

Degree of accessibility of the vertical housing for elderly dwellers: the vision of the dweller and the researchers

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Keywords: Housing assessment tool. Spatial accessibility. Elderly.

1 Context

The aging process causes changes in the functional capacity of the human being and, over the years, the level of independence and autonomy to perform daily activities decreases. The physical dependence, the psychological and social deficiency, with the advancement of the age, directly affects the quality of life of the elderly (AGNELLI, 2012).

In face of the physical changes, we can state that the necessities of use of the dwelling spaces change as a person ages. For this reason, the quantity and disposition of the furniture in the residence, apart from the dimensions of the environments can directly influence the performance and quality of the activities performed by the elderly users (TEMELOVÁ; DVORÁKOVÁ, 2012).

Because the elderly stay at home for a long period of time, especially those who are already retired, the situation described above may have a more direct impact on the performance of the daily activities of these dwellers. For this reason, housing should be fully accessible, to extend the level of the dweller's independence in relation to the use of all spaces. The dwelling place should be designed to meet the physical needs of the elderly, ensuring safety and mobility (HUI et al., 2014; AGNELLI, 2012).

In order to identify the accessibility problems in the dwellings, this paper sought to present a methodology that incorporates the users' and researchers' vision to measure the accessibility of housing for elderly residents, which could evaluate the same aspects considered important to both evaluation segments, but incorporating a quantitative analysis of the degree of accessibility of each environment and of the dwelling place as a whole.

2 Method

The case study was carried out in a residential building located in the central region of Marília (SP), a medium-sized city located in the center-west region of the State of São Paulo. The building, inaugurated in 1984, has 13 floors (underground, ground floor, 10 floors type and attic). Each floor type has four apartments.

The methodology that incorporates the view of users and researchers to assess accessibility in housing for elderly dwellers was composed of the application of structured interview, technical auditing and the definition of an index of accessibility of housing. The different techniques used allowed the analysis of the internal and external environments of the residential building. Interviews and technical audits were conducted in the period of March 2016 (pilot test) and November to December 2016.

For the interviews, the sample consisted of: i) the sample was calculated from the total number of apartments for the elderly (26 units). An interview per apartment was considered (7 interviews). For this calculation was taken into account a margin of error of 20%, 95% confidence and 90% of heterogeneity of responses., and ii) the accessibility assessment by means of a technical audit, was performed in an apartment type, whose dweller was an elderly person (84 years old). This apartment has approximately 70 m², distributed in the following rooms: living room, kitchen, laundry, laundry bathroom, pantry, 2 bedrooms, internal circulation and bathroom.

The satisfaction level of the elderly regarding accessibility was assessed through the following elements: ease and safety in the displacement within each housing environment; analysis of the disposition of furniture within each environment; ease of use of furniture and equipment; level of lighting and ventilation of the surroundings; thermal comfort and sound comfort.

The assessment of the 69 questions by the interviewees was performed using a scale from 1 to 5, with the value (1) awful, (2) bad, (3) regular, (4) good and (5) great. The interpretation of most of the answers was analyzed using the Multicriteria Analysis Method, and the Points Scale Method was adopted. This method uses degrees of preference of each evaluator from a scale of five levels of importance. The analysis of the results is carried out by normalizing the answers of the questions to the same evaluation scale. Then, the average weights of each criterion are calculated per evaluator, which allows the definition of a ranking and thus the identification of the satisfaction level of the users in relation to the main accessibility problems related to the external and internal areas of the building.

The analysis by means of technical auditing was performed using a form that assessed the external environments (public sidewalk, access to the lot, external access to the building, external access ramp, external access stairs, circulation in the elevator area) living room, bedroom, bathroom, internal circulation, canopy, kitchen, balcony and

laundry), besides the Theme - Devices and controls from the definition of Themes and Indicators.

The numerical scale adopted for this assessment is distinct, but corresponds to a numerical interval corresponding to 0; 0.5 and 1 or 0 and 1, in which the value 0 corresponds to the worst assessment and the value 1 to the best assessment; these values were proposed with reference to the technical recommendations / standards and design guidelines.

The results of the Indicators and Themes of the technical audit worksheet should be multiplied by their respective weights, thus obtaining the scores of each environment (Theme) analyzed and later of the building, which in this paper was called Global Accessibility of Housing (ACCESS-HAB_{GLOBAL}) and Maximum Global Accessibility of Housing (ACCESS-HAB_{GLOBAL MAX}).

Subsequently, a comparative analysis was carried out between the assessments of the level of satisfaction of the dwellers and the one made through technical auditing. The results obtained had the objective of verifying whether there is a repetition of the problems of accessibility in the dwelling from the point of view of the users / dwellers and the technicians.

3 Results

The results showed that it is possible to identify little similarity of results obtained both in the view of the dwellers and the researchers. The two groups identified problems related to comfort and safety, as well as problems in project execution such as dimensions of environments and lack of space for movement.

The application of interviews to elderly dwellers allowed the conclusion that the main accessibility problems identified in this building are related to the safety and comfort of the following rooms: living room, bedroom, kitchen, bathroom and laundry and handling of equipment and / or furniture. Among the problems listed by the dwellers, we highlight: *Safety when using the environment when the floor is wet or waxed, Ease of opening and closing the door (door handle), Ease of opening and closing the window, Ease of use of the furniture and the space of the Box for use of shower.*

Problems such as ventilation and natural lighting, size and shape of the room, type of floor, door width and layout of hydrosanitary parts are related to the design and execution stages of the work. Other problems such as the available area for circulation within the rooms, the disposition of the existing furniture and the ease of use of the furniture are related to the way each inhabitant disposes of his furniture, which can compromise and / or hinder mobility within the environment.

4 Conclusions

The construction of buildings that incorporate the space accessibility and the adequacy of buildings built before the enforcement of laws and technical norms on this subject is a determining factor so that the elderly, regardless their mobility restriction, can have safer environments.

The assessment showed that the residential building analyzed is inadequate to receive elderly dwellers, a growing demand in the country, since many problems of space accessibility were identified both in the internal areas of the apartment and in the external areas.

Regarding the application of the instrument, it was observed that the procedures used to assess accessibility through both users' and researchers' perspectives proved to be valid, easy to implement and reliably reflected the main difficulties found in the residential building, and in particular, in the appraised apartment.

This diagnosis can be used by architects and engineers to i) identify the various problems that may compromise accessibility in homes; ii) intervene in advance in these environments to ensure greater comfort and safety for the elderly; and (iii) incorporate these issues into new residential projects.

5 References

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6 Acknowledgments

The authors thank CAPES (Commission for the Improvement of Higher Education Personnel) for contributing to the development of the research that gave rise to this article.