

An ageist perspective on age and older adults in information behaviour research

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Abstract

Introduction. *This study aims to answer the question what kind of research exists on aging and older adults in information behaviour and information seeking.*

Method. *A systematic literature review was conducted in two databases, LISA and Scopus.*

Analysis. *The results were refined and tagged thematically and clustered into main research topics.*

Results. *(Online) health information behaviour is the largest research topic in relation to aging and older adults. Underrepresented topics are information needs and behaviour outside of the health care sector. An ageist perspective is strongly present in information behaviour studies.*

Conclusions. *Existing research on (online) health information behaviour primarily addresses a negative aspect of old age, frailty and illness, which may amplify the stereotypical image of older people and aging. This paper suggests that the research field should turn to topics that are more diverse and use the demographic variable of age more carefully in order to mitigate ageism.*

Keywords: *information seeking behaviour, older people, aging, ageism*

Introduction

Age is a historically mainstay demographic variable in social research to find correlations in the behaviour or attitudes of people (Case, 2012). Information behaviour research also uses demographic variables to uncover relationships between behaviours and study participants (Lundh, 2016). In addition to collecting biological age, the variable age is used to record and present, name or assign age groups, like young, middle aged or older participants. Since there is a lack of standards, the age ranges are often set differently: sometimes the age of retirement is used to distinguish older adults (Kite and Wagner, 2004), more often the decision belongs to the researchers (Asla, Williamson and Milles, 2006). The names for age groups vary (for example older adults, elderly, seniors, oldest old), but the purpose of using age variables remains the same: a categorization to assign results according to age (groups).

This categorization gives the impression that behaviours are inextricably linked to biological age. It can result in research findings that lead to stereotypical perceptions of age groups. In research on stereotypes, these perceptions are part of the phenomena ageism.

Ayalon and Tesch-Römer (2018, pp. 1-3) defined ageism as the complex, often negative construction of (old) age. If differences between older individuals are neglected and over-generalised, older people, ageing, and old age is seen in a stereotypical manner. It is largely accepted in the field of social science that age stereotypes precede age discrimination. As humans are often not aware of their own ageist perceptions and behaviours, ageism finds its ways into individuals' behaviour, in organizational regulations or cultural values. On the individual level, ageism can affect the researcher as a human being. On the societal level the negative construction of old age can influence research design and topics. Although ageism can affect any age group, this study focuses on older adults.

Information behaviour researchers focus on the human aspects of information interactions (Wilson 2000; Bates 2010). They should be the first ones in information science to carefully use user categorizations and to avoid ageism. This paper uses a systematic literature review to address the topic as broadly as possible in the research field of information behaviour. It answers the following research question: What kind of research exists on age, aging and older adults in the research field of information behaviour and information seeking?

Research background

In research on stereotypes, the perceptions of age groups are part of the phenomena ageism (John, 2013). The term originated with gerontologist R. Butler (1969) and has been taken up by other disciplines like social psychology where the formation of stereotypes beyond the variable of age is explored as a fundamental function of human consciousness (e.g., Pendry, 2014). Researchers in the field of human computer interaction are also increasingly turning their attention to this topic (Cutler, 2005), often in relation to the digital divide (e.g., Quan-Haase, et al., 2018; McDonough, 2016; Lagacé, et al., 2016). In the field of library and information science, the study by Barrie et al (2021) explores ageism as a central theme in interviews on a teaching program for older adults in a public library.

Much less research is done on how ageism may affect the research process in itself. As ageism is a unique kind of discrimination, concerning all people through their life span, it must be critically reflected if and how ageism affects empirical research designs.

Asla, Williamson and Mills (2006) examined a very specific age group, called '*oldest old*' (age 85 +). In the first part of their paper, the authors presented a theoretical framework for library and information science to study the information seeking of the oldest. In the second part, they analysed prior studies on information needs and sources of older people. Referring mainly to Williamson's earlier research (1995) on the topic, the authors concluded that information needs of the oldest adults appeared to have diminished significantly except with regard to information pertaining to health, consumer, and pharmaceuticals. According to their findings, a major gap in the literature regarding

older people is the internet use, especially research that does not treat older people as a homogenous group.

Dickinson, Arnott and Prior (2007) postulated that human computer interaction research relies too much on young, well-educated students test subjects. To address this, they analysed age information in issues of three journals in their field. The results showed a dramatic underrepresentation of older people: only two of the 39 studies included people over 60 in their sample.

Case (2012) discussed the demographic variable of age in his book. On five pages, he presented studies on children and older persons. Many of those studies on older adults are included in the sample of this analysis.

The most notable study for this paper is Vines et al (2015) who similarly conducted a literature review, but in the research field of human computer interaction. The authors analysed three decades of research on ageing published across the Association for Computing Machinery Special Interest Group on Computer-Human Interaction (SIGCHI) community. Their results suggest that ageing in human computer interaction is typically framed as a “problem” that can be managed by technology. This discourse in SIGCHI literature enforces common stereotypes around old age.

Lundh (2016) published a conceptual paper on children as subjects in information behaviour research. Even though the age group is different, the method and results are comparable to this study. Her research showed that the information behaviour field characterizes children by deficiencies. Information behaviour research describes children by not being adults and by not being competent information seekers. She criticized this perspective which creates a position of power for adults, and for children a position as those in need of expert help.

Vines et al and Lundh criticized a deficit-discourse in relation to two different age groups, this shows that age discrimination can have different age stages with similar negative perspectives. In the field of information behaviour, there is no comparable study on topic clustering of research on aging and older adults. This literature review seeks to close this gap by analysing the degree to which age, aging and older adults are present in information behaviour and to which research areas those publications can be assigned.

Method

The study used a systematic literature review to address the question of age, aging and elderly people in information behaviour. For each database, a defined set of keywords was used: *information behaviour* and *information seeking* were chosen as subject keywords. Those were combined with different terms for age segments: *older adults*, *older people*, *elderly*, and *seniors*. In addition, the terms *aging*, *age*, *old* and *older* were used to complete the search field. The keywords were chosen based on an analysis of previous research on older adults.

The queries were performed in two library information science relevant databases: library and information science abstracts (LISA) and Scopus. The first round of queries was performed in LISA, the second search process in a slightly shortened version at Scopus where keywords had to be adapted, since, for example, Scopus makes no distinction between the keywords *old* and *older*. It was verified that a set of known papers that would fit the search query could be found in the two databases, including publications from ISIC proceedings in Information Research. In both databases, the first query was limited to titles only and later extended with keywords. The title search returned the most relevant results, especially for the combinations with the words *age*, *old* and *older*.

The results of the queries were saved as a research information system format file and imported to the literature reference program Citavi. Citavi, now a sub-product of Swiss Academic Software, combines the classical features of a reference program with extended categorization and tagging functionalities, thus allowing the use for data analyses functions. Citavi also ensured that duplicates were excluded immediately upon reference import. At the end of this process, a total of 604 matching publications were imported into Citavi. These were manually inspected and data cleaned according to relevance.

Only papers dealing in depth with the topic of information behaviour or seeking and the addressed age group or age as a central demographic variable were included in the analysis. The search terms had to be mentioned in the abstract within the aim of the research design. This did not apply to some studies, where the terms were mentioned in the abstract but were not the central focus of the study (e.g., Arcury, et al., 2015; Bauer, et al., 2018). The terms *seniors* and *old* were a challenge in data cleaning because of their contextual ambiguity (e.g., Arnott, 2010; Fisher, et al., 2005). If the word *age* appears in the title, it was assumed that the relevance of the publication to the research question is high. During manual inspection, however, it became apparent that the term referred in most cases to the concept of a timeframe, such as *information age* or *digital age*. A total of 375 papers were consequently excluded from the analysis (62% of the original dataset).

The remaining 229 publications, published between 1984 and 2022, were further analysed and categorized. In a first round of initial coding a codebook was developed, which was then followed by a focused coding applying the codebook. After coding, all 229 publications were categorized into four main subject areas with a total of 28 sub-categories (see also figure 1). Since publications may fall into several thematic categories, it was decided to only code for the dominant theme, since the aim of the paper is to discover where the focus of research on age, aging and elderly people in information behaviour is.

Limitations

The biggest challenge was the interdisciplinary nature of the topic of older adults and information behaviour and seeking. Library and information science thrives on exchange with other disciplines, but this is precisely what makes clear delineation difficult. For this review, the human computer interaction discipline in particular was a large grey area. Information behaviour often takes place within interactions with information and communication technology (e.g., Quan-Haase, Martin and Schreurs, 2016; Jayroe and Wolfram, 2012), but then it is one of many possible interactions. This means much human computer interaction research does touch on the topic of information seeking, for example in the area of technology acceptance, but then centrally addresses the question of why older people use technology, not how or what information they seek when they use technology. Therefore, those studies were not included here.

A further problem during coding was that papers cannot always be clearly distinguished. The dominant theme was decided based on the stated research aim in the abstract and where the order was not alphabetical, based on the order of keywords. This research decision may result in a biased representation of topics. However, the alternative, in which multi-themes were counted, had resulted in a table where a couple of outliers that fit many topics mislead readers as to the presence of the examined topics among all studies.

Results

The results are structured as follows: after describing each of the four main topics, their subcategories are described: (1) *'health'*, (2) ... (4) and related publications are cited as examples. Afterwards the results of the distribution of topics are presented, followed by a discussion of results.

Figure 1 shows the categorization of papers into the four main themes. In bracket are the number of publications assigned to each theme. Results are presented according to dominance starting with the most dominant theme *'health'*. The category *'age as central demographic variable'* is presented as the last in line, as it is the only category that does not address older adults exclusively.

<p>1. Health (157)</p> <p>1.1. Online health information seeking (54)</p> <p>1.2. Health information behavior needs (46)</p> <p>1.3. Health literacy (19)</p> <p> 1.3.1. Teach & improve health literacy (7)</p> <p>1.4. (Non) professional caregivers (15)</p> <p>1.5. Usability of online health information (10)</p> <p>1.6. Library (4)</p> <p>1.7. Smart and eHealth technology (2)</p> <p>2. Information behaviour and older adults (22)</p> <p>2.1. Older Adults (8)</p> <p>2.2. Library (3)</p> <p>2.3. Relatives (2)</p> <p>2.4. Covid-19 (2)</p> <p>2.5. Academics (1)</p> <p>2.6. Migration (1)</p> <p>2.7. Social services (1)</p> <p>2.8. Natural disaster (1)</p> <p>2.9. Information literacy (1)</p> <p>2.10. Retired investors (1)</p> <p>2.11. Socioemotional selectivity theory (1)</p>	<p>3. Information behaviour and information & communication technology (21)</p> <p>3.1. Social media (8)</p> <p>3.2. Online information behaviour (6)</p> <p>3.3. Digital literacy/skills (2)</p> <p>3.4. Cybersecurity (1)</p> <p>3.5. Information quality (1)</p> <p>3.6. Television (1)</p> <p>3.7. Library (1)</p> <p>3.8. Older women (1)</p> <p>4. Age as central demographic variable (29)</p> <p>4.1. Health (16)</p> <p>4.2. Online information behaviour (4)</p> <p>4.3. Information seeking/decision making (4)</p> <p>4.4. E-Book wall (2)</p> <p>4.5. Library (1)</p> <p>4.6. Covid-19 (1)</p> <p>4.7. Filipino aquaculture researchers (1)</p> <p>Total: 229 papers</p>
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Fig 1. Categorization and numbers of papers per category (N = 229).

Category 1: health, age, aging and elderly people

157 publications could be assigned to the first category of ‘*health*’ representing 69% of all publications in the sample. The majority of these (54) were on the topic of ‘*online health information seeking*’. Publications address the questions of who, why, and how older adults use the internet to access health information. The question of who refers to the study of specific demographic groups of older adults (e.g. Yoon, et al., 2020; Goodall, Newman and Ward, 2014) or to how older adults use the internet for information seeking in general (Medlock, et al., 2015; McMillan and Macias, 2008). Publications focusing on why older adults use the internet to access health information focus on specific diseases such as cancer (e.g., Haase et al., 2020; Saied, et al., 2014), chronic diseases (e.g., Zhao, Song and Zhao, 2021; Sedrak et al., 2020), as well as health emergencies such as heart attacks (Meischke, et al., 2005) or falls (Askari et al., 2014). One study explored health anxiety among older adults (Bagarić and Jokić-Begić, 2020). Furthermore, there is research on reasons to go online for diagnoses (Luger, Houston and Suls, 2014), accessing personal health records (Huvila, et al., 2021; Huvila, et al., 2018), accessing information about a particular form of medical treatment (Hou, et al., 2021) or communicating with health professionals (e.g., Huisman, Joye and Biltereyst, 2020; Silver, 2015). The question of how older adults access health information can be related to the technology used to be online, often described as the internet. Some papers specify devices like smartphones (Shahrokni, et al., 2015; Deng, Liu and Hinz, 2015) or TV (Paek, Choi and Hove, 2017). Different search entries for health information are researched like social media (e.g., Lumpkins, et al., 2017; Pálsdóttir, 2016), social apps (Zhao, Song and Zhao, 2021), web portals (Edmonds, et al., 2019) or Wikipedia (Huisman, Joye and Biltereyst, 2021). Several studies deal with the challenges in online health information seeking (Berkowsky and Czaja, 2018), satisfaction and credibility of - or trust in online health information (e.g., Meng, et al., 2022; Choi, 2020). The category ‘*health*’ also includes three literature reviews on eHealth and older adults (Tajudeen, et al., 2022; Ying, et al., 2019; Waterworth and Honey, 2018).

The sub-category ‘*health information behaviour needs*’ includes 46 papers. Since the internet is not an underlying factor for this category, it contains a larger number of papers that refer to older people of a certain nationality (e.g., Mathis, Rooks and Wiltshire, 2021 (United States); Williams, Ames and Lawson, 2019 (Australia)). Marginalized groups such as older women (e.g., Potter, Allen and Roberto,

2019; Burton, et al., 2017), migrants (Nguyen, et al., 2010), or language minorities (Eriksson-Backa, 2008) are also studied. Different disease patterns are taken up, cancer (e.g., Leung, Chow and Wong, 2017), Alzheimer's (Huisman, Joye and Biltereyst, 2020a), diabetes (Mansour, 2021), sexually transmitted diseases (Lyons, et al., 2018), chronic diseases (Chou and Wister, 2005) or constipation (Annells and Koch, 2002). The paper of Jensen, et al., (2017) connects cancer health information seeking with the information overload model. One study combines hearing loss with research on health information seeking and media use (Manchaiah, et al., 2020). Other thematic keywords in relation to health information behaviour are physical activity (e.g., Enwald, et al., 2017), decision-making behaviour (Burton, et al., 2017; Burton, et al., 2015; Chang, et al., 2008), support from social environment (Liu, Yang and Sun, 2019), critical-care choices (Clarke, et al., 2005) and coping (Theis, et al., 2021). The paper by Huisman, Joye and Biltereyst (2020b) explicitly explores the non-sharing behaviour of health information by older adults.

Twenty-six papers deal with health literacy of older people. The publications can be classified according to three main research topics. The first group of publications deals with health literacy of elderly in general (e.g., Kuo and Tsai, 2020; Matas and Bronstein, 2018), or in relation to specific diseases such as prostate cancer (Zanchetta, et al., 2007) or depression (Huang, et al., 2021). The second group explores the influences and predictors of health literacy in older people (e.g., Tsahi, et al., 2021; Berkowsky, 2021). The third group of papers links health literacy with other concepts like the health information seeking behaviour of older adults (e.g., Yamashita, et al., 2020; Kim and Utz, 2018), the health disparities and sources of health information (Cutilli, et al., 2018) or health rumours (Yang, Zhou and Salvendy, 2019).

Seven out of the 26 studies designed tutorials or tested educational material to improve and teach older adults a better health literacy (e.g., Xie, et al., 2012).

The category '*health*' further includes 15 publications that focus not only on the information needs of older adults, but those of their '*(non)professional caregivers*' (e.g., Bangerter, et al., 2019). This includes the two studies by Pettigrew (1999; 1999a) that have shaped grounded theory in the information science field. In these publications, the author investigated the information exchange of nursing staff. Dorsey and Detlefsen (2005) and Dorsey (2008) focus on the information needs of physicians of older people with depression and their caregivers. Two other disease conditions are explored, dementia (Soong, et al. 2020) and chronic diseases (Bull and Jervis 1997). Kyota, Tsukasaki and Itatani (2018) and Noureldin et al (2017) have published on information needs on medication for caregivers. Two studies explored information seeking as part of interrogative strategies in care transition (Georgiadis and Corrigan, 2017; Allen, et al., 2017).

Ten papers revolve around the topic of '*usability of online health information*' (e.g., Enwald, et al., 2020) In two studies, the main focus is on information about medications (Martin-Hammond and Gilbert, 2016; AlRuthia, et al., 2016). Usage of online health information by caregivers was the subject of another usability study (Barbabella, et al., 2018).

The role libraries can play in providing and finding health information is explored in four papers (e.g., Lin et al., 2021).

The category '*health*' concludes with '*smart and health assistant technology*'. One paper deals with the topic of older people's opinions on digital assistants for their own health management (Martin-Hammond, Vemireddy and Rao, 2019). The other paper investigates if information need of older adults influences their technology usage (Theis, et al., 2019).

Category 2: information behaviour, age, aging and elderly people

This second category (22 publications) includes papers that do not deal exclusively with the need for health information (category 1) or with needs related to the use of information and communication technology (category 3). The category includes eight papers that study information needs of older adults in general (e.g., Mansour 2021a; Choi, Park and Lee, 2021). Three papers explore information seeking behaviour of older students and older adults in libraries (e.g., Colosimo and Badia, 2021).

Pálsdóttir (2011; 2012) explore how relatives support elderly and their information needs and what kind of needs they have themselves.

Although more papers have the term Covid-19 in the title, only two explore the context of the pandemic as a key influence on the information needs of older adults (Lund and Ma, 2022; Lund and Maurya, 2021). Another context of interest is the information world of older adults during natural disasters (Pang, Karanasios and Anwar, 2020). Three papers focus on specific groups of older adults; Deng and Zhu (2016) explore the information seeking behaviour of older academics, O'Connor (2013) studies retired investors and Caidi et al (2020) explore the information experience of older immigrants. Getz and Weissman (2010) focus on specific information needs for law and services. Two literature reviews deal with older adults and aspects of their information behaviour. Williamson and Asla (2009) analysed the information literacy needs of people in the fourth age. Manžuch and Maceviciute (2020) offer a Socioemotional Selectivity Theory perspective on the information behavior of older adults.

Category 3: information behaviour, age, aging, older adults and information and communication technology

This third category lists all studies that link information behavior with the use of the internet or information and communication technology (in total 21 that is 9% of all publications in the sample). Six studies examine how online information seeking behavior of older people is generally shaped (e.g., Villarejo-Ramos, Peral-Peral and Arenas-Gaitán, 2019; Rikard, Berkowsky and Cotton, 2018). Eight publications focus on social media and information seeking (e.g., Nguyen and Le, 2021; Pálsdóttir, 2016). These two somewhat larger groups are followed by subject areas that include only one or two publications. Two papers explore digital skills of older adults (Oh and Kang, 2021; Santos, Veloso and Alves, 2016). Furthermore, research exists on information seeking and cybersecurity (Nicholson, Coventry and Briggs, 2019) and information quality (Xiong and Zuo, 2019). Older research in this area deals with television as an information seeking technology (Rubin, 1986). Hsu and Chang (2013) want to develop or improve the internet services for the elderly in the Public Library. Older women and their online information needs are the subject of a single study by Sabelli (2020).

Category 4: age as central demographic variable

The fourth category, '*age as a central research variable*' includes all studies (29) that do not focus exclusively on older people but relate this age group to others or treat biological age as a significant factor influencing behaviour.

The first subcategory, '*health*' (16), includes papers that cover almost all subcategories of the main category '*health*'. For instance, Paimre (2020) explores the online information behaviour of older adults and students in Estonia. Tang et al (2019) explore the influence of socioeconomic determinants like age on health literacy and health information seeking or Agree et al. (2015) explore age and cognitive style on online information seeking. Different studies examine whether trust in health information varies with biological age (e.g., Liao and Fu, 2014).

Four papers examine whether age has an influence on online information behaviour (e.g., Sanchiz et al., 2019) and another four investigate age as an influencing factor on information seeking (e.g., Karanam et al., 2017) and decision making (e.g., Hess, Queen and Ennis, 2013). Two papers by the same group of authors examine e-book walls and the information seeking behaviour of different age groups (Wu and Huang, 2018; Huang, Wu and Tsau, 2017). Connaway, et al., (2008) research the challenges for libraries to meet the needs of the multiple generations of users with differing approaches to information seeking. The pandemic as current context for effects on the information behaviour of different age groups was the subject of one publication (Skarpa and Garoufallou, 2021). Superio (2018) examined a particular link between age and specific audience in his study on the information seeking of Filipino aquaculture researchers.

Distribution of publications on age, aging and elderly people in information behaviour research

Across the 229 publications, health, with approximately 68% of all publications, is the central theme in information behaviour research on older adults (Fig. 2). The remaining percentages are shared almost fairly between research on online information behaviour and information behaviour in general. The sequence of this line-up continues within the fourth category. In the category '*age as a central demographic variable*' most papers research the topic of health information behaviour, then online information behaviour and information behaviour in general. If the 16 papers from the subcategory '*health*' of '*age as a central demographic variable*' are added to the 157 publications from the category '*health*', the share of paper on health-related topics rises to 75% (173 paper). These results are discussed in the next section.

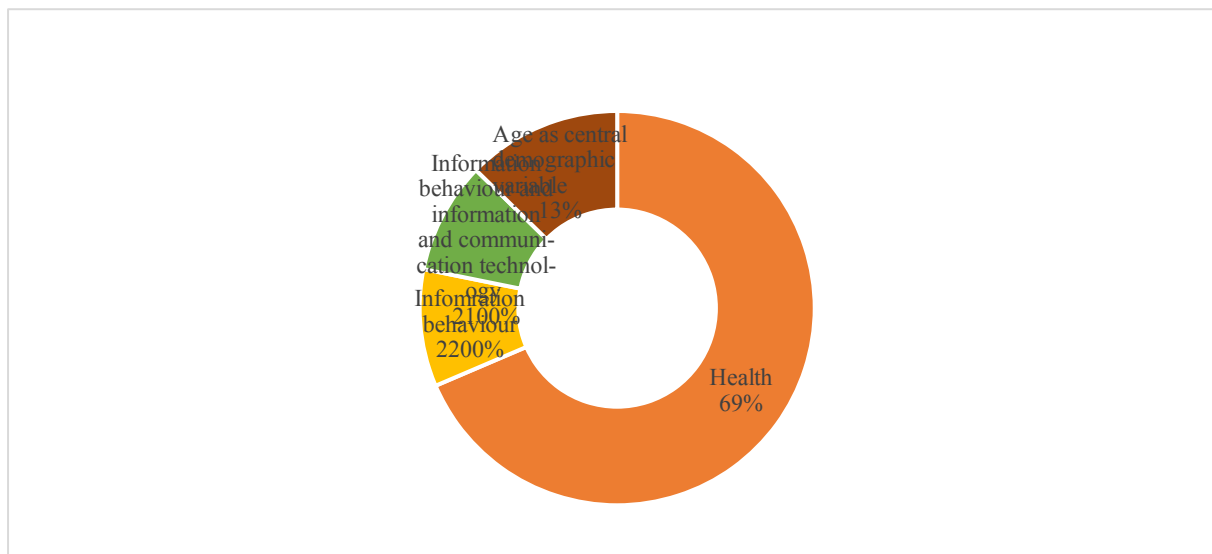


Fig 2. Publications per category in percent (N = 229).

Discussion

The results of this systematic literature review complement the results of Vines et al (2015), Asla, Williamson and Milles (2006) and Lundh (2016). Aging people and older adults seem to be of continuous interest to researchers, but the studies focus almost exclusively on the same area - health. This result suggests a similar deficit discourse of older adults like Vines et al (2015) discover in human computer interaction and it is a similar discourse that Lundh (2016) criticises about information behaviour research with children. Both age groups seem to be studied under an ageist viewpoint, linking their behaviour to their biological age. Few studies address the general information needs of older adults. The author is not suggesting that all research on health information needs is redundant. The findings of Williamson's research (1995) cited in Asla, Williamson and Milles (2006) of older adults having less information needs than others except in relation to health is still an important research finding. It is still true that biological aging means a higher probability of physical limitations and that online (health) information should be made more accessible. Nevertheless, the primary focus on one negative aspect of aging paints a homogeneous picture of older adults' information needs. Aging is a complex socio-cultural issue outside the context of information behaviour. Berger (2017) and Nelson (2011) have discussed the dealing with the negative persistent perspective on fragility, aging and older adults in western cultures. Their findings suggest that ageism is still a social problem, multi-faceted, tied in part to that culture's views of (or fears about) death and is institutionalized in the United States of America. A major part of the information behaviour research is done in North America; it is relatively safe to assume that these views on ageing are also present in European (research) culture.

Research in information behaviour is conducted by humans and with humans, hence there is a high likelihood that age-discriminatory ways of thinking permeate the way research is conducted and evaluated. The research field is not alone in this, but none of the cited papers critically discusses biological age as a basis for behaviour. This suggests there is little discussion of the resulting negative stereotypes of older adults through the focus on a specific research topic like health. The purpose of this literature review is to point to this ageist perspective in information behaviour research towards older adults.

Conclusion

This study examined what kind of research exists on aging and older adults in information behaviour and information seeking using a systematic literature review.

The results of the analysis reveal that research around age, aging, and older adults focuses strongly on (online) health information behaviour. 68% of 229 analysed publications see age or aging people under the lens of health information needs and health seeking behaviours. This is comprehensible as biological ageing is often accompanied by health challenges. At the same time, it shows how one-dimensional the information behaviour research is regarding this age group or aging. The findings of this analysis suggests that the research field should turn to topics that are more diverse like general information needs and online seeking behaviour of older adults. While it may be true that information needs shift towards health in old age, these are not the only needs that should be addressed in research in order to mitigate ageism in the research culture.

This continuous focus on the deficits of aging and older adults contributes to a homogenous, stereotypical image of this demographic. It is obvious that the field of information behaviour cannot and should not explore the socio-cultural aspects of aging to full extend. However, researchers who include age or older adults as a central aspect in their publications should address and discuss the potential ageist perspective in their own research.

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