EVALUATING THE AGE-FRIENDLINESS OF TRANSPORT SYSTEM IN SRI LANKAN CITIES

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ABSTRACT – Nowadays as one of the key areas of urban planning and design, health concerns of the community, with high vulnerability on older population have re-appear. Over the time, the elderly population around the world are predicted to increase and Sri Lanka follows the same trend. In this context, the concept of 'Age-friendly Cities' introduced by WHO comes to play. WHO has identified, 'Transport and Mobility' as one of the eight priority domains for policy action in order to build age-friendly cities. Since without transportation, other facilities and services are inaccessible, transportation plays a major role in a city design. How to effectively understand the age-friendliness of a city's transport system and diagnose the underlying problems of urban development have therefore become critical in managing this demographic change. Previous studies have not yet provided a proper methodology for quantification of age-friendliness of transport system in Sri Lankan cities. This study aims to evaluate the age-friendliness of transport system in Sri Lankan cities by incorporating quantitative indicator-based examination. Three case study areas; Negombo, Kurunegala and Kandy, were employed and the results show that the age-friendliness of transport system in each city is 59.29%, 68.25% and 66.98% respectively.

Keywords: Age-friendly Cities; City Design; Elderly Population; Quantitative Indicators; Transport System

1. INTRODUCTION

The world is aging and urbanizing rapidly. In this kind of a background, as a key area of urban planning and design, health concerns of the community have re-appear. Indeed, older community has been identified as one of the most vulnerable groups with major consequences. Here, 'Age-friendly Cities' [1], emerge as a key planning concept to create healthy living spaces for the community, especially paying attention to the elderly population.

According to the recent statistics in Sri Lanka, the dependency ratio of aged population has increased from 9.4% to 11.8% from 2001 to 2012 period [2], and it is further predicted to increase up to 24.3% by 2030. Therefore, understanding the link between the aging population and urban change, and design our cities accordingly is a timely requirement [3]. Incorporating healthy aging strategies to city plans allows more number of elderly people participating for the social and economic life of a city [4].

In a developing world and expanding cities, transportation is much important to elderly people than ever before. As people age, usage of private cars decreases due to various reasons and walking and public transportation, especially buses, become the most recurring modes of transportation among them [5]. But the unfriendly design of those transport modes for elderly population affects their mobility, causing safety issues. In the light of reducing these challenges and to promote active aging, need of an age-friendly transport system is identified.

World Health Organization has identified several transport and mobility strategies that can be incorporated in urban design such as accessible, affordable and safe public transport, age-friendly driving conditions and parking facilities etc. But these strategies are not yet validated in regions with various socio-economic development levels [6]. In the global context, several studies and researches have conducted on 'Age-friendly public transportation' where majority of issues covered related to

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public transportation only, and several studies on 'Age-friendly driving conditions'. Only few papers take a broader perspective on combination of most recurring modes of transportation by elderly; bus and walking. In terms of active transport, there are only few literature that consider combination of public bus transportation and walking, compared to the old age and no such literature in Sri Lankan context. When considering the age-friendliness of cities, many studies were carried out on qualitative indicators with greater interest in medical science perspective. But studies on spatial aspects in terms of urban design are lacking. Therefore, further studies and innovation are required in the field of urban design in order to facilitate age-friendly transport system, and thus age-friendly cities.

2. MATERIALS AND METHODS

The study was carried out in 5 key stages, as shown in Table 1.

Table 1. Procedure for the assessment of age-friendliness of transport system

Stage 1	Identification of attributes and indicators of age-friendly transport system through literature
Stage 2	Analyzing secondary data to assess age-friendliness of transport system (bus transportation and walking) in selected cities
Stage 3	Collecting primary data through field observations included with indicators identified in stage 1
Stage 4	Quantifying age-friendliness of transport system in selected cities
Stage 5	Analysis to derive recommendations based on findings

In the Stage 1, nineteen indicators categorized under 5 key mandates focusing on spatial characteristics of age-friendly bus transportation and walking were filtered from the literature [1] [7] [8]. The age-friendliness of transport system was evaluated for 3 case study areas; Negombo Municipal Council area, Kurunegala Municipal area and Kandy Municipal Council area, by considering 3 main factors; distribution of aged population, travel pattern of the residential population, and urban intensity.

One of the important tasks for quantification of age-friendliness of Sri Lankan cities is identification of key travel destinations of elderly. For that purpose, a survey was conducted by targeting commuters to Kurunegala MC Area. The age-friendliness was assessed by prioritizing these destinations. This study utilized both primary and secondary data where primary data was collected through field observations and secondary data through internet sources. The collected spatial data was then used for QGIS based mapping. In mapping, tools such as buffer analysis, sum line lengths, basic statistics for fields, overlap analysis, aggregate, and network analysis were used for data analysis. After mapping spatial data, all mapped and non-mapped data was quantified by utilizing a set of formulae. Weighted scoring methodology was used in the evaluation where weights were calculated based on expertise opinion from university professionals, transport planners and economists.

3. RESULTS AND DISCUSSION

Based on weightage and likert value, age-friendliness of transport system in selected three case study areas were identified as 59.29%, 68.25% and 66.98% in Negombo, Kurunegala and Kandy respectively. The performance of 19 key indicators within each city can be depicted through Figure 1. Accordingly, the indicators such as 'coverage of public transportation', 'located closed to key travel destinations of elderly', 'located close to pedestrian crossing facilities and main junctions' and 'bus stop area is adequately lit during day and night', shows similar performance within each city. It can be noted that some of the worst performing indicators such 'Availability of public outdoor seating', 'Adequate footway width', 'Convenient height of the curb', 'Bus stop is provided with shelter and seating' and 'Availability of bus stop signage' can be resolved by minimum intervention

in infrastructure provision. Such interventions can make a huge impact on the overall experience of a trip to an older passenger.
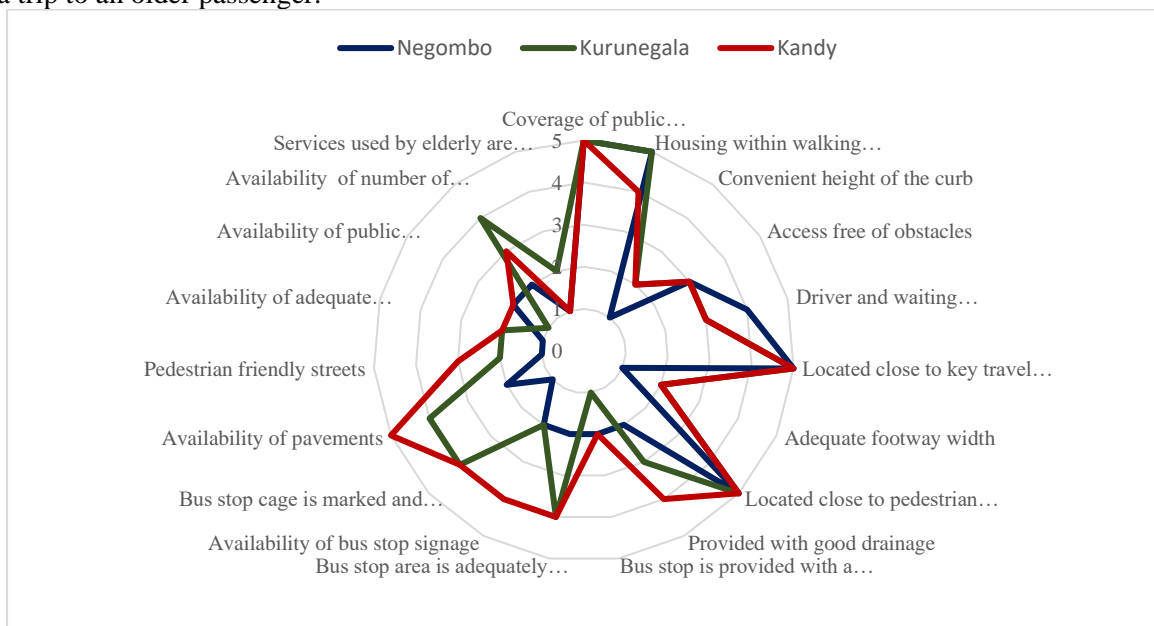

Figure 1. Overall performance of 19 indicators in 3 case study areas

4. CONCLUSION

The findings from the research are beneficial for urban planners and transport engineers in Sri Lanka. The results suggest that these aspects of critical unfriendly designs should be highly addressed by the local government in the future urban planning, construction and management of Sri Lankan cities. With this results, future planning can be done by prioritizing cities with greater deficiencies in age-friendliness of transport system and by targeting lacking mandatory aspects. The findings can be utilized to identify key intervention areas and to decide the level of intervention required.

The study was carried out only for three selected urban areas with greatest distribution of elderly population within the country. It is recommended for future researchers to apply similar methodology to quantify age-friendliness of transport system in other urban areas of Sri Lanka. It is also recommended to further develop the list of key mandates and indicators that can be utilized to assess age-friendliness of transport system in a developing country like Sri Lanka.

REFERENCES

1. WHO, (2017). Global Age-friendly Cities: A Guide, 76, WHO Press, France
2. Department of Census and Statistics, (2021). Statistical Pocket Book
3. Tine Buffel, C. P.-B. (2019). Age-Friendly Cities and Communities: New Directions for Research and Policy. Springer.
4. Green, G. (2013). Age-Friendly Cities of Europe. Journal of Urban Health 90, 116-128. doi:10.1007/s11524-012-9765-8
5. Loos, E., Sourbati, M., & Behrendt, F., (2020). The Role of Mobility Digital Ecosystems for Age-Friendly Urban Public Transport: A Narrative Literature Review. Environmental Research and Public Health, 17, 7465
6. Yi Wang, E. G.-H. (2017). Applying WHO's Age-Friendly Communities Framework to a National Survey in China. Gerontological Social Work. doi:10.1080/01634372.2017.1292980
7. Khoddam, H., Dehghan, M., Sohrabi, A., & Modanloo, M. (2020). The age–friendly cities characteristics from the viewpoint of elderly. Journal of Family Medicine and Primary Care.
8. Accessible Bus Stop Design Guidance. (2017). Transport for London.

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