

## Documents

Halimi, N.H., Nawawi, N.M., Aripin, S.

**Exploring the Physical Environment Opportunities for Accessibility in Homes of Children with Cerebral Palsy in Malaysia**

(2023) *Sustainable Development Goals Series*, Part F2787, pp. 271-280.

DOI: 10.1007/978-3-031-36302-3\_20

Kulliyyah of Architecture and Environmental Design, International Islamic University Malaysia, Kuala Lumpur, Malaysia

**Abstract**

Cerebral palsy (CP) is a common disorder and disability in children. Statistically, 2 to 3 out of every 1000 births are diagnosed with CP globally. The therapists are the main point of reference among caregivers of children with CP for advice when building the appropriate built environment. This study aims to identify the elements in the home-built environment to improve accessibility and promote independence among children with CP. The methodology used for this study was interviews with occupational and physiotherapists in Malaysia. Findings show that the elements in the physical environment designed or modified for the use of children with CP are similar to the guideline MS 1184: 2014 Universal Design and Accessibility in the Built Environment—Code of Practice. These physical attributes are commonly suggested by therapists to families of children with CP when making adaptations to their homes. However, most therapists are not familiar with the said national legislation. Accessibility in the built environment to promote the independence of children with CP is very important for their well-being and preparation to enter adulthood. This study concludes the importance of MS 1184 as a reference for modifying and designing the built environment for both therapists and architects. A suitable built environment will be beneficial to children with CP to enhance accessibility and promote independence while also mitigating the dependency on their caregivers. © The Author(s), under exclusive license to Springer Nature Switzerland AG 2023.

**Author Keywords**

Accessibility; Built environment; Cerebral palsy; Independence

**References**

- Ab Rahman, S.A., Samsudin, N., Mohamed Osman, M., Bachok, S., Rabe, N.S.  
**Design elements of houses among disabled community: The satisfaction and the preferences**  
(2018) *Plan Malays*, 16 (6).
- Boniface, G., Morgan, D.  
**The central role of the occupational therapist in facilitating housing adaptations/home modifications for disabled children**  
(2017) *Brit J Occup Ther*, 80 (6), pp. 375-383.
- Cans, C., Guillem, P., Baille, F., Arnaud, C., Chalmers, J., Cussen, G.  
**Surveillance of cerebral palsy in Europe: A collaboration of cerebral palsy surveys and registers**  
(2000) *Dev Med Child Neurol*, 42 (12), pp. 816-824.
- Capezuti, E., Wagner, L., Brush, B.L., Boltz, M., Renz, S., Secic, M.  
**Bed and toilet height as potential environmental risk factors**  
(2008) *Clin Nurs Res*, 17 (1), pp. 50-66.
- Carnemolla, P., Bridge, C.  
**Accessible housing and health-related quality of life: Measurements of well-being outcomes following home modifications**  
(2016) *Int J Archit Res*, 10 (2), pp. 38-51.
- Cesario, S.K.  
**Designing health care environments: Part I. Basic concepts, principles, and issues related to evidence-based design**  
(2009) *J Contin Educ Nurs*, 40 (6), pp. 280-288.

- Clarke, V., Braun, V.  
**Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning**  
(2013) *Psychologist*, 26 (2), pp. 120-123.
- Cobern, W., Adams, B.A.J.  
**When interviewing: How many is enough?**  
(2020) *Int J Assess Tools Educ*, 7 (1), pp. 73-79.
- Creswell, J.W., Creswell, J.D.  
**Research design qualitative, quantitative and mixed methods approaches, 5th edn**  
(2018) *SAGE Publications*,
- (2014) *Malaysian Standard 1184: 2014 Universal Design and Accessibility in the Built environment—code of Practice (2Nd Revi-Sion)*,  
Department of Standards Malaysia, Malaysia
- Guest, G., Bunce, A., Johnson, L.  
**How many interviews are enough?**  
(2006) *Field Methods*, 18 (1), pp. 59-82.
- Halimi, N.H., Mohd Nawawi, N., Aripin, S.  
**The impacts of physical environment towards children with cerebral**  
(2022) *Int J Stud Child Women Elderly Disable*, 15, pp. 42-51.
- Himmelmann, K., Hagberg, G., Beckung, E., Hagberg, B., Uvebrant, P.  
**The changing panorama of cerebral palsy in Sweden. IX. Prevalence and origin in the birth-year period 1995–1998**  
(2005) *Acta Paediatr*, 94 (3), pp. 287-294.
- Ismail, A., Abd Razak, R.S., Suddin, L.S., Mahmud, A., Kamaralzaman, S., Yusri, G.  
**The economic burden and determinant factors of parents/caregivers of children with cerebral palsy in Malaysia: A mixed methods study**  
(2022) *Int J Environ Res Public Health*, 19 (1), p. 475.
- Johnson, M., George, A., Tran, D.T.  
**Analysis of falls incidents: Nurse and patient preventive behaviours**  
(2011) *Int J Nurs Pract*, 17 (1), pp. 60-66.
- Krigger, K.W.  
**Cerebral palsy: An overview**  
(2006) *Am Fam Physician*, 73 (1), pp. 91-100.
- Moore, K., Bedford, J.  
**Childhood disability in Malaysia—a study of knowledge, attitudes and practices**  
(2017) *United Nations Children's Fund*,  
UNICEF) Malaysia, Malaysia
- Morgan, D.J., Boniface, G.E., Reagon, C.  
**The effects of adapting their home on the meaning of home for families with a disabled child**  
(2016) *Disabil Soc*, 31 (4), pp. 481-496.
- Novak I, Morgan C, Adde L, Blackman J, Boyd RN, Brunstrom-Hernandez J et al (2017) Early, accurate diagnosis and early intervention in cerebral palsy: advances in diagnosis and treatment. *JAMA Pediatr* 171(9):897–907.  
<https://doi.org/10.1001/jamapediatrics.2017.1689>. Erratum in: *JAMA Pediatr* 2017 Sep 1;171(9):919
- Padmakar, P., Kumar, K., Parveen, S.  
**Management and treatment for cerebral palsy in children**

(2018) *Indian J Phar Pract*, 11 (2), pp. 104-109.

- Patel, D.R., Neelakantan, M., Pandher, K., Merrick, J.  
**Cerebral palsy in children: A clinical overview**  
(2020) *Transl Pediatr*, 9, pp. S125-S135.
- Rezaei, A., Raji, P., Mousavi, S.T., Mahmoodian, M., Bagh-Estani, A.R.  
**Study of environmental factors and quality of life in children with cerebral palsy based on international classification of functioning, disability and health**  
(2022) *Brit J Occup Ther*, 85 (2), pp. 137-143.
- Roy, L., Rousseau, J., Allard, H., Feldman, D., Majnemer, A.  
**Parental experience of home adaptation for children with motor disabilities**  
(2008) *Phys Occup Ther Pediatr*, 28 (4), pp. 353-368.
- Russell, R., Ormerod, M., Newton, R.  
**The development of a design and construction process protocol to support the home modification process delivered by occupational therapists**  
(2018) *J Aging Res*, 2018.
- Sadowska, M., Sarecka-Hujar, B., Kopyta, I.  
**Cerebral palsy: Current opinions on definition, epidemiology, risk factors, classification and treatment options**  
(2020) *Neuropsychiatr Dis Treat*, 16, pp. 1505-1518.
- Stark, S.L., Somerville, E., Keglovits, M., Smason, A., Bigham, K.  
**Clinical reasoning guideline for home modification interventions**  
(2015) *Am J Occup Ther*, 69 (2).
- Stephens, L., Spalding, K., Aslam, H., Scott, H., Ruddick, S., Young, N.L.  
**Inaccessible childhoods: Evaluating accessibility in homes, schools and neighbourhoods with disabled children**  
(2017) *Childr Geogr*, 15 (5), pp. 583-599.
- Summers, J., Coker, B., Eddy, S., Elstad, M., Bunce, C., Bourmpaki, E.  
**Selective dorsal rhizotomy in ambulant children with cerebral palsy: An observational cohort study**  
(2019) *Lancet Child Adolesc Health*, 3 (7), pp. 455-462.
- Švraka E (2014) Cerebral palsy and accessible housing. In: Švraka E (ed) *Cerebral palsy—challenges for the future*. IntechOpen, London, pp 97–120. <https://doi.org/10.5772/56983>
- Turner, D.W.  
**Qualitative interview design: A practical guide for novice investigators**  
(2010) *Qual Rep*, 15 (3), pp. 754-760.
- Wellecke, C., D’Cruz, K., Winkler, D., Douglas, J., Goodwin, I., Davis, E.  
(2022) *Accessible Design Features and Home Modifications to Improve Physical Housing Accessibility: A Mixed-Methods Survey of Occupational Therapists*, *Disabil Health J* 15(3):101281. <https://doi.org/10.1016/j.dhjo.2022.101281>

#### Correspondence Address

Halimi N.H.; Kulliyyah of Architecture and Environmental Design, Malaysia; email: [jclynda26@gmail.com](mailto:jclynda26@gmail.com)

**Publisher:** Springer

**ISSN:** 25233084

**Language of Original Document:** English

**Abbreviated Source Title:** Sustain. Dev. Goals Ser.

2-s2.0-85194570362

**Document Type:** Book Chapter

**Publication Stage:** Final

**Source:** Scopus

---

**ELSEVIER**

Copyright © 2024 Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

 **RELX** Group™