Terms Related to Neighborhood Environmental Quality to Improve Urban Community Life

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Abstract—Urban environment quality refers physical, social and economic aspect. Physical factors include air and water quality, availability of green spaces, waste management, noise levels, walkability, quality of structure, provision of amenities and essential services. Physical factors include environmental aspects which are measurable and non-measurable. Social aspects of NEQ (neighbourhood environmental quality include social conditions about neighbourhood, safety and security. Local facilities, connectivity to transportation, its quality defines economical factor to evaluate NEQ. Urban density, giving rise to more housing demands, adversely influences air, water, noise, and the environment around the urban habitat of cities but directly influencing economic and social factors of NEQ. More civilization establishes all the facilities nearby which are schools, hospitals, medical, market and public amenities as well. Different countries will show different key factors based on their culture and development of urban areas.

All these practices challenge the quality of community life in urban residential areas of cities. Are these practices related to issues of happy human relations, outdoor style living, natural environment, public security, environmental protection, and social interactions. These factors positively influence urban residence's wellbeing, physical and mental health. Exposure to pollutions, noise and physical disorder can lead to increase stress and health issues. These relationships between NEQ and human wellbeing mediated by aspects like stress levels, engagements in physical activities, and overall neighbourhood satisfaction, green infrastructure, and sense of security. In Urban residential areas of the city, people are happy to live in dense areas despite facing bad environmental and health conditions to achieve a sense of security and easy accessibility to all facilities. This is helping them to reduce their mental stress and improve mental wellbeing with better social structure in dense urban neighbourhood.

The methodology aims to study the literature papers for the last two decades researching on neighbourhood environmental quality factors in urban neighbourhoods of different countries. Analysis of these practices focuses on relevant domains of NEQ, their evolution and knowledge structure that are helping to improve the quality of community life in urban neighbourhood areas of cities. The study aims to find out the most impactful factor for urban areas to improve neighbourhood environment quality and residential community life in the city.

Index Terms—Neighbourhood environment quality, urban areas, Quality of community life, urban density, Human wellbeing.

I. INTRODUCTION

1.1 Neighborhood environment quality

The term "neighborhood" represents an intermediate urban scale, larger than a single building and its immediate surroundings but smaller than an entire town or city. It usually includes dwellings, infrastructure, and community services. It is a scale in which multiple disciplines are involved, including environmental, mobility, accessibility, and infrastructure studies. (Delsante, I. (2016)).

Few research papers focus on sustainable aspects of environmental factors more precisely. It experimentally relates human settlements with green infrastructure rendering better mental peace and wellness. We identified two perceived aspects of the green environment that were associated with neighborhood satisfaction, independent of type of residence, namely historical remains (culture) and silence, such that sounds of nature can be heard (serene). Moreover, neighborhoods rich in historical remains (culture) and in animal and plant species (lush) were positively associated with physical activity. (De Jong, K., Albin, M., Skärbäck, E., Grahn, P., & Björk, J. (2012)).Analysis based on dominant keywords which are "neighborhood" and "neighborhood quality (NQ)", indicators listed in the paper and frequently referred key terms in literature to

define environmental attributes, the primary attributes associated with NQ were studied under six categories: urban green and blue, amenities, housing quality, physical environment, accessibility and urban mobility, and socio-economic environment. (Gocer, O., Wei, Y., Torun, A. O., Alvanides, S., & Candido, C. (2023)). Over recent years, the sustainability of urban environments has become one of the key challenges of our time, and a remarkable upsurge of concern about it can be observed through scientific and non-scientific literature. (Gillis, D., Semanjski, I., & Lauwers, D. (2015)).

Neighborhood environmental quality of urban settlements has been a topic for researchers for the last decade. Urban life in cities is facing problems of urbanization. Green building concepts or sustainability assessment of buildings are part of urban planning, but these assessments are not a complete solution to improve neighborhood environmental quality. Sustainability has been driving many aspects of urban planning since its conception. Urban areas are constantly transforming and evolving, and so do the approaches to urban sustainability. The meaning of urban and environmental sustainability differs from country to country, depending on the resources, economy, disasters, etc. Countries try to redefine, contextualize, and modify approaches and deal with situations and optimize resource utilization, so that urban areas are sustainable. (Kamble, T., & Bahadure, S., 2022, December). Researchers found different criteria affecting the sustainable assessment of the neighborhood. Measuring neighborhood sustainability requires integrating strategies to provide a framework to assess the level of sustainability, as sustainable urban development is multidimensional. In this paper, researchers identified key features for sustainable neighborhood development spatial/environmental, economic, social, governance, and physical sustainability (the focus is on transport infrastructure, connectivity, etc.) are used to formulate an integrated neighborhood sustainability assessment framework. (Moroke, T., Schoeman, C., & Schoeman, I. (2019)).

Neighborhood environmental quality (NEQ) research in European countries is showing indicators based on well-being and health. Meanwhile, in Asian countries, NEQ considers indicators based on connectivity, accessibility, and mobility.

After the implementation of sustainability policies and restrictions, urban residential areas face challenges in terms of physical and mental issues. After the pandemic outbreak, issues are noticeable with the Neighbourhood quality of people in urban areas.

This research aims to find out the issues faced due to neighborhood environmental quality in urban areas. A few problems are listed down to find research answers through the literature papers and bibliographic analysis method –

- RQ1. What was the research focus on the NEQ domain during its inception?
- RQ2. What is the thematic evolution of the NEQ domain during urbanization? What are the major research themes that evolved parallel to NEQ?
- RQ3. Which publications have significantly covered the NEQ and its indicators in detail?
- RQ4. What is the knowledge structure, insights and potential research directions for the NEQ domain in different countries?

The paper is organized into different sections.

The rest of the paper is organized as follows. In Section 1, Data sources for the paper and search method. Section 2 presents detailed results from various

analyses such as descriptive analysis, citation analysis, keywords analysis, thematic

mapping and evolution and collaboration analysis. Subsequent sections, such as the

discussion in Section 3 about finding answers for the research questions and theoretical and practical implications in Section 4, present important findings and their relevance to academicians, researchers and policymakers, and conclusion.

Section 1 –

Methodology –

Data sources for bibliometric analysis encompass various platforms collected for analysis from databases like Web of Science, Scopus, PubMed, and Google Scholar, and provide access to scholarly publications across all disciplines, offering citation metrics, authors' affiliations, and publication trends. Academic search engines like Google Scholar offer a vast array of literature, facilitating citation tracking and authors, journals, funding and organizations, and more.

In this research paper, data is collected from Dimensions.ai on 8th May 2025 using the database available for research articles. The author concentrated

the database using the following strings: (title – Neighbourhood environment quality and community spaces) in the research category of built environment and design, urban and regional planning, and architecture. Publication years selected from 2005 to 2024. Dimensions.ai was employed for this research. It offers the largest database for bibliometric analysis and greater compatibility with software tools. The software used for bibliometric analysis is for VOS viewers. (García-Sánchez, P., Mora, A. M., Castillo, P. A., & Pérez, I. J. (2019))

A Total of 25,720 articles were found in the search database with title community spaces and Neighbourhood environment quality required words from full data of articles published from 2005 to 2024. The database was analyzed by dimensions.ai and bar chart for the last two decades was generated.
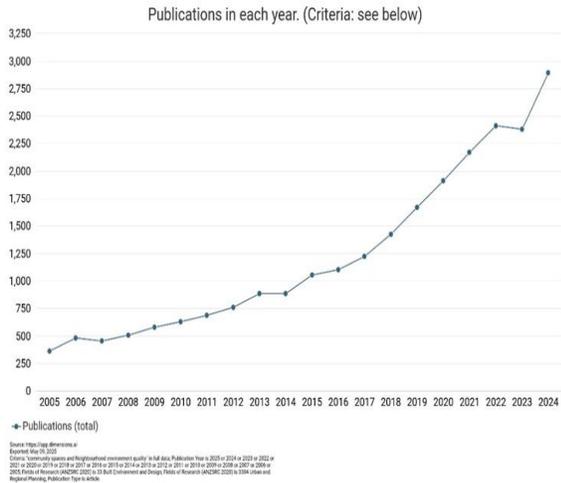

Chart 1 – Publications on Neighbourhood environment quality and community were shown in the chart from 2005 to 2015, deliberate from 250 to 1250 numbers approximately. From the last decade's 2015 to 2024, it is a noticeable increase from 1000 to 3000 in the total number of publications.

Section 2 –
Further analysis was performed in the VOS viewer to generate the network map with a cluster for each dataset. A binary method was adopted to filter the co-occurrence of co-authors from a large number of countries. The data showed large variations among countries up to 91 numbers. Hence, the occurrence threshold was set to 10 articles published by the country in the last 20 years. The number of countries

was selected with a total number of linkages i.e.46. Most countries have documents below 25 numbers. Further threshold set to 25 numbers of publications then output of the data was extracted in the form of network visualization as shown in Figure 1 for the data extraction.
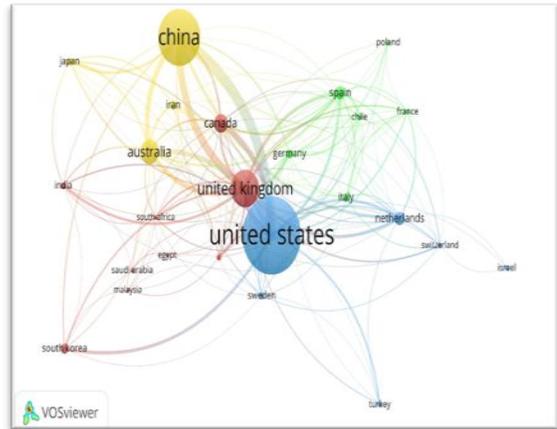

Figure 1Netwrok Visualization of worldwide study during 2005-2014

Figure 1 shows that the highest publications were carried out in United States, United Kingdom and china. There were four clusters formed based on the number of publication ranges. European countries show less publications on community spaces.
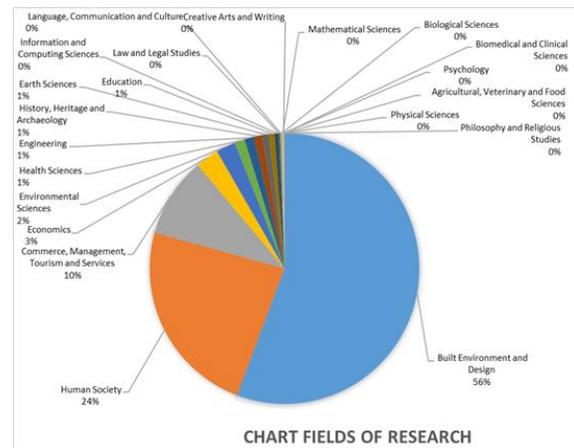

Figure 2 Classification of Neighbourhood studies (Source - Dimension.ai)

Figure 2 demonstrates the dominance of Neighbourhood with relevant to build environment and design. Neighborhood spaces firmly relate to environmentally built spaces when it comes to urban

areas. It is doubtfully explored by looking at the percentage of publications. Total 25720 publications were listed from 2005 in the field of built environment and Design. The second was Human Society (10856 publications) followed by third as commerce, management, tourism and services (4415 publications), and economics (1287 publications) for the year 2005 to 2024. For the analysis of the term related to Neighborhood environmental quality and community spaces, publications for environment-built spaces have been taken into consideration.

Figure 3Network Visualization of worldwide studies

Software produced a network analysis map (Figure 3) for the most occurring terms with the highest frequency and their links. During the COVID pandemic, it was important to study Neighbourhood quality to assess the quality of life and social life in communities. Community-related terms were mainly represented in the analysis map, life, place, social activity, and mental health etc.

Table I further analyzes decadal data for the highest-frequency words with the highest-frequency links. The last two decadal data periods are 2005 to 2014 and 2015 to 2024. More than 500 words were considered the most likely occurring words in the abstracts and titles of the research articles. Link strength was also mentioned for the first 10 keywords.
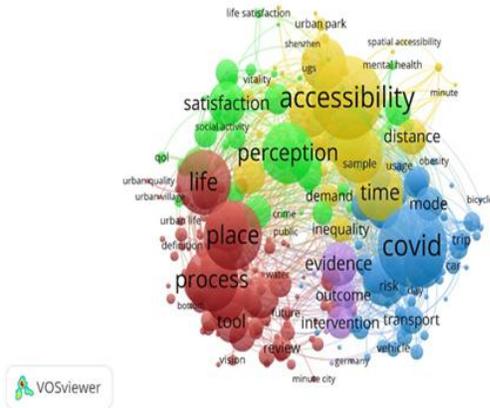
Table 1: worldwide data for top research topics last two-decade types

Rank	Keyword	Frequency	Relevance	Keyword	Frequency	Link Strength
	2015-2025			2005-2014		
1	Covid	711	0.44	Social Activity	232	0.58
2	Accessibility	459	0.31	Neighbourhood	162	0.83
3	Place	403	1.91	Public space	117	0.44
4	Process	373	0.51	Health	113	0.80
5	life	317	1.07	Perception	100	0.60
6	Perception	224	0.28	Sustainability	80	1.07
7	Satisfaction	306	0.57	Urban Park	70	0.94
8	Evidence	221	0.51	Urban quality	65	0.82
9	Tool	169	0.43	Mental health	67	2.06
10	Urban life	71	0.79	Life satisfaction	46	0.48

Table 1 shows that the world data shows that the top research topic in the years 2015-2025 is Covid (frequency =711). However, the link strength shows that interrelatedness of Place is higher, 1.91, with the topics than with COVID. Thus, it comes to accessibility and place as a priority worldwide. It is reportedly the highest research topic in the last decades. During the COVID pandemic, the

importance of accessibility to places and community areas played the most important role in achieving mental wellness and satisfaction. Other topics were related to 'urban life', 'tools', 'Evidence', 'Satisfaction', and 'perception'.

While the world data for 2005-2014 shows top research topic is social activity (frequency 232). During this decade, the need for community spaces and neighborhoods was necessary to consider for urban development. All other worlds listed in the topic were relevant to places such as 'Public spaces', 'health', 'perception', 'sustainability',' urban park',' urban quality', and mental health and life satisfaction.
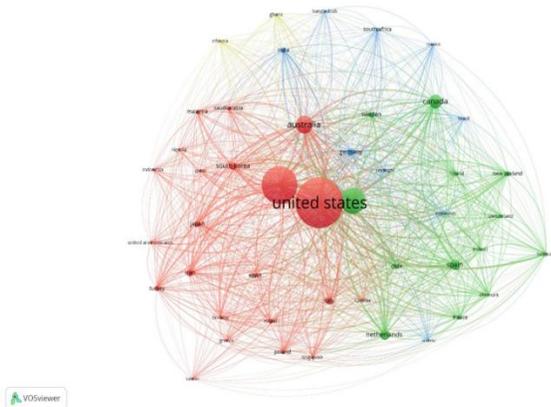

Figure 4: Network visualization of worldwide research organization

Two publications are bibliographically coupled if there is a third publication that is cited by both publications (Kessler, 1963). In other words, bibliographic coupling is about the overlap in the reference lists of publications. The larger the number of references two publications have in common, the stronger the bibliographic coupling relation between the publications. Although bibliographic coupling was introduced earlier than co-citation, it initially received less attention in the literature on visualizing bibliometric networks. In image 4, cluster 1 shows most of the bibliographic coupling. Cluster 1 countries like China, United States and Australia have most of the research papers which has bibliographic coupling. These countries shared most of the research information from their research Institutions. While other three clusters show less bibliographic coupling by research institutes. Developed countries are listed more bibliographic coupling in the research areas. Developing countries re-show bibliographic coupling with developed countries.
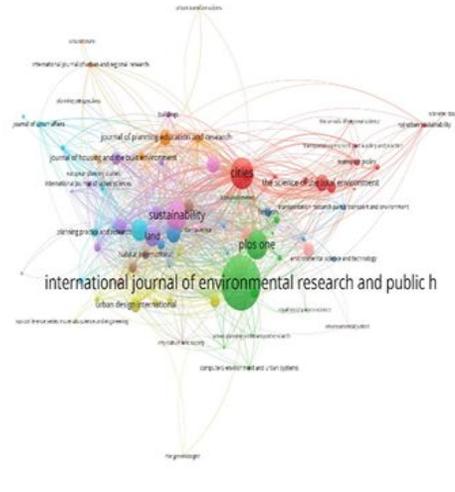

Figure 5: A network mapping of sources of publications

It is necessary to understand the domain under which 'Neighbourhood environmental quality and community areas' were studied and published. 'International Journal of Environmental Research and Publication' had the maximum number of publications (210 Total) and 4604 citations. 'Landscape and urban planning' journal had a maximum citation of 5975 in total for the documents published in the journal, followed by 'cities' journal (total citations 5165). There were other journals 'sustainability, 'Plos one', 'Cities', 'Journal of Housing and Built Environment', 'Journal of Planning Education and research', 'Journal of Planning Literature, Urban Planning, 'Habitat International', 'land', 'Habitat International' were list of journals for the publication of the related research on community areas and Neighbourhood environment quality. "Cities' journal had maximum total link strength. (479 total).

Section 3-
Data from the VOS-viewer was analyzed in section 2 of this chapter. Based on the analysis, questions were answered about the study of Neighbourhood environment quality.
Q. 1. What was the research focus on the NEQ domain during its inception?
Table 1: worldwide data for top research topics last two-decade types indicates more frequently used NEQ domain from its inception, from 2005. The NEQ research domain relates to the words from 2005, which focuses more on 'social activity' and 'Neighborhood'

and 'public health'. Social Activity is the major area that one can relate to the community spaces around where people perform different social activities and social interactions. These spaces play a key role in enhancing the well-being and mental health of the people.

Research question 1 answered with bibliometric analysis of key factors. NEQ research focuses on community spaces, public spaces, and urban parks for mental health and social interactions. During the last decades, places remained dominant under different names in urban areas. 'Place' was the important 'Space' during the COVID pandemic times as well. The perception of the place was studied and identified to improve human life.

Research question 2 - What is the thematic evolution of the NEQ domain during urbanization? What are the major research themes that evolved in parallel to NEQ?

Neighborhood environmental quality evolved around sustainability and accessibility of spaces. Research touched many domains in parallel, a few of them were environment, social culture, accessibility of services, and nearby locations. It was studied to improve human satisfaction and quality of life. It's required in urban areas where concrete is encroaching on nature. Urban areas' social interactions, nature, and activities were limited to maintaining human health and well-being. Research themes that evolved in parallel were mental health, human perception, and life satisfaction.

Research question 3 – Which publications have significantly covered the NEQ and its indicators in detail? Bibliometric studies show various publications mainly related to the built environment and design. Publications based on NEQ research were 'International research journals of the built environment', 'Sustainability', and 'Cities'. Other journals are based on urban themes and human health and wellness.

Research question 4 - What is the knowledge structure, insights, and potential research directions for the NEQ domain in different countries?

The main cluster of countries affecting human life due to degraded Neighbourhood environment mainly includes developed countries like the United States, and United Kingdom, and China. These countries are facing challenges due to urbanization. The growth of the human population in urban cities faced challenges to human settlement. It has been mapped around the restricted activities of daily life. Early decades from 2005 shows that studies were focused on the Neighbourhood by case studies located in these countries. These countries started mapping with sustainability assessment tools, BREEM, LEED, GREEN STAR, CASBEE, and BREEM PLUS. Later study was further started in depth to improve the Neighbourhood for human well-being and health.

Section 4-
Limitations –
This study makes use of the database available on dimensions.ae for bibliometric analysis, which includes all the weighted network of journals. Files for mapping created in the bibliometric analysis were used in VOSviewer to create network analysis. This database purely included two words 'NEQ and community spaces' while searching. Individual words giving separate references for the studies. Therefore, result may vary if worked on individual core areas of these two words. Also 'built environment and design' where search string gave the publications. Other field of research will give different research publications under NEQ and community spaces.

II. CONCLUSION

Important findings from this bibliographic analysis will provide a complete avenue for research in the area of Neighbourhood environment quality. It will be guiding researchers and policymakers to focus study areas to the relevant themes while enhancing NEQ for wellness and health for people. Community Spaces themes developed under public place, social activity, urban park and accessibility shall be studied. Policy makers for recreational ground, open spaces with regards town planning and urban areas find different avenue to design these for people's wellness and mental health.

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