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Dis-Ability and the Built Environment: A Literature Review

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Abstract: there have been worldwide efforts to move towards inclusive design via legislation, guidelines, and policy motivated by health, social, sustainable development goals. Paper links together strands of research in which inclusion of all is a primary concern especially in the context of the built environment with a broader interest to understand how inclusion of all in built environment is supported or contested by research. Paper reviews literature of the recent decade- 2010-2021 having words 'inclusion and built environment' in their title on Google Scholar. Literature is organized in three categories: 1.) Disability, Barrier and exclusion, 2.) Ability, access, and inclusion 3.) Indian context. Paper finds that most of the literature is focused on the minimum standard that does not provide inclusive solution and even ratification to UNCRPD has not yet resulted in inclusive design for all, even in developed countries.

Keywords: *accessibility, inclusion, disability and diversity*

Introduction: Built environment and human interactions have been studied by various researchers in sociology, ergonomics, and architecture and it is established that a built environment can facilitate or hinder one's ability to participate in day-to-day activities (Mulligan et al., 2018). Even though the population with

a disability is the world's largest minority but is often overlooked (Jonckheere, 2020). A study conducted to understand architect's (designer of-built environment) conception of the human body concludes that the human body or the user of the built environment has been reduced to a specific type and architecture theories and practices fail to acknowledge bodily diversity (Imrie, 2003). Designing for the able-bodied is a form of discrimination that affects their social life by imposing physical barriers for people with ethnic, gender, or physical differences. A good design acknowledges the diverse nature of people and does not impose physical, cultural, or social barriers. The barrier-free concept is an aftermath of the 70's disability rights movements that influenced the creation of the 1990 American with Disabilities Act (Lund, 2021). In addition, there have been growing scholarly literature on Inclusive environment, particularly need to go beyond bare minimum standards is highlighted.

Paper takes stock of the literature published between 2010-2021 and links together various strands of research in which "design for all (inclusion for all) is a primary concern. Our broader interest is to better understand how importance of design for all is supported by scholarship. Inclusion of all is explicit part of Agengda-2030 and even master plan of various cities (MPD-2041) and we want to access inclusion of all in context of built environment is supported by research.

A search on google scholar for journal articles with the words 'inclusion and built environment' in the title yields 23 results. Papers from 2010-2021 are included in the review. The paper is structured as follows: The first part of the literature highlights various barriers encountered by diverse user groups that disables them and leads to social exclusion. The second part of the

literature highlights the research that provides in-depth knowledge of the barrier-free concept and the third part highlights India's aspirations to become inclusive and action taken to achieve inclusion for all.

Though there have been worldwide efforts to move towards inclusive design of built-environment via legislation and guidelines, for example, American act with disability 1990, Right of Person with Disability Act 2016 (India), that protects against discrimination and comprehensive design standards like New-Zeeland Building code, a handbook on barrier-free and accessibility provide standards for accessibility (Mulligan et al., 2018). But most of the literature concerned with disability from architectural point of view is didactic and focused on standards and doesn't provide an in-depth understanding of the concept. While BS 8300-2:2018 Design of an accessible and inclusive built environment-Code of Practice and NZS 4121: Design for access and mobility advocates going beyond bare minimum standards and move towards universal design concept.

Disability, barriers, and exclusion: Built environment can facilitate or hinder one's ability to participate in day-to-day activities (Mulligan et al., 2018). There is an increase in interest towards human-centric architecture among research scholars' but in the practical, built environment is largely seen to have been constructed without reference to the physical needs of different types of users. Users of the built environment has been reduced to a specific type, fit and able bodied with symmetrical body proportions. Architecture theories and practices fail to acknowledge bodily diversity (Imrie, 2003). Design for inclusive is perceived as challenging by architectural students and practicing architects find it difficult to incorporate elements of inclusive

design as clients do not want to invest in this because it has additional cost associated and commercial space profit is reduced (Mulligan et al., 2018). However, Murugkar Kavita notes that accessibility measures, when planned at the design stage, would result in one percent to 1.2 percent of the construction cost. Most of the architects while designing, have no conception or have a self-referential image of the human body or as noted by McAnulty,1992 a statistically balanced symmetrical figure. The built environment lacks acknowledging bodily, cultural, gender, age diversity and continues to excluding their needs and wants. The literature review notes that various groups of the population face barriers in the built environment including elders, caregivers, pregnant women, people with impairment. Most of the literature concerned with disability from an architectural point of view is didactic and focused on standards and doesn't provide an in-depth understanding of the concept (Lund, 2021). Built environments that do not cater to the needs of all impose significant barriers and disables them from living a dignified life and performing to the best of their abilities. A study notes that only less than 5% of people with disabilities have access to services.

Ability, access, and inclusion: United nations convention on the right of persons with a disability considers that disability is a result of interaction between a person with impairment and environmental, attitudinal barriers that hinder their effective participation in society. It is the lack of opportunity to participate in social, cultural, economic life due to barriers imposed that hamper an individual's ability (Chęć-Małyszek, 2019). These barriers are a result of obstacles encountered due to various factors including communicational, cultural, economic, environmental, institutional, political, social, attitudinal, or structural factors. (RPWD,2016) The person with impairments is

perceived as other by able-bodied persons and encounter various barriers like social, physical, cultural that affect their life and mostly they are bound to stay home due to lack of independent mobility and access (Chęć-Małyszek, 2019). Though Person with disability have the full right as an individual but because of their impairments, are disadvantaged by environmental, economic, and social barriers (European Forum of the European Parliament) .

It is the dismantling of these barriers that can enable everyone in participating as active members of society (UNCRPD). In the context of the architecture and built environment, it is the inclusive design that is about creating environments that allow everyone the same opportunity of use, enjoyment, and experience without separation as noted by S. Neil and D. David. (Smith & Dropkin, 2012) A group of research scholars (Mulligan, Kerry & Calder, Allyson & Mulligan, Hilda 2017) notes that inclusive design can also be referred to as universal design, accessible design, and barrier-free design while another group (Smith, Neil & Dropkin, David 2012) notes that a design may be accessible but not inclusive. As highlighted in BS 8300-2:2018 Design of an accessible and inclusive built environment-Code of Practice and NZS 4121: Design for access and mobility Inclusive design goes beyond bare minimum standards. Inclusive design questions bolt-on solutions like provision of the separate ramp and separate stepped access as it separates the users into abled and disabled. It is important to note that one solution might be usable for all users. For example, designing for wheelchair access may exclude a person with impairment making it difficult for him to bent. An inclusive design might provide flexible solutions. For example, choice of surface material, adjustable height of the working surface (Smith & Dropkin, 2012). At some point in their lives (injury, pregnancy, old age), people may require the same

provision that is made for a disabled person and as recognized by Planning policy guidelines, UK inclusive design is about making places everyone can use. As highlighted by Ar. Kumta designing for a barrier-free environment is not a special requirement but a fundamental need (Kumtha Parul, 2020). UNCRPD highlights the importance of 'leaving no one behind as an approach to achieve sustainable development. Inclusive design should be seen as fundamental in process of designing the built environment (Mulligan et al., 2018) and it must be considered from inception to completion (Smith & Dropkin, 2012). RIBA plan of work assists in incorporating principles of inclusive design at various work stages.

Indian Context: India has around 3 crore persons 'disabled' which amounts to 2.21% of the total population (National Census 2011). India's population needing universal accessibility is estimated at around 25% (BASIIC). Persons with disabilities are the largest minority in India but are the least visible and are deprived of fundamental rights (Structural Framework for Accessible Infrastructure in Smart Cities, n.d.). India aspires to become inclusive for all as it has ratified UNCRPD and has obligations to identification and elimination of obstacles and barriers to accessibility that in applies to buildings including schools, housing, medical facilities and workplace and other indoor and outdoor facilities. To fulfills the obligations to the UNCRPDand *Rights of Persons with Disabilities Act, 2016* was formulated and it replaced Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995. also Access India Campaign was also launched in 2015 to meet the aspiration of inclusivity. Although accessible design in India has gained relevance, even official documents like Master plan Delhi, 2041, highlights the need for designing for all. There

are documents like Handbook on Barrier-Free and Accessibility, Central Public Works Department (CPWD), 2014, Harmonized Guidelines and Space Standards for Barrier-Free Built Environment for Persons with Disability and Elderly Persons, Ministry of Urban Development, 2015, National Building Code of India, Bureau of Indian Standard (BIS) in India detailing the standards for accessibility in India. A comparative study of these documents concludes that there has been no authentic study undertaken in India, concerning the accessibility needs of persons with different disabilities, keeping in mind the range of assistive devices/technologies being used, cultural aspects, terrains in rural/urban/hilly regions, and it needs to include a lot more technical detail to make it appropriate as a reference (DOEC, 2016). These building standards are not mandatory to comply with the built environment and are based on western models instead of research-based standards to serve Indian needs (Solanki & Khare, 2018). While India is witnessing rapid urbanization, the rural scene remains neglected in its basic amenities and other infrastructural support. Low economic status, lack of facilities present challenges for a person with disabilities in rural India, and the impact of impairments is much significant in a rural setting as compared to urban settings (Raheja).

Conclusion: Inclusive design has taken on a special significance in recent years from bare minimum standard implementation to advocating what disabled and neglected users want instead of perceiving what they need. Inclusive design is forming an essential basis for achieving social, economic health, and sustainable development objectives. Reviewing the literature of the recent 10 years related to inclusion and built environment, the paper summarizes the research in three parts. Review links together strands of reteaching, policy, legislation, guidelines from

global overview to Indian context along with providing an in-depth understanding of various terms including disability, barriers, social exclusion, and inclusive design. The rise of barrier-free architecture is a study that presents a view of how barrier-free architecture came into existence, the struggle, and the timeline of its development. From social stigma about the disabled person to consider them as individuals with full rights, social perspective in certain parts of the world has evolved but remain unchanged especially in small and medium towns, rural settings of India. A person with otherness (perceived as different in terms of physical appearance, gender, ethnicity, sexual orientation, sex) continue to encounter environmental and attitudinal barriers. While there is recognition that something as basic as access for all should factor in via Ratification to UNCRPD, Delhi master plan 2041, BASIIC, RPWD 2016.

The main conclusion of the review can be summarized as follows. Firstly, the need for advocacy for an environment inclusive of all has improved substantially over the past decade motivated by the development of country-level legislation, policy, guidelines but in reality, even in developed countries like New Zeeland, this has not yet resulted in design inclusive of all people. Secondly, when it comes to users of the built environment, it is barriers that disable them or hinder their ability to participate effectively. Certain documents and research provide in-depth knowledge of the idea of inclusive design like BSI- 8300, NZS 4121, Access and inclusion by Neil Smith and David Dropkin, RIBA- plan of work: inclusive design overlay that can assist in dismantling barrier and help in achieving built environments inclusive of all. Thirdly, when it comes to India, though India has obligations to UNCRPD, ongoing programmers like Sugamya Bharat, mention of inclusivity in Delhi master plan-2041, there is no mandatory obligation to make built-

environment inclusive. In small and medium towns and rural areas stigma, ignorance, lack of awareness continues to impose challenges to the user that are perceived as other by able-bodied users.

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