

Aging with and into disability: An introductory review with clarification of basic terms

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Abstract

Aging involves the progression of becoming older, encompassing physical, mental, and social changes that take place in individuals over time. The longer lifespan and decreasing fertility rates have brought attention to the difficulties experienced by elderly people with disabilities. A survey method was used to collect titles of articles from different electronic databases, both online and offline, in national and international journals, as well as chapters or full-length books in the fields of gerontology and disability studies. The resulting list of 95 entries up to March 2024 was examined using the SANRA guidelines (Scale for the Assessment of Narrative Review Articles: Baethge, Goldbeck-Wood, & Mertens, 2019), aided by a flow chart and harvest plot to visually present the findings. The main focus was on clarifying fundamental terms related to aging with and into disability, successful aging, atypical aging, psychological aging, premature aging, and others. This type of clarification, which is not yet available from a single source, is considered necessary for aspiring researchers in this field to choose specific topics or themes for further study. The findings provide valuable insights for future considerations and opportunities for additional research.

Keywords: Gerontology; Successful Aging; Enablement; Empowerment; Longevity; Quality of Life

1. Introduction

The spelling difference between "aging" (American) and "ageing" (British) does not change their meaning, and they are used interchangeably based on the context. Both terms refer to the natural process of getting older, encompassing physical, psychological, and social changes over time. Aging should not be confused with being aged. Geropsychology is a branch of psychology focused on studying aging and providing services for the elderly. Global life expectancy is increasing while fertility rates are declining, leading to accelerated demographic aging in developing countries. Given these trends, it would be valuable to explore the intersection of aging and disability (Grassman & Whitaker, 2013; Trieschmann, 1987) in this evolving landscape.

1.1. Basic terms

Disability is defined as a restriction or inability to perform activities within the expected range for a human being. It includes impairments, activity limitations, and participation restrictions. Impairments refer to structural or functional issues in the body, while activity limitations involve challenges in task performance. Participation restrictions indicate difficulties in real-life situations for individuals (WHO, 2001).

Common disabilities include physical impairments like post-polio paralysis, amputation, and clubfoot, often resulting from acid attacks, accidents, injuries, cerebral palsy, or leprosy treatment. Other types include short stature, muscular dystrophy, visual or hearing impairments, speech and language disabilities, intellectual disabilities, mental illness, chronic neurological conditions, spinal cord injuries, and blood disorders. Hearing impairment, vision issues, and

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mental health conditions often lead to disability and loss of ability to work among individuals aged fifty and above. Common challenges for the elderly include difficulties with seeing, hearing, mobility, personal care, cognition, and memory. Health issues frequently reported in this age group encompass incontinence, joint pain, chest pain, breathing difficulties, stroke, paralysis, tremors, depression, and Alzheimer's. Despite these challenges, older individuals, known as seniors, play crucial roles in their families, communities, and societies. It is important to recognize that older people have the same rights as those in younger age groups (Yang, Ding, & Dong, 2014).

Aging represents a significant achievement within society and poses challenges in terms of healthcare and maintaining a healthy lifestyle for the rapidly expanding elderly population. It is essential that these additional years are not only free from illness or disability, but also that individuals can sustain their physical and mental capabilities. Healthy aging involves the process of developing and preserving the functional ability necessary for well-being in older age (Rudnicka et al., 2020). Functional ability refers to having the capacities to pursue valued activities and roles, encompassing meeting basic needs, learning, mobility, building relationships, contributing to society, and making decisions (Beard et al., 2016).

Factors supporting healthy aging include employment and social involvement, accessible healthcare, healthy diet and lifestyle, maintaining independence at home, regular exercise, seeking medical attention, engaging in leisure activities, financial security, social support, cognitive and mental well-being, resilience, and mental health care (Ploughman et al., 2012). Conversely, smoking, obesity, and physical inactivity are identified as barriers to healthy aging, along with uncertainties related to aging, dysfunctional dependency, role reversal requiring individuals with disabilities to take on caregiving responsibilities, challenging behaviors, cognitive decline, illness, and excessive dependency (LaPlante, 2014; World Health Organization, 2000; Zarit, Johansson, & Berg, 1993; Zola, 1989). The World Health Organization has designated 2020-2030 as the Decade of Healthy Aging, emphasizing the importance of addressing these factors to promote well-being in older age (Yen et al., 2022).

Successful aging, also known as aging well, is characterized by "adding years to life" with a low likelihood of disease and disability, high cognitive and physical functioning, and active participation in life, while maintaining a good quality of life (QOL). Aging gracefully or successfully is distinct from aging with a disability (Bowling, 2007; Minkler & Fadem, 2002; Baltes & Carstensen, 1996; Baltes & Baltes, 1990). "Healthy aging" primarily focuses on preserving physical and mental health as individuals age, whereas "successful aging" encompasses not only health, but also social involvement, productivity, and overall well-being in later life. While healthy aging emphasizes the absence of illness and disabilities, successful aging takes a broader approach, emphasizing active participation in life and a sense of satisfaction. Both concepts aim to enhance the QOL as people age, but they may differ in their specific focuses and objectives.

The concept of successful aging with disability encompasses important themes such as resilience, adaptation, autonomy, social connectedness, and physical health (Molton & Yorkston, 2017). Individuals who age with a disability must integrate their previous able-bodied adulthood with new impairments. For instance, Charlifue (1999) identified spousal support as a significant factor contributing to the ongoing health and well-being of aging individuals with spinal cord injury or disability. Organizations have outlined key domains of successful aging for those with physical disabilities, including autonomy and/or maximized independence, living arrangements, health and well-being, and social connection and meaningful community engagement (Rurka & Riba, 2023).

Current discussions on aging and disability have emphasized meaningful social and community participation, goals and values in the context of disability, and the scope and effectiveness of programs and policies on rehabilitation and service utilization as themes addressed in contemporary research on aging and disability services (Molton & Ordway, 2019). Positive stereotypes of "successful aging" within the framework of the social model of disability suggest that wisdom increases with age. Negative stereotypes persist, portraying older individuals as exhibiting poor physical and cognitive performance and function. People with disabilities (PWDs) are often perceived as weak, dependent, and incompetent. The phrase "stroller than wheelchair" is also used in branding and marketing within the disability sector (Putnam, 2007).

Psychological aging refers to how individuals perceive, act, or behave based on their age, which may not align with their chronological age. This subjective perception can be higher than one's actual age, reflecting maturity or feeling older than one is. Various aspects of psychological age encompass cognitive, emotional, social, and spiritual dimensions (Wahl & Lang, 2006). Premature aging occurs when the growing old occurs earlier than expected, leading to signs such as wrinkles, age spots, skin dryness or loss of tone, hyperpigmentation, and sagging. Progeria, a rare genetic condition, causes rapid aging in children, leading to an advancement of two years in life for each chronological year (Sgarbieri & Pacheco, 2017).

1.2. Need, rationale, and justification for study

Research on aging and disability is crucial due to the growing number of elderly individuals worldwide and their increasing life expectancy. Key areas of inquiry include the prevalence of disabilities among aging adults, their improved survival rates, and the pursuit of a fulfilling life while aging with a disability. Researchers also investigate the impact of historical eras of disability, the experiences of aging parents caring for adult children with disabilities, and the dynamics of relationships when both partners have disabilities. Additionally, the roles of spouses, siblings, and parents in providing care to individuals with disabilities, the experiences of older individuals as they become disabled, and the differences between aging with a disability and acquiring a disability in old age are explored. The research also examines the role of active life expectancy, patterns of secondary conditions, prevention and mitigation of negative effects, the influence of obesity, and the long-term effects of developing a disability earlier in life on subsequent health, functioning, and socioeconomic outcomes (Freedman, 2014).

Objectives

The primary objective of this narrative review was to gather research findings related to the existing literature on introductory concepts of aging with disabilities, as distinct from aging into disabilities, while also elucidating the significance of related subjects such as healthy aging, successful aging with disability, atypical aging, and psychological aging

2. Method

A survey method was used to gather titles of research articles from national and international journals in the fields of Gerontology, Aging Research, Aging & Mental Health, Aging and Social Policy, Disabilities & Impairments, as well as chapters, books, and publications related to topics such as policy and advocacy for aging populations, QOL, well-being, aging-related transitions, life changes, employment, and retirement considerations for older adults with disabilities. Various online and offline databases and search engines, including Google Scholar, PsycINFO, ERIC, Research Gate, Web of Science, and PubMed, were utilized for database searches using keywords like aging, disabilities, elderly, and old age while excluding non-research materials.

Ethical considerations in research on aging and disabilities center on upholding the autonomy, privacy, and well-being of elderly individuals with disabilities. Researchers must pay special attention to addressing communication or cognitive impairments that may impact participants' ability to provide informed consent. Efforts should be made to minimize potential harm or discomfort, ensuring that the benefits of the research outweigh any potential risks. Safeguarding participant confidentiality, being mindful of power dynamics, respecting cultural diversity, addressing community needs, and including diverse perspectives are all critical ethical considerations. Ultimately, researchers aim to ensure that their studies contribute to the well-being of the aging and disabled population, inform policies and practices that enhance QOL and support the rights of these individuals (Venkatesan, 2009).

The search strategy involved identifying various sources, including books, journal articles, and websites, for data extraction. Electronic bibliographic databases, grey literature websites internet search engines, and the publications of relevant organizations, Hand searching of key journals and reference harvesting citation tracking author searching, visit libraries were all adopted. Details such as authors, publication dates, titles, volume, issue, page numbers, and URLs were recorded following the APA-7 style as of 2021. Accuracy checks were conducted to ensure the precision of the reference list. The extracted data was organized in an Excel spreadsheet for easy access. Data synthesis entailed reviewing, comprehending, and extracting relevant information to emphasize main ideas, arguments, or results from different sources. Key points and themes were summarized and compared across sources, ensuring cohesive organization with proper citations in the designated style.

2.1. Procedure

After inputting the raw data into an Excel spreadsheet for reference listing, the themes derived from the article titles were coded, categorized, and classified. To ensure reliability, two independent coders, blinded to each other, assessed at least a quarter of the entries in the overall sample of research articles. This process resulted in a strong correlation coefficient ($r: 0.94$), indicating minimal bias. Descriptive and interpretative statistical analysis was conducted using non-parametric statistics in IBM SPSS Statistics (Version 27), with effect sizes assessed according to Cohen's guidelines, yielding an agreement level of 'almost perfect' (Cohen, 2013; Landis & Koch, 1977). The face validity of the thematic categories covered by the research papers was found to be high.

The list of 95 entries, compiled up to March 2024, underwent bibliometric analysis to create a flow diagram and harvest plot illustrating the results (Table 1; Figure 1) using the SANRA (Scale for the Assessment of Narrative Review Articles: Baethge, Goldbeck-Wood, & Mertens, 2019). The scale consists of six items rated from 0 (low standard) to 2 (high standard), covering the following topics: justification of the article’s importance, statement of aims or formulation of questions, description of the literature search strategy, referencing, scientific reasoning (incorporation of appropriate evidence such as RCTs in clinical medicine), and appropriate presentation of data (e.g., absolute vs relative risk, effect sizes without confidence intervals). In essence, the six items in SANRA assess the article's significance, clarity of aims, literature search strategy, referencing, scientific rationale, and data presentation.

3. Results

The results of this study, which reviewed 95 records, are presented in separate categories based on the publication format, journal titles, study themes, and publication years. In terms of format, the majority of the publications (60 out of 95; 63.16%) were original research articles, followed by books (21 out of 95; 22.11%), and book chapters (14 out of 95; 14.74%). The collection includes nearly 60 different journal titles where research papers on the selected theme were published. Disability and Health Journal from the American Association of Health and Disability (Online ISSN: 1876-7583; Print ISSN: 1936-6574) had the highest number of publications with 6 articles. While other theme-related journals such as Aging & Society, Innovation in Aging, Journal of Aging & Health, Research on Aging, and Journal of Gerontology & Geriatric Medicine were reviewed, only one or two research articles were found from each of them.

There is a steadily doubling growth every decade in the number of publications over the years since the first classic book on “Aging with disability” (Trieschmann, 1987), and journal article on “Aging and Disabilities” (Rose & Ansello, 1988) were first early published. The topics or themes of study have varied interests for researchers from Aging with Disability (n: 31), Aging & Disability (n: 25), Models, Paradigms & Perspectives (n: 9), Disability & Aging (n: 8), Disability in aged (n: 7), Policy (n: 7), Successful Aging (n: 6), Healthy aging (n: 4), and Training (n: 3).

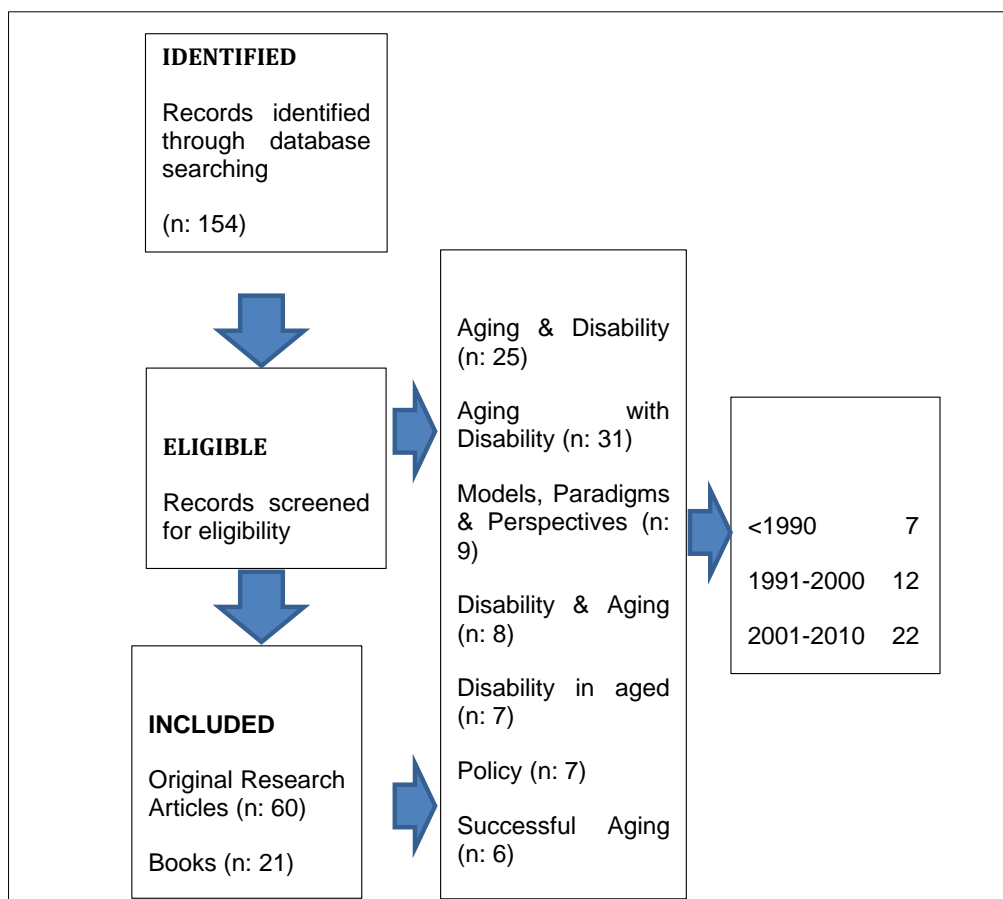


Figure 1 Flow Diagram cum Harvest Plot depicting the procedure and frequency distribution of literature on Aging with/into disability included in this review

Research in the introductory aspects of aging with and into disability has overlooked several important areas. Family dynamics and caregiving, the role of assistive technology, and the experiences of individuals aging with developmental disabilities are underexplored. There is a scarcity of research on the impact of aging on existing disabilities and the emergence of new age-related health conditions. The intersection of aging with disability and other aspects of identity, such as race, gender, and sexual orientation, has received minimal attention. Furthermore, the challenges faced by these people in accessing healthcare, social inclusion, long-term care options, mental health needs, and policy impact require further exploration. Addressing these gaps in research is crucial for better understanding and supporting the aging population with disabilities.

4. Discussion

The study of aging with disability is a relatively recent area of research, with the majority of research emerging in the past few decades. A growing body of literature is uncovering the distinct challenges faced by older adults with disabilities. These individuals are more susceptible to various health issues such as chronic pain, depression, and anxiety, and are more likely to face hospitalization and struggle with activities of daily living. Additionally, they are at higher risk of living in poverty, encountering limited access to healthcare and other services, experiencing social isolation, and encountering employment difficulties. Despite these obstacles, there is evidence that with appropriate support, they can lead active and fulfilling lives, participating in community activities, engaging in meaningful pursuits, and enjoying a high QOL (Blanck, 2011; Minkler, 1990).

The aging-disability nexus covers two aspects, viz., aging with disability, and aging into disability. After World War II, as Western society saw the rise of generations of elderly individuals with disabilities, research began to concentrate on the obstacles they encounter. The period from 1900 to 1945, marked by the advent of antibiotics and advancements in healthcare, prioritized survival. The subsequent era, post-1940s and the World Wars, witnessed the development of rehabilitation fields such as occupational therapy, physical therapy, and rehabilitation psychology, along with the creation of non-wood wheelchairs. The third era, commencing in the 1970s, emphasized longevity, as a large number of PWDs lived into their later years. The 1960s and 70s brought about a shift in civil rights and the deinstitutionalization of disability, leading to increased diversity within the aging population (Seelman, 1999).

Aging and disability form the societal framework within which older adults with disabilities exist, encompassing policies, programs, services, and societal attitudes. This framework underscores the importance of acknowledging the specific needs of this group and the necessity for tailored interventions and support systems. It also emphasizes society's role in fostering an inclusive environment for older adults with disabilities to lead fulfilling lives. References by Aubrecht, Kelly, & Rice (2021), Putnam & Bigby (2021), Callahan (2019), Ansello & Eustis (2018), and Coyle & Mutchler (2017) support these insights.

Atypical aging refers to a departure from the usual course of aging, involving unusual or abnormal changes in physical, cognitive, or emotional functioning compared to what is considered typical for a person's age. These deviations may manifest as vague, non-specific presentations, under-reported symptoms, or altered behavioral patterns. Atypical aging can be influenced by various factors such as genetics, lifestyle, environment, and medical conditions. For instance, individuals with Down's syndrome often experience premature or accelerated aging and are genetically predisposed to developing dementia or Alzheimer's disease. Additionally, they may face challenges such as hypothyroidism, depression, obesity, chronic constipation, thyroid disorders, and urinary incontinence, leading to greater neuropsychological functional deficits in verbal fluency compared to fine motor skills (Woods, 2011; Mimi, Kwan, & Lau, 2018; Zigman, 2013; García-Domínguez et al., 2020; Burt et al., 2005).

When the words aging and disability are juxtapositioned, various combinations and distinctions emerge. There can be aging with disability, aging into disability, and disability with aging. "Aging with disability" refers to individuals who are born with a disability and grow older while coping with a physical, mental, or developmental impairment. It considers the impact of the impairment across different stages of life. Individuals with conditions such as Spina bifida, cerebral palsy, multiple sclerosis, post-polio paralysis, muscular dystrophies, or ALS. They often encounter additional challenges and accelerated impairment as they age. There might be a childhood-onset and later adult-onset disabilities. It involves a person with a disability living to an advanced age. These individuals may require extra support and accommodations to address the financial impact of the intersection between aging and their pre-existing disability (McDaid & Park, 2021; Petretto et al. 2019; Klingbeil, Baer, & Wilson, 2004).

In case of the term "disability with aging" the disability is a consequence of the aging process. The disability arises with aging with mobility limitations, falls, hearing loss, and other age-related impairments after living relatively free of

disability until midlife or later life. There can be conditions such as age-related macular degeneration leading to vision impairment, osteoarthritis leading to mobility limitations, or cognitive decline leading to dementia.

Aging into disability is the experience of becoming disabled in old age. This happens to a healthy or unaffected individual, as they grow older, begin to experience a decline in physical or cognitive functioning that leads to the development of a disability. They cannot or do not easily think of or accept themselves as aging into disability or being disabled. People aging into disability may require additional support and accommodations to maintain their QOL and independence. The phrases, such as "use it or lose it" and "conserve it to preserve it," highlights their keeping themselves active. Additionally, there is the unique experience of being a parent, caregiver, sibling, or spouse of a person with a disability from birth or acquired later. Both are equally challenging for the individuals to come to terms with their evolving disability, face stigma and threats to their self esteem. This reluctance to acknowledge disability may hinder their willingness to seek accommodations and connect with peers. They might experience heightened health risks, social isolation, and discrimination. It raises thought-provoking questions about the implications of living a long life with a disability, the experiences of aging parents caring for adult disabled children, and the dynamics of couplehood when both partners are aging with disabilities (Klingbeil, Baer, & Wilson, 2004; Guralnik, Fried, & Salive, 1996). There are numerous intersections between these two concepts, highlighting the transient nature of able-bodiedness (Verbrugge, Latham, & Clarke, 2017; Verbrugge & Yang, 2002; Kahana, Goler, & Force, 2021).

Many factors contribute to aging into disability, such as chronic disease (heart disease, stroke, cancer, and diabetes), accidents and injuries (damage to the brain or spinal cord), frailty (decline in physical strength, endurance, and function), and cognitive impairment (such as dementia). There is progressive reduction of functioning, impairment, environmental disablement, and changes in social relationships that accelerate with advancing age. The negative consequences of aging into disability can be loss of independence, social isolation, and financial hardships. Aging into disability can be prevented or delayed by managing chronic diseases, preventing accidents and injuries, staying active, adopting a healthy diet and lifestyle, getting enough sleep, and managing stress (Simons et al. 2000). This topic has not been sufficiently addressed by researchers and policymakers in the field of gerontology (Monahan & Wolf, 2014; Rose & Ansello, 1988).

In rare instances, the phrase "disabled elderly" has been used. This is not preferred since it defies the person's first principle of nomenclature or language when referring to PWDs. It is disrespectful to emphasize the disability than the person. Other terms with negative connotations, such as "the aged," "elderly," "senior citizen," "boomer," or "senile" are also to be avoided.

The epidemiology of aging with disability involves studying how common and how often disabilities occur in older individuals, as well as the factors that contribute to this. Research indicates that as people age, the occurrence of disabilities becomes more prevalent. Compared to younger age groups, older adults are more prone to experiencing disabilities. This area of research also explores how living with a disability while aging can affect the health and QOL of individuals. Such individuals often encounter difficulties in maintaining good health due to the combination of aging-related changes and their disabilities, resulting in higher rates of long-term conditions and a decrease in QOL. Understanding the epidemiology of aging with disability is essential for creating effective strategies to prevent, intervene, and provide care for this vulnerable population. Factors like socioeconomic status, access to healthcare, social support, and the type of disability can influence the health and well-being of aging individuals with disabilities. Tailored interventions and support services can significantly enhance their QOL and overall well-being, underscoring the importance of addressing their specific needs (Freedman 2014).

India is home to the world's second-largest elderly population, with approximately 77 million individuals, compared to China's 127 million. The number of elderly people in India has risen significantly over the years, from 24 million in 1961 to 43 million in 1981, 57 million in 1991, and 77 million in 2001. It is projected that by 2050, this proportion will increase by 21 percent (Petretto et al 2019; Leong et al. 2018; Chatterji et al. 2015). According to the 58th round sample survey of disabled persons (NSSO, 2002), 40 percent of the elderly reported experiencing at least one disability, with a slightly higher prevalence among females than males. Sex differences were also observed in the prevalence of two and three disabilities, with 15 percent experiencing at least two disabilities and an additional 6 percent experiencing three disabilities (Census, 2011; Prakash, 2003).

Comparison of disability prevalence and healthcare-seeking behavior among elderly individuals in Kerala, a relatively advanced state, and Uttar Pradesh, a less developed state in India, revealed increasing rates of disability and healthcare utilization. Kerala showed higher rates of locomotion, speech, and hearing disabilities, while Uttar Pradesh exhibited elevated levels of visual impairments (Basu & King, 2013). The study emphasized the influence of local factors and contexts on disability within the Indian subcontinent (Basu & King, 2013; Duba et al. 2012).

The recently developed National Policy on Older Persons (September 2021) aims to enhance the welfare and rights of senior citizens, improving the QOL for millions of elderly individuals in India. However, the policy and practice still treat the concerns of older individuals with disabilities and those who acquire disabilities in old age as separate issues. The policy seeks to ensure social security, financial stability, healthcare, well-being, legal rights, protection, active and healthy aging, elder abuse prevention, and protection against exploitation of older individuals (Gupta & Raju, 2022; Gangadharan, 2020; Rajan et al. 2014; Liebig & Rajan, 2013).

4.1. Aging Theories & Perspectives on Disability

Individuals with disabilities form a diverse group, displaying significant diversity and individual distinctions, encompassing differences in age of onset, gender, and social standing. The life expectancies of various disability conditions also vary. Despite over four decades of research on aging and disability, a comprehensive framework effectively linking disability and aging is still lacking, underscoring the need for more integrated and interdisciplinary research. The International Classification of Functioning, Disability, and Health (ICF) can play a crucial role in bridging this gap, along with consideration of an active aging framework. An experimental approach to evidence-based care is also imperative. Various theories and perspectives on aging with disability, including the life course perspective, biographical approach, epidemiological perspective, social model of disability, bio-psychosocial model of disability, perspective of clinical psychology, successful aging perspective, and intersectionality theory, exist. Moreover, previous research has examined the "decline-and-loss paradigm" and "biopsychosocial perspective" of aging and disability (Leahy, 2021; Molton & Jensen, 2010). The life course perspective considers disability as a lifelong journey, encompassing the impact of disability onset, duration, effects across life stages, and age at reflection. Temporality holds multi-dimensional significance, encompassing shared experiences within specific age, gender, social class, or geographical contexts (Jeppsson-Grassman & Whitaker, 2013).

4.2. Training, Education, Enablement, & Empowerment

This narrative review underscores the significance of offering specialized training programs, including assistive technology, mobility, and vocational training, to improve the capabilities and expertise of aging individuals with disabilities. It also emphasizes the importance of inclusive and accessible education, lifelong learning support, and provisions for personal and professional growth. Furthermore, it stresses the creation of supportive environments, encouragement of self-care abilities, and the promotion of independence and advocacy among older individuals with disabilities. These efforts aim to enable their active engagement in society, acknowledging their distinct requirements and potential contributions, ultimately fostering comprehensive development and well-being (Bigby & Putnam, 2021; Kailles, 2019; Racino & Heumann, 2019; Sutton et al. 2019; Kahana & Kahana, 2017; Hammel & Nochajski, 2000; Beedon, 1992; Seltzer, 1992).

4.3. Challenges

As PWDs age, they may encounter declining health, heightened social isolation, transportation difficulties, and financial pressures due to the need for specialized care. The compounding effects of worsening existing conditions or acquiring new disabilities can have detrimental effects on their mental health and overall well-being. Managing a disability involves substantial expenses, which increase with age as a result of rising healthcare costs, adaptive equipment requirements, and related expenditures. Accessing suitable healthcare services, support, and long-term care can impose significant financial burdens. Securing appropriate housing that meets their specific needs is challenging and often necessitates costly modifications. Family members or caregivers providing assistance to individuals with disabilities may also experience caregiver stress and burnout over time due to the demanding nature of their responsibilities. Additionally, they may encounter legal complexities related to guardianship, decision-making capacity, and advocacy for the rights of aging individuals with disabilities (Remillard et al. 2022; Koon et al. 2020; Macfarlane, 2014; Kelley-Moore, 2010; Fast & de Jong Gierveld, 2008; Bigby, 2002; Holland, 2000).

4.4. Visions for Future Research

Potential research directions in the field of aging and disability encompass various areas, including long-term health outcomes, technological advancements, healthcare accessibility, and strategies to enhance social inclusion and participation for PWDs as they age. Exploring the impact of emerging technologies and assistive devices on enhancing the QOL and independence for aging PWD, investigating interventions and programs to promote their mental health and well-being, addressing issues such as depression, anxiety, and social isolation, studying support systems and strategies that enable comfortable and secure aging in place within their communities, examining the needs of caregivers, and developing resources and interventions to improve their well-being and effectiveness are critical areas for investigation. Additionally, researching effective caregiver support and training programs, examining the influence of policy changes and advocacy on the lives of aging PWDs, exploring the intersectionality of aging with disability and

other factors such as gender, race, ethnicity, sexual orientation, and socioeconomic status, and investigating preventive health strategies tailored to their specific needs are potential new research directions in the field of aging with disability. Furthermore, exploring ways to enhance the QOL for older adults and PWDs, developing innovative technologies to assist with daily tasks, improving healthcare services tailored to the needs of aging populations, and investigating interventions to promote healthy aging are also crucial research areas (Ansello & Eustis, 2019; Waidmann & Liu, 2000; Mann, 2005).

Amidst these research directions, it is imperative to prioritize the clarification, definition, or development of universally accepted operational definitions for fundamental terms related to aging with and into disability, such as successful aging, atypical aging, psychological aging, premature aging, and others. This effort is crucial for ensuring clear communication, reducing the potential for misunderstandings and miscommunication, promoting consistency in the use of terms among researchers, and increasing precision in data collection and analysis. Clear definitions can prevent or resolve conflicts arising from differing interpretations of terms in research and development, ensuring that findings are replicable and comparable across studies (Coyle & Mutchler, 2017; Garcia et al. 2017; Gu, Gomez-Redondo, & Dupre, 2015).

5. Conclusion

The future of research on aging and disability shows significant potential. Advancements in regenerative medicine, personalized medicine, wearable technologies, and artificial intelligence are poised to become pivotal areas for future research in aging and disability. These technologies have the capacity to revolutionize our approach to aging and disability by providing more tailored and effective solutions. Future research inquiries may focus on distinguishing between the natural aging process and the presence of a disability. This involves understanding the typical decline in physical or cognitive abilities associated with aging versus disability, as well as ageism versus ableism. Additionally, research can seek to differentiate between chronic illness and disability affecting daily functioning, as well as temporary limitations in daily activities versus permanent disabilities. Addressing differences between the elderly and disabled, supportive care and disability accommodations, the normal aging process and the onset of disability, rehabilitation and the aging process, and independence versus dependency while living with a disability are all promising and necessary areas for future research. Overall, future research in this field aims to promote independence, enhance health outcomes, and improve overall well-being for older adults and individuals with disabilities. By leveraging the potential of technology and innovative approaches, researchers can pave the way for a more inclusive and supportive society for individuals of all cultures, ages, and abilities.

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