



Review



Ageism and nursing students, past or reality?: A systematic review

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ABSTRACT

Objective: This systematic review aimed to summarise and update existing knowledge about ageism among nursing students through the following research question: what is the perception and attitudes of ageism among student nurses?

Design: A systematic review of longitudinal and cross-sectional studies of ageism in nursing students was carried out.

Data sources: The literature search was conducted in the scientific databases Pubmed and Scopus in February 2021.

Review methods: After the screening process, 22 studies meeting the selection criteria were selected; 8 more were identified after manually searching the selected paper's reference lists. A total of 30 studies were included in the review. The JBI Critical Appraisal Checklists for Analytical Cross-Sectional studies and for Cohort Studies were used to appraise the articles' quality.

Results: There was large variability in the manifestation of ageism among student nurses, as well as in the instruments used for assessment. Most of the articles analysed attitudes towards old age, the majority of which were positive. Being a female student, being on the final year of study and having regular contact or cohabitation with an older adult were three of the main determinants in the expression of positive attitudes towards the elderly.

Conclusions: Our findings suggest that student nurses generally have positive attitudes towards old age, although ageist beliefs and discriminatory behaviours were identified and should be studied in greater depth. Training programs for future care professionals have a responsibility to educate from a non-stereotypical perspective based on current societal needs.

1. Introduction

Population aging is a reality growing at an unprecedented rate, mainly as a consequence of a decrease in birth rate and a significant increase in longevity (Abreu and Caldevilla, 2015; Kaplan Serin and Tülüce, 2021). Aging is a process of psychological changes that involves

challenges that affect those who experience it in all their dimensions, as well as the people around them (Kaplan Serin and Tülüce, 2021). In turn, ageism is defined as age discrimination against older people, expressed through negative attitudes and behaviour towards them, and is the third most frequent form of discrimination worldwide after racism and sexism (Darling et al., 2018). The manifestations of ageism include

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avoidance of contact with older people or marginalisation in access to housing, the labour market or certain public services. It is associated with increased anxiety, depression, and suicidal ideation in those who experience it, to the detriment of their quality of life (Ha and Kim, 2021; López-Hernández et al., 2021).

According to some authors (Ridgway et al., 2018), aging can be seen as “a condition to be avoided” because of the negative view of this stage by some in society. An increasingly high-performance oriented society, as well as the perception of older people as being economically inactive and experiencing poor health, have favoured the spread of discrimination on the basis of age among different social strata, including health professionals. According to research, ageism is more frequently suffered in social and sexual life, family, and healthcare services (Kaplan Serin and Tülüçe, 2021). In this context, health consequences for older people can manifest as omissions in care or as the commission of acts that unintentionally harm them (Heckemann et al., 2021; Jester et al., 2021). This phenomenon, which exerts a direct impact on the health care system and healthcare professionals, generates an unknown demand for healthcare (Alquwez et al., 2018; Faronbi et al., 2017).

Nursing professionals have an essential role in elderly care, as the knowledge, behaviour, and attitudes they display towards their patients represent the defining elements of the quality of care provided. However, nurses' values and belief systems may influence their perception of aging (Alquwez et al., 2018; Kaplan Serin and Tülüçe, 2021), and thus also the quality of their care. Previous studies have analysed both qualified and student nurses' perception and attitudes towards aging and the elderly, obtaining different results depending on the place, culture, instrument used and the time of data collection (Bahadır-Yilmaz, 2018; Lambrinou et al., 2009; Rababa et al., 2021; Schüttengruber et al., 2021; Slevin, 1991). Interestingly, a common denominator in these studies is the significant percentage of individuals with little or no interest in a career in elderly care or gerontology (Bahadır-Yilmaz, 2018; Galzignato et al., 2021; King et al., 2013; Özdemir and Bilgili, 2016).

The analysis of the factors influencing the nurses' level of ageism has also been a recurrent topic. Certain socio-demographic variables such as being a woman, being on their final year of study, having had regular contact with the elderly and/or having previous experience interacting with this group have been associated with lower levels of ageism (Bahadır-Yilmaz, 2018; Kydd et al., 2014; Schüttengruber et al., 2021). We argue that education on aging (and ageism) is effective as a tool for improving the quality of elderly care, providing a non-stereotypical view of old age that allows care to be adapted to patients' real needs (Usta et al., 2012; Yao et al., 2021).

2. The review

2.1. Research aim

This systematic review aimed to summarise and update the existing knowledge about ageism among nursing students. We used the PEO question formatting tool to frame the research question as follows: (P) opulation: student nurses, (E)xposure: Ageism, (O)utcome: Perception and attitudes of ageism. Subsequently, the research question was formulated as follows: what is the perception and attitudes of ageism among student nurses? We were also interested in the measurement of ageism among student nurses. Therefore, a secondary research question was formulated as follows: how can the ageism manifested by nursing students be determined?

2.2. Design

We carried out a systematic review of the literature. The studies were selected by two researchers independently and their inclusion was decided by consensus. We followed the PRISMA 2020 recommendations for the reporting of our findings. This review was registered in Prospero, whose corresponding ID is CRD42021249821.

2.3. Search strategy

A preliminary search of the scientific literature was conducted in Trip Database, Science Direct and The Cochrane Library to identify any previous systematic reviews on the same topic. We identified a single review on this topic, namely “Nursing students' attitudes towards people who are aged” (Hovey et al., 2017), which included studies from Canada and the United States only, about the attitudes of nursing students towards older people. The authors concluded that both theoretical and practice learning about elderly care can improve the attitudes of student nurses towards older adults. We did find other reviews on similar topics, but their focus was not ageism, but nursing students' experiences during their clinical placements in nursing homes (Cooke et al., 2021), the impact of educational interventions on the students' attitude towards the elderly (Martínez-Arnau et al., 2022), and student nurses' knowledge, attitudes, and intention to work with the elderly (Yan et al., 2022). Thus, to our knowledge, apart from Hovey et al.'s integrative review, which was circumscribed to North America, there has been no previous review of the literature published on this topic.

The literature search was conducted in the scientific databases Pubmed and Scopus in February 2021. Two key term combinations were used to identify relevant scientific articles. The first combination (“Students, Nursing”[Mesh] OR “Students, Nursing” OR “Nursing Students”) AND (“Ageism”[Mesh] OR ageism)) resulted in a total of 37 studies in Pubmed and 48 in Scopus.

In an attempt to broaden the search strategy, a second combination was used (“Students, Nursing”[Mesh] OR “Students, Nursing” OR “Nursing Students”) AND “Attitudes” [Mesh] OR attitudes AND “Aging” [Mesh] OR aging)), resulting in 9 studies in Pubmed and 53 in Scopus.

As a result of both searches, 147 results were obtained, of which 34 had to be eliminated due to duplication. We reviewed the title and abstract of the remaining 113 studies and 22 more studies were eliminated as they were not related to the study topic.

Subsequently, we read the full text of the 91 remaining studies and excluded 69 due to not meeting this review's selection criteria. The selection criteria were designed based on this review's research main and secondary research questions (Stern et al., 2014). We included both cross-sectional and longitudinal studies that analysed ageism and manifestations of ageism, such as attitudes towards old age, ageist beliefs, discriminatory behaviour towards older people, perception of old age and negative stereotypes towards older adults. In addition, we included studies that measured ageism in student nurses both as a whole or a partial sample. Studies of an informative nature, academic papers, research projects, expert opinions and letters to the editor were excluded. Additionally, we excluded papers published in languages other than English or Spanish, research with unpublished data, and studies that did not measure ageism in student nurses. We did not limit the search by year of publication; the earliest study retrieved was published in 1991. Twenty-two studies were included in the review at this stage. However, after manually searching the selected papers' reference lists, we included 8 more studies. Finally, 30 studies were included in this systematic review of the literature (Fig. 1).

Two researchers assessed the quality of the selected studies separately. The JBI Critical Appraisal Checklists for Analytical Cross-Sectional studies and for Cohort Studies were used for this purpose (Tables 1 and 2). The cross-sectional studies demonstrated high-quality methodology, with only 1 article scoring 3 out of 8 points (Henderson et al., 2008). The quality of the longitudinal studies was more uneven, with only 2 studies scoring 6 or more points out of 11 (Hovey et al., 2018; Ridgway et al., 2018).

The heterogeneity of the ageist manifestations analysed, and the variation in the instruments used for it, made further meta-analysis inappropriate.

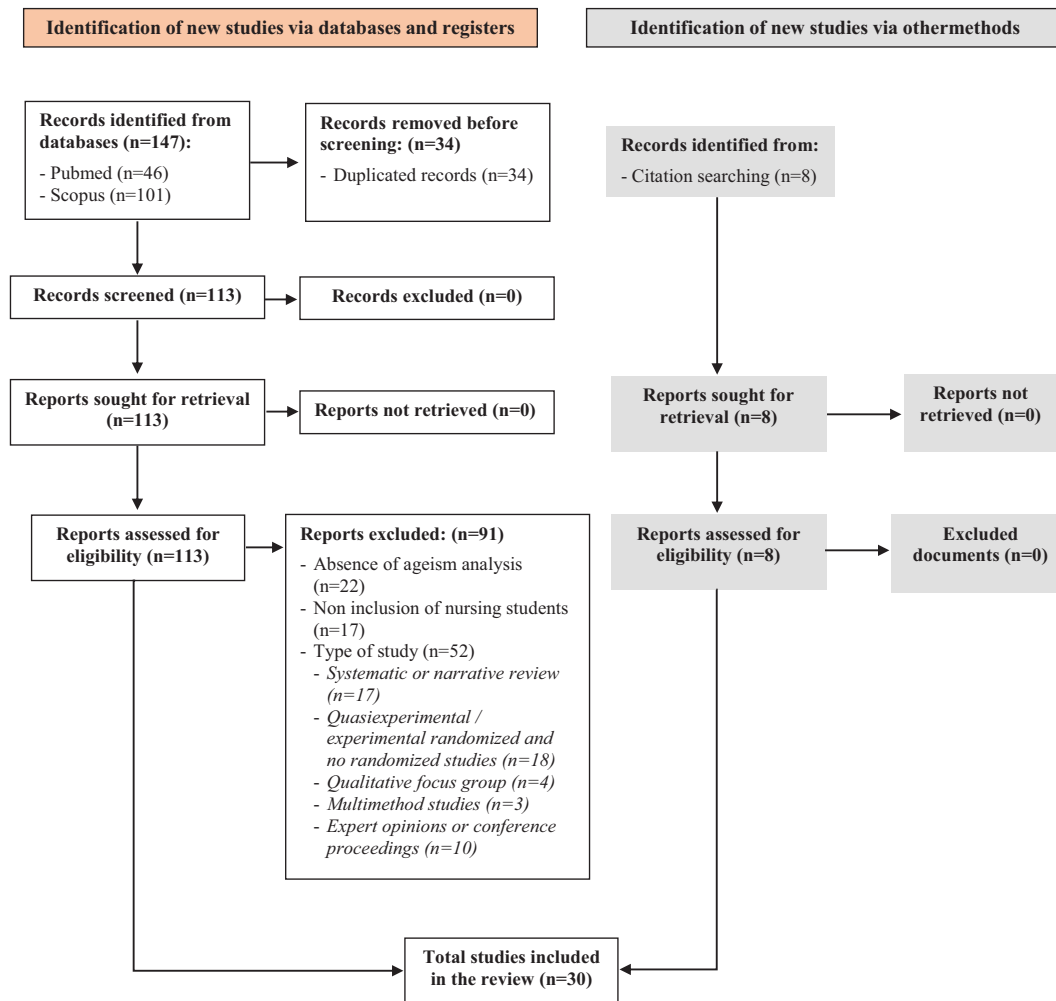


Fig. 1. Flowchart of the review process.

3. Results

The main characteristics of the 30 studies included in this review are presented in Table 3.

Year of publication ranged from 1991 to 2021, with 2021 being the most repeated year. All the papers selected were written in English. Only five studies were longitudinal (Bleijenberg, 2012; Gould et al., 2012; Hovey et al., 2018; King et al., 2013; Ridgway et al., 2018), whilst the remaining 25 had a cross-sectional design. Samples sizes ranged from 73 (Hovey et al., 2018) to 1587 participants (Kydd et al., 2014), with the latter being a multicentric, international study (Scotland, Sweden and the USA). All the studies analysed ageism in student nurses, although 6 papers also included other groups, namely social work students (Gewirtz-Meydan et al., 2018), other health professions students (Jester et al., 2021), qualified nurses, medical and humanities students (Schüttengruber et al., 2021), high school students and qualified nurses (Slevin, 1991) and students of physiotherapy, dentistry, occupational therapy, social work and medicine (Zambrini et al., 2008).

Almost a third were carried out in Middle Eastern countries such as Turkey, Saudi Arabia, Jordan and Israel (Alquwez et al., 2018; Bahadır-Yılmaz, 2018; Darling et al., 2018; Gewirtz-Meydan et al., 2018; Hweidi and Al-Obeisat, 2006; Kaplan Serin and Tülüçe, 2021; Özdemir and Bilgili, 2016; Rababa et al., 2021; Usta et al., 2012). However, we included studies from all over the world.

Only three studies did not describe discriminatory attitudes towards old age in general (Frost et al., 2016; Gewirtz-Meydan et al., 2018; Ha and Kim, 2021).

Some studies, such as those carried out by Bleijenberg (2012) and Lambrinou et al. (2009), analysed discriminatory attitudes towards the elderly and investigated the participants' knowledge about older people. Likewise, the work of Rababa et al. (2021) also studied attitudes towards older people, knowledge about old age and ageist behaviour. Other aspects analysed included ageist beliefs (Gewirtz-Meydan et al., 2018) and discriminatory behaviour towards older adults (Frost et al., 2016).

Nine different instruments were used to assess ageism. Kogan's Attitudes Toward Older People Scale (KAOP) was the most frequently used tool, appearing in 12 out of the 30 studies analysed (Alquwez et al., 2018; Bleijenberg, 2012; Darling et al., 2018; Faronbi et al., 2017; Galzignato et al., 2021; Holroyd et al., 2009; Hweidi and Al-Obeisat, 2006; King et al., 2013; Lambrinou et al., 2009; López-Hernández et al., 2021; Ridgway et al., 2018; Yao et al., 2021). The Facts on Aging Quiz (Bleijenberg, 2012; Lambrinou et al., 2009; Rababa et al., 2021; Yao et al., 2021) was used to assess knowledge about old age; the Relating to Older People Examination Survey (ROPE) was used to measure ageist behaviours (Frost et al., 2016; Rababa et al., 2021); and the Fraboni Scale of Ageism was used to assess ageist beliefs (Gewirtz-Meydan et al., 2018; Ha and Kim, 2021; Rababa et al., 2021) and attitudes (Rababa et al., 2021).

Regarding the ageist manifestations analysed, 17 out of the 27 studies that addressed attitudes towards old age, identified positive or "slightly" positive attitudes (Alquwez et al., 2018; Bahadır-Yılmaz, 2018; Darling et al., 2018; Faronbi et al., 2017; Galzignato et al., 2021; Henderson et al., 2008; Hovey et al., 2018; Hweidi and Al-Obeisat, 2006; King et al., 2013; Kydd et al., 2014; Lambrinou et al., 2009;

Table 1

Quality assessment of cross-sectional studies (deeper blue means higher scores). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Author/s	Clear sample inclusion criteria	Clear description of subjects and environment	Valid and reliable exposure measurement	Objective and standard criteria for measurement	Identification of confounding factors	Strategies for dealing with confounding factors	Valid and reliable measurement of results	Statistical analysis of the results	Total score
Abreu and Caldevilla	UNCLEAR (first-year students)	YES	YES	YES	NO	NO	YES	YES	5/8
Alquwez et al.	NOT APPLICABLE (no sample, all 2nd, 3rd and 4th year population)	YES	YES	YES	NO	NO	YES	YES	5/8
Bahadir-Yilmaz	NOT APPLICABLE (no sample, all 2nd, 3rd and 4th year population)	YES	YES	YES	YES	NO	YES	YES	6/8
Darling et al.	NOT APPLICABLE (non-sample, whole population)	YES	YES	YES	NO	NO	YES	YES	5/8
Faronbi et al.	YES	YES	YES	YES	NO	NO	YES	YES	6/8
Frost et al.	NOT APPLICABLE (non-sample, whole population of 1st year)	YES	YES	YES	NO	NO	YES	YES	5/8
Galzignato et al.	NOT APPLICABLE (All nursing students from all courses who chose to participate in the programme).	YES	YES	YES	NO	NO	YES	YES	5/8
Gewirtz-Meydan et al.	UNCLEAR (convenience sampling)	YES	YES	YES	YES	NO	YES	YES	6/8
Ha and Kim	UNCLEAR (convenience sampling)	YES	YES	YES	YES	NO	YES	YES	6/8
Heckemann et al.	UNCLEAR (convenience sampling)	YES	YES	YES	YES	NO	YES	YES	6/8
Henderson et al.	NOT APPLICABLE (non-sample, whole population)	YES	UNCLEAR	UNCLEAR	NO	NO	YES	YES	3/8
Holroyd et al.	NOT APPLICABLE (non-sample, whole population)	YES	YES	YES	YES	NO	YES	YES	6/8

Hweidi and Al-Obeisat	UNCLEAR (convenience sampling)	YES	YES	YES	NO	NO	YES	YES	5/8
Jester et al.	UNCLEAR	UNCLEAR	YES	YES	YES	NO	YES	YES	5/8
Kaplan Serin and Tülüce	NOT APPLICABLE (no sample, all 2nd, 3rd and 4th year population)	YES	YES	YES	NO	NO	YES	YES	5/8
Kydd et al.	YES (convenience sampling)	YES	YES	YES	NO	NO	YES	YES	6/8
Lambrinou et al.	NOT APPLICABLE (non-sample, whole population)	YES	YES	YES	NO	NO	YES	YES	5/8
López-Hernández et al.	YES	YES	YES	YES	NO	NO	YES	YES	6/8
Özdemir and Bilgili	UNCLEAR (sample of 3rd and 4th year students)	YES	YES	YES	NO	NO	YES	YES	5/8
Rababa et al.	YES	UNCLEAR	YES	YES	NO	NO	YES	YES	5/8
Schüttengruber et al.	UNCLEAR (convenience sampling)	YES	YES	YES	NO	NO	YES	YES	5/8
Slevin	YES (convenience sampling)	YES	YES	YES	NO	NO	YES	YES	6/8
Usta et al.	NOT APPLICABLE (non-sample, whole population)	YES	YES	YES	NO	NO	YES	YES	6/8
Yao et al.	YES	UNCLEAR	YES	YES	NO	NO	YES	YES	5/8
Zambrini et al.	NOT APPLICABLE (non-sample, whole population)	YES	YES	YES	YES	NO	YES	YES	6/8

López-Hernández et al., 2021; Özdemir and Bilgili, 2016; Ridgway et al., 2018; Usta et al., 2012; Yao et al., 2021; Zambrini et al., 2008). One study described moderately ageist attitudes (Kaplan Serin and Tülüce, 2021); Bleijenberg (2012) reported moderate-slightly positive or neutral attitudes, whilst Heckemann et al. (2021) concluded that Swedish and Austrian student nurses did not have extremely positive or negative attitudes towards older adults (particularly those aged 80 years and over). Finally, Jester et al. (2021) suggested that students nurses' attitudes about old age were more negative than those of graduate nurses.

Six articles emphasised the negative nature of the students' attitudes towards the elderly (Abreu and Caldevilla, 2015; Gould et al., 2012; Holroyd et al., 2009; Rababa et al., 2021; Schüttengruber et al., 2021;

Slevin, 1991), with one of them describing ageist attitudes and behaviours in their sample.

Ageism was found to be neutral in the Ha and Kim (2021) study, whilst a high prevalence of discriminatory behaviours towards old age was found by Frost et al. (2016) and a moderate level of ageist beliefs was observed in the work of Gewirtz-Meydan et al. (2018).

Whilst both year of study and gender were discussed in most of the studies analysed, the variable gender was not analysed in 14 papers (Bleijenberg, 2012; Frost et al., 2016; Galzignato et al., 2021; Gould et al., 2012; Ha and Kim, 2021; Heckemann et al., 2021; Henderson et al., 2008; Jester et al., 2021; King et al., 2013; Kydd et al., 2014; Özdemir and Bilgili, 2016; Schüttengruber et al., 2021; Slevin, 1991;

Table 2

Quality assessment of longitudinal studies (deeper blue means higher scores). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Author/s	Similar groups	Similar E.M.	Valid and reliable E.M.	I.C.F.	T.C.F.	Participants free of result at the start	Valid and reliable P.M.	Informed and sufficient follow-up time	Complete tracking or scanning of losses	Strategies for comprehensive monitoring	Appropriate statistical analysis	Total score
Bleijenberg	N.A.	NA.	YES	NO	NO	N.A.	YES	YES	NO	NO	YES	4/11
Gould et al.	NO	YES	YES	NO	NO	N.A.	YES	YES	NO	NO	YES	5/11
Hovey et al.	YES	YES	YES	NO	NO	N.A.	YES	YES	YES	NO	YES	7/11
King et al.	N.A.	N.A.	YES	YES	NO	N.A.	YES	YES	NO	NO	YES	5/11
Ridgway et al.	N.A.	N.A.	YES	YES	YES	N.A.	YES	YES	NO	NO	YES	6/11

Similar E.M.: similar exposure measurement; Valid and reliable E.M.: valid and reliable exposure measurement; I.C.F.: identification of confounding factors; T.C.F.: Tackling confounding factors; Valid and reliable P.M.: valid and reliable performance measurement; N.A.: no applicable.

Yao et al., 2021). Similarly, 12 articles did not analyse the impact of academic year of study on their findings (Abreu and Caldevilla, 2015; Frost et al., 2016; Gewirtz-Meydan et al., 2018; Heckemann et al., 2021; Henderson et al., 2008; Hovey et al., 2018; Kydd et al., 2014; Ridgway et al., 2018; Schüttengruber et al., 2021; Slevin, 1991; Yao et al., 2021; Zambrini et al., 2008).

A total of 16 studies analysed differences between male and female students' ageist attitudes. Seven studies (Gewirtz-Meydan et al., 2018; Kaplan Serin and Tülüce, 2021; Lambrinou et al., 2009; López-Hernández et al., 2021; Ridgway et al., 2018; Usta et al., 2012; Zambrini et al., 2008) concluded that women presented more positive and less ageist attitudes than men, with only one study describing the opposite (Hweidi and Al-Obeisat, 2006); no gender differences were found in the remaining studies (Abreu and Caldevilla, 2015; Alquwez et al., 2018; Bahadır-Yilmaz, 2018; Darling et al., 2018; Faronbi et al., 2017; Holroyd et al., 2009; Hovey et al., 2018; Rababa et al., 2021).

Concerning the academic year, only seven studies included participants in all the years of study (Darling et al., 2018; Galzignato et al., 2021; Ha and Kim, 2021; Holroyd et al., 2009; Hweidi and Al-Obeisat, 2006; Kydd et al., 2014; Usta et al., 2012). Six chose students at the beginning of their studies (Abreu and Caldevilla, 2015; Frost et al., 2016; Gewirtz-Meydan et al., 2018; Henderson et al., 2008; Hovey et al., 2018; Slevin, 1991) and two papers included students who were in their final year (Zambrini et al., 2008; Jester et al., 2021).

The rest of the studies made different combinations, namely three studies included students in their first and final years (Lambrinou et al., 2009; Nienke Bleijenberg, 2012; King et al., 2013), Özdemir and Bilgili (2016), Heckemann et al., 2021, and Schüttengruber et al. (2021) recruited third and fourth-year students, Gould et al. (2012) compared students from three academic years and two different study programs, and López-Hernández et al. (2021) excluded fourth year students, whilst Kaplan Serin and Tülüce (2021), Alquwez et al. (2018) and Bahadır-Yilmaz (2018) excluded first years. Faronbi et al. (2017) included students who were on clinical placement and one longitudinal study followed-up students throughout their study program (Ridgway et al., 2018). In other studies, the academic year of the participants was not specified (Yao et al., 2021) or they were classified as juniors and seniors (Rababa et al., 2021).

Regarding ageism according to the participant's academic year of study, 9 studies concluded that the more advanced the year of study, the

more positive the students' attitude towards ageism (Bahadır-Yilmaz, 2018; Galzignato et al., 2021; Gould et al., 2012; Hweidi and Al-Obeisat, 2006; Kaplan Serin and Tülüce, 2021; King et al., 2013; Lambrinou et al., 2009; Özdemir and Bilgili, 2016; Usta et al., 2012). However, the results were not consistent; no significant differences were found in 7 of the studies (Alquwez et al., 2018; Darling et al., 2018; Faronbi et al., 2017; Holroyd et al., 2009; Jester et al., 2021; López-Hernández et al., 2021; Rababa et al., 2021), and some authors (Ha and Kim, 2021) concluded that third year students had a higher level of ageism than first year students, but did not analyse students in the rest of the courses. For his part, Bleijenberg (2012) found that student nurses who were in their final year had more positive attitudes towards the elderly than their junior colleagues with the KAOP scale, but found no significant differences with the AAS instrument in the same sample.

Some studies analysed the influence of other variables on ageism, such as the students' empathy (Kaplan Serin and Tülüce, 2021; Yao et al., 2021), pre-existing knowledge about the elderly (Rababa et al., 2021), attitudes towards sexuality in older adults (Gewirtz-Meydan et al., 2018) and professional values such as professionalism, caring and trust (Bahadır-Yilmaz, 2018). Others measured alternative factors such as quality and frequency of contact with older people, anxiety about aging (Ha and Kim, 2021), the students' personality traits, including being trusting or reserved, pre-existing knowledge about ageism, personal contact with older adults (Schüttengruber et al., 2021), and intention to work with this age group (Galzignato et al., 2021).

4. Discussion

This literature review has analysed the perception and attitudes of student nurses towards the elderly, and the level of ageism in this population.

The variability of the instruments used to measure ageism, as well as the different manifestations analysed, may generate an information bias that makes it difficult to amalgamate the results. Most of the articles analysed confirmed that student nurses generally have positive or slightly positive attitudes towards old age (Alquwez et al., 2018; Bahadır-Yilmaz, 2018; Darling et al., 2018; Faronbi et al., 2017; Galzignato et al., 2021; Henderson et al., 2008; Hovey et al., 2018; Hweidi and Al-Obeisat, 2006; King et al., 2013; Kydd et al., 2014; Lambrinou et al., 2009; López-Hernández et al., 2021; Özdemir and Bilgili, 2016; Ridgway

Table 3
Characteristics of the articles included in the review.

Author/s	Year	Language	Design	Sample size	Participants	Place of study	Manifestation of ageism	Analysis tool	Differences according to gender	Differences according to academic year
Abreu and Caldevilla	2015	English	Cross-sectional	140	First-year nursing students	Porto (Portugal)	Negative attitudes towards old age	The Inventory of Attitudes towards Aging (Portuguese version)	No significant differences	Not studied (only first- year students)
Alquwez et al.	2018	English	Cross-sectional	164	2nd, 3rd and 4th year nursing students	Saudi Arabia	Slightly positive attitudes towards old age	KAOP-A Scale	No differences	No differences
Bahadir- Yilmaz	2018	English	Cross-sectional	326	2nd, 3rd and 4th year nursing students	Turkey	Positive attitudes towards old age	Ageism Attitude Scale (AAS)	No differences	The higher the course, the more positive attitudes
Bleijenberg	2012	English	Longitudinal	194	1st and 4th year nursing students	Netherlands	Moderate level of knowledge about old age; neutral attitude towards old age (ASD) and moderate (slightly positive) attitudes towards old age (KAOP)	- Facts on aging quiz (Palmore) - The Aging Semantic Differential (ASD) - The KAOP scale	Not studied	- The higher the course, the more positive attitudes with KAOP - No - Differences with ASD
Darling et al.	2017	English	Cross-sectional	468	1st, 2nd, 3rd and 4th year nursing students	Turkey	Slightly positive attitudes towards old age	KAOP scale (Turkish version)	No differences	No differences
Faronbi et al.	2017	English	Cross-sectional	280	Nursing students in their clinical practice years (3rd, 4th and 5th or 2nd and 3rd according to program)	Nigeria	Positive attitudes towards old age, positive perceptions of old age and non-belief in negative stereotypes	- The KAOP scale - Students' perception of working with older people - Facts on Aging Quizz-2	No differences	No differences
Frost et al.	2016	English	Cross-sectional	185	First-year nursing students	Australia	High prevalence of discriminatory behaviour	Relating to Older People Evaluation (ROPE) survey	Not studied	Not studied (only first- year students)
Galzignato et al.	2021	English	Cross-sectional	383	1st, 2nd, 3rd and 4th year nursing students	Venice (Italy)	Relatively positive attitude towards older people	Kogan Attitudes Old People Scale (KAOP)	Not studied	The higher the course, the more positive attitudes
Gewirtz-Meydan et al.	2018	English	Cross-sectional	285	First-year nursing and social work students	Israel	Moderate level of ageist beliefs	Fraboni Scale of Ageism (adapted to Israeli society)	Slightly higher ageist beliefs in men than in women	Not studied (only first- year students)
Gould et al.	2012	English	Longitudinal	170	Nursing students in 1st year of a new curriculum and 2nd and 4th year of the old curriculum	Canada	Negative attitudes towards "care" in old age	Survey adaptation of the Medical student survey by Le Couteur	Not studied	The higher the course, the more positive attitudes
Ha and Kim	2021	English	Cross-sectional	238	1st, 2nd, 3rd and 4th year nursing students in two Nursing Colleges in South Korea	South Korea	Neutral nursing student's ageism towards older adults	Fraboni Scale of Ageism (Korean version)	Not studied	Third year students had a higher score of ageism than first year students
Heckemann et al.	2021	English	Cross-sectional	358	222 Swedish students in 6th and 8th semester and	Sweden and Austria	No extremely positive or negative attitudes	Aging Semantic Differential (ASD) (German and	Not studied	Not studied

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Table 3 (continued)

Author/s	Year	Language	Design	Sample size	Participants	Place of study	Manifestation of ageism	Analysis tool	Differences according to gender	Differences according to academic year
					136 Austrian students from one course per semester.		towards oldest-old adults. Swedish students' attitudes were more favourable	Swedish language version)		
Henderson et al.	2008	English	Cross-sectional	262	First-year nursing students	Australia	Positive attitudes towards old age	The Nursing Students Attitudes towards the elderly questionnaire KAOP scale	Not studied	Not studied (only first- year students)
Holroyd et al.	2009	English	Cross-sectional	197	1st, 2nd, 3rd and 4th year nursing students	Canada	Attitudes towards old age "closer to negative"		No differences	No differences
Hovey et al.	2018	Inglés	Longitudinal	73	First-year nursing students	United States	Positive attitudes towards old age	Refined Aging Semantic Differential Scale	No differences	Not studied (only first- year students)
Hweidi and Al-Obeisat	2005	English	Cross-sectional	250	1st, 2nd, 3rd and 4th year nursing students	Jordan	Slightly positive attitudes towards old age	KAOP scale	Men more positive attitudes towards old age	The higher the course, the more positive attitudes
Jester et al.	2021	English	Cross-sectional	1156	1156 health professions students over six academic semesters.	South Florida (EEUU)	It depends on the profession. Physical therapy and graduate nursing students reported more positive attitudes in compared to the rest.	The Image of Aging scale	Not studied	No differences between students of different semesters (not specified academic year).
Kaplan Serin and Tülüce	2020	English	Cross-sectional	229	2nd, 3rd and 4th year nursing students	Turkey	Moderate level of ageist attitudes	Ageism Attitude Scale (AAS)	Women more positive attitudes than men	More positive attitudes in higher grades
King et al.	2013	English	Longitudinal	80	1st and 4th year nursing students measured at different points in time	Wisconsin-Madison (United States)	Positive attitudes towards old age	KAOP scale	Not studied	The higher the course, the more positive attitudes
Kydd et al.	2014	English	Cross-sectional	1587	Nursing students from all courses and nurses	Scotland, Sweden and United States (Florida)	Positive attitudes towards old age	Multifactorial Attitudes Questionnaire (MAQ)	Not studied	Not studied
Lambrinou et al.	2009	English	Cross-sectional	418	First and final year nursing students (Faculty of Nursing and TEI Department of Nursing).	Greece	Positive attitudes towards old age and average knowledge about old age	- Facts on aging quiz 1 (Palmore) - KAOP scale	- Women more positive attitudes than men (in both) - TEI men more knowledge about old age	- The higher the course, the more positive attitudes (in both) - No - Differences in knowledge about old age (in both)
López-Hernández et al.	2021	English	Cross-sectional	337	1st, 2nd, 3rd and 4th year nursing students	Valencia (Spain)	Positive attitudes towards the elderly.	Kogan's Attitude Toward Old People Scale	Women have a more positive attitude than men	No statistically significant differences between the courses, although enrollment in more advanced nursing courses increased positive attitudes.
Özdemir and Bilgili	2016	English	Cross-sectional	495		Ankara (Turkey)			Not studied	The higher the course, the

(continued on next page)

Table 3 (continued)

Author/s	Year	Language	Design	Sample size	Participants	Place of study	Manifestation of ageism	Analysis tool	Differences according to gender	Differences according to academic year
Rababa et al.	2021	English	Cross-sectional	290	3rd and 4th year nursing students Senior and junior nursing students	Jordan	Positive attitudes towards old age The majority of nursing students hold negative attitudes, and expressed ageist behaviours towards older adults	Ageism Attitude Scale (AAS) - The Relating to Older People Evaluation (ROPE) - The Fraboni Scale of Ageism	No significant differences	more positive attitudes No significant differences
Ridgway et al.	2018	English	Longitudinal	307	First-year nursing students measured throughout their studies	United Kingdom	Positive attitudes towards old age	- KAOP scale - Drawing of a 75 year old person - Thurstone scale - Photo-elicitation	Women more positive attitudes than men	Not studied
Schüttengruber et al.	2021	English	Cross-sectional	225	Austrian nursing, medicine and humanities students	Austria	Slight general tendency to hold negative attitudes towards people with small differences according to the profession	German version of The Aging Semantic Differential (ASD)	Not studied	Not studied (only 3rd and 4th year students)
Slevin	1991	English	Cross-sectional	321	High school students, first year nursing students and nurses	Northern Ireland	Negative attitudes towards old age	The Attitudes Towards the Elderly (ATE)	Not studied	Not studied
Usta et al.	2012	English	Cross-sectional	145	1st, 2nd, 3rd and 4th year nursing students	Turkey	Positive attitudes towards old age	Ageism Attitude Scale (AAS)	Women more positive attitudes than men	The higher the course, the more positive attitudes
Yao et al.	2021	English	Cross-sectional	622	Nursing students. Academic years not specified	Henan Province (China)	Relatively positive attitudes towards older people	The Chinese version of the Kogan's Attitude Toward Older People Scale (C- KAOP)	Not studied	Not studied
Zambrini et al.	2008	English	Cross-sectional	472	Health students in their final year.	Salamanca (Spain)	Positive attitudes towards old age, although nursing is the least positive group.	Aging Semantic Differential Spanish version (ASD)	Women more positive attitudes than men	Not studied (only final year students)

et al., 2018; Usta et al., 2012; Yao et al., 2021; Zambrini et al., 2008). However, some student nurses were found to have certain ageist beliefs, negative attitudes and discriminatory behaviours towards old age, which should be studied in more detail (Abreu and Caldevilla, 2015; Frost et al., 2016; Gould et al., 2012; Holroyd et al., 2009; Rababa et al., 2021; Schüttengruber et al., 2021; Slevin, 1991).

Regarding the students' year of study, some authors (Bahadır-Yilmaz, 2018; Bleijenberg, 2012; Galzignato et al., 2021; Gould et al., 2012; Hweidi and Al-Obeisat, 2006; King et al., 2013; Lambrinou et al., 2009; Özdemir and Bilgili, 2016; Usta et al., 2012) suggested that student nurses who were in a more advanced stage in their studies had a lower level of ageism than their junior counterparts. This may be due to the effect of both theoretical and practical learning on the students' perception of old age.

Other factors were also found to have a positive influence on attitudes towards old age, including: rural environment and extended family structure (Alquwez et al., 2018); regular cohabitation with the elderly, close contact with one's own grandparents, elderly people or

being an acquaintance or family member of an older adult (Alquwez et al., 2018; Bahadır-Yilmaz, 2018; Heckemann et al., 2021; López-Hernández et al., 2021; Özdemir and Bilgili, 2016; Rababa et al., 2021; Ridgway et al., 2018; Schüttengruber et al., 2021; Usta et al., 2012; Yao et al., 2021); high quality and frequency of contact with them (Ha and Kim, 2021) and the intention or willingness to work with this group (Darling et al., 2018; Galzignato et al., 2021; Ha and Kim, 2021; Hweidi and Al-Obeisat, 2006; Jester et al., 2021; López-Hernández et al., 2021; Özdemir and Bilgili, 2016; Ridgway et al., 2018).

Finally, a minority of studies identified other factors influencing the student nurses' perception of ageism, namely the amount of interaction with the elderly during clinical practice (Özdemir and Bilgili, 2016), completion of training courses in the field (King et al., 2013; Usta et al., 2012), studying a subject on "Caring for the elderly" (López-Hernández et al., 2021); intention to specialise in elderly care (Zambrini et al., 2008), the willingness to live with older relatives after forming one's family (Usta et al., 2012), previous work experience with this group (Henderson et al., 2008), caring or having cared for older adults

(Heckemann et al., 2021), being familiar with the term ageism (Heckemann et al., 2021; Schüttengruber et al., 2021), having less anxiety about aging (Ha and Kim, 2021; Heckemann et al., 2021), displaying increased knowledge about old age (Rababa et al., 2021; Yao et al., 2021), and presenting a high level of empathy according to the Interpersonal Reactivity Index (Yao et al., 2021).

Participants' age, although a predictor of more positive attitudes in many studies (Alquwez et al., 2018; Ha and Kim, 2021; Holroyd et al., 2009; Hweidi and Al-Obeisat, 2006; Lambrinou et al., 2009; Özdemir and Bilgili, 2016), represented a more controversial element, as it did not generate a uniform impact and it was difficult to separate its effect from the academic year, as both variables grow in the same direction.

4.1. Strengths and limitations

Certain limitations should be considered. This systematic review has excluded studies in a language other than English or Spanish, therefore, a possible language bias could have been introduced. One-third of the studies were developed in Eastern countries, whose value and belief system could have influenced the results, as the authors themselves point out in some cases. Also, the studies included have shown more heterogeneity than it is desirable for a meta-analysis, which has prevented us from stating more solid conclusions.

5. Conclusions

Despite its limitations, this review confirms that student nurses do tend to have positive attitudes towards old age. However, some of the studies included in this review did identify ageist manifestations in this population, which should be analysed in greater detail.

Regular contact or cohabitation with an older adult is one of the main determinants in the expression of positive attitudes towards the elderly, which underlines the need to integrate intergenerational contact as a differential element in the training of future healthcare professionals.

Education and training in elderly care is effective to challenge stereotypes related to the elderly, as more senior student nurses often have a more positive view of old age than junior students. Nursing study programs should integrate more realistic and stimulating view of elderly care. It is of paramount importance that student nurses become qualified nursing professionals who have not only the willingness, but also the knowledge, skills, attitudes and values-based competence to offer high quality care for an increasingly aging society.

Ethical issues

As the research did not involve interventions over human beings, an Ethics Committee approval was not required. The authors declare no conflict of interest, and the research received no external funding.

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Declaration of competing interest

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