

ANALYTIC HIERARCHY PROCESS TO INFORM DISABILITY HOUSING DEVELOPMENT: TWO APPLICATIONS

ABSTRACT

A longstanding disability housing crisis across the developed world has meant that many individuals with disability do not have access to adequate housing. Disability housing development relies on multiple stakeholders with differing priorities making decisions to best meet service users' needs. This paper presents two strategies of how the Analytic Hierarchy Process (AHP) can be used to support disability housing development decisions. The two strategies described are: utilising AHP to establish the best disability housing development option, and second, utilising AHP to prioritise factors related to a disability housing development option. A systematic review of five databases concerning the use of AHP for disability housing development provided sources that informed the two strategies. AHP has the potential to support disability-housing decisions and provide knowledge about priorities that underpin disability housing development for various stakeholders. It is important that future research explore how AHP may benefit disability housing development decisions, and further how the decisions impact the subsequent lives of service users

Keywords: disability housing, analytic hierarchy process, systematic review

1. Introduction

Across the developed world there is an undersupply of disability housing and many individuals with disability reside in housing which is not adequate for their needs (Muscular Dystrophy UK [MDUK], 2015; Joint Center for Housing Studies of Harvard University [JCHSHU], 2015; National Disability Services [NDS], 2015). Disability housing development requires the coordination of a variety of stakeholders including architects, government housing and disability support services, private construction, rental agencies, health professionals and researchers, and service users and their family and carers. All groups have differing priorities, and the priorities of many stakeholders are unaccounted for throughout the disability housing development process.

2. Hypotheses/Objectives

As disability housing decisions are dependent on a variety of criteria which are prioritised differently between groups, it is expected that an AHP methodology can also support disability housing development decisions. To date, no review has synthesised the

ways AHP has been employed to support disability housing development decisions. Thus, this research aimed to:

- 1.) Provide a systematic review of the literature to establish how the AHP has been used for disability housing development.
- 2.) Provide examples of how an AHP can be applied for disability housing development decisions.

3. Literature Review

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach for conducting systematic reviews was employed (Moher et al., 2009). On 26th August 2015 the databases, CINAHL, ISI WebofScience, PubMed, PsychInfo and Avery were searched for literature published at any date using the following search string: ("disab*" OR "Support* Living" OR "Support* Hous*") AND ("AHP" OR "Analytic Hierarchy Process" OR "pairwise comparison*" OR "eigenvector" OR "eigenvalue"). Zero studies met the entire selection criteria. Two studies which were included for full text review focused on the use of an AHP to identify important factors for empowering elderly people to be actively involved in their health (Fico, Gaeta, Arredondo, & Pecchia, 2015), and identifying risk factors which contribute to falls in elderly populations (Pecchia, Bath, Pendleton, & Bracale, 2011). Both of these studies informed the following sections which provide recommendations into the ways AHP can be used for disability housing development.

4. AHP Disability housing: Two applications

AHP has been employed to rank or prioritise factors contributing towards a health care phenomena (Fico et al., 2015; Pecchia et al., 2011), additionally AHP has been employed to establish best health care alternative (Cho and Kim, 2003). Consequentially the two potential uses for AHP as informed by the literature include: (i) utilizing an AHP to establish the best disability housing development alternative, and (ii) utilizing an AHP to prioritise and rank factors in terms of a disability housing development decision.

5. Conclusions

A systematic review that synthesized research exploring the use of AHP for disability provided zero studies. Previously AHP has been employed in construction projects concerning equipment selection (Shapira & Goldenberg, 2005), factors contributing to safety risks (Shapira & Simcha, 2009), and establishing budgets for construction projects (Lai, Wang, & Wang, 2008), and to answer health and wellbeing questions related to elderly populations (Fico et al., 2015; Pecchia et al., 2011). Consequentially there is potential for AHP to support decision making concerning disability housing development, however, research has yet to explore the potential. It is important that future research explore how AHP may benefit disability housing development decisions, and further how the decisions impact the subsequent lives of service users.

6. Key References

Fico, G., Gaeta, E., Arredondo, M. T., & Pecchia, L. (2015). Analytic Hierarchy Process to Define the Most Important Factors and Related Technologies for Empowering Elderly People in Taking an Active Role in their Health. *J Med Syst*, 39(9), 300.

Pecchia, L., Bath, P. A., Pendleton, N., & Bracale, M. (2011). Analytic Hierarchy Process (AHP) for examining healthcare professionals' assessments of risk factors. The relative importance of risk factors for falls in community-dwelling older people. *Methods Inf Med*, 50(5), 435-444.

Saaty, T. L. (2013). The modern science of multicriteria decision making and its practical applications: the AHP/ANP approach. *Operations Research*, 61(5), 1101-1118.