A statistical approach on dissimilarities of elderly population and the elderly population live in elderly homes, Sri Lanka

Abstract

Sri Lanka is experiencing a period of rapid aging, which increases the need of long-term care services in the country. Elderly homes have been the traditional alternative to deal with the increase of elderly population in the country, with services supplied by a mix of for-profit and nonprofit providers. Additionally, population exhibits a high degree of geographical concentration. The study aims to identify the determinants of the geographical location of elderly population live in elderly homes in Sri Lanka. The analysis takes into account the different location criteria for different types of nursing homes as well as potential spatial effects. The paper uses spatial and statistical analysis tools to identify concentration of elderly population and population characteristics and to estimate the determinants of nursing homes availability and coverage in the country. The analysis–based on Dissimilarity Index, Location Quotient and location coefficient and Anova test- show the existence of clusters of nursing homes according to elderly population. Both anova test and Dissimilarity index reveals a spatial inequality of the distribution of elderly population as well as the population in elder homes. Further, the Location Quotient results demonstrates a different level of concentration of elderly population in the elderly homes compare to the overall distribution of elderly population. Whereas Anuradhapura, Kurunegala, Kaluthara, Rathnapura and Galle demonstrates the highest values for the elderly home population. The results reveals the importance of the regional development of elderly homes with professional care givers.

Introduction

Population ageing, sometimes called demographic ageing, is now a worldwide phenomenon. Technically any population whose average age is rising can be said to be ageing, but usually the term is more specifically used with reference to an increase in the proportion of person aged over 60 or 65. Such an increase has been taking place in the currently developed regions for well over a century and is now also increasingly evident in the countries of the less-developed regions.

Similar to many developing countries worldwide, Sri Lanka defines elderly population as those who have completed sixty years of age and above. Sri Lankan elderly population currently represents 12.4% of the total population. Sri Lanka is one country in the world which has a rapidly ageing population. In 1953, the Sri Lankan elderly population was 5.4% and in 2003, it was 10.8% of the total population. From 1953 to 2003, within a period of 50 years, it has almost doubled in size. In 1981 and 2012, the elderly population was 6.6% and 12.4% of the total population, respectively. During 1981 to 2012, within a period of 31 years, the Sri Lankan elderly population has further doubled. It is estimated that one in four Sri Lankans will be elderly by the year 2041.

Geographical distribution of the elderly population varies from province to province and from district to district. The Western Province is residence for majority (31%) of the elderly population while Central Province has the second highest elderly population (3.8%). It is reported that Colombo, Galle, Matara and Kegalle Districts have a high ageing index which reflects the rapidity of population ageing.

The study of ageing has traditionally been wide ranging, involving social scientific and health, and social care professional disciplines. Most recently, the concern in ageing research for environment, space and place has become even more widespread. Academic interest in space and place has also been motivated by unprecedented demographic, social, fiscal and technological changes that have impacted simultaneously in many countries. Indeed, these are well documented, and include rapidly ageing populations, changing kinship relationships and responsibilities, an ever broader range of health and social care and increasingly limited resources with which to provide it.

The concept of elderly homes arise with the increasing trend of aging population in the world. The complex life structure of the siblings made it more valuable in the modern societies. But the traditional attitudes in the developing region reduce the demand for elderly homes where it concerns as a bad thing in the family context and, many factors have a direct and indirect impact on elderly homes which shows a spatial inequality among regions as well. This research manly focused on the spatial distribution inequalities of the aging population and the population live in elderly homes.

There is a high demand for trained caregivers to provide care. Training of caregivers to look after elders at community level, providing long-term care facilities, promotion of infrastructure facilities at institutional care level, and advocacy and awareness on active ageing have been already initiated and are in progress successfully in the country. Yet, with the rapidly increasing elderly population, the availability of more services is needed faster.

Objectives

1. To identify the spatial distribution of elder population.
2. To recognize the elderly population in Adult homes.
3. To identify the inequalities of Elderly population with Adult homes.

Methodology

Data Collection and analysis

This research mainly focused on the secondary data which collected by the Department of Census and statistics. Secondary data related to elder population in Sri lanka especially the district wise distribution of elderly population have been used for the research. The data for the elderly population in the elder homes have been collected through the HelpAge institute in Sri Lanka. Gender wise data have been used for the analysis of the research.

Data Analysis

Spatial analysis tools by Arc GIS 10.1 and the statistical analysis by Excel 2013 have been used for the analysis of the secondary data of elderly population. The grouping techniques in spatial analysis have adopted for the spatial analysis. Statistical analysis based on Lorenz curve, and also Location Quotient and Coefficient of localization have been used in the research.

The Lorenz Curve is a tool used to represent income distributions as proposed by Lorenz (1905); it illustrates the proportion of total income is in the hands of a given percentage of population. This method is conceptually very similar to the method by quantiles. However, instead of ending up

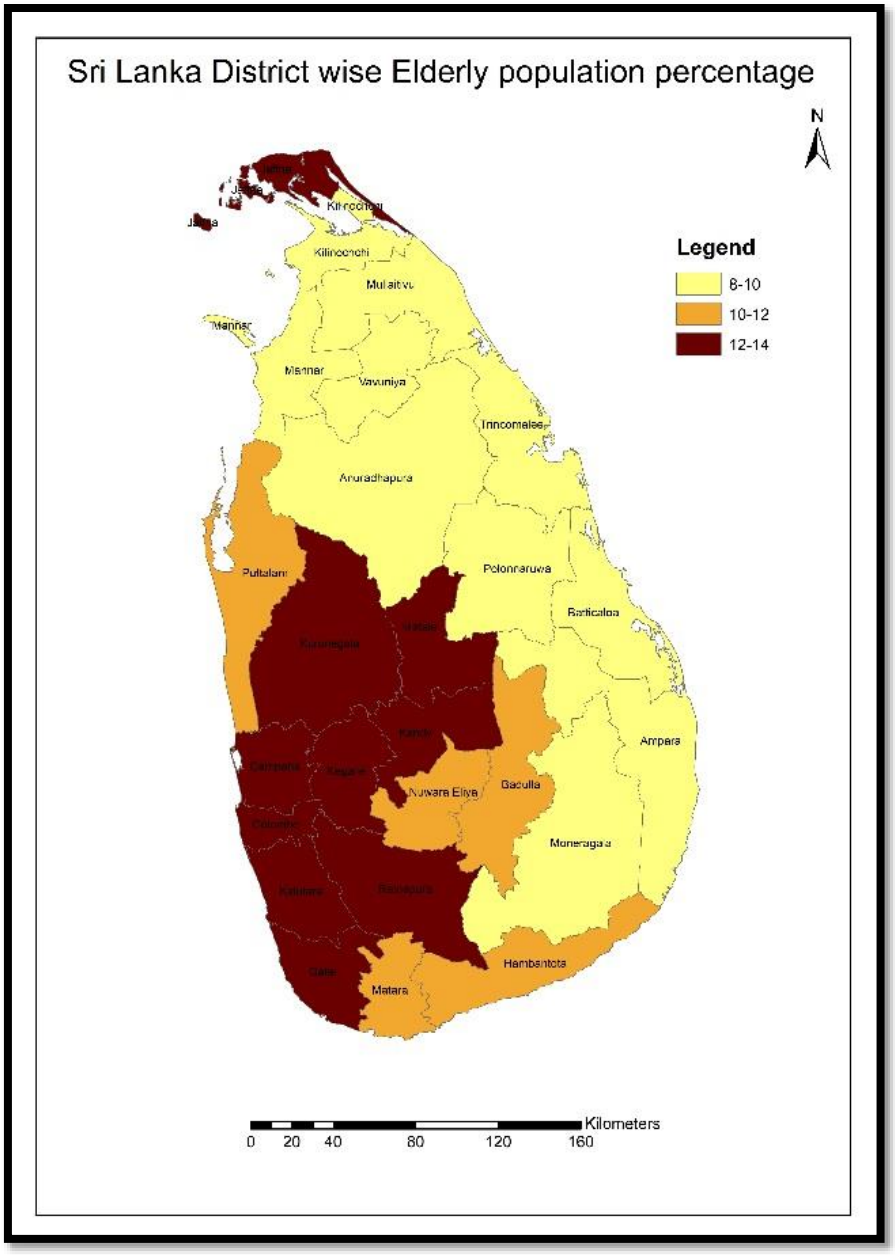
with income shares, the Lorenz Curve has been widely used for the population and inequality analysis as well.

A Location Quotient (LQ) is an analytical statistic that measures a region's industrial specialization relative to a larger geographic unit (usually the nation). An LQ is computed as an industry's share of a regional total for some economic statistic (earnings, GDP by metropolitan area, employment, etc.) divided by the industry's share of the national total for the same statistic. Here with a population perspective, Location Quotient have been used to identify the spatial inequalities of elderly population in elderly homes. If LQi > 1The region has higher water allocation compared to the whole region (district) If LQi = The region has a right share of the water allocation accordance with its share of the total water availability in the district . If LQi < 1 The region has less water allocation than the water availability in the district. Location coefficient also a statistical measure used to explore the degree of regional specialization advantage. Further identifications of elderly homes with the aging population have been identified through the Location coefficient analysis. Values of the coefficient, L, lie between 0 (even distribution) and 1 (extreme concentration).

The information have been presented with maps and graphs. Especially the Dissimilarity Index of elder population demonstrate with a graph and the values of Location Quotient and coefficient of localization interpret with the choraplepth maps.

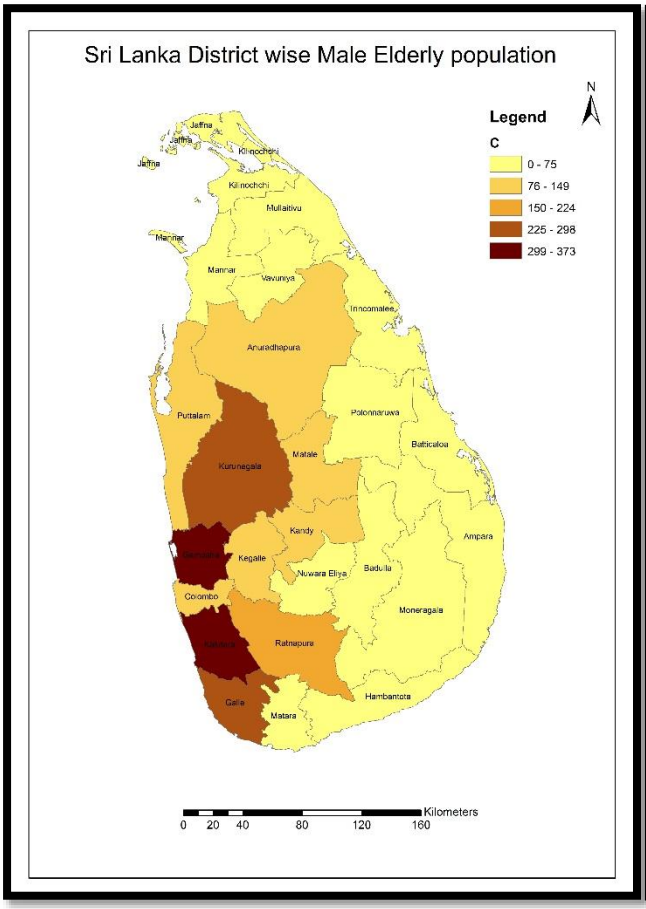
Results

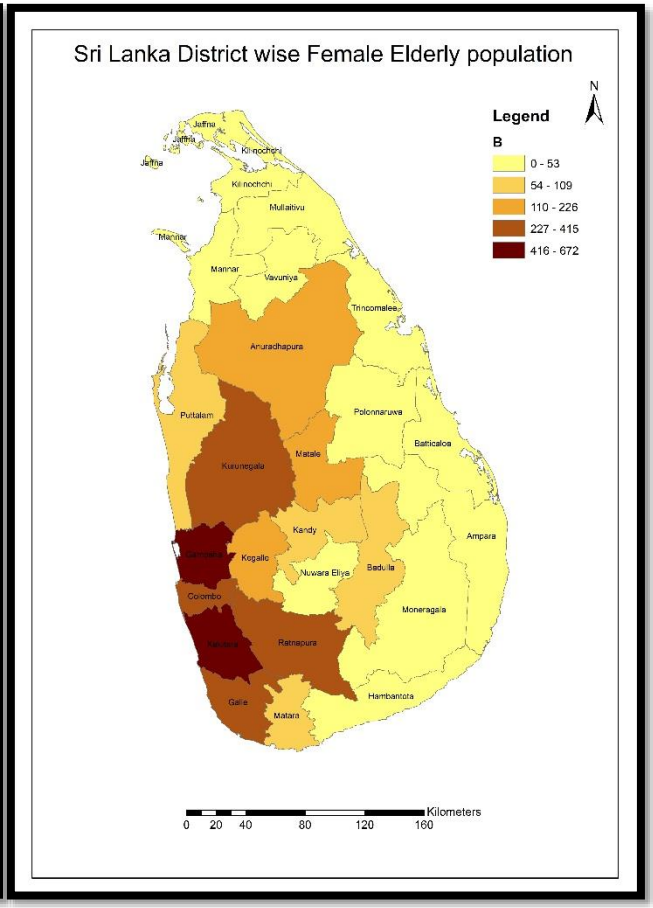
The district wise elderly population can be identified in the figure 1which shows an inequal distribution with in the country. The highest percentage can be seen in the south west region of the country especially Colombo, Gampaha and Kaluthara district reported the highest number of elderly population along with Galle, Rathnapura and Kurunegala. The districts with highest population concentration have been reported the highest elderly population in the country.



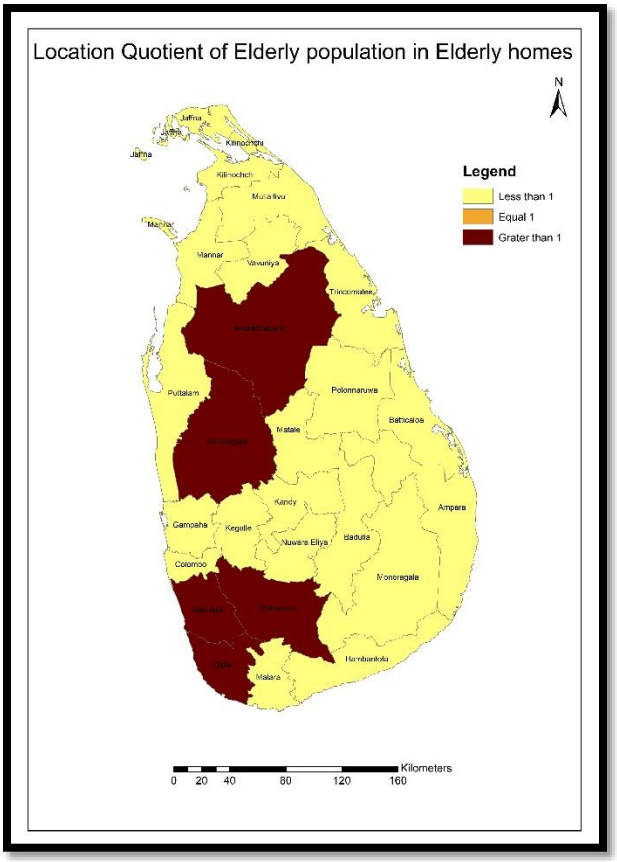
The gender wise differences of the elderly population can be identified in Figure 2 and 3. The highest number of Male elderly population lives in Gampaha and Kaluthara. Similarly the female population shows the same results with Gampaha and Kaluthara. Even though the Colombo ranked highly with the overall elder population the male elderly population is slightly low in the region. The concentration of male working force in the highest urbanized area of the country may affected the results where the elderly population live in the periphery areas of Gampaha and Kaluthara.

The elderly population in the elderly homes shows a different status relates to the overall elder population where the regions outside the Colombo demonstrates an increasing trend of elder home population. The Location Quotient and the coefficient of localization also illustrates the same results.





The districts with the highest Location Quotient can be identified in the figure 4. The highest concentration can be seen in the Anuradhapura, Kurunegala, Kaluthara, Rathnapura and Galle. It defines that the elder population in the elderly homes relatively low in those districts. Even though the Colombo, Gampaha and Kaluthara shows the highest elder population the location quotient of those district shows a comparatively low value. The coefficient of localization also shows the same results where Anuradhapura, Kurunegala demonstrates the highest coefficient values.



Conclusion

Ageing is a natural phenomenon. Community needs to manage it in the most productive and desirable manner. An active healthy life during old age cannot be achieved in one instance or in one initiation. It is a process to be achieved throughout the life. More awareness is needed on the availability of free services for elders at community level to enhance their physical, mental social and economic wellbeing, focusing more towards improved quality of life. Elderly committees and elderly day-care centers at community provide an excellent environment for elders to promote their wellbeing. The government should pay more attention on the regional planning more than the urban areas where the highest concentration of elderly population lived. Within elders' committees, the elders are empowered to protect their rights and promotion of wellbeing. Activities are implemented to empower older people to be strengthened on self-determination. Grass root level identification of elderly population and their necessities will provide the basic platform to enhance their living in a prosperous environment.

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