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The Transformative Impact of Industrial Design on the Adaptation of Migrant Older Adults: A Gerontological Approach

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Abstract

The migration of older adults is a growing phenomenon with implications for the quality of life and well-being of this population. Migrant older adults often face challenges in adapting to new environments due to physical, social, and cultural constraints. Industrial design has the potential to address these challenges by incorporating gerontological principles into creating environments and products that fit the needs of this population. OBJECTIVE: The study aimed to explore how gerontological design can facilitate adaptation and improve the quality of life of older adults who have migrated to new contexts. It seeks to identify specific design strategies that can mitigate the challenges of migration and promote social inclusion and functionality. METHODOLOGY: Qualitative research was conducted that included surveys and interviews with migrant older adults in various settings. Data collection focused on understanding the barriers they face in areas such as accessibility, social interaction, and comfort. Gerontological design principles were applied to develop adaptive solutions through collaboration with industrial designers and gerontologists. RESULTS The results highlight common challenges faced by migrant older adults, including mobility difficulties, language barriers, and social isolation. The proposed design solutions, such as accessible spaces and ergonomic products, demonstrated a positive impact on the adaptation and well-being of this population. CONCLUSIONS The application of gerontological design in migration contexts is essential to improve the quality of life of older adults. The results support the idea that adaptive design can address migration-specific challenges and foster social inclusion. Greater collaboration between industrial designers, gerontologists and migration professionals is recommended to develop more comprehensive solutions. Training designers in gerontological principles and considering cultural diversity in design are key steps for the future. FUTURE WORK: Future research should focus on the implementation and long-term evaluation of gerontological design solutions in diverse migration contexts. In addition, the expansion of this approach at the level of public policies and urban planning is urged to ensure a sustainable impact on the quality of life of migrant older adults.

Keywords: Gerontological design, products, interdisciplinary, physical, emotional, social.

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Introduction

The migration of older adults is a growing phenomenon that has captured the attention of numerous researchers and health professionals. As populations age and transnational movements intensify, there is a need to understand the specific implications that migration has for this demographic. Migration affects the elderly in their way of life and their aging, since in most cases they face challenging conditions in their adaptation process (Meza, Ramos, & Ávila, 2022).

In their study on migrant older adults, García, Sánchez and Pérez (2019) point out that physical limitations, such as decreased mobility and health, can be exacerbated during the migration process and make it difficult to adapt to new environments.

Likewise, it has been observed that migration in the vulnerable population has an impact on mental health, due to cultural shock, discrimination and family distancing that they live in the adaptation process (Torres and Arias, 2018).

In this context, industrial design emerges as a discipline with the potential to make a significant difference in the lives of migrant older adults. Industrial design has the ability to effectively address the specific challenges faced by this demographic. By incorporating gerontological principles into the creation of environments and products, greater accessibility and functionality can be ensured, thus improving the adaptation, quality of life and health of older adults (Asiamah, et al., 2023).

Gerontological industrial design or also known as inclusive design provides older adults with physical and emotional independence, since it increases their self-esteem and dignity, because it understands the needs and preferences suffered by this population (Lopez and Uribo, 2022). The creation of friendly and ergonomic spaces, along with products specifically designed to address physical limitations and everyday demands, can have a positive impact on the autonomy and well-being of migrant older adults.

The central purpose of the present study was to explore how the implementation of gerontological design can be leveraged to promote successful adaptation and improvement in the quality of life of older adults who have experienced the migratory phenomenon to new environments. In agreement with the findings of Victoria, Vega, and Ortega (2018), this research was oriented towards the identification of concrete design strategies that address and mitigate the specific challenges associated with migration in this demographic.

The work of López and Álvarez (2021), highlight that, within this context, gerontological design emerges as a powerful tool to promote both social inclusion and functionality of migrant older adults. In addition, the seminal work of García, González and Pérez (2019) underlines the importance of considering the individual characteristics of migrants, such as their cultural background and previous experiences, when developing effective design solutions.

The conception of inclusive and functional environments for migrant older adults has been supported by multiple researchers. Sánchez and Montalvo (2019), emphasize the need to create physical spaces that are accessible and adaptable to the physical limitations of this population, while García, Sánchez and Pérez (2019), emphasize that the empowerment of older adults results in confidence that allows them to better adapt to their physical and social environment.

This study adopted a qualitative methodological approach, conducting in-depth surveys and interviews with migrant older adults in different contexts, in order to capture a diverse range of perspectives and experiences.

In conclusion, the present research aligns with a growing body of literature that recognizes gerontological design as a fundamental strategy for the promotion of adaptation and quality of life in migrant older adults. The identification and

implementation of specific design strategies presents an opportunity to overcome the challenges of migration and foster stronger social inclusion and improved functionality.

Methodology

In a world in constant demographic and social transformation, the migration of older adults has become a phenomenon that demands a deep understanding and an effective response. To address the challenges inherent in this process and to build more robust knowledge, it is essential to use innovative and well-grounded research approaches. In this context, the adoption of a qualitative research approach offers a solid platform for the exploration and comprehensive understanding of the experience of migrant older adults and the formulation of adaptive solutions.

This study is part of the current stream of research addressing the migration of older adults and adopts a predominantly qualitative approach that aims to immerse itself in the richness and complexity of the constantly changing experiences of this population. Through the use of qualitative approaches, we sought to significantly deepen understanding, thus allowing a deeper appreciation of individual narratives and perceptions. This methodology was oriented towards capturing the subjectivity and personal perspective of the participants.

At the same time, this qualitative approach made it possible to identify and explore emerging patterns and trends. Although quantification itself was not pursued, the opportunities offered by the intersection with quantitative methodologies to give an objective dimension to the analysis were recognized. The combination of these qualitative and quantitative perspectives enriches the global understanding of the migratory phenomenon in older adults.

Following the methodological guidelines presented in "Research Methodology" by Hernández, Fernández, and Baptista (2018), a solid basis was established for the execution of this research. The selection of tools was made through careful evaluation and precise adaptation, considering both the particularities of the niche market and the specific objectives of the study.

In this research, qualitative methodology assumed an essential role in allowing deep and meaningful access to the subjective experiences of migrant older adults. Following the guidelines proposed by Hernández, Fernández, and Baptista (2018), we opted for the use of semi-structured interviews as a method of data collection. These interviews, conducted with sensitivity and empathy, created a safe environment in which participants could openly share their perspectives, narratives and emotions. This methodological approach is aligned with narrative and phenomenological approaches, which seek to explore the internal and unique experience of individuals immersed in a particular phenomenon.

The qualitative methodology in this research significantly emphasizes the deep understanding of the subjective experience of migrant older adults. Through the deliberate choice of semi-structured interviews, a clear intention is manifested to capture and give voice to individual narratives as well as the unique perceptions these individuals possess. This methodological choice not only provides a platform to explore their experiences in detail, but also allows us to discover the nuances and subtleties that are intertwined in their life stories.

In addition, the use of this methodology drives a deep and holistic approach, aimed at unraveling the emotional and personal complexities that lie in the background of the experiences of these migrant older adults. Beyond the superficial aspects of his stories, this technique pursues a deeper understanding, and seeks to delve into the underlying emotions, intrinsic challenges and internal perceptions that make up his narratives.

On the other hand, semi-structured interviews, as a central tool in this methodology, allow an organic and flexible exploration of the participants' stories, through open questions that served to obtain a spontaneous dialogue, creating a space in which migrant older adults can share their experiences from their unique and enriching perspective. Individual voices emerge with authenticity, revealing the difficulties of adaptation, nostalgia, struggles and triumphs that characterize their lives in a new environment.

Ultimately, this qualitative methodology not only seeks to document and analyze the experiences of migrant older adults, but also to honor the richness and diversity of their experiences. By highlighting individual voices and perceptions, it transcends mere data collection to reach a deeper level of empathic understanding. This research thus becomes an eloquent testimony to the importance of qualitative methodology in social research, especially when it comes to exploring the intricate dimensions of human experience.

The choice of this methodology is attributed by the author Maya (2023), who gives relevance to the domains in the gerontological design of environments, services and products, also emphasizes that this design is key to human sustainability. Considering that these factors are intricately intertwined in the experience of migrant older adults, it is crucial to understand their challenges and aspirations in these areas to develop effective and adaptive solutions.

Following the suggestions of González, et al., (2020), a multidisciplinary collaboration between industrial designers and gerontologists was promoted. This enriching collaboration made it possible to combine design expertise with a deep understanding of the needs of migrant older adults. On the other hand, gerontological design helped the idea of creating solutions that adapt to the needs and desires of this population, thanks to this union there was a huge interdisciplinary benefit, since it contributed to the effective and practical implementation of the proposed solutions.

Taking into account the suggestion of Sánchez (2023), his proposal in the field of women's accessories has the potential to be developed into a venture that integrates a social responsibility approach. In this context, this initiative could play a crucial role as a catalyst for the labor inclusion of older adults who are in migration conditions. Likewise, this proposal has the capacity to promote ecological awareness in society and stimulate the entrepreneurial spirit.

Results

Exploring the research findings sheds light on the intrinsic challenges that migrant older adults face in their process of adapting to new environments. These challenges, which emerge as recurring patterns in the experiences of this population, encompass a number of key areas that deserve attention and action at both the policy and design levels.

One of the most significant challenges identified in the results is the difficulty of mobility experienced by migrant older adults. Migration can intensify pre-existing physical limitations, and lack of accessibility in host settings can further exacerbate this situation. Adaptation to new transport systems, navigation in unknown urban spaces and the absence of adequate infrastructures for mobility stand as obstacles that affect both the autonomy and the quality of life of this population. These findings corroborate the research of Gil Mastalerczyk (2023), who highlights the need for a comprehensive approach in the design of urban environments that prioritizes universal accessibility and adaptability to the mobility needs of older adults.

Language barriers also emerge as a preponderant challenge in the experience of migrant older adults. Lack of proficiency in the host country's language can result in poor communication with health professionals, government services, and the community at large. This not only limits their ability to access essential resources and services, but can

also lead to feelings of isolation and social exclusion (Sumonte, et al., 2018). It is clear that overcoming these barriers requires multidimensional approaches that encompass language training, cultural training and the promotion of more effective intercultural communication (Munita, 2020).

Social isolation is established as another challenge that negatively impacts the lives of migrant older adults (Castillo, 2003). The breakdown of family and support networks, combined with the need to adapt to new social and cultural dynamics, can lead to feelings of loneliness and isolation (Raymond, et al., 2023). This aspect coincides with several studies that underline the importance of addressing social isolation as an influential factor in the quality of life of migrant older adults. Establishing enabling environments and the generation of opportunities for social interaction, both within migrant communities and in the host society, are presented as essential elements to address this challenge, as proposed by Sánchez (2023) in his entrepreneurship initiative focused on the creation of feminine accessories made with leather remnants and natural dyes. This proposal could represent an effective solution to promote the labor inclusion of older adults in environments characterized by migration.

In response to these challenges, the proposed design solutions reveal the significant potential of gerontological design to positively impact the adaptation and well-being of migrant older adults. The implementation of accessible spaces and ergonomic products not only directly addresses mobility and comfort barriers, but also sends a message of inclusion and consideration towards this population (Ng and Indran, 2023). In addition, design solutions contribute to the creation of environments that are not only functional, but also aesthetically pleasing and culturally sensitive. These results reflect the importance of gerontological design proposals based on the need for responsive and adaptable design that is rooted in understanding the unique needs of migrant older adults.

Ultimately, the intersection between identified challenges and proposed design solutions illustrates how the strategic application of gerontological design principles can positively influence the lives of migrant older adults. It not only addresses concrete mobility, linguistic and social issues, but also promotes a deeper change in the perception of these populations and their needs. By incorporating these solutions into urban planning, social welfare policy, and the design industry, one can aspire to a more inclusive and respectful environment that supports the adaptation and well-being of migrant older adults.

The following table concisely presents the challenges identified in the research along with the industrial design strategies proposed to address those challenges in the adaptation and well-being of migrant older adults.

Table 1. Challenges and Key Areas, Findings and Results, Design Strategies

Challenges and Key Areas	Findings and Results	Industrial Design Strategies
Mobility Difficulties	- Mobility difficulty due to physical limitations and lack of accessibility in host environments.	- Design of accessible spaces and ergonomic products.
	- Obstacles in adapting to new transport and navigation systems in unknown urban spaces	- Design of urban environments with universal accessibility and adaptability to mobility needs, focus on universal accessibility.
	- Impairment of autonomy and quality of life.	- Implementation of ergonomic products to improve comfort and mobility.
Language barriers	- Poor communication due to lack of proficiency in the language of the host country.	- Multidimensional approaches to overcome barriers, including language training and cultural training. Design of Multilingual Translation Devices,

		Communication Devices for the Deaf and Hard of Hearing, Tactile and Visual Communication Products, Multisensory Communication Products.
	- Difficulties in accessing resources, health services and generating feelings of isolation.	- Promotion of effective intercultural communication for integration in the community.
Social Isolation	- Rupture of support networks and adaptation to new social dynamics that generate loneliness.	- Creation of spaces and opportunities for social interaction in migrant communities and host society. Design of Multifunctional Meeting Spaces, Ergonomic Furniture for Socialization that is comfortable and accessible for older adults. Creation of products that allow migrant older adults to share their culture with the host society, such as kitchen utensils, musical instruments and decorative elements that encourage conversations and cultural activities.
	- Negative impact on the quality of social life of migrant older adults.	- Promotion of social and cultural activities that facilitate integration and reduce isolation, Develop board games, group activities and interactive tools that encourage socialization among migrant older adults. Creating products designed to stimulate conversation and share personal stories between migrant older adults and members of society
Gerontological Design	- Gerontological design solutions can improve the adaptation and well-being of migrant older adults.	- Implementation of ergonomic spaces and products that address mobility and comfort obstacles.
	- Accessible spaces and ergonomic products promote inclusion and consideration towards the migrant population.	- Sensitive and culturally appropriate design to create functional and aesthetically pleasing environments.
	- Solutions impact the perception and needs of migrant older adults.	- Integration of gerontological design solutions in urban planning and social welfare policies.
Overall Results	- The application of gerontological design can positively influence the lives of migrant older adults.	- Aspiration to an inclusive and respectful environment that supports adaptation and well-being of migrant older adults.
	- Promotion of changes in social perception towards migrant older adults and their needs.	- Raising awareness in society and promoting the appreciation of diversity at all ages.

In summary, the research results highlight the common challenges faced by migrant older adults in their adaptation process. The implementation of gerontological design solutions, ranging from accessible spaces to ergonomic products, demonstrates their effectiveness in improving the quality of life and adaptation of this population. As these solutions are

integrated into design policies and practices, a sustainable and positive impact on the experience of migrant older adults in their new contexts can be expected.

Conclusions and recommendations

The integration of gerontological design in migration contexts has become an imperative need to promote a significant improvement in the quality of life of older adults who face the challenge of adapting to new environments. The results obtained in various studies strongly support the notion that the implementation of adaptive and user-centered designs can not only address the specific challenges linked to migration, but also catalyze the social inclusion and overall well-being of this population (Xu, et al., 2023).

Accumulating evidence reveals that gerontological design can translate into tangible solutions that bring relief to migrant older adults in key areas of their experience. Universal accessibility, ergonomics and adaptability of spaces are critical aspects that can directly influence the autonomy and comfort of this population (Levasseur and Nguyen, 2022). For example, the incorporation of elements such as ramps, handrails and ergonomic furniture can play a crucial role in promoting mobility and physical well-being. In addition, the adaptation of assisted products and technologies can enrich the independence and quality of life of migrant older adults, effectively mitigating the limitations associated with age and reduced mobility.

The importance of multidisciplinary collaboration between industrial designers, gerontologists and migration professionals stands out as a crucial aspect in creating comprehensive and effective solutions. (Quinchoa and Cajas, 2022). An approach that combines design expertise with specialist knowledge in ageing and migration has the potential to generate innovative and contextually relevant solutions. This collaboration can address challenges from multiple perspectives, considering not only the physical needs, but also the emotional, cultural, and social aspects of the migrant older adult experience.

Training industrial designers in gerontological principles is a critical step into the future. As the global population continues to age and migrations remain a persistent reality, the demand for suitable design solutions increases. Training in gerontological aspects will enable designers to understand the changing needs of the population and create solutions that are not only functional, but also meaningful and appropriate. In addition, consideration of cultural diversity in design is essential to ensure that solutions are culturally sensitive and respectful of each community's unique identities and values.

The application of industrial and product design in the context of migrant older adults represents a valuable tool to improve their quality of life and social integration in the host society. Challenges, such as cultural and linguistic diversity, limited mobility and social isolation, can be addressed by adaptive and culturally sensitive design solutions. Gerontological design offers tangible answers, highlighting the importance of multidisciplinary collaboration, training in gerontological principles and cultural awareness. It is recommended to continue research, integrate these principles into policy and urban planning, promote collaboration, train designers and raise awareness to build a more inclusive and supportive future for migrant older adults.

In conclusion, the implementation of gerontological design in the context of migration of older adults is not only essential, but also highly promising. The results obtained in various studies demonstrate that the adaptive approach can address the specific challenges of migration and contribute to stronger social inclusion. However, this requires close collaboration across disciplines, proper training of designers, and constant attention to cultural diversity. By doing so, we can build a future where design not only improves physical functionality, but also the well-being and dignity of migrant older adults in their new environments.

In the realm of future research, it is recommended to focus on the implementation and long-term evaluation of gerontological design solutions in a wide range of migration contexts. These studies would allow not only to understand the continued effectiveness of the proposed solutions, but also to optimally adapt them to the diverse needs and cultural dynamics of migrant older adults.

In addition, it calls for the extension of this approach beyond the realm of design, urging deeper integration into public policy and urban planning. By incorporating gerontological principles into policy-making and the creation of urban spaces, a lasting and sustainable impact on the quality of life of this vulnerable population can be ensured. This synergy between design, research and policies will allow us to build a more inclusive and supportive future for migrant older adults.

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References

- Asiamah, N., Bateman, A., Hjorth, P., T. A. Khan, H., & Danquah, E. (2023). Socially active neighborhoods: operationalization of constructions for aging in place, health promotion and psychometric tests. *Health Promotion International*, 1-10.
- Castillo, M. Á. (2003). Migrations in the hemisphere: consequences and relationship with social policies. CELADE.
- García, M., Sánchez, D., & Pérez, R. (2019). Aging and adaptation strategies to urban environments from environmental gerontology. *Scielo*, 101-128.
- Gil Mastalerczyk, J. (2023). Discovering others and transforming the world together: the effect of an innovative attitude on sustainable design. *Global Journal of Engineering Education*, 21-28.
- González, J., Ramírez, R., & Menéndez, R. (2020). Transverse geriatrics. A healthcare challenge for the XXI century. *Revista Española de Geriatria y Gerontología*, 84-97.
- Hernández, R., Fernández, C., & Baptista, P. (2018). *Research methodology*. Mexico City: McGraw-Hill Interamericana.
- Levasseur, M., & Nguyen, T. (2022). How does community housing foster social participation in older adults: importance of well-designed common space, proximity to resources, flexible rules and policies, and benevolent communities? *Journal of Gerontological Social Work*. *Journal of Gerontological Social Work*, 103-133.
- Lopez, C., & Uribio, M. (2022). Inclusive design: Seniors in pandemic the benefits of design. *Proceedings of Design*, 183-187.
- López, É., & Álvarez, É. (2021). Strategy in smart cities and social inclusion of the elderly. *Technology and Society Magazine*.
- Maya Rivero, A. (2023). Current panorama of design for old age and aging in Mexico. *Transformations and challenges of education in arts and designs*, 319-346.
- Meza, A., Ramos, J., & Ávila, U. (2022). Ageing and Migration. Reflections on the participation and experience of older persons in migration to the United States. *Cimexus Magazine*, 147 - 171.
- Munita Lira, J. C. (2020). Barriers in access to justice for vulnerable groups in Chile.
- Ng, R., & Indran, N. (2023). Innovations for an ageing society through the lens of patent data. *The Gerontologist*, 1-8.

- Quinchoa, M. P. S., & Cajas, W. J. Q. (2022). A comprehensive proposal for the region from enterprises and organizations around project management. *Bulletin of Anthropology*, 37(63), 147-165.
- Raymond, É., Carrasco, V., Rodríguez, B., Gallardo, L., González, H., Osorio, P., & Caro, S. (2023). Studies on the diversity of aging in Latin America and the Caribbean. *Social Prism*, 142-168.
- Sánchez, P. E. S., Carrillo, D. G. F., & Sánchez, R. P. S. (2023). Natural dyes of animal origin as an alternative applied in leather remnants for the elaboration of feminine accessories. *Journal of Survey in Fisheries Sciences*, 10(3S), 5782-5791.
- Sumonte, V., Sanhueza, S., Friz, M., & Morales, K. (2018). Non-Spanish-speaking migration in Chile: Building linguistic and intercultural bridges. *Andean Dialogue*, 61-71.
- Torres, E., & Arias, B. (2018). Ageing and mental health in migratory contexts. *University Nursing*, 86-97.
- Victoria, A., Vega, H., & Ortega, O. (2018). Retirement migration and new consumer markets. The case of San Miguel de Allende, Guanajuato, Mexico. *Cimexus*, 135-154.
- Xu, W., Holm, T., Lee, S., Uherbelau, G., Madraisau, S., & Subediang, H. (2023). Towards healthy ageing in Palau. *The Gerontologist*, 1-8.