source: Survey of Kenya)

As indicated in figure 1, the distribution of aged persons in Lamu district is essentially dominant in Mpeketoni division, followed by Amu and Faza division, then Witu and Hindi divisions and lastly Kiunga Division with less than 149 aged persons. In terms of lithology, the major rock clusters are igneous and metamorphic rocks which cut through much of the district, as well as a few sedimentary rocks in the northern and eastern parts of Witu and Mpeketoni Divisions, and some patches of unconsolidated rock spread throughout the district. As can be discerned, there seems to be no direct influence of the lithologic factors on the distribution of aged persons in the district. However, this distribution can be explained by a number of distinct considerations such as soils, agriculture, climate, water availability, and fishing, among others. Mpeketoni division has the highest number of the elderly (1030) in the district. The division, with high fertility red-loam soils in the low lands and some fluvial deposits, has the highest percentage of good agricultural land, followed by Faza and Witu divisions [13]. With a farm area of 89.5 square kilometers, the division has the highest number of small farm holdings in the district, and given its high agricultural potential and high settlements, agricultural activities are predominant. The area supports both food and cash crop farming and the crops grown include maize, beans, cassava and cowpeas. Mpeketoni division also enjoys a number of shallow wells as well as Lake Kenyatta, the only natural fresh water lake in the district, which provides a source of water, together with rain water. Fresh water fishing in species such as tilapia, claris and protopterus is also prevalent. These considerations serve as attractions to the elderly populations in Mpeketoni division.

Amu and Faza divisions are also important settlement areas for the elderly populations. Other than the prevalent urban environment conducive to the elderly as it provides numerous resources in terms of food, health and other requirements, Amu division has shallow wells of the Shella sand dunes that provide fresh water supplies for the Lamu

Island and Mokowe area. The division also has good agricultural potential and a high percentage of the farmers in the division grow cash rather than food crops. These include coconut and mango plantations. Faza Division has low production levels due to its semi-arid nature. Residents here prefer fishing to farming. The rocky soils found in the northern marginal areas of Kiunga and Witu divisions are very poor and support only scanty grassland vegetation. In Kiunga division, some aeolian soil deposits are also prevalent. Rain water, an important source of water in the district, is the only source of clean and portable water in Kiunga division. In addition, predominant banditry activities coupled with an existing wildlife menace in the division are important militating factors against the elderly populations.

The physical environment plays an important role in the lives of a population [8] and more so old people as it influences a number of variables. In their perception, 38 percent of the elderly in Lamu district feel that the physical environment has influenced their rate of growing old as they have witnessed a worsening environment in terms of reduced soil fertility and therefore decreasing harvests, increasing floods, increasing sunshine and heat intensity, new emerging diseases, and increased poverty and stress. However, 62 percent of the respondents in Lamu district indicated that the physical environment has not influenced their rate of growing old. This agrees with the above finding that lithologic aspects, as shown in the lithology map of Lamu are not distinct to certain specific areas only but cut across most of Lamu district and therefore do not influence the distribution of the elderly in the district [9].

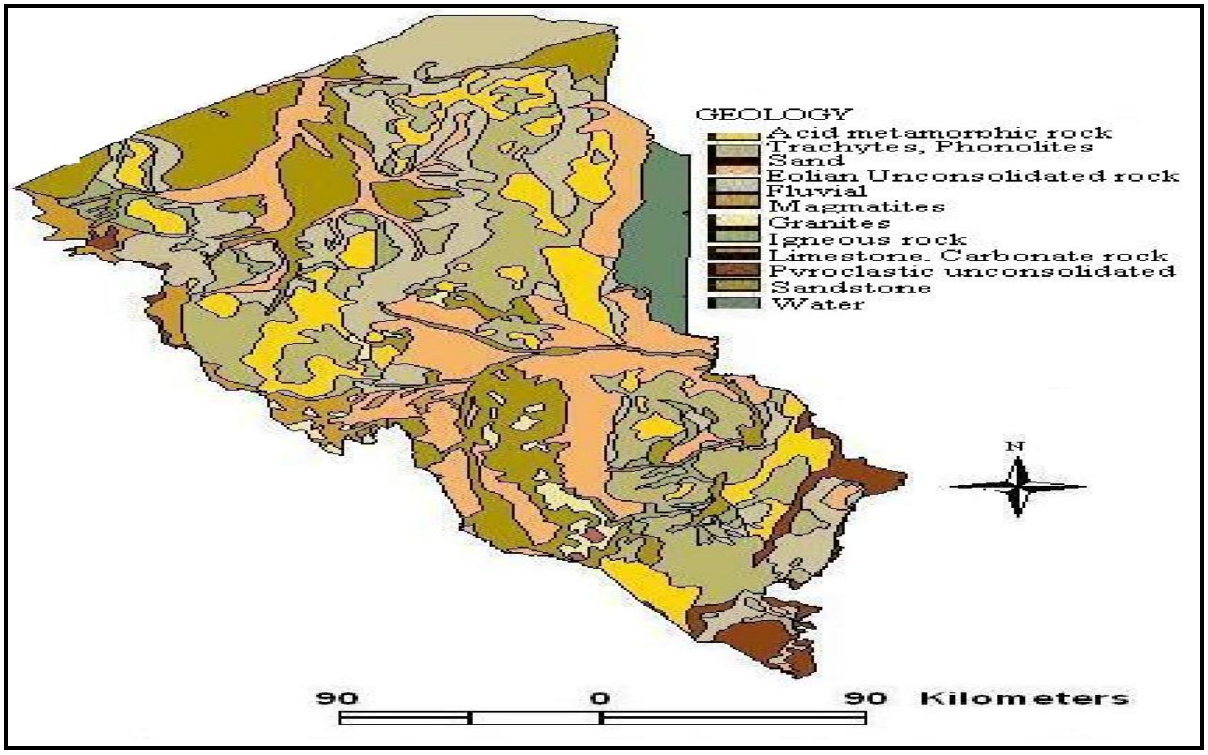

Figure 4. Lithology of Turkana District (source: Survey of Kenya)

As shown in figure 2 on the elderly population distribution in Turkana district, the Turkwel and Central areas have more elderly population totals of between 1177 and 1456, followed

by Kakuma and Kalokol with between 898 and 1176 elderly people. The larger part of the district composed of Kaaling, Lokitaung, Lokichoggio, Loima and Lokichar have elderly populations of between 619 and 897 persons. Another part of the district constituted by Oropoi, Katilu, Kainuk, Lokorio and Kerio have between 340 and 618 elderly people and another area made of Kibish and Lomelo have populations of between 60 and 339 **[9]**. These five elderly population regions, together with their lithological characteristics are shown in figure 5.

	Elderly Region	**Lithological characteristics**	**Predominant Activity**
1	Turkwel-Central	Unconsolidated + Sedimentary	Livestock, irrigated agriculture, urban life
2	Kakuma-Kalokol	Unconsolidated + Igneous	Livestock, refugee camp, fishing
3	Kaaling-Lokitaung-Lokichoggio-Loima-Lokichar	Igneous	Pastoral, refugee camp
4	Oropoi-Katilu-Kainuk-Lokorio-Kerio	Metarmorphic + Igneous + Sedimentary	Agriculture, pastoral
5	Kibish-Lomelo	Unconsolidated	Pastoral

Figure 5. Elderly Regions and Lithological Characteristics in Turkana District
(Source: Fieldwork, 2008

As indicated figures 4 and 5, most of Turkana district consists of low-lying plains with isolated mountains and hill ranges. The district is also mainly characterized by metamorphic and volcanic rocks, though in some areas sedimentary rocks are prevalent. The vegetation physiognomic characteristics such as woodland, bush and bushed grassland [4] is controlled by both water availability and landscape pattern. The woodland and forest vegetation mainly occur in the riparian and riverine situations while the driest parts of the district supports the dwarf shrub grassland with fewer trees. The woody vegetation, characterized by variations in landscape gradients and gradients of rainfall, are mostly dominated by species of acacia namely: *acacia tortilis* – mostly dominant in the riparian and riverine zones, *acacia Senegal* – on the hilly and rocky sites, and *acacia reficiens* – on the non-riparian sites with fine soils.

Climatic Factors and the Distribution of Elderly

Climatic factors such as rainfall and temperature are critical considerations in the livelihoods of the older persons and other population categories in Lamu and Turkana districts. Whereas at least 39.6 percent of the elderly populations in Lamu district believe that climatic characteristics tend to accelerate their rate of ageing, only 29.5 percent believe the same in Turkana district. They believe that climatic considerations impact their lives as they influence disease availability or otherwise and therefore attendant poor health, insufficient food, increased heat, reduced rainfall, increased drought and reduced pastures. In Turkana district, insufficient food is the most critical factor as compared to the poor health occasioned by climatic changes in Lamu [9].

Figure 6. Two elderly women in the harsh climatic environment of Turkana district (Source: [9])

In terms of climate, Turkana district is characterized by desert conditions and a rainfall of 300 mm/year or less [5]. This means that there exists a regular crisis of water and food shortages that escalates with drought conditions in the area. In the district, most of the villages are semi-deserted as most of the men move with their livestock to the hills in search of water and pasture [17, 18]. Notably, pastoralist livelihood depends on the availability of water and pasture. In this area, the elderly, given their vulnerability owing to their frail physical and health conditions, tend to be disadvantaged as they can only depend on their family members, relatives and well wishers for their survival.

Availability of Water and Distribution of the Elderly

Water is essential for human survival. Population in Lamu and Turkana districts tend to concentrate along rivers and streams and around water points. Such water points include dams, falls, rapids, springs, wells and waterholes. To the pastoralists in Turkana district, access to safe and affordable water is one of the main challenges in an environment characterized by inadequate fresh surface water supplies [5]. Water acts as the main limiting factor in the socio-economic development of the dry season grazing areas of the district where livestock exploitation is the backbone of local livelihoods. The Turkana community is made up of clans with each having their own territorial grazing zones. When moving into the grazing territory of another clan, grazing and water rights have to be discussed. Turkana people have a great indigenous knowledge on natural resource management and take wise decisions on water use and grazing patterns as their livelihood depends on the availability of these resources.

In general, only 41 percent of the Turkana people have access to a reliable drinking water source [9]. Many water points that have been created by diverse actors include bore holes, shallow wells and ground water dams mainly the subsurface and sand storage dams. These water sources, with a few exceptions, have been created to serve the settled communities. Few of them serve the pastoralist population and in most cases these sources of water are located close to rivers and other sources of water. Consequently, few of them serve the pastoralists, even though they do fall back on them in times of stress. Pastoralists access water from different types of water sources. Fortunately, Turkana district is endowed with a number of seasonal rivers and water courses. Although dictated by the amount of rainfall and season, shallow wells and traditional scoop holes in the river are a common source of water for the pastoralists. Water is drawn from unlined depths of up to 8m below riverbeds. One has to keep on changing wells as the water disappears. The Turkana pastoralists extract their water from underground by scooping the top soil and sand from dry river beds to reach the water table. This method especially involves women, for whom it is their main task, as they take care of the watering of the animals.

The life of Turkana people is inevitably changing. Droughts and increasing conflicts are the basis of loss of traditional social and political structures. More people are settling in and around towns. Figure 7 shows the variations between land area, population density and water demand both for domestic and livestock consumption in Turkana district. It is observed that Kakuma division, with a land area of 3,695 square kilometres and a population density of 638 persons, has the highest water demand for both domestic (1,457 cubic meters per day) and livestock (2,913 cubic meters per day) consumption in the district, followed by Turkwel, Lokichoggio and Central divisions. Conversely, Kibish division, with an area of 5,684 square kilometres and a population density of 10 persons per square kilometre has the least demand both for domestic (91 cubic meters per day) and livestock (182 cubic meters per day) consumption. This variability in water resource demand also affects the elderly in terms of their distribution in the district.

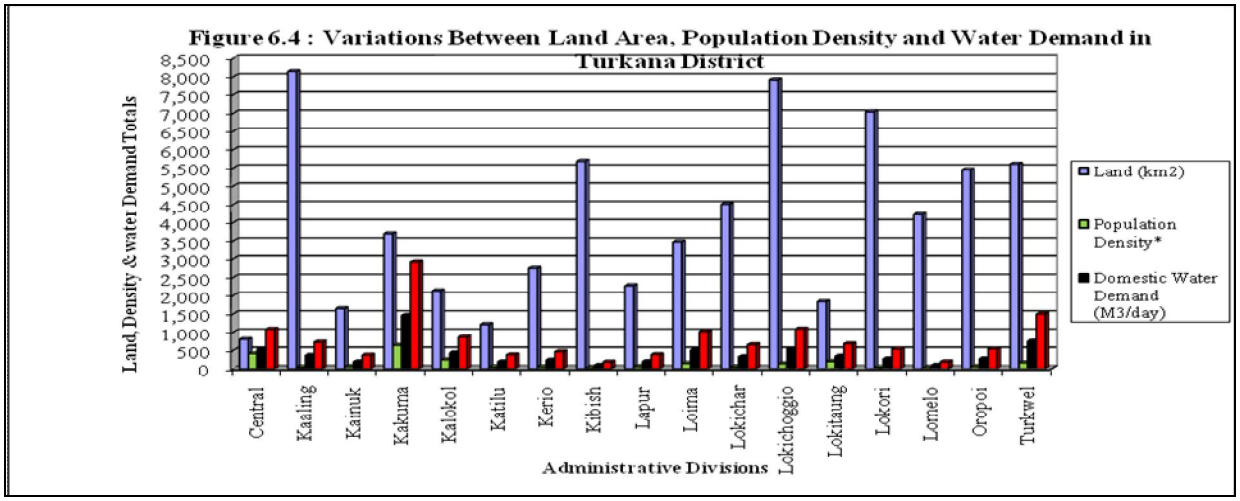

Figure 7. Variations Between Land Area, Population Density and Water Demand in Turkana district (*Source:* [9])*.*

In Lamu district, there are more watering points in Mpeketoni division, followed by Amu division. This indicates that water availability mainly for domestic and agricultural use is higher in Mpeketoni division than in any other division. It is also noteworthy that population concentration is higher in Mpeketoni division and Amu division [9].

Temporal Factors and Distribution of the Aged Population

Conflict Induced Migrations

Owing to the harsh climatic conditions, drought and insufficient water, Lodwar town in Turkana district continues to attract more and more older persons seeking for survival. This is also accentuated by the fact that there is insecurity in most areas as a result of resource conflicts. For instance, there have always been tensions between the Turkana and other pastoralist groups about access to water and pasture and these increases as water sources have dry up and pastures get lost. Cattle raids have always been used as a strategy to restock herds during or after a drought. Among those interviewed 13.5 percent of the elderly in the district indicated as having been displaced from their original abodes for various reasons namely frequent raids (13 percent), droughts (6.5 percent), wars (2.2 percent and food shortage (2.2 percent). About 19.8 percent of the elderly indicated that violent conflicts involving communities have befallen them and these are caused by stealing of animals (21.5 percent), pasture areas (9.2 percent), water points (9.2 percent) and land disputes. Notably, prolonged drought and more cattle deaths lead to more raids.

In Lamu district, 24 percent of the elderly indicated that for a number of reasons, they were displaced from their original homes. The reasons advanced include insecurity as a result of banditry activities mainly from the Somali shifters (26 percent), landlessness (52 percent) occasioned by factors such as search for land for cultivation, squatting and displacement during colonial times. In addition, other factors such as witchcraft (4.3 percent), robberies (4.3 percent), lack of care for the elderly (4.3 percent), and divorces/separations (8.7 percent) explain such migrations. Figure 8 shows how four sisters in Lamu live together as a way of overcoming lack of care for the elderly in society. Regarding cattle rustling and banditry activities in Lamu district, only 23 percent of the elders indicated having fallen victim to such activities, though they noted that such are not frequent these days.

Figure 8. Four Sisters between the ages of 65-94 years living together in Lamu District
Source: [9]

Cash-for-work programmes

In Turkana district, over 4,000 vulnerable households have benefited from a cash-for-work scheme where families identify activities such as tree planting, improvement of surface water points, making fishing nets, running livestock sale yards, improving irrigation systems, among others, in exchange for money. This money is mostly used to buy food. Such activities mostly lead to aggregating of population particularly along the Turkwel River, where such activities, mostly run by a non-Governmental Organization called Oxfam, are prevalent.

CONCLUSIONS

As indicated from the foregoing, overall, spatio-temporal factors are important considerations in the distribution of the elderly populations in the study areas. For instance, whereas lithology has some important role to play in the lives of the elderly as it is mainly about rocks, soils and vegetation, other considerations mainly climate, water availability and induced migrations resulting from environmental vulgaries such as drought, together with wars and insecurity are critical in the distribution and redistribution of the elderly. Whereas insufficient food is the most worrying concern in the lives of the elderly in Turkana district, poor health as a result of increased diseases with ageing is the most important concern of the elderly in Lamu district

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