

**DIFFERENCES AND SIMILARITIES OF  
INTERVENTIONS PROMOTING  
QUALITY OF LIFE, WELL-BEING, AND  
COMFORT IN LONG-TERM CARE RESIDENTS:  
A SYSTEMATIC LITERATURE REVIEW**

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### **Abstract**

Quality of life (QoL), well-being, and comfort are frequent outcomes of contemporary interventions targeting long-term care residents. These constructs share conceptual features but also have distinguishing characteristics. This systematic literature review investigated whether conceptual differences and similarities amongst these constructs translate into differences and similarities between interventions. Data was retrieved from the databases Scopus, Web of Science, and PubMed. A publication was included when an intervention aimed to promote either (HR)QoL, well-being, or comfort in long-term care residents, and was tested in a randomised controlled trial. Interventions were compared analysing three variables—their targeted construct, their content, and their impact on the targeted construct (i.e. effectiveness). The Cochrane Collaboration Risk of Bias Tool (CCRB) was used to assess the quality of studies. Searching identified 1716 articles, of which 28 were included. Most interventions targeted QoL ( $n = 19$ ), followed by health-related QoL ( $n = 3$ ), and the combination of well-being and QoL ( $n = 3$ ). Two studies aimed to enhance comfort and one well-being. The content of interventions targeting QoL appears to be more diverse compared to the other constructs. Notwithstanding, few interventions demonstrated a proper alignment of the targeted construct and content suggesting that most conceptual characteristics are not reflected in the content of interventions. When there was a good fit, however, interventions seemed to be more likely to be effective. Future research is needed to validate this finding since the low quality of studies and the limited amount of data concerning well-being and comfort do not allow generalisations.

*Keywords:* quality of life, well-being, comfort, long-term care residents, intervention

## **Differences and Similarities of Interventions Promoting Quality of Life, Well-Being, and Comfort in Long-Term Care Residents: A Systematic Literature Review**

If you imagine your life as a long-term care resident, what comes to your mind?

Probably you were not thinking about anything positive—rather monotony, loneliness, and boredom might have been aspects that popped up in your mind. This unfavourable association with elderly long-care facilities is not uncommon but the public perception (Sullivan & Willis, 2018). Counteracting negative conditions in nursing residencies, the US culture change movement is an effort attempting to achieve a paradigm shift, away from mere health care institutions and towards person-centred care facilities (Koren, 2010). According to Koren (2010), the movement has two main objectives, the improvement of the quality of care in nursing facilities and quality of life of long-term care residents.

With the rise of the culture change movement, contemporary interventions have been developed to promote *quality of life (QoL)*, *well-being*, and *comfort* (Crandall et al., 2007; Kolcaba et al., 2006; Koren, 2010). These interventions reinforce the described transformation by contributing to the attainment of the two goals. The current study will explore how conceptual differences and similarities between the introduced constructs translate into differences and similarities between interventions aiming to promote either QoL, well-being, or comfort in long-term care residents. It builds on a recent conceptual analysis by Pinto et al. (2017) which highlights that QoL, well-being, and comfort share similar attributes but also have their distinctive features. The most salient distinguishing features of these concepts are presented and discussed in the following sections. These are decisive for the formulation of the hypotheses of this study.

The WHO (World Health Organization, 1997) defines QoL as “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (p. 1). This definition acknowledges the culture-dependent nature of QoL and illustrates the broad

coverage of the construct. According to Pinto et al. (2017), QoL is the most comprehensive amongst the three concepts and mainly concerned with subjective satisfaction with life in general. Note that there are also related constructs, such as health-related quality of life (HRQoL), which are more narrow and specific (Karimi & Brazier, 2016).

Similar to QoL, well-being is a subjective multidimensional construct (emotional, social, and psychological well-being) but it is more closely linked to mental health (Pinto et al., 2017). This connection is well-illustrated by the definition of mental health, given by the WHO, referring to mental health as a state of well-being (World Health Organization, 2005). Keyes (2002) also argues that all aspects, emotional, social, and psychological well-being are crucial for positive mental health. In literature, well-being is intuitively rather associated with the psyche and spirituality of humans demonstrated by the given examples and confirmed by Pinto et al. (2017). Burack et al. (2012) identified spiritual well-being as being a facet and, among others, a determinant of nursing home residents' level of QoL illustrating their considerable overlap.

While QoL and well-being are not restricted to a particular context, comfort is closely tied to nursing care and mainly concerned with the fulfilment of basic human needs (Kolcaba, 1994; Pinto et al., 2017). The recognition and satisfaction of these needs appears to be a core element of comfort and a main duty for nursing staff or caregivers. As in the case of well-being, however, there is no consensus on a definition yet (Malinowski & Stamler, 2002). Nevertheless, comfort is a desired outcome in the care setting and described as a primary nursing function (Kolcaba et al., 2006). This outcome, a sufficient state of comfort, is according to Malinowski and Stamler (2002) attained by means of nursing care. Although comfort is also referred to as a holistic concept analogous to well-being and QoL, it is bound to a specific environment (Pinto et al., 2017).

The description of the constructs underlines that their boundaries are not clear-cut but overlap. Thus, each concept encapsulates parts of the others. QoL, well-being, and comfort

are conceptually related by comprising a positive state of being, albeit each has a unique focus. QoL is the most comprehensive construct, well-being is more intertwined with mental health, and comfort is tied to the nursing care environment (Kolcaba et al., 2006; Pinto et al., 2017). In addition to their overlap, which presumably complicates their appropriate usage, agreement within the individual concepts is lacking (Karimi & Brazier, 2016; Kolcaba et al., 2006; Theofilou, 2013). There is evidence suggesting that some researchers use QoL, well-being, and comfort as if they were synonyms, without minding their conceptualisation (Karimi & Brazier, 2016; Pinto et al., 2017; Theofilou, 2013). The disregard of the conceptualisation of constructs could pervade the content and the effectiveness of interventions, as exemplified by the following case.

Van Malderen et al. (2013) conducted a systematic literature search reviewing interventions which aimed to promote QoL in nursing home residents, and included articles published between 1990 and 2010. No systematic effect of interventions on QoL was observed. Most of these interventions adopted a unidimensional focus which means that one intervention only aimed to modify one life domain of residents respectively (e.g. social engagement, physical activity, mental health). Yet, this approach stays in contrast to QoL being a multidimensional construct. The content was, hence, not in line with the conceptualisation of the construct. Van Malderen et al. (2013) assumed that the absence of a systematic effect was due to the divergence of the construct and content of interventions but was not able to provide data supporting this notion. According to this presumption, an intervention would be particularly effective if there was convergence between the targeted construct and the content.

So far, however, it is not clear whether a good alignment of the targeted construct and the content of an interventions has an impact on their effectiveness. Furthermore, it is not possible to infer with certainty that conceptual differences and similarities between QoL, well-being, and comfort, as outlined by Pinto et al. (2017), accurately translate into

differences and similarities in the content of interventions. The expressed scepticism is reasonable since a body of evidence indicates that these constructs are used inconsistently (Karimi & Brazier, 2016; Kolcaba et al., 2006; Theofilou, 2013). If and how conceptual characteristics manifest in the content and effectiveness of interventions is currently not yet well understood. Therefore, the present study aims to identify differences and similarities between the content and effectiveness of interventions targeting either QoL, well-being, or comfort in long-term care residents. The literature was reviewed systematically to compile and categorise interventions according to the three constructs. To be able to compare these interventions and test the following hypotheses, the interrelationship between the targeted construct, the content, and the effectiveness of interventions was analysed.

Based on the conceptual analysis by Pinto et al. (2017), it is expected that interventions targeting either of the constructs in long-term care residents are of a specific content, in line with their conceptualisation. For each construct, one content-related hypothesis was formulated based on their aforementioned distinguishing features: QoL interventions tend to be versatile meaning that they have multiple active components, and not only one specific focus as opposed to well-being and comfort interventions. Well-being interventions are more concerned with mental health and predominantly aim to improve residents' psyche (e.g. in the form of psychotherapy). Considering that providing comfort is a primary nursing function, comfort interventions involve nursing staff more frequently to improve care processes and the satisfaction of residents' basic needs (Kolcaba et al., 2006).

In terms of the effectiveness of interventions, the tentative explanation by Van Malderen et al. (2013) that a systematic effect probably occurs when there is a good fit between the construct and content of an intervention was translated into a hypothesis. It is, hence, hypothesised that interventions with proper alignment of the targeted construct and content are more likely to yield significant differences between groups. A proper alignment

implies that, as in the case of the content-related hypotheses, the conceptual properties of the targeted construct converge with and are reflected in the content of interventions.

## **Methods**

### **Literature Search**

This systematic literature review was carried out adhering to the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement (Liberati et al., 2009). The search considered articles, written in English, which were published between January 1<sup>st</sup> 2011 and May 1<sup>st</sup> 2020. This specific period was chosen to get a comprehensive picture of the most recent interventions, and to not duplicate the data gathered by Van Malderen et al. (2013), who did a systematic review of QoL interventions published between 1990 and 2010. Articles were retrieved from the electronic databases Scopus, Web of Science, and PubMed using the search terms “quality of life”, “well(-)being”, “comfort”, “intervention”, “RCT”, “randomised-controlled trial”, “nursing home resident”, “older adults”, “elderly people”, “nursing home”, “long-term care”, “residential aged care”. The appendix contains an example of a full digital search strategy on Scopus, including search string and applied filters.

### **Study Selection and Eligibility Criteria**

The identified records from all electronic databases were imported in EndNote. After removing the duplicates, one researcher screened the articles reading their title and abstract using Rayyan, a free online tool for managing systematic literature reviews (Ouzzani et al., 2016). Taking into account the eligibility criteria, it was assessed whether a study was potentially relevant. The inclusion was restricted to articles which met all of the following inclusion criteria.

A publication was included if an intervention was conducted and tested experimentally with random allocation of participants (I), aimed to promote either (HR)QoL, well-being, or comfort (O), and if the target population were older people aged 60+ living in a long-term care facility (P). The letters within the brackets refer to an adjusted version of the PICO

acronym, which aided formulating search terms and the eligibility criteria (Richardson et al., 1995). The letter P represents the population, I the intervention, and O the outcome of interest. For the conducted search, a specific control condition was not required, correspondingly, leaving out the C. The model was used since according to Schardt et al. (2007), it enhances the sensitivity of systematic searches to detect relevant articles.

A publication meeting one of the following criteria, however, was excluded. An article was excluded if the long-term resident population solely consisted of older people with a condition, e.g. dementia or cognitive impairment only, an intervention was not conducted, e.g. study designs or protocols for randomised controlled trials (RCTs), or the targeted construct was not measured. Eventually, full-paper articles were read and, if excluded, labelled with a reason for exclusion. The remaining records comprised the final selection included in the qualitative synthesis. Following the PRISMA flow chart, it was kept track of the number of included and excluded articles (Liberati et al., 2009).

### **Data Extraction and Presentation**

A table was compiled displaying the main characteristics and extracted data of the included studies. This table contains the targeted construct, type of intervention, information on the intervention and control group, measurement instruments used to measure the construct, sample size of elderly residents, and the impact of an intervention on the targeted construct. All of the mentioned data was extracted by one researcher independently. The entries were categorised depending on the construct they targeted (i.e. (HR)QoL, well-being, and comfort), sorted in ascending alphabetical order, and numbered serially. Throughout this paper, superscript numbers refer to the corresponding study in Table 1 and 2 (see Results). The exact name of each measurement instrument can be found in the description of Table 1 (except the QUALIDEM and DEMQOL, which are no abbreviations but full names).

## **Synthesis of Results**

The main focus was the integration of information concerning the targeted construct, the content of an intervention (represented as the type of intervention), and the impact of an intervention on the targeted construct (i.e. effectiveness). These factors, and their potential interrelatedness, constituted the fundament for the comparison of interventions targeting different constructs.

### ***Types of Interventions***

A categorisation of interventions served as the basis for the content-related analysis and comparison of interventions, between constructs and also within a construct. The included studies got labelled with a particular type depending on the content of their intervention. One researcher assessed which type reflected the content of an intervention best. A new type was created, each time the content of an intervention did not fit any of the already existing types. Hence, these types of interventions emerged in the data extraction phase and were not predetermined. When there was ambiguity, which type reflects the content best, an intervention got labelled with two types. For example, interventions which attempted to improve care processes by educating nurses were coded as Health Care Service and Education interventions. In total, there are ten types of interventions: (1) Mental Health, (2) Physical Activity, (3) Health Care Service, (4) Soothing, (5) Education, (6) Resident Empowerment, (7) Social Engagement, (8) Multicomponent, (9) Functional Health Promotion, and (10) Physical Environment.

### ***Effectiveness***

Interventions were either classified as effective or non-effective depending on whether a significant difference between groups regarding the targeted construct was reported. On this basis, it was analysed whether interventions which targeted a specific construct (i.e. (HR)QoL, well-being, and comfort), interventions of a certain type, or interventions with a particular combination of a construct and a type appear to be especially effective. It was,

correspondingly, examined in what way effective interventions differ from non-effective interventions.

### **Quality Assessment**

The Cochrane Collaboration Risk of Bias Tool (CCRB) aided in estimating the potential bias of RCTs and was used to assess the quality of included studies (Higgins et al., 2019). Since the present systematic review was also interested in the effectiveness of interventions, this tool was particularly suitable. For each study separately, one researcher judged whether there was a low, high, or unclear risk of bias regarding predetermined criteria (i.e. “Random Sequence Generation”, “Allocation Concealment”, “Blinding of Participants and Personnel”, “Blinding of Outcome Assessment”, “Incomplete Outcome Data”, “Selective Reporting”). Another unspecific parameter, the “Other Bias”, allowed reporting risks of bias beyond the mentioned ones. The assessment of these parameters served as an indication of the quality of a study. It was examined whether there are qualitative differences between studies targeting different constructs. More importantly, the quality assessment of individual studies was used as a factor relevant to the evaluation of the effectiveness of interventions, and incorporated in the according subsection.

## **Results**

### **Study Selection**

The conducted search is presented as a PRISMA flow diagram in Figure 1 (Liberati et al., 2009). Initially, the literature search identified 1716 articles, of which 1245 records were screened. After the screening phase, 121 references were examined in greater detail and, eventually, 28 met the eligibility criteria. Figure 1 depicts that the large majority of articles were excluded since their target populations were mainly long-term residents with a condition (e.g. dementia), thus, were too specific. It was noticeable that interventions targeting comfort tended to consider end-of-life patients, who most often had a chronic disease too.

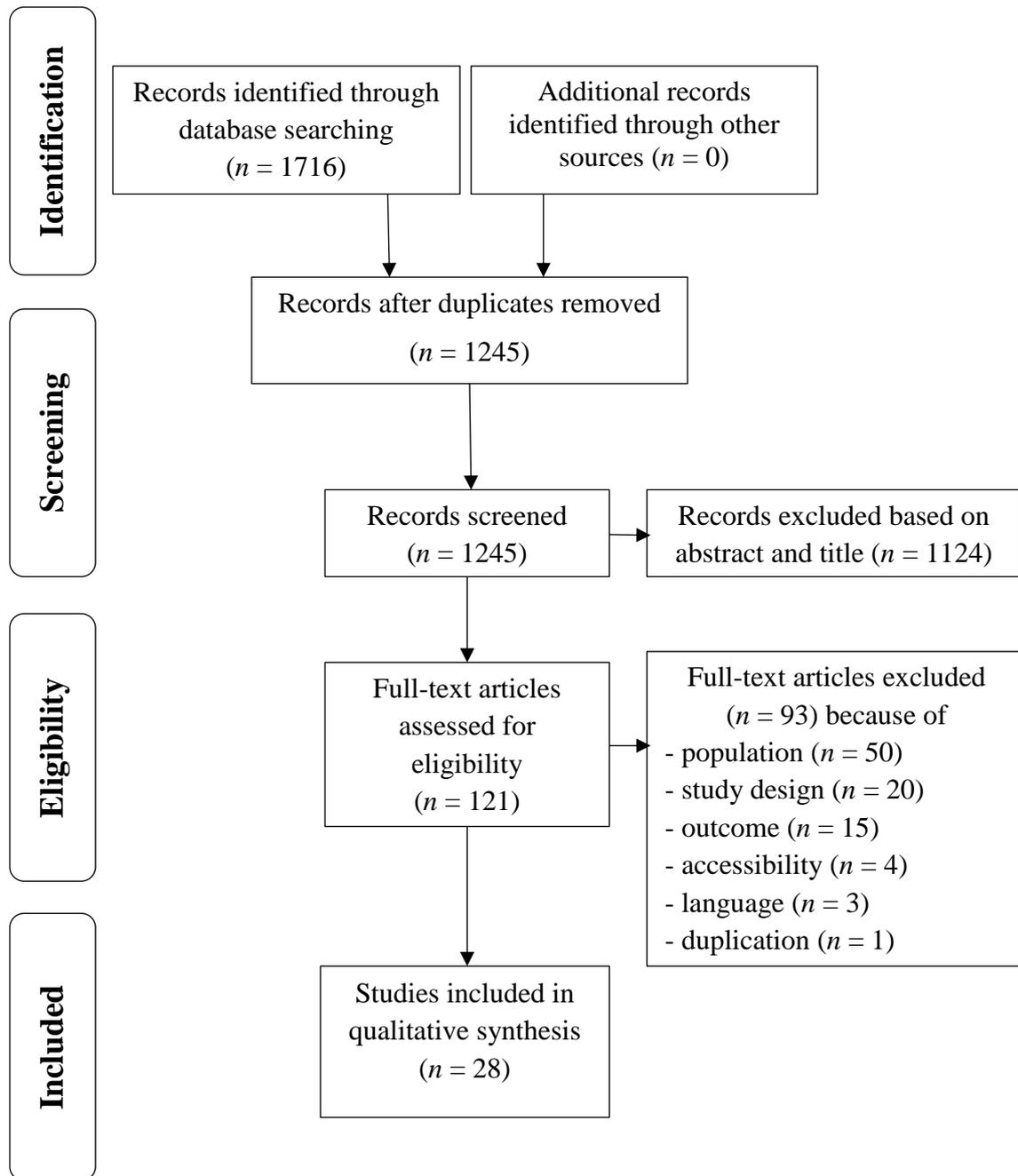


Figure 1. PRISMA flow diagram of included and excluded articles.

### Study Characteristics

All studies displayed in Table 1 conducted at least one intervention and tested their effectiveness in a randomised controlled trial. The studies varied to a great extent in the number of recruited subjects, ranging from eight to 12245. Hence, the participants of one study<sup>6</sup> represent 69.4% of the total number of residents. The median of the number of recruited long-term nursing residents equals 73 illustrating the average sample size.

Remarkably, Van den Block et al. (2020)<sup>2</sup> collected data from deceased individuals in several countries to test the effectiveness of their intervention. In this particular case, data was provided by nursing staff who estimated the degree of comfort in the last month of residents' lives. Apart from this study, the other studies conducted interventions solely in one country, especially in European countries (e.g. Belgium, Spain, and Sweden) but also in Asia or America, and obtained data from alive residents. Measurements were either self-completed ( $n = 9$ ) by the participants, proxy-rated ( $n = 10$ ) by nursing staff or caretakers, or administered in the form of an interview ( $n = 10$ ). Eight articles, however, do not specify how a particular instrument was applied<sup>1, 3, 5, 10, 12, 15, 21, 24</sup>.

Table 1

*Characteristics and Outcomes of Included Studies*

	Authors - Country	Targeted Construct	Type of Intervention	Effect on Construct	Intervention (I) - Control (C)	Sample Size	Measurement Instrument
1.	Ergin and Yücel (2019) - Turkey	Comfort	Mental Health & Soothing	+	I: Listening to Music 30min/day - C: Not Listened to Music	I: 28, C: 28	GCQ <sup>NS</sup>
2.	Van den Block et al. (2020) - Belgium	Comfort	Health Care Service & Education	O	I: Integration of Basic Palliative Care - C: Usual Care	I: 687 C: 840	EOL-CAD <sup>PR</sup>
3.	Álvarez-Barbosa et al. (2014) - Spain	HRQoL	Physical Activity	+	I: Whole Body Vibration Exercise - C: Usual Care	I: 15, C: 14	EQ-5D <sup>NS</sup>
4.	Arendts et al. (2018) - Australia	HRQoL	Health Care Service	+*	I: Nurse Practitioners Working with GPs using the Best Practice Guide - C: Usual Care	I: 101, C: 99	HUI2/3 <sup>SR/PR</sup> & EQ-5D-3L <sup>SR/PR</sup>
5.	Cichocki et al. (2015) - Austria	HRQoL	Physical Activity	+	I: Low-Threshold Physical Activity - C: Social Animation Events	I: 104, C: 118	EQ-5D <sup>NS</sup>
6.	Abraham et al. (2019) - Germany	QoL	Physical Environment	O	I1: Multicomponent Intervention to Prevent Physical Restraints (updated), I2: Concise version of I1 - C: Optimised Usual Care	I1: 4126, I2: 3547, C: 4572	QOL-AD <sup>IF</sup>
7.	Bökberg et al. (2019) - Sweden	QoL	Health Care Service & Education	+*	I: Education-Based Palliative Care Intervention - C: Usual Care	I: 23, C: 29	WHOQOL <sup>SR</sup> & WHOQOL-OLD <sup>SR</sup>
8.	Degenholtz et al. (2014) - USA	QoL	Multicomponent	+	I: QoL Care Plan (Standardised Individualised Intervention) - C: Not Specified	I: 39, C: 25	QOL.SRI <sup>IF</sup>

	Authors - Country	Targeted Construct	Type of Intervention	Effect on Construct	Intervention (I) - Control (C)	Sample Size	Measurement Instrument
9.	Hall et al. (2012) - UK	QoL	Mental Health	O	I: Dignity Therapy - C: Baseline and Follow-up Interviews	I: 31, C: 29	EQ-5D <sup>IF</sup>
10.	Hewitt et al. (2018) - Australia	QoL	Physical Activity	O	I: High Level Balance and Moderate Intensity Progressive Resistance Training - C: Usual Care	I: 97, C: 92	SF-36 <sup>NS</sup> & EQ-5D <sup>NS</sup>
11.	Husebø et al. (2019) - Norway	QoL	Multicomponent	+	I: Multicomponent Intervention - C: Usual Care	I: 297, C: 248	QUALIDEM <sup>PR</sup> , QUALID <sup>PR</sup> & EQ-VAS <sup>SR/PR</sup>
12.	Lai et al. (2017) - Taiwan	QoL	Functional Health Promotion	+	I: Acupressure - C: Massage	I: 31, C: 31	SF-36 <sup>NS</sup>
13.	Lok et al. (2017) - Turkey	QoL	Physical Activity	+	I: Physical Activity Program - C: Not Specified	I: 40, C: 40	SF-36 <sup>IF</sup>
14.	Low et al. (2013) - Australia	QoL	Mental Health	O	I: Humour Therapy - C: Usual Care	I: 189, C: 209	DEMQOL <sup>SR/PR</sup>
15.	McCord et al. (2020) - Australia	QoL	Mental Health	O	I: Video Game - C: Usual Care	I: 12, C: 12	OPQOL-Brief <sup>NS</sup>
16.	Park et al. (2017) - South Korea	QoL	Resident Empowerment & Education	+	I: Health Coaching Self-Management Program - C: Usual Care	I: 43, C: 47	EQ-5D-3L <sup>IF</sup>
17.	Rezola-Pardo et al. (2019) - Spain	QoL	Functional Health Promotion	O	I: Dual-Task Training - C: Multicomponent Training	I: 33, C: 35	QOL-AD <sup>IF</sup>
18.	Richter et al. (2019) - Germany	QoL	Health Care Services & Education	O	I: Person-centred Care - C: No Intervention	I: 493, C: 660	QOL-AD <sup>IF</sup>
19.	Robinson et al. (2013) - NZ	QoL	Mental Health & Soothing	O	I: Robot-Seal Intervention (Paro) - C: Normal Activities	I: 20, C: 20	QOL-AD <sup>IF</sup>
20.	Sollami et al. (2017) - Italy	QoL	Mental Health & Soothing	+	I: Pet Therapy - C: Normal Activities	I: 14, C: 14	QUALID <sup>PR</sup>

	Authors - Country	Targeted Construct	Type of Intervention	Effect on Construct	Intervention (I) - Control (C)	Sample Size	Measurement Instrument
21.	Takeuchi et al. (2011) - Japan	QoL	Social Engagement	O	I: Group Exercise Intervention - C: Individual Exercise Intervention	I: 14, C: 12	LSIA <sup>NS</sup> & PGC <sup>NS</sup>
22.	Underwood et al. (2013) - UK	QoL	Physical Activity	O	I: Depress. Awareness and Physical Activity - C: Depress. Awareness	I: 35, C: 43	EQ-5D <sup>PR</sup>
23.	Van Malderen et al. (2017) - Belgium	QoL	Resident Empowerment & Social Engagement	+	I: Participatory Action Research - C1: Reminiscence Activity, C2: Usual Care	I: 9, C1: 10, C2: 30	ACSA <sup>SR</sup>
24.	Wouters et al. (2017) - Netherlands	QoL	Health Care Service	O	I: Medication Review - C: Usual Care	I: 233, C: 193	EQ-5D-3L <sup>NS</sup> & DQI <sup>NS</sup>
25.	Mamhidir et al. (2017) - Sweden	QoL & Well-being	Health Care Service & Education	O	I: Pain Education for Nurses - C: Usual Care	I: 98, C: 68	WHO-5 & QUALID <sup>PR</sup>
26.	Reig-Ferrer et al. (2014) - Spain	QoL & Well-being	Mental Health & Soothing	+	I: Relaxation Technique - C: Waitlist Group	I: 15, C: 15	ABS <sup>IF</sup> , NHP <sup>IF</sup> , & SWLS <sup>SR</sup>
27.	Van Roie et al. (2017) - Belgium	QoL & Well-being	Physical Activity	+	I: Ergometer-Cycling Strict Supervision - C1: Ergometer-Cycling Minimal Contact, C2: No Cycling	I: 3, C1: 3, C2: 2	Marcoen Scale for Subjective Well-being <sup>IF</sup>
28.	Lai et al. (2018) - China	Well-being	Mental Health	O	I: Horticultural Therapy - C: Social Activity Group	I: 46, C: 50	PWBI <sup>SR</sup>

*Note.* O = No significant difference between groups; + = Experimental group performed significantly better than the control group; \* = Decline got slowed down. <sup>IF</sup> = Interview Format; <sup>NS</sup> = Not Specified; <sup>PR</sup> = Proxy-Rated; <sup>SR</sup> = Self-Rated. ABS = Affect Balance Scale; ACSA = Anamnestic Comparative Self-Assessment; DQI = Dementia Quality of Life Instrument; EOL-CAD = End-of-Life in Dementia Scale Comfort Assessment while Dying; EQ-VAS = Visual Analogue Scale. EQ-5D(-3L) = EuroQol 5 Dimensions (Three Level Version); GCQ = General Comfort Questionnaire; HUI2/3 = Health Utilities Index; LSIA = Life Satisfaction Index A; NHP = Nottingham Health Profile; OPQOL = Older People's Quality of Life; PGC = Philadelphia Geriatric Center (Morale Scale); PWBI = Personal Wellbeing Index; QOL-AD = Quality of Life-Alzheimer's Disease; QOL.SRI = Quality of Life Structured Resident Interview; QUALID = Quality of Life in Late-stage Dementia; SF-36 = Short Form 36; SWLS = Satisfaction with Life Scale; WHOQOL = World Health Organisation Quality of Life; WHOQOL-OLD = World Health Organisation Quality of Life Instrument-Older Adults Module; WHO-5 = WHO-Five Well-Being Index.

## Quality Assessment

Table 2 displays the results of the risk of bias assessment. Minor differences in the quality of studies between the three constructs were observed. The included studies are rather homogenous in their quality concerning the selection and attrition bias, yet differ in the performance bias. Most studies demonstrate a low selection and attrition bias ( $n = 19$ )<sup>1-3, 5, 6, 9-11, 13-19, 24, 26-28</sup>. First, nearly all researchers applied computer-generated randomisation, thereby automatically concealing allocations. Second, each publication presented all pre-, post-, and follow-up measurements and explained how they dealt with missing or erroneous data. However, approximately half of all included studies were not able to conduct a double-blind RCT suggesting a rather high performance bias ( $n = 13$ ). Of the 13 studies, eleven interventions targeted QoL. The data illustrates that, methodologically, QoL studies exhibit a higher performance risk bias compared to comfort, HRQoL, and well-being studies. Accordingly, one between-construct difference is that the overall quality of studies is lower for those targeting QoL, especially with regard to the performance bias.

Table 2

*Risk of Bias Assessment of included Studies (CCRBt)*

		Selection Bias		Performance Bias	Detection Bias	Attrition Bias	Reporting Bias	Other Bias
		RSG	AC	BPP	BOA	IOD	SR	
<b>Authors per Construct</b>								
<b>Comfort</b>								
1.	Ergin and Yücel (2019)	L	L	-	-	L	-	-
2.	Van den Block et al. (2020)	L	L	H <sup>x</sup>	H	L	-	-
<b>HRQoL</b>								
3.	Álvarez-Barbosa et al. (2014)	L	L	H	-	L	L	-
4.	Arendts et al. (2018) <sup>a</sup>	-	-	-	-	L	-	-
5.	Cichocki et al. (2015)	L	L	-	L	L	-	-
<b>QoL</b>								
6.	Abraham et al. (2019)	L	L	-	L	L	-	-
7.	Bökberg et al. (2019)	-	-	H <sup>x</sup>	H	L	-	-
8.	Degenholtz et al. (2014)	-	-	-	-	L	-	-
9.	Hall et al. (2012)	L	L	-	-	L	-	-
10.	Hewitt et al. (2018)	L	L	H <sup>x</sup>	L	L	-	-
11.	Husebø et al. (2019)	L	L	H <sup>x,y</sup>	H <sup>x</sup>	L	-	-
12.	Lai et al. (2017)	-	-	H <sup>y</sup>	L	L	-	-
13.	Lok et al. (2017)	L	L	H	H	L	-	-
14.	Low et al. (2013)	L	L	H <sup>y</sup>	H	L	-	-
15.	McCord et al. (2020)	L	L	-	-	L	-	-
16.	Park et al. (2017)	L	L	H <sup>x</sup>	-	L	-	-
17.	Rezola-Pardo et al. (2019)	L	L	H <sup>x</sup>	L	L	-	-
18.	Richter et al. (2019) <sup>a</sup>	L	L	H <sup>x,y</sup>	L	L	L	-
19.	Robinson et al. (2013)	L	L	-	-	L	-	-

		Selection Bias		Performance Bias	Detection Bias	Attrition Bias	Reporting Bias	Other Bias
		RSG	AC	BPP	BOA	IOD	SR	
<b>Authors per Construct</b>								
20.	Sollami et al. (2017)	-	-	-	-	L	-	-
21.	Takeuchi et al. (2011)	-	-	-	-	L	-	-
22.	Underwood et al. (2013) <sup>a</sup>	L	H <sup>x</sup>	-	-	L	L	-
23.	Van Malderen et al. (2017)	-	-	H <sup>x,y</sup>	-	L	-	-
24.	Wouters et al. (2017)	L	L	H <sup>y</sup>	-	L	-	-
<b>QoL &amp; Well-being</b>								
25.	Mamhidir et al. (2017)	-	-	-	-	L	-	-
26.	Reig-Ferrer et al. (2014)	L	L	-	L	L	-	-
27.	Van Roie et al. (2017)	L	L	L	-	L	-	-
<b>Well-being</b>								
28.	Lai et al. (2018)	L	L	-	L	L	-	-

*Note.* AC = Allocation Concealment; BPP = Blinding of Participants and Personnel; BOA = Blinding of Outcome Assessment; H = High Risk of Bias; IOD = Incomplete Outcome Data; L = Low Risk of Bias; RSG = Random Sequence Generation; SR = Selective Reporting; - = Unclear.

<sup>a</sup> = Information retrieved from the corresponding study protocol. <sup>x</sup> = low risk of bias not possible due to the nature of the study. <sup>y</sup> = only participants were blinded.

## Targeted Constructs

Most of the included studies focused on QoL ( $n = 19$ )<sup>6-24</sup>, followed by health-related quality of life (HRQoL) with  $n = 3$ <sup>3-5</sup> and the combination of QoL and well-being, also with  $n = 3$ <sup>25-27</sup>. Two interventions aimed to improve long-term residents' level of comfort<sup>1, 2</sup> and only one targeted their well-being<sup>28</sup>. There was an emphasis on QoL as indicated by the large number of studies focusing on QoL contrasting the limited amount of gathered data concerning the other constructs. This and the following subsections are, therefore, more focused on QoL interventions.

The publications considering both QoL and well-being, differ in how they approached the measurement of these constructs. Reig-Ferrer et al. (2014)<sup>26</sup> used multiple measurement instruments for assessing QoL and one for examining well-being. In contrast, Van Roie et al. (2017)<sup>27</sup> measured subjective psychological and physical well-being with a subjective well-being scale, yet frequently referred to the outcome as if QoL was measured. Mamhidir et al. (2017)<sup>25</sup> intended to assess well-being and used a QoL measurement instrument and a self-reported well-being measure. These researchers applied various measurement strategies and seemed to conceptualise well-being and QoL differently. In general, many measurement instruments were applied to assess the targeted constructs. The data suggest that there are also some inconsistencies in the appropriate usage of instruments and confusions between HRQoL and QoL. HRQoL was primarily measured with the EQ-5D, an instrument originally developed to describe the health status of a person (Brooks & Group, 1996). However, this questionnaire was also used for the assessment of QoL<sup>9, 16, 22, 24</sup>. The same measurement instrument was, accordingly, used to measure two different constructs, HRQoL and QoL.

## Types of Interventions

The ten emerged types of interventions indicate that the content of the included interventions taps into various life domains of long-term residents. There was an emphasis, however, on particular contents as the frequency distribution of interventions across types

demonstrates. The numbers within the brackets refer to the number of interventions which were coded as the respective type: Mental Health ( $n = 8$ )<sup>1, 9, 14, 15, 19, 20, 26, 28</sup>, Physical Activity ( $n = 6$ )<sup>3, 5, 10, 13, 22, 27</sup>, Health Care Service ( $n = 6$ )<sup>2, 4, 7, 18, 24, 25</sup>, Education ( $n = 5$ )<sup>2, 7, 16, 18, 25</sup>, Soothing ( $n = 4$ )<sup>1, 19, 20, 26</sup>, Resident Empowerment ( $n = 2$ )<sup>16, 23</sup>, Social Engagement ( $n = 2$ )<sup>21, 23</sup>, Multicomponent ( $n = 2$ )<sup>8, 11</sup>, Functional Health Promotion ( $n = 2$ )<sup>12, 17</sup>, Physical Environment ( $n = 1$ )<sup>6</sup>. The total number of types ( $n = 38$ ) exceeds the total number of included studies ( $n = 28$ ) since ten interventions were coded as two types. The most frequent pairings were Mental Health and Soothing ( $n = 4$ )<sup>1, 19, 20, 26</sup> and Health Care Service and Education ( $n = 4$ )<sup>2, 7, 18, 25</sup>.

Mental Health, Physical Activity, and Health Care Service appeared to be the main focus of interventions aiming to enhance QoL since, in sum, they account for half of all included QoL interventions. Contrasting the formulated hypothesis, only a small fraction of interventions which aimed to enhance QoL in long-term care residents were Multicomponent interventions ( $n = 2$ )<sup>8, 11</sup>. Husebø et al. (2019)<sup>11</sup>, for example, conducted a versatile intervention combining medication review, pain management, communication, and leisure activities. Notwithstanding, the content of QoL interventions seems to cover a broader spectrum compared to the other constructs. Resident Empowerment, Social Engagement, Multicomponent, Functional Health Promotion, and Physical Environment interventions solely aimed to increase QoL but not the other constructs. On the one hand, the content of QoL interventions appears to be more diverse than the content of the interventions targeting the other constructs. On the other hand, a combined strategy was only applied in two cases. Therefore, the hypothesis that most QoL interventions have multiple active ingredients is rejected. There was too little data to formulate valid statements regarding the content of interventions targeting the other constructs so that neither the hypothesis on well-being nor the hypothesis on comfort is rejected or confirmed.

### ***Mental Health Interventions***

The majority of interventions, which aimed to promote QoL, were Mental Health interventions ( $n = 5$ )<sup>9, 14, 15, 19, 20</sup>. The data indicate that there are differences between the content of Mental Health interventions. For example, Hall et al. (2012)<sup>9</sup> examined the effectiveness of dignity therapy, a specific form of psychotherapy, to ensure the dignity of older adults. Another study by Low et al. (2013)<sup>14</sup> put its emphasis on humour and, via this pathway, aimed to improve residents' level of QoL. Although these two interventions got coded as Mental Health interventions, they still vary in their approach. It, furthermore, appears as the content within this type differs independent of the targeted construct. There were three interventions Mental Health interventions targeting the other constructs, one comfort<sup>1</sup>, one the combination of QoL and well-being<sup>26</sup>, and one well-being only<sup>28</sup>. The first of these interventions<sup>1</sup> used music as a means to provide comfort, the second<sup>26</sup> applied a relaxation technique to increase QoL and well-being, and the third<sup>28</sup> employed horticulture therapy to enhance well-being.

### ***Health Care Service and Education Interventions***

Analogous to the findings of the Mental Health interventions, Health Care Service interventions vary in their content and focus. However, these interventions seem to be similar in their implementation. More than half of all Health Care Service interventions, regardless of the construct, were likewise coded as Education interventions ( $n = 4$ )<sup>2, 7, 18, 25</sup>. The facility staff got either educated on palliative care<sup>2, 7</sup>, person-centred care<sup>18</sup>, or pain<sup>25</sup> to improve the quality of care. Hence, each study adopted a different emphasis but conveyed the relevant information via theoretical and practical training. The implementation of these interventions was similar, yet the content differed. Of these interventions, one aimed to increase the level of comfort<sup>2</sup>, one well-being<sup>25</sup>, and two QoL<sup>7, 18</sup>.

### *Physical Activity Interventions*

The second most frequent type of QoL interventions were Physical Activity interventions ( $n = 3$ )<sup>10, 13, 22</sup>. The objectives of Physical Activity interventions appear to diverge—either the goal was to avoid something negative, in particular falls, or to strive for a more positive state, independent of the targeted construct. Hewitt et al. (2018)<sup>10</sup> applied a progressive resistance and balance training to prevent falls. The primary goal was, therefore, not to increase QoL, but to decrease the number of falls. In contrast, Lok et al. (2017)<sup>13</sup> and Underwood et al. (2013)<sup>22</sup> both applied a physical activity program to reduce depressive symptoms and additionally foster QoL. A similar pattern emerged for HRQoL Physical Activity interventions. Álvarez-Barbosa et al. (2014)<sup>3</sup> aimed to reduce the fall risk, whereas Cichocki et al. (2015)<sup>5</sup> intended to improve residents' mobility.

### **Effectiveness**

The percentages displayed in this subsection represent the ratio of effective to non-effective interventions per construct. Half of all included articles ( $n = 14$ )<sup>1, 3-5, 7, 8, 11-13, 16, 20, 23, 26, 27</sup> report that the experimental group performed better than the control group. More precisely, one out of two comfort interventions<sup>1</sup> (50%), all HRQoL interventions<sup>3-5</sup> (100%), eight out of 19 QoL interventions<sup>7, 8, 11-13, 16, 20, 23</sup> (50%), two out of three QoL and well-being interventions<sup>26, 27</sup> (66.6%), and no well-being intervention (0%) were reported to be effective.

According to these ratios, HRQoL interventions yielded significant differences between groups most often compared to interventions targeting the other constructs. Of the three HRQoL interventions, two were coded as Physical Activity<sup>3, 5</sup> interventions and one as a Health Care Service<sup>4</sup> intervention. This specific focus in the content of HRQoL interventions is in line with the health-related emphasis of the construct. In contrast, the same types of interventions (i.e. Physical Activity and Health Care Service) do not appear to be particularly effective in interventions which target QoL: Significant effects were only reported in one out of three interventions, for Physical Activity and Health Care Service respectively. Instead,

both Multicomponent interventions resulted in a positive effect in the experimental group<sup>8, 11</sup>, converging with the multidimensional focus of QoL. The observations indicate that, in line with the hypothesis, the probability of an intervention to produce a significant effect is higher if there is an appropriate conceptual fit between the construct and the type of intervention.

Given the quality assessment, however, these findings have to be treated with caution. Not one of the studies exhibits an overall low risk of bias, and especially the two Multicomponent interventions targeting QoL appear to be of lesser quality. Degenholtz et al. (2014)<sup>8</sup> only demonstrate a low attrition bias and do not provide information crucial for the assessment of the other criteria. Except from a low attrition bias, the risk of bias of the other parameters remains unclear. Husebø et al. (2019)<sup>11</sup> were, due to the nature of the intervention, not able to conduct a double-blind experiment and also not able to blind the assessor, suggesting a high performance and detection bias. The observed significant effects were, therefore, probably affected by biases so that less confidence can be put in the outcomes of these studies.

## **Discussion**

The present systematic literature review aimed to identify similarities and differences between interventions which target to promote either QoL, well-being, or comfort in long-term care residents. Of 1716 initially identified studies, 28 met the eligibility criteria and were eventually synthesised. Only a small fraction of the included interventions targeted comfort or well-being. The largest proportion of interventions focused on the improvement of residents' QoL. Independent of the construct, there was predominantly a mismatch between the targeted construct and the content of interventions. The few interventions exhibiting a good alignment of the targeted construct and content appeared to be more likely to be effective than those with a mismatch. It might be that the discrepancy between the targeted construct and content of interventions is partly attributable to a lack of consistency and agreement regarding the appropriate usage of the examined constructs.

It was initially expected that conceptual differences and similarities between QoL, well-being, and comfort, as identified by Pinto et al. (2017), are reflected in the content of interventions. Thus, QoL interventions were assumed to consist of multiple components which aim to modify various life domains, well-being interventions were assumed to be more closely linked to mental health, and comfort interventions were assumed to target improving care. Contrary to these expectations, the included studies reveal a different picture. Most conceptual differences and similarities of QoL, well-being, and comfort do not accurately translate into content-related differences and similarities. Interventions targeting different constructs share that the content varies. There were, however, no major differences between the content of these interventions. The only difference was that, on a global level, the content of QoL interventions is more diverse, albeit all but two QoL interventions adopted a unidimensional focus.

Currently, most interventions aim to promote QoL, the broadest and most encompassing amongst the three concepts (Pinto et al., 2017)<sup>6-24</sup>. Against expectations, only two out of 19 interventions were identified as Multicomponent interventions<sup>8, 11</sup>. The most frequent types of interventions targeting QoL were Mental Health and Physical Activity interventions. This finding is consistent with Van Malderen et al. (2013) who conducted a systematic review of QoL interventions considering articles published between 1990 and 2010. They observed an accumulation of Physical Activity and Mental Health but not of Multicomponent interventions. From the perspective that well-being is likewise a component and predictor of QoL, it is comprehensible that many QoL interventions also targeted the psyche of long-term-care residents (Burack et al., 2012). Following Van Malderen et al. (2013), however, a combined strategy was and still is lacking. A unidimensional program to enhance long-term care residents' QoL contradicts the multidimensional alignment of this construct. The content of most QoL interventions did not holistically converge with the conceptualisation of the construct.

No content-wise evaluation of interventions targeting the other constructs was feasible. In total, merely two interventions targeted comfort<sup>1, 2</sup> and one well-being<sup>28</sup>. There was, correspondingly, too little data to be able to formulate meaningful conclusions. In this specific population, long-term residents aged 60 or older, few contemporary interventions aim to improve well-being or comfort. The lack of data regarding comfort interventions diverges from Kolcaba et al. (2006), who stated that many comfort interventions target nursing home residents. During the research process, it became evident that comfort interventions mainly focus on end-of-life patients, who were excluded since this kind of studies solely included residents with a condition (e.g. bedridden residents). The target population of comfort interventions appears to be more specific. Furthermore, the screening process revealed that many other studies focus on a particular population, especially residents with dementia, so that the majority of exclusions was due to populations not relevant to this study.

Half of the included articles reported significant differences between the experimental and control group. According to the data, Physical Activity, Resident Empowerment, and Multicomponent interventions perform better compared to the other types of interventions. The analysis of the targeted construct, the content, and the effectiveness of interventions suggests the presence of a specific relationship: The proper alignment of the targeted construct and the content of interventions might enhance the probability for interventions to be effective. For example, interventions targeting QoL were more likely to produce positive results when there was an appropriate fit between the construct and content. QoL is a multidimensional construct and was, apparently, adequately stimulated by Multicomponent interventions (Pinto et al., 2017; Van Malderen et al., 2013). Otherwise, the interventions would probably have not produced the intended effect. A similar pattern emerged for HRQoL and Physical Activity and Health Care Service interventions. The obtained results corroborate the conjecture, originating from Van Malderen et al. (2013), that the presence of a systematic effect might depend on a good match of the content and targeted content of interventions.

Moreover, it is remarkable that three interventions aimed to, simultaneously, promote QoL and well-being<sup>25-27</sup>. Each of these studies adopted a different strategy in the application of these constructs. Van Roie et al. (2017)<sup>27</sup>, for example, referred to QoL throughout their paper and measured well-being instead. They used QoL and well-being as synonymous, despite conceptual differences, confirming Theofilou (2013) who reported that these terms are often used interchangeably. In another study, well-being functioned as an umbrella term for both QoL and well-being (Mamhidir et al., 2017)<sup>25</sup>. A counterexample emanates from Reig-Ferrer et al. (2014)<sup>26</sup> who measured well-being and QoL with appropriate measurement instruments respectively. These findings stress that there are differences between how researchers conceptualise and relate QoL and well-being, which is indicative of an inconsistent usage of these constructs and in line with Theofilou (2013).

The given examples highlight how conceptual confusions might pervaded the design of interventions that aim to increase QoL and well-being in long-term care residents. If there was a global understanding and consensus of the concepts, the results might have been more homogeneous, transparent, and comparable. This study demonstrates that there is no global agreement among researchers indicated by an inconsistent and false usage of concepts. It, thereby, validates the body of literature reporting that there is a lack of consensus within and between (HR)QoL, well-being, and comfort (Karimi & Brazier, 2016; Kolcaba et al., 2006; Malinowski & Stamler, 2002; Pinto et al., 2017; Theofilou, 2013; Van Malderen et al., 2013). The review adds that, in most contemporary interventions targeting QoL, well-being, or comfort, there is a discrepancy between the content and the conceptualisation of the targeted construct. Nevertheless, in the few cases where conceptual characteristics of a targeted construct manifested in the content of interventions, they seemed to be more likely to be effective.

The present systematic literature review, however, had several methodological limitations which might have biased the research process. First, only one researcher screened

the publications, extracted the data, and assessed the type of interventions. There was, additionally, no preregistered review protocol the researcher adhered to so that a personal bias might have decreased the overall quality of the results. Second, four full-text articles were not accessible and, therefore, not included. These might have been relevant to the purpose of the present study. Some more publications with an emphasis on well-being or comfort might have made a content-related comparison between interventions more reliable. Third, tied to the previous aspect, the presence of a generation bias could be accountable for the lack of data on well-being and comfort. Note that this study considered articles published between 2011 and 2020. Interventions conducted before 2011 probably emphasised at least comfort more often compared to the current findings, as inferred from Kolcaba et al. (2006). Thus, the presented interventions are not representative for the time prior to 2011 because the focus on QoL grew tremendously in the 30 years preceding 2010 (Koren, 2010).

Taking into account the described limitations, the main findings require further research and should be studied in greater detail to be able to make reliable generalisations. Especially the investigated relationship between the targeted construct and the content of interventions, presumably affecting their effectiveness, demands validation research in view of the low quality of included studies. If it holds, however, a recommendation for researchers developing interventions to support the culture change movement is to tailor the content to the targeted construct. An increase in the probability of interventions to be effective contributes to, and is in line with, the objective of the culture change movement to improve long-term care residents' quality of life (Koren, 2010). The prerequisite for the successful implementation of a good alignment is the correct usage and application of constructs. To be able to accommodate the content of interventions, it appears to be essential to have a profound understanding of the targeted construct(s), be it (HR)QoL, well-being, or comfort.

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## Appendix

### Exemplary Search Strategy for Scopus

The combination of relevant concepts resulted in the following search string:  
TITLE-ABS-KEY ("quality of life" OR well-being OR wellbeing OR comfort) AND  
(intervention OR rct OR "randomised controlled trial\*") AND (resident\* OR "elderly people"  
OR "older adult\*") AND ("nursing home" OR "specialized care" OR ltc OR "nursing  
residency"). Additionally, Scopus allowed setting individualised filters to further narrow  
down the identified records. One filter was applied to confine the time span (Publication  
dates: From 2011 - Present). This particular search identified 679 records.