



INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT



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To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v12-i1/15811>

DOI:10.6007/IJARPED/v12-i1/15811

Received: 06 November 2022, **Revised:** 11 December 2022, **Accepted:** 30 December 2022

Published Online: 15 January 2023

In-Text Citation: (Zambri et al., 2023)

To Cite this Article: Zambri, I. M., Amin, A. S., Kamil, N. K. M., Akhir, N. M., Sutan, R., Khairuddin, K. F., & Abdullah, W. A. W. (2023). Factor Affecting Independent Living of Persons with Intellectual Disabilities: A Systematic Review. *International Journal of Academic Research in Progressive Education and Development*, 12(1), 623–644.

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Vol. 12(1) 2023, Pg. 623 - 644

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www.hrmars.com

ISSN: 2226-6348

Factor Affecting Independent Living of Persons with Intellectual Disabilities: A Systematic Review

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Abstract

Evidence indicates that the transition process to adulthood represents a critical and confusing time in the life of any person with intellectual disabilities (PWID). However, PWID often experiences adaptive functioning deficits that negatively impact an individual's ability to achieve independence. Many previous studies only focus on persons with physical disabilities and place less emphasis on the empowerment of independent living for PWID. Therefore, this systematic literature review, guided by the publication standard Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), tries to identify the factors that could affect PWID to live independently. This study selected articles using two databases: Scopus and Web of Sciences, from 2017 to 2020, resulting in a total of 607 articles. Overall, only 28 selected articles were discussed in this review after the quality appraisal process using Mixed Methods Appraisal Tool (MMAT). In sum, this systematic review found two main themes: individual factors and environmental factors. For individual factors, there are four sub-themes: gender, cognitive ability, self-attitudes and skills. Whereas, for environmental factors, there are eight sub-themes family, community, policy, technology, economy, health, education and geographical location. Thus, this study contributes to the conceptual framework for future research involving independent living for PWID.

Keywords: Environment, Family Relation, Independent Living, Intellectual Disabilities, Social Integration.

Introduction

The Convention on the Rights of Persons with Disabilities (CRPD, 2006) and Article 19 indicate, in particular, the equal rights of persons with disability (PWD) to live independently in the community (Fullana et al., 2019). The notion of independence tends to be understood as the ability of PWD to have the same opportunities to choose and control their own lives,

accomplish tasks with the assistance required controlled by the person with disabilities themselves and acquire new skills through everyday activities. Autonomous living is also emphasized, with the idea that people with disabilities should be entirely responsible for their actions (Ioanna, 2018). "Learning disabilities" in United Kingdom terminology refer to the individual with intelligence quotient (IQ) scores below 70 with impairments of adaptive functioning before age 18. However, in 2015, The World Health Organization's International Statistical Classification of Diseases and Related Health Problems amended the term "learning disabilities" to "intellectual disabilities". In line with that, the term proposed and used by the Malaysian Ministry of Education under the Education Act (1996) is learning disabilities. Individuals diagnosed with an intellectual disability (ID) experience a combination of both intellectual and adaptive behaviour deficits that impact conceptual, social, and practical domains (American Association on Intellectual and Developmental Disabilities, 2013). According to Simpson (2020), persons with intellectual disabilities (PWID) have high rates of physical and mental ill-health, and co-morbidity is likely to occur. These difficulties can negatively impact an individual's ability to achieve independence (Ryan et al., 2019).

A few factors should be considered when defining independent living among PWID as it depends on the multi-dimension of ecological systems. Individual factors refer to the uniqueness of PWID's physical and psychological characteristics and attributes. According to Feng et al (2017), cognitive ability is the most important factor in determining the capabilities of PWID to live independently, as it is lined with self-determination, competency, self-esteem and self-advocacy (Ellenkamp et al., 2016). Besides, gender also significantly influences the ability of PWID to live independently in the community, as people tend to treat others based on masculinity. It is also related to the cultural context, especially in Asian countries, as they believe women should be protected and taken care of (John et al., 2017). As a result, most parents tend to be overprotective towards their daughter with a disability more than boys regarding safety, which could affect dependence on autonomy and exploration (Callus et al., 2019).

The previous studies also emphasized environmental factors, which refer to the meso and macro level in the ecological system as the most significant influence in independent living among PWID. This part focuses on family-related factors, society, policy and facilities available for disabled people. Families play an essential role in empowering PWID to be independent, make decisions, and participate in developmental responsibilities in the community (Park & Park, 2019). Parents' education level and household income have also been analysed as potential factors affecting the employment of PWID. Other than that, informal support from parents to teach their children about rights can also improve PWID's quality of life (Neuman, 2020). PWID often experience stigma that can limit social inclusion and increase disparities with the general population. Thus, society's discriminatory, stereotypical perceptions and behaviours towards PWID also affect the secure sense of belonging and acceptance in the community (Vuuren & Aldersey, 2020). At the government level, it is crucial to strengthen policy implementation to promote acceptance and protect persons with intellectual disabilities in education, employability and rights (Radzi, 2020).

The significant factor in achieving the goal of adapting the concept of independent living among PWID has also been highlighted in the movement of the social model that demanded the presence and inclusion of individuals in the community through three essential elements,

namely: i) attitudes, ii) environmental barrier and iii) impairment (Bolt, 2010; Carol Thomas, 2001, 2004, 2007; Ioanna, 2018). According to Dimitris and James (2013), impairment and disability should not limit the opportunities of PWID to take part in the community on an equal level with others due to physical and social barriers.

Building on this debate, this systematic literature review approach has been adopted to explore the literature on independent living among persons with intellectual disabilities. The systematic review proposes details on the performed review process by developing research questions, keywords used, and the articles selection process for others to reproduce the investigation, confirm the analysis or study the generality (Shaffril, 2020). The systematic literature review approach offers various merits over conventional approaches as it can synthesize the literature systematically and transparently (Tranfield, Denyer, & Smart, 2003). A systematic literature review can offer several advantages compared to conventional literature styles as it evaluates and organises all accessible data.

Despite the extensive research that focused on the idea of independent living among PWD in general, the robust discussions among scholars who systematically reviewed the existing studies on this concept for persons with intellectual disabilities are still insufficient (Ioanna, 2017). Although some studies attempted to systematically review the issue of persons with disability on adaptation towards independent living, their focus is not on the specific groups with intellectual disabilities. The lack of studies on persons with intellectual disabilities has driven a lack of understanding and failure to comprehend the related literature systematically. This study aimed to fill this gap in the literature by thoroughly evaluating previous related studies to help readers understand the concept of independent living better by using a systematic literature review. Thus, the central research question guiding this review is: What are the factors affecting the independent living of persons with intellectual disabilities?

Materials and Methods

The Review Protocol – PRISMA

To address the formulated questions, the authors adopted a standard called PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), practised by (Shaffril, 2020). This established standard is designed to accommodate the diversity of methods applied to a wide variety of review subjects, such as qualitative synthesis. PRISMA protocol assisted the author report the details of potentially relevant studies to promote high-quality systematic reviews (Haddaway et al., 2018). PRISMA also examines the extensively selected database at a defined time, allowing precise search terms to be conducted on factors affecting the independent living of PWID. PRISMA focuses on the review process's earlier and middle stages, consisting of three main sub-processes: identification, screening (inclusion and exclusion criteria) and eligibility. The authors then proceed with the quality appraisal to ensure all the selected study follows the necessary level of rigour in a 'gold standard' review.

Formulation of Research Questions

The process of the review protocol starts with developing research questions guided by PICo. PICo is a framework that provides and facilitates an effective search strategy to structure the development of the entire systematic review report (Lockwood, 2015). A revised PICo mnemonic is used to guide the development of a clear and meaningful question based on

three main concepts: Problem, Interest, and Context (Shaffril, 2020). Based on these concepts, the authors have included three main aspects: persons with intellectual disabilities (Population), factors affecting (Interest) and independent living (Context), which then guide to formulate its main research question: What are the factors affecting the independent living of persons with intellectual disabilities?

Systematic Searching Strategies

These systematic searching strategies have three main processes: identification, screening, and eligibility (refer to Figure 1).

Identification

Identification is a part of the technique in systematic strategies to search synonyms of the main keywords identified in the research question formulation of the study, namely factors affecting independent living and persons with intellectual disabilities. These keywords are developed based on the identification process relying on the online thesaurus, past studies and expert suggestions (Okoli, 2015). Keyword searches were employed to locate scholarly articles related to this review that cover an extensive range of databases and journals identified (Shaffril, 2020). The search process in these two databases, Scopus and Web of Sciences, has resulted in 607 articles. For the keyword of the factor, the author had identified two keywords: element and aspect, and the keyword of independent living: autonomous and self-supporting. Last but not least, the keyword for intellectual disability: mental disability, learning disability, intellectual disabilities, mental disabilities and learning disabilities. These keyword sets and search configurations are presented in Table 1.

Table 1

Search String

Databases	Keywords used
Scopus	TITLE-ABS-KEY (("factor" OR "element" OR "aspect") AND ("independent living" OR "autonomous" OR "self-supporting") AND ("intellectual disability" OR "mental disability" OR "learning disability" OR "intellectual disabilities" OR "mental disabilities" OR "learning disabilities"))
Web of Science	TS= ((factor OR element OR aspect OR component) AND (independent living OR autonomous OR self-supporting) AND (intellectual disability OR mental disability OR learning disability OR intellectual disabilities OR mental disabilities OR learning disabilities))

Screening

This study screened all the 607 selected articles by choosing the criteria for articles selection which was accomplished automatically based on the database's sorting function. Three eligibility criteria have been sorted out for this research based on the research question suggested by Kitchenham and Charters (2017); Samsuddin et al (2020), namely: literature type, language, and timeline (refer to Table 2). Firstly, only articles published in a research article journal are included to ensure the quality of the review. Furthermore, it should be noted that the review only articles published in English are incorporated in the review to avoid confusion in understanding.

As it is almost impossible for the author to review all the existing published articles, Okoli (2015) suggested that the author should determine the range of periods they can review. According to Higgins and Green (2011), restrictions on timeline publication should only be implemented if the related studies can be reported during a specific period. Based on the searching process of the selected data, it was realized that the number of studies related to independent living among persons with intellectual disabilities has multiplied starting from 2017. Meanwhile, the reason for the limitation of the search to 2020 was due to the search process that started in June 2021. Therefore, the timeline between 2017 to 2020 was selected as one of the inclusion criteria. This process excluded 406 articles as they did not fit the inclusion criteria. The number of articles left behind after this process is 62 articles. The author then removed 11 duplicated articles. The remaining 51 articles were used for the third process - eligibility.

Table 2
The Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Literature type	Research article journal	Review articles, books, chapter in book, conference proceedings
Language	English	Non-English
Timeline	2017-2020	<2017

Eligibility

Eligibility is the third process, where the authors manually monitor the retrieved articles after the screening process to ensure all the remaining articles are in line with the inclusion criteria. Each article abstract was then reviewed and judged for its theoretical robustness and contribution to the current discussion, resulting in only 28 articles. This process excluded 23 articles due to focusing on the other types of disability rather than intellectual disability; the methodology section is not very clearly defined and published in the form of a chapter in a book. Some of the articles focus more on the independent living skills, definition and general concept of independent living. Overall, the author will only review 28 selected articles after this process (see Fig. 1).

Data Abstraction Analysis

The author independently assessed the remaining articles for the quality appraisal process using guidance from Hong et al (2018), namely the Mixed Methods Appraisal Tool (MMAT). The main criteria of the quality assessment are based on these five questions: i) Are the article's objective related to the SLR methodology? ii) Are the articles providing all methodology needed in developing SLR? iii) Are the articles clearly defining the SLR methodology to the authors? iv) Is there an adequate rationale for each guidance on SLR methodology in the articles? and v) Are the articles providing any alternative to their suggested guidance on SLR methodology? The author only has three options for the answer, namely yes, no, or cannot tell. Suppose the selected articles fulfil four or five criteria. In that case, it will be categorized as having a high quality. Meanwhile, if the articles only fulfil three criteria are at a moderate level. If the articles merely have one or two criteria, then it will be categorized as having low quality. All the authors agreed that 19 articles met the minimum requirement of high quality, six moderate and three low qualities. Further discussions among

the authors believed that the low-quality articles related to the methods implemented in this SLR. Thus, these articles decided to have remained in the review.

After the quality appraisal process, the list of selected articles for this systematic literature review was examined critically to determine independent living factors for persons with intellectual disabilities. This process relied on the integrative review that allowed diverse research designs to be included in the review. The author read the 28 articles thoroughly in the sections of abstract, method and results. Subsequently, the data abstraction was conducted based on the research questions. This study focuses on the qualitative technique that allows the author to conduct iterative comparisons across the primary data sources in synthesizing integrative data (Whittemore & Knafl, 2005). The author performs thematic analysis to identify themes and sub-themes based on the abstracted data's existence (Braun & Clarke, 2006). According to Flemming et al (2018); Vaismoradi et al (2013), thematic analysis is considered the most suitable for synthesizing a mixed research design (integrative) as it reduces the data in a flexible mode that merges with other data analysis techniques.

The first step of thematic analysis is to generate themes. In this process, the authors tried to identify the rising patterns that emerged among the abstracted data of all reviewed articles. Any similar or related abstracted data were pooled in a group eventually. After being thorough several times, the author then identified two themes and found 12 other sub-themes regarding the main idea of independent living among intellectual disabilities. The following process was composed by a group of corresponding authors and co-authors to re-examine all the themes and sub-themes to ensure the data's accuracy.

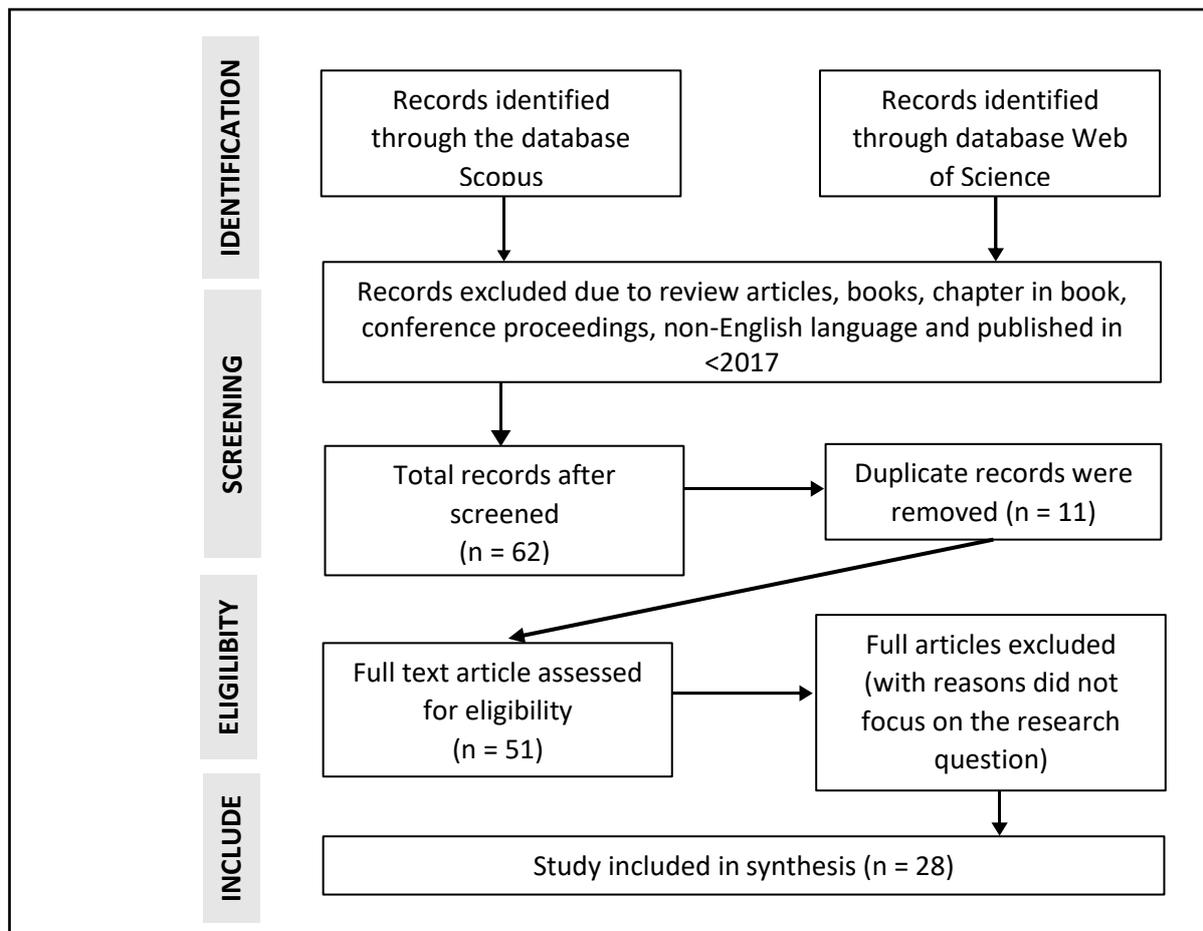


Fig. 1. Flow Diagram of the Study (adapted from Shaffril et al., 2019)

Results

Background of the Studies

The review managed to obtain 28 selected articles. Based on the thematic analysis, two themes were developed; individual and environmental factors. Further analysis of the themes has resulted in 12 sub-themes. As presented in Table 3, the two themes are individual factors and environmental factors. Four sub-themes emerged under the themes of individual factors: gender, cognitive ability, self-attitudes and skills. Eight sub-themes relied on themes of environmental factors: family, community, policy, technology, economics, health, education and geographical location.

Furthermore, nine studies were conducted in the United States (Bouck, 2020; Brown et al., 2018; Chan et al., 2018; Collier et al., 2017; Cullen et al., 2017; Dell'Armo et al., 2019; Houseworth et al., 2018; Ryan et al., 2019; Stancliffe & Anderson, 2017) and three articles in the United Kingdom (Bennett et al., 2019; Terras et al., 2018; Williams et al., 2018). Two studies were respectively conducted in Australia (Ho et al., 2018; Thompson et al., 2018), Taiwan (Chou et al., 2017; Lin et al., 2020) and Norway (Janson & Aure, 2021; Roos & Sondenaar, 2020). Other than that, each study was conducted in Germany (Schmidt et al., 2021), Florida (Agarwal et al., 2021), Sweden (Johansson et al., 2017), Greece (Dimitriadou et al., 2017), Ireland (Gadd, 2020), Scotland (Anderson et al., 2020), England (Hassiotis et al., 2020),

Korea Park & Park (2019), Turkey Kilincaslan et al (2019) and Spain Cano et al (2019) were also included in the review.

Among the 28 articles, 19 articles involve persons with intellectual or learning disabilities as a research sample (Bennett et al., 2019; Cano et al., 2019; Chan et al., 2018; Chou et al., 2017; Collier et al., 2017; Cullen et al., 2017; Dell’Armo et al., 2019; Dimitriadou et al., 2017; Gadd, 2020; Ho et al., 2018; Houseworth et al., 2018; Kilincaslan et al., 2019; Lin et al., 2020; Park & Park, 2019; Ryan et al., 2019; Schmidt et al., 2021; Stancliffe & Anderson 2017; Terras et al., 2018; Williams et al., 2018). Six articles analyse data from the parents or caregivers of the persons with intellectual disabilities (Agarwal et al., 2021; Bouck, 2020; Brown et al., 2018; Janson & Aure, 2021; Roos & Sondenaa, 2020; Thompson et al., 2018), and three articles employ professionals involved directly with persons of intellectual disabilities as research participants (Anderson et al., 2020; Hassiotis et al., 2020; Johansson et al., 2017).

Regarding the year of publication, six articles were published in 2017 (Chou et al., 2017; Collier et al., 2017; Cullen et al., 2017; Dimitriadou et al., 2017; Stancliffe & Anderson, 2017; Johansson et al., 2017), and seven were published in the year 2018 (Brown et al., 2018; Chan et al., 2018; Ho et al., 2018; Houseworth et al., 2018; Terras et al., 2018; Thompson et al., 2018; Williams et al., 2018). Next, six articles were published in 2019 (Bennett et al., 2019; Cano et al., 2019; Dell’Armo et al., 2019; Kilincaslan et al., 2019; Park & Park, 2019; Ryan et al., 2019), followed by six were published in 2020 (Anderson et al., 2020; Bouck, 2020; Gadd, 2020; Hassiotis et al., 2020; Lin et al., 2020; Roos & Sondenaa, 2020), and three articles published in 2021 (Agarwal et al., 2021; Janson & Aure, 2021; Schmidt et al., 2021).

Table 3

Background of the Studies

No	Author	Year	Country	Methodology	Sample
1.	Dimitriadou et al	2017	Greece	Mix Method	Individuals with ID
2.	Chou et al	2017	Taiwan	Quantitative	Students with ID
3.	Collier et al	2017	USA	Quantitative	Students with LD
4.	Houseworth et al	2018	USA	Quantitative	Individuals with ID
5.	Ho et al	2018	Australia	Mix Method	Older adult with ID
6.	Terras et al	2018	UK	Qualitative	Individuals with ID
7.	Dell’Armo et al	2019	USA	Quantitative	Students with ID
8.	Bennett et al	2019	UK	Qualitative	Individuals with ID
9.	Cano et al	2019	Spain	Qualitative	Individuals with ID
10.	Ryan et al	2019	USA	Quantitative	Individuals with ID
11.	Bouck	2020	USA	Quantitative	Parents and Students with ID
12.	Roos & Sondenaa	2020	Norway	Qualitative	Parents and employees
13.	Schmidt et al	2021	Germany	Quantitative	Adult with ID

14.	Agarwal et al	2021	Florida	Qualitative	Parents with ID child
15.	Janson & Aure	2021	Norway	Qualitative	Caregivers of ID
16.	Gadd	2020	Ireland	Qualitative	Adult with ID
17.	Lin et al	2020	Taiwan	Quantitative	Adult with ID
18.	Stancliffe & Anderson	2017	USA	Quantitative	Adult with ID
19.	Park & Park	2019	Korea	Quantitative	Individuals with ID
20.	Kilincaslan et al	2019	Turkey	Quantitative	Child and adult with ID
21.	Thompson et al	2018	Australia	Qualitative	Parents with autism
22.	Brown et al	2018	USA	Qualitative	Parents with ID children
23.	Williams et al	2018	UK	Qualitative	Woman with ID
24.	Johansson et al	2017	Sweden	Qualitative	Leaders for group homes of ID
25.	Anderson et al	2020	Scotland	Qualitative	
26.	Chan et al	2018	USA	Quantitative	Adults with ID and Autism
27.	Cullen et al	2017	USA	Qualitative	Adult with ID
28.	Hassiotis et al	2020	England	Mix Method	Professional Staff

Table 4
The main themes and the sub themes

Author (Year)	Individual Factors			Environmental Factors								Geographical Location
	Gender	Cognitive Ability	Self-Attitudes	Skills	Family	Community	Policy	Technology	Economy	Health	Education	
Dimitriadou et al (2017)					/		/		/			
Chou et al (2017)		/										
Collier et al (2017)		/	/				/					
Houseworth et al (2018)		/	/	/	/		/		/			
Ho et al (2018)										/		
Terras et al (2018)		/	/	/				/				
Dell'Armoro et al (2019)			/		/						/	
Bennett et al (2019)	/			/				/		/		
Cano et al (2019)		/	/					/				
Ryan et al (2019)	/		/									

Bouck (2020)	/	/	/	/
Roos & Søndena a (2020)	/	/	/	/
Schmidt et al (2021)	/	/	/	/
Agarwal et al (2021)	/	/	/	/
Janson & Aure (2021)	/	/	/	/
Gadd (2020)	/	/	/	/
Lin et al (2020)	/	/	/	/
Stancliffe & Anderson	/	/	/	/
Park & Park (2019)	/	/	/	/
Kilincaslana et al (2019)	/	/	/	/
Thompson et al (2018)	/	/	/	/
Brown et al (2018)	/	/	/	/
Williams et al (2018)	/	/	/	/
Johansson et al (2017)	/	/	/	/
Anderson et al (2020)	/	/	/	/
Chan et al (2018)	/	/	/	/
Cullen et al (2017)	/	/	/	/
Hassiotis et al (2020)	/	/	/	/

Main Findings

The analysis produced a total of two themes and 12 sub-themes related to the factors of independent living among persons with intellectual disabilities. As presented in Table 4, the two themes are individual factors (four sub-themes) and environmental factors (eight sub-themes).

Individual factors

First and foremost, it is necessary to systematically identify the factors that affect independent living among persons with intellectual disabilities (PWID) to ensure they are

capable of living freely without parental supervision. The first factor is individual factors that refer to the personal condition of persons with intellectual disabilities, such as gender, IQ level or cognitive ability, self-attitudes and skills.

Gender

Gender has a significant influence in determining the ability of persons with disabilities to live independently. According to Park and Park (2019), the employment rate was higher for men than women with intellectual disabilities. The reason is due to the employer's propensity to judge disabled individuals purely based on the concept of masculinity. Women with intellectual disabilities are also constantly being associated with the lack of skills that have caused women to face obstacles in the workplace and job retention. Bennett (2019) clearly highlighted that women are generally more prone to feeling anxious, less curious and fearful when it comes to trialling and adapting new technologies, especially in vehicles. As a result, it has caused negative impacts on their abilities to socialize, attend hospital appointments, remain in employment, and generally interact with local communities.

Cognitive Ability

The second sub-themes that arise in individual factors are IQ levels or cognitive ability. Cognitive ability is one of the crucial aspects that greatly influence the ability of PWID to be independent in terms of work, health or education. In particular, PWID tends to have limited memory, difficulty sustaining attention for long periods, and conceptualization and transferring the conceptual learning to real settings due to neurodevelopmental disorders (Cano, 2019; Teras, 2019). However, PWID with a high level of cognitive ability responds well and meets the community standards of personal independence and social responsibility compared to severe PWID (Kilincaslan, 2019; Ryan et al., 2019; Standcliffe, 2017). This idea is in line with Park's (2019) statement that cognitive ability might also influence psychological variables in the context of self-determination and self-efficacy, which positively affect job performance and well-being.

In contrast, a study by Ryan (2019) shows that employment was not predicted by the IQ level of persons with intellectual disabilities. Some of the respondents with severe cognitive ability managed to approximately work the same number of hours as their peers and earned the same wage. Ryan (2019) also highlighted that the employment rate of PWID solely depends on one's working experience and level of education. Promotions of self-determination also enhance the importance of autonomy and increase choice-making opportunities for people with intellectual disabilities (Houseworth, 2018; Park, 2019). PWID have stated clearly and repeatedly that choice is crucial to them as it is one of the independent contributions of the individual-level variable of living in the community. Therefore, it is necessary to encourage PWID to improve their cognitive ability by providing training-related and adequate support.

Self-Attitudes

A third unique finding that relates to individual factors is self-attitudes. Positive acceptance of one's disability increases the possibility of receiving help from others (Bennett, 2019; Terras, 2018; William, 2018). According to Collier (2017), PWID that willing to identify themselves as having a disability have higher self-advocacy to avail themselves of the rights they are afforded by law. However, some PWID might not disclose their disability status

because it does not affect their performance, and they might be negatively discriminated against in society (Houseworth, 2018). Thus, numerous resources should discuss the potential advantages and disadvantages of disclosure of a disability across education, workplace, and community settings.

Skills

Finally, it is essential for PWID to master independent living skills in order to become self-sufficient. Self-sufficiency encourages societal values commonly achieved through the social construct of quality life regarding education, employment, and community (Chou, 2017; Collier, 2017; Cullen, 2017; Kilincaslan, 2019). According to Dell'Armo (2019), skills are divided into three significant concepts based on the definitions of adaptive behaviour, which focus on:

- i. Conceptual skills: language abilities, reading, writing, time and money concept,
- ii. Social skills: interpersonal, inclusion and social problem-solving, and
- iii. Practical skills: self-care skills, activities of daily living, health and safety, and ability to use transportation.

These three crucial skills are considered important steps in the transition process for persons with intellectual disabilities as adults (Bouck, 2020; Cano, 2019; Chan, 2018; Johansson, 2017; Schmidt, 2020; Terras, 2018). Adequate training and workshops can truly reinforce the skill or behaviour of PWID that align with their interests and goals to promote independent living skills (Houseworth, 2018; Park & Park, 2019; Ryan, 2019). In discussing this issue, Gadd (2020) stated that skill development was viewed positively by PWID when it occurred in everyday activities engaged in the community and workplace. This statement is in line with Agarwal (2021) regarding career development as jobs provide opportunities for economic independence for PWID.

Environmental factors

Moving on to the second theme that emerged in this review, which is environmental factors. Environmental factors refer to the support systems (micro, meso, and macro) interacting directly to influence independent living among PWID. Support should be provided to meet the individual's perceived needs to promote well-being and enhance an individual's functionality. This review will focus on eight sub-themes: family, community, policy, technology, economics, health, education and geographical location.

Family

The functionality of PWID has strongly emphasized the ability to respond to life changes and environmental demands (Ioanna, 2017). Functionality requires family support as it plays a significant role in helping persons with intellectual disabilities to enhance their participation in society (Bouck, 2020). Family members often provide informal, socio-emotional, and financial support to help PWID reduce loneliness, anxiety, and feelings of helplessness and mortality, which is conducive to longer life expectancy for individuals. Across the transition literature, studies have consistently identified parents' expectations for their children with disabilities as one of the most important predictors of outcomes for PWID (Ioanna, 2017).

Dell Armo (2019) found that parent expectations contribute to higher rates of the transition in employment, education and independent living among PWID. Support from

family members also helps PWID exercise daily living skills, make decisions and emphasize the importance of these decisions and their consequences (Houseworth, 2018). Despite that, many parents are also recognized as overprotective and lacking confidence in their child's ability to live alone or away from family (Agarwal, 2021; Park & Park, 2019). As a result, parental actions will develop negative consequences and act as barriers to PWID growth and independence (Brown, 2018; Roos, 2020).

Community

Living independently does not mean PWID must live separately from their family home. However, most PWID want to have their privacy and space. In this situation, the local community plays a significant role in helping PWID live independently and adapt to new environments. Additionally, few studies suggest that PWID involves community-based employment, such as competitive or supported employment. These services provided social inclusion among PWID with non-disabled persons to enhance self-determination, earn the same wage and job opportunities for career development (Houseworth, 2018). Besides, PWID has shown better conversational skills and fewer social difficulties after joining community-based employment (Chan, 2018). It is also important for the community to acknowledge the phenomenon of PWID to create more awareness of supporting independent living among PWID (Thompson, 2018).

Policy

Policy and regulation have been identified as the crucial factors that could directly affect the decision of independent living among PWID (Collier, 2017). Living in a comfortable and safe house complete with excellent facilities, such as easy access to transport and services, is a key factor for successful independent living among PWID (Roos, 2020). In the United Kingdom, the government provides housing as accommodation in community living to support the idea of independence among persons with disabilities (Anderson, 2020; Williams, 2018). However, the increasing number of PWID has caused a long waiting list for a suitable house. This situation prevented PWID from fully contributing to society and constrained their participation in their communities' economic and social life.

Besides, government funding also contributes a more prominent part to support services that encourage the action and everyday choices of PWID (Houseworth, 2018). In developing countries, a lack of legislation affects the independent living of PWID (Ioanna, 2017). When designing and delivering respite services, service providers are guided by laws, policies, and regulations. However, basic living security benefits in most countries negatively affect employment because of the conflict between earned incomes and benefit eligibility (Park & Park, 2019). Thus, it is essential to change the policy to be compatible with the preferences of persons with disabilities (Gadd, 2020). Policies and services should focus on strengths to maximize participation in higher education, employment and independent living amongst PWID.

Technology

Becoming an independent adult is the goal for most persons with intellectual disabilities. Acquisition of daily living skills will help PWID to have greater access and involvement in community settings and employment opportunities. Recently, assistive technology has become popular as it can improve functioning and independence, thereby promoting the

well-being and empowerment of PWID (Terras, 2018). As devices become complex, accessibility in user interface and physical design becomes prominent. To date, mobile phones, laptops and other technology devices are now indispensable for everyone. However, persons with intellectual disabilities experience a high level of digital literacy. According to Janson (2021), it is essential to understand the cognitive, social, emotional and behavioural needs of PWID to develop an accessibility device that will help PWID in everyday activities.

Mobile technology and gadgets have emerged as an effective tool for self-prompting that allows instruction on daily living skills to occur in the natural environment (Cullen, 2017). Technology also provides equitable access and opportunities for PWID to participate in society. Bennett (2019) indicates that transportation is the most crucial and challenging for PWID to travel. However, introducing driverless cars (autonomous vehicles) will improve their transportation experience and allow PWID to travel more freely. Besides, playing mobile games also promotes positive outcomes in developing daily living skills among PWID. Cano (2019) shows the advantages of implementing video games to train PWID using public transport independently. This study exemplifies an approach to adequate the users' cognitive abilities to sustain attention in one particular activity during long periods, understanding sequential instructions given simultaneously and executing tasks under time pressure.

Economic

The economic situation is essential in developing support services for persons with intellectual disabilities. Poor outcomes of acquisitions in employment have caused most PWID to face financial problems (Dell Armo, 2019). The poor economic situation causes PWID to depend on financial assistance from the government (Park, 2019). However, the monthly income of PWID must be below a certain legal standard to maintain the qualifications to receive these benefits. Higher costs of living also negatively impact the abilities of PWID to socialize with the community in terms of mobility. Affordable and ready access to public transportation will be particularly disadvantageous to PWID in lower-income countries as they can spend more on other basic needs. Taken together, all of this makes the transition process to independence quite hard for PWID as it could limit their everyday choices (Houseworth, 2018).

On top of that, Brown (2018) also points out the financial struggle among parents of PWID. Due to budget restrictions, some parents could not afford the necessary basic needs to support their children. Parents reported limited budgets also represent difficulties in meeting the additional needs of severe PWID, such as medicines, wheelchairs and fees for hospital appointments. Additionally, some parents decided to stop working to care for their children, resulting in a lack of income. Thus, this situation might negatively impact the family's socioeconomic status and distress source (Kilincaslan, 2019). In contrast, a higher-income family predicts a greater likelihood of independent support programs, providing higher education and practical and moral support to promote employment retention (Chan, 2018; Park & Park, 2019).

Health

Health had substantial effects on the capability of PWID to manage their own with minimal reliance on others. However, since birth, PWID has constituted a difficulty as they may experience physical and mental health, including cognitive decline (Johansson, 2017). PWID

also has a high prevalence of obesity due to unhealthy food choices and passive lifestyles (Janson, 2021). Medically, PWID generally has a high risk of developing secondary conditions at younger ages, such as fatigue and chronic pain (Schmidt, 2021). The reason is due to biological factors and lack of access to adequate health care.

Furthermore, the average lifespan of PWID has significantly increased in the same way as for the population in general as a result of medical and social progress. It is essential to ensure that older PWID has the opportunity to age healthily, live according to their preferences, and make independent decisions (Williams, 2018). Moreover, older PWID has also been observed to experience at least one fall per year, which could lead to severe fractures and injury (Ho, 2018). Some of them have sedentary lifestyles and do not meet the minimum recommendations for any physical activity, which causes some parents consciously choose to step in to be deeply involved in their child's life (Stancliffe, 2017).

Education

Agarwal (2021) indicated that education is the most crucial factor that enhances the ability of PWID to access higher opportunities of freedom and employment as it emphasizes attaining a meaningful life. These include experiences that focus on social inclusion, skills, integrated work experiences, and career skills that ultimately lead to independent living. Academic support and training significantly improved in many areas of independent living, including the availability of increasing self-advocacy, functional communication and self-determination, daily living skills, gaining confidence and engaging well with the community (Chan, 2018).

Several parents also mentioned that they need to be less involved in their children's day-to-day activities as they have grown and become more optimistic after the repetition of paramount training in class delivery (Bouck, 2020). In congruence, a qualitative study from Park (2019) shows that education level significantly affected employment among PWID as they will be more likely to obtain competitive employment.

Geographical Location

Lastly, geographical location also impacts the quality of life for persons with intellectual disabilities (PWID) to live independently (Hassiotis, 2020). According to Chan (2018), PWID from urban or metropolitan areas have greater availability of stable incomes and sustaining employment. However, Lin (2020) stated that the number of persons with intellectual disabilities living in rural areas is significantly higher compared to large metropolitan areas. Those in rural areas may encounter more substantial barriers to inclusive and accessible accommodation (e.g., lower socioeconomic, transportation issues, access to education and vocational rehabilitation services and health care) that could potentially improve this population's health and well-being.

Besides, Bouck (2020) also highlighted the disadvantage of rural areas in terms of life transition among PWID based on fewer resources and opportunities in employment and welfare support. The location of residence also might influence the preference of parents or caregivers on the concept of independent living regarding being financially self-sufficient and the ascertainment of post-secondary education (Lin, 2020). From the perspective of the relationship between the functionality of PWID and geographical location, this review

concluded that urban areas would have a more extensive maternal social network, high levels of school inclusion, and opportunities for PWID to become independent in life.

Discussion

According to Anderson (2020), independent living allows disabled people to have the same human and civil rights to promote quality of life, better health, and greater control over their life. However, low independence among persons with intellectual disabilities is still commonly reported. Thus, this paper systematically reviewed the influencing and hindering factors of independent living for persons with intellectual disabilities. As a result, this paper has come out with two themes regarding the concept of independent living: individual and environmental factors. To live independently, PWID depends on cognitive ability, gender, acquiring new skills and self-attitudes. It is also essential to note that other influencing and hindering factors of independent living are affected by family, community, policy, technology, economics, health, education and geographical location.

Persons with intellectual disabilities can live independently but are often limited by low expectations of others and continue to experience segregation in other areas of life (Hutchinson, 2021). Living independently is beneficial not only for monetary and personal fulfillment but also for the maintenance of health (Janson, 2021). Hence, it is vital to support PWID by providing appropriate infrastructure and empowerment of policies to promote integrated employment and better access to education regarding their geographical location (Conrad, 2020). PWID have numerous opportunities to learn, do new activities, and improve their quality of life by acquiring independent living skills. The efforts of parents to educate PWID on fundamental independent skills could change the gap in the system and practitioner knowledge that exists.

Recommendation

This study proposed several recommendations for the consideration of future scholars. First, more studies are needed to review the disclosure of a disability status as it might influence the concept of independent living among PWID. Research on factors influencing independent living among PWID has predominantly been undertaken in western countries, and very few are known in other parts of the world. Thus, this systematic review suggested that future scholars consider conducting more factor-related studies on this population in the Asian community as it might differ based on the cultural context. Future scholars can investigate the negative impacts of adaptation strategies related to technology-assisted in helping PWID in everyday activities. For example, relying too much on technology-assisted devices in order to adapt to the transition process might have adverse medical effects on persons with intellectual disabilities. Therefore, future studies should also consider retaining factors in employment to offer a comprehensive understanding among scholars. In addition, future scholars are encouraged to improve the method of completing systematic literature reviews, such as using more databases and broadening the search strings.

Limitations of the Study

There are some limitations of the study while completing the systematic literature review. The first limitation in this study's design is acknowledged as the author used broad search criteria to include a wide range of studies and maximized the generalizability of the findings. Although it is commonly known that the significance of other study designs in complex

interventions, many sources necessitate using a narrative synthesis method, which has significant drawbacks. Assessing quality is challenging, and data extraction strongly relies on the reviewers' interpretation of the literature, which might induce bias. This study also has limitations to accessing the article journal significantly related to the topic of independent living concept for persons with intellectual disabilities.

Conclusion

Despite the proliferation of good practice and the stated need for intensive support in the community, there is little understanding from different perspectives of persons with different abilities that should be taken into consideration to define the factors and concept of independent living wholly. This paper highlighted two main concepts for the factor of independent living: individual and environmental factors. In conclusion, the factors affecting independent living among persons with intellectual disabilities are covered in this systematic review from three perspectives: persons with intellectual disabilities, their families, and professionals.

Acknowledgement

The researchers would like to express sincere appreciation to the Ministry of Higher Education for the sponsorship of this research under the Fundamentals Research Grant Scheme (FRGS/1/2020/SS0/UKM/02/8) and thanks to the Faculty of Social Sciences and Humanities, The National University of Malaysia.

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