

# The burden of boundedness and the implication for nursing: A scoping review

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## Abstract

**Background:** In the COVID-19 pandemic, many people experienced temporal boundedness in different ways (e.g., home, country, persons, and rules). However, being bound is also a permanent experience for chronically ill or handicapped people with sometimes serious consequences. To be able to recognize the phenomenon, a clear definition is necessary. In the literature, though, boundedness shows up as a very multifaceted phenomenon.

**Objectives:** Exploring and conceptualizing the phenomenon of boundedness taking into account the various forms and the consequences for nursing.

**Methods:** A scoping review using the framework of Arksey and O'Malley and the PRISMA statement (PRISMA-ScR) to verify the fullness of the review.

**Data Sources:** Online dictionaries and theoretical and empirical publications in CINAHL, Medline via PubMed, PsycINFO, PsycArticles, Scopus, WISO. A total of 34 sources were included.

**Results:** Boundedness as a contextual concept is ambiguous. There are three basic causes: an acquired condition, personal obligations, arranged conditions, two principal courses: enduring and temporary, and seven types of being bound: to one or more person (s), to a place/position, to/in an object, to thoughts/opinions, to activities, to/in substances and to time. Examples of types are bedbound, culture-bound, homebound, time-bound, wheelchair-bound and are particularly relevant for care. The consequences are manifold, physically, as well as mentally, and socially.

**Conclusion:** To reduce or avoid the burdens caused by boundedness, the concept must be implemented in nursing education and nursing practice. To this end, nursing research must further specify the types of boundedness in concept analyses and develop suitable interventions.

## KEYWORDS

boundedness, bound, scoping review, typology, conceptualization

## 1 | INTRODUCTION

What does it mean for someone to “be bounded”? From a clinical perspective, to be bounded means to be restricted in some manner, that is confined to space (the home), a device (intravenous pump), or an implement (wheelchair). Boundedness, the state of being confined or restricted creates both physical, psychological, and/or social limitations, such as those evidenced in COVID-19 restrictions. However, being bound is also a permanent experience for chronically ill or handicapped people with sometimes serious consequences. Nurses play a vital role in advocacy and intervention, assisting clients who experience boundedness. In an integrative review, Schirghuber and Schrems<sup>1</sup> examined the occurrence and possible definitions of local confinement and bedriddenness in the scientific literature. The results show a variety of English-language terms. The synthesis of the terms resulted in the concept of boundedness in various contexts such as home, wheelchair, and bed. Thus, boundedness is a phenomenon in nursing with many facets. Yet, while the concept is known, it is underdeveloped. A clear concept is necessary for a good understanding and the perception of boundedness in nursing practice. It is also necessary for developing standardized and evidence-based nursing diagnoses and interventions.

## 2 | OBJECTIVES AND RESEARCH QUESTIONS

In this scoping review using Arksey and O'Malley's<sup>2</sup> framework, the objective is to explore and conceptualize the phenomenon of boundedness through the lens of the patient, nursing interventions and approaches to aid the patient, and emerging patterns and trends. The review was guided by the following questions:

1. How is boundedness represented as a phenomenon in the scientific literature?
2. How does boundedness express itself in terms of types and potential differences?
3. How might nurses mitigate the effects of boundedness?

## 3 | METHODS AND CHARTING THE DATA

Arksey and O'Malley's five-step framework includes the following steps: (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, and (5) collating, summarizing, and reporting the results.<sup>2</sup> The PRISMA reporting guideline for scoping reviews (PRISMA-ScR)<sup>3</sup> is used to verify the fullness of the review.

### 3.1 | Identifying and selecting relevant publications

Two approaches of the search strategy were performed as follows. First, to explore the phenomenon of boundedness in different

contexts and examples and to create a concept map online dictionaries<sup>4–8</sup> were consulted with the term's boundedness and bound. Second, the scientific literature was conducted for further development of the concept map and for reviewing what is already known about boundedness and what are the implications for nursing. The guiding inclusion and exclusion criteria are shown in Figure 1. The search period (from January 1990 to December 2019) was set at around 30 years so that not only more recent literature is included. The results show, however, that little was published on this topic in the 1990s. Based on the study by Schirghuber and Schrems<sup>1</sup> the search terms homebound (=housebound), wheelchair-bound, and bedbound were added to the search terms boundedness and bound for searching in the following databases: CINAHL, Medline via PubMed, PsycINFO, PsycArticles, Scopus, and WISO (=database for economics and social science). The eligibility screening ( $n = 266$ ) was done by two reviewers independently and the results of in/exclusion of publications were discussed together. If there was any uncertainty, the literature was checked by a third reviewer. In total, 34 sources were included (Figure 1).

### 3.2 | Findings from the scientific literature and charting the data

Of all investigated sources ( $n = 34$ ) in scientific literature, most were empirical papers ( $n = 29$ ), followed by theoretical papers ( $n = 5$ ). These sources originated from the United States ( $n = 20$ ), Japan ( $n = 6$ ), England ( $n = 3$ ), Israel ( $n = 2$ ), Taiwan ( $n = 2$ ), and the Netherlands and England ( $n = 1$ ). The majority of the sources were published in the years 2010–2019 ( $n = 21$ ), a smaller part between 2000 and 2009 ( $n = 9$ ), followed by the years 1990–1999 ( $n = 4$ ). Most of the sources relate to being homebound ( $n = 20$ ), followed by the phenomenon of culture-bound ( $n = 5$ ), bedbound ( $n = 4$ ), wheelchair-bound ( $n = 4$ ), and time-bound ( $n = 1$ ). The detailed findings of the included publications are presented in Table 1.

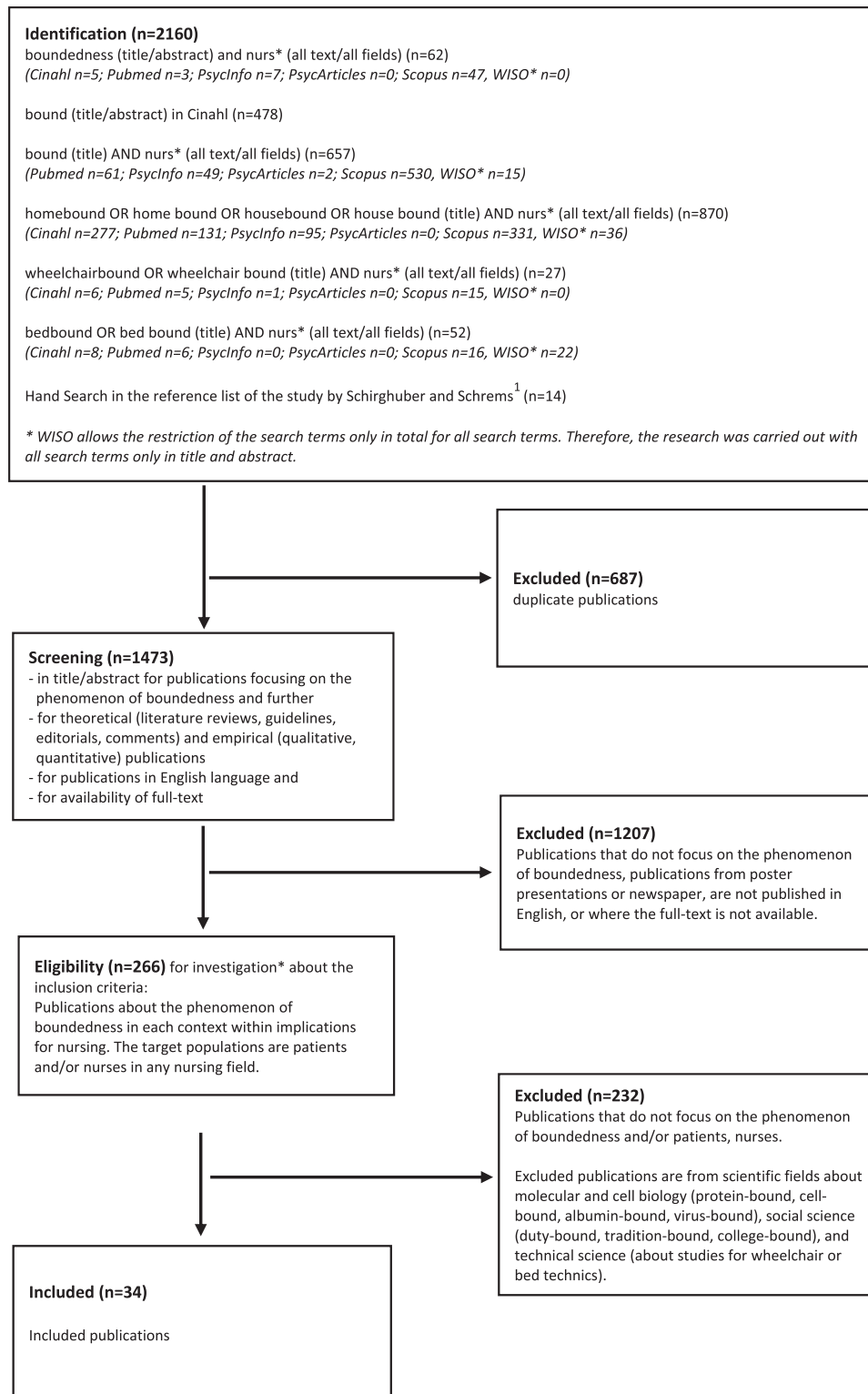
## 4 | RESULTS

### 4.1 | Operational definitions and key findings on boundedness

The literature supports that client boundedness—in its various forms—exists. Dictionary and scientific definitions were analyzed with the result that throughout the remainder of this study, boundedness is best defined as: “the quality or state of being bounded.”<sup>4</sup>

The concept map of the appearance of boundedness in different contexts based on dictionary definitions includes the following forms of being bounded. To be bound to one or more person(s), to/in a place, position, to/in an object, to thoughts, opinions, to activities, to/in substances, cells, and to time.<sup>5–8</sup>

The results of the scientific literature to answer the research question of how boundedness is represented as a phenomenon in the



**FIGURE 1** PRISMA flowchart of the study selection process

scientific literature are summarized into four themes: (1) definitions of the types of boundedness, (2) prevalence of boundedness, (3) risk factors of becoming bound, and (4) consequences of being bound. The content of these themes is presented according to the frequency of the types of boundedness.

#### 4.1.1 | Theme 1: Definitions of the types of boundedness

Some publications<sup>26,27,30,32,34,37</sup> use the homebound definition by Medicare that people can “leave home only with great difficulty and

TABLE 1 Findings from the reviewed scientific literature

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Hampton <sup>9</sup>	Bedbound	England	Nursing & Residential Care	Title: Practical skincare for people who are bedbound	Theoretical	Clinical Review		Bedbound people are unable to reposition, check or maintain their skin health.	Blisters, skin damage and infections, incontinence or contact dermatitis are consequences of being bedbound.
Meguro et al. <sup>10</sup>	Bedbound	Japan	Tohoku Journal of Experimental Medicine	To examine bedbound patients to minimize respiratory infections, possibly caused by silent aspiration.	Empirical	Randomized clinical study	45 bedbound nursing home patients staying in bed for more than 3 months.	No definition of bedbound.	Oral care or sitting up in bed reduces febrile days in bedbound patients, probably due to minimizing respiratory infections.
Rich et al. <sup>11</sup>	Bedbound	USA	Wound Repair and Regeneration	To examine the association between repositioning (at least every 2 h) and pressure ulcer incidence among bedbound elderly hip fracture patients.	Empirical	Prospective cohort study	269 elderly patients (>65 years) with hip fracture and bedbound (during the first 5 days of hospitalization)	No definition of bedbound.	No association between frequent repositioning (every 2 h) and pressure ulcer incidence.
Yoneyama et al. <sup>12</sup>	Bedbound	Japan	Archives of Gerontology and Geriatrics	To provide oral care in bedbound patients to minimize respiratory infections, possibly caused by silent aspiration.	Empirical	Randomized clinical study	46 bedbound nursing home patients	No definition of bedbound.	Oral care can be useful to prevent respiratory infections.

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TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Bayles and Katerndahl <sup>13</sup>	Culture-bound	USA	International Journal of Psychiatry in Medicine	To document Hispanic primary care patients' knowledge and experience of five culture-bound syndromes (CBS), as well as the basic socio-cultural correlates of these disorders.	Empirical	Cross-sectional survey	100 adult Hispanic patients	Definition of culture-bound syndromes by the DSM-IV: Recurrent, locality-specific patterns of aberrant behavior and troubling experience. It is triggered by an event or a trauma such as death.	Culture-bound syndromes in Hispanic primary care patients with country-specific names are susto (fright), nerves, mal de ojo, ataques de nervios. It is triggered by an event or a trauma such as death.
Choi and Yeom <sup>14</sup>	Culture-bound	USA	Journal of American Academy of Nurse Practitioners	To introduce advanced practice nurses to the concept of Hwa-Byung, a culture-bound syndrome that is now accepted as a psychiatric term.	Theoretical	CE Article and a single case example from literature	Single case South Korean woman	Hwa-Byung is a culture-bound syndrome caused by longstanding suppressed anger prevalent among older immigrant women of Korean heritage.	Hwa-Byung is a culture-bound syndrome caused by longstanding suppressed anger prevalent among older immigrant women of Korean heritage.
Dowrick <sup>15</sup>	Culture-bound	England	British Journal of General Practice	Title: Depression as a culture-bound syndrome: Implications for primary care	Theoretical	Editorial		Definition by the American Psychiatric Association: Culture-bound syndromes are considered to be illnesses, limited to specific societies or cultural areas.	In westernized societies, however, depression is a dominant culture-bound syndrome. Diagnostic categories of depression are based on shaky foundations and created within cultural boundaries that will be subject to substantial shifts in the coming decades.

TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Hamilton <sup>1,6</sup>	Culture-bound	USA	Journal of Child & Adolescent Psychiatric Nursing	This case study deals with a 14-year-old Hispanic girl who presented at a behavioral health clinic with anxiety behaviors.	Empirical	Case Study	Single case of a 14-year-old Hispanic girl	Culture affects how one defines health and illness, including the meanings of specific physical and psychological sensations.	Cultural competence is a profound influence on a child's thoughts, emotions, and behaviors. Clinicians must develop a sense of cultural competence.
Isaac <sup>17</sup>	Culture-bound	England	Journal of Psychiatric and Mental Health Nursing	Title: Culture-bound syndromes in mental health: a discussion paper	Theoretical	Discussion paper		Each cultural-bound syndrome would be bound by specific ethnic and cultural groups.	Explanations about the inclusion (or not) of culture-bound syndrome within the mental disorders diagnostic manual. Western psychiatric diagnostics can no longer be the standard used to measure mental illness in cultural spectrum.
Choi and McDougal <sup>18</sup>	Homebound	USA	Aging & Mental Health	The purpose of this study was to examine the questions of whether homebound older adults were more likely than their ambulatory peers who attended senior centers to show depressive symptoms and whether self-reported coping strategies were different between two groups.	Empirical	Cross-sectional study	81 homebound older adults (aged 60 and older) with their 130 ambulatory peers who attended senior centers	Homebound people are older adults as those who, due to medical conditions and/or mobility-affecting impairments, are not able to freely leave their home and require help in doing so.	High depression rate in homebound population.

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TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Cohen-Mansfield et al. <sup>19</sup>	Homebound	Israel	Journal of the American Geriatrics Society	To examine the effects of homebound status of older persons in Israel on mortality, mental health and function, future homebound status, and institutionalization.	Empirical	Cross-sectional analysis using existing data sets of a national survey CALAS—study	Older Jewish persons from the CALAS study (n = 1191) and the second wave (n = 621) of the study	Being homebound was defined as a frequency of going outside the house less than once a week.	Risk of mortality, depressed affected, activities of daily living (ADL), and instrumental activities of daily living (IADL) difficulties.
Cohen-Mansfield et al. <sup>20</sup>	Homebound	Israel	Archives of Gerontology and Geriatrics	The current study examines the prevalence and correlates of homebound status aiming to elucidate the predictors and implications of being homebound.	Empirical	Cross-sectional and longitudinal analysis (data from CALAS and IMAS study)	older Jewish population from the CALAS study (n = 1191) and older Jewish population from the IMAS study (n = 418)	Being homebound was defined as a frequency of going outside the house less than once a week.	Prevalence, characteristics, and longitudinal predictors
Ganguli et al. <sup>21</sup>	Homebound	USA	Journal of the American Geriatrics Society	To determine the frequency and characteristics of homebound older adults in a rural community.	Empirical	Epidemiological Survey, Community-Based Study	878 noninstitutionalized persons aged 68 years and older	Being homebound was defined as a frequency of going outside the house less than once a week.	Homebound people have a disproportionate share of morbidity and disability. Identification of characteristics of risks of being or becoming homebound. They need home-based health services, particularly in medically underserved communities such as rural areas.

TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Gilbert et al. <sup>22</sup>	Homebound	USA	Health Services Research	The purposes are to propose an operational definition of homebound status; to measure its validity in a community-dwelling sample of elderly persons, while discussing its limitations; and to describe the characteristics of the homebound over nine years.	Empirical	Longitudinal study by the Massachusetts Health Care Panel Study (MHCPS) which began in 1974, with follow-up surveys in 1976, 1980, and 1985.	A cohort of elderly persons (n = 1625) living in Massachusetts (USA)	Operational definition: age, sex, marital status, household composition, education, total amount in stocks/savings, pretax income, ADL, functional health scale, cognitive score, bedbound days, incontinence, use of in-home services, number of times visited/talked to physician, hospitalization	The operational measure is a highly specific, moderately sensitive, valid measure.
Hamazaki et al. <sup>23</sup>	Homebound	Japan	Japan Journal of Nursing Science	To investigate the association between homebound status and functional decline over a 2-year follow-up period and the sex difference in its association.	Empirical	2-year follow-up study	2956 independently living ≥65 years older individuals (n = 1267 men, 1679 women)	Homebound status by the Ministry of Welfare and Health, Japan (who left homeless than once per week).	Homebound status is a higher risk for functional dependence. In men, being homebound despite intact functional ability was also a risk for functional dependence.

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TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Inoue and Matsumoto <sup>24</sup>	Homebound	Japan	Asia-Pacific Journal of Public Health	The aim is to investigate the association of sociodemographic profiles, health conditions and functional disabilities with homebound status in a rural community population.	Empirical	Cross-sectional study	Among 1020 older adults (65 years and older) from a mountain village in Japan, 866 residents completed the entire survey.	Definition by the Ministry of Health, Labor and Welfare (degree of "bedriddenness") and homebound people can be also confined to bed.	Functionally impairment, Association of mobility domain and sensory disturbances with homebound status.
Knight and Houseman <sup>25</sup>	Homebound	USA	Issues in Mental Health Nursing	The aim is (1) to determine the incidence of depression in homebound elders; (2) to educate elder clients and significant others about the nature of depressive symptoms in older adults; (3) to identify client-specific treatment plans and treatment objectives; (4) to implement agreed upon treatment for depression with each client; and (5) to evaluate patient outcomes in this setting.	Empirical	Quasi-experimental, nonequivalent-groups design	179 older adults (age 65 and older) receiving services from a home care agency serving 15 rural communities in Massachusetts	No definition of homebound.	High incidence of depression in homebound people and significant improvement with pharmacological and psychosocial interventions by specialized ANP Nurse.

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References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Locher et al. <sup>26</sup>	Homebound	USA	Gerontologist	The purpose of this study was to identify relationships between medical, functional, economic, oral health, social, religious, and psychological factors and undernutrition in homebound older adults. The focus of the study was on identifying potentially modifiable factors amenable to social and behavioral interventions.	Empirical	Cross-sectional study	230 homebound older adults who were currently receiving home health services	Homebound definition by Medicare/USA	Homebound older people have several reasons for undernutrition: geographic isolation, lack of transportation, functional limitations, medical conditions.

Musich et al. <sup>27</sup>	Homebound	USA	Geriatric Nursing	The purpose of this study was to estimate prevalence rates of homebound older adults, their characteristics and the impact of homebound status on health care utilization, expenditures and quality of medical care measures.	Empirical	Prospective cross-sectional study	New enrollees in time of 2012–2014 for Medicare benefits in five states of the USA (n = 25,725)	Homebound definition by Medicare/USA and discussion about other definitions.	prevalence and characteristics of homebound status, health care utilization, quality of care
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References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Ornstein et al. <sup>28</sup>	Homebound	USA	JAMA International Medicine	To develop measures of the frequency of and ability to leave the home, and to use these measures to estimate the homebound population in the U.S. population.	Empirical	Cross-sectional study (data from the National Health and Aging Trends Study)	Noninstitutionalized Medicare beneficiaries, ages 65 and older (n = 7609)	Development of a homebound definition: homebound (= completely, mostly), semi-, not homebound	prevalence, characteristics of homebound status
Petkus et al. <sup>29</sup>	Homebound	USA	International Journal of Geriatric Psychiatry	The purpose of this study was to investigate the factor structure, internal consistency, and concurrent validity of the Brief Symptom Inventory-18 (BSI-18) for use as a screening instrument for depression and anxiety with homebound older adults and to examine if the BSI-18 could be shortened further and exhibit comparable psychometric properties.	Empirical	Validity testing of the Brief Symptom Inventory-18	142 older adults receiving in-home aging services	Clients of in-home services are largely homebound, unable to leave their home independently without assistance.	depression and anxiety as risk factors of being homebound
Qiu et al. <sup>30</sup>	Homebound	USA	Journal of the American Geriatrics Society	This review examines the current literature to identify the specific physical and psychiatric factors most responsible for older adults becoming and remaining housebound.	Theoretical	Literature review		Discussion about researchers' definition of homebound status and the definition by Medicare/USA	overview about homebound definitions, medical and psychiatric disorders of homebound older adults, growth of homebound people and cost of care
	Homebound	USA			Empirical				

TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Reckrey et al. (2020, published online 2019) <sup>31</sup>	Homebound	USA	Journal of Aging & Social Policy	The purpose of this study was to (1) characterize the amount and sources of family and/or paid caregiving received by the homebound and (2) to determine the association between receipt of caregiving support and the ability of older adults to leave the home.	Empirical	Cross-sectional study	Older adults from the National Health and Aging Trends Study (NHATS) (n = 1852)	Homebound definition by Ormstein et al. (2015) <sup>28</sup>	Homebound people who had ≥20 h of caregiving support per week (by family and paid caregivers) had 50% fewer odds of being "exclusively homebound" (rarely or never leave home). This may allow homebound people who would otherwise be isolated at home to utilize social and medical services in the community.
Smith et al. <sup>32</sup>	Homebound	USA	Annals of Internal Medicine	To identify process quality indicators that are essential to high quality, home-based primary care.	Empirical	Expert development panel used a modified Delphi study	Two national panels with home-based primary care experts varied in practice type, location, and setting (n = 5 development panel/n = 9 evaluation panel)	Homebound definition by Medicare/USA	Quality indicator set for high quality, home-based primary care
Soones et al. <sup>33</sup>	Homebound	USA	Journal of the American Geriatrics Society	The aims of this study were to use NHATS data (1) to determine the impact of homebound status on two-year mortality and (2) to describe the prevalence of homebound status in the year before death among older adults in the United States.	Empirical	Trend study	Older adults from the National Health and Aging Trends Study (NHATS) (n = 6400)	Homebound definition by Ormstein et al. (2015) <sup>28</sup>	prevalence, 2-year mortality rate of homebound status

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TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Stall et al. <sup>34</sup>	Homebound	USA	Journal of the American Geriatrics Society	To describe the effect of home-based primary care for homebound older adults on individual, caregiver, and systems outcomes.	Empirical	Systematic review	Homebound community-dwelling older adults (n = 46,154)	Discussion about heterogeneous definitions in studies: e.g., Qiu et al. (2010) <sup>30</sup> and the Medicare Definition/USA	Effects of emergency department visits, on hospital admissions and bed days of care, on long-term care admissions and bed days of care, on costs, on other individual and caregiver outcomes.
Trader et al. <sup>35</sup>	Homebound	USA	Journal of Geriatric Physical Therapy	To examine balance, falls, and related variables in older adults primarily confined to their homes.	Empirical	Descriptive Study	30 homebound older adults	Homebound is defined as confined to the home. Leaving the home environment is required considerable, taxing the functional capacity or to use of assistive devices or need assistance of others.	Homebound people have a high risk of falling because of their current health and medical condition. Screening for environmental hazards should be a standard part of home care services.
Umegaki et al. <sup>36</sup>	Homebound	Japan	Nagoya Journal of Medical Science	In the current study the authors aimed to clarify the incidence of homebound in the elderly in a city in Japan.	Empirical	Prevalence study	Older adults (over 65 years old) (n = 3053) from whom complete sets of data were available for statistical analysis.	Being homebound was defined as a frequency of excursions that was less than once a week.	prevalence of homebound status

TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Wajenberg et al. <sup>37</sup>	Homebound	USA	Journal of the American Geriatrics Society	To document the degree of symptom burden in an urban homebound population.	Empirical	Cross-sectional survey	475 individuals were newly enrolled in the Mountain Sinai Visiting Doctors (MSVD) program and were tested with the ESAS score. 318 individuals were included (aged 18 and older)	Homebound definition by Medicare/USA	The most commonly reported symptoms were loss of appetite, lack of well-being, tiredness, pain; depression, and shortness of breath.
Hassink and van den Berg <sup>38</sup>	Time-bound	Netherlands, England	Social Science & Medicine	Title: Time-bound opportunity costs of informal care: Consequences for access to professional care, caregiver support, and labor supply estimates	Empirical	Cross-sectional study	568 informal caregivers	Time-bound activities correspond with personal care (e.g., dressing, eating, drinking, taking medications, moving around inside and outside the house, or going to the toilet).	Time-bound activities by informal caregivers have consequences for their opportunity costs (e.g., a considerable burden or reduction to partake in paid work).
Chen et al. <sup>39</sup>	Wheelchair-bound	Taiwan	Nursing Outlook	The purpose of this study was to test the effectiveness of 6 months of elastic band exercises on sleep quality and depression of wheelchair-bound older adults in nursing homes.	Empirical	Cluster randomized controlled trial	127 older adults from 10 nursing homes and 114 completed this study	No definition of wheelchair-bound.	The effect of the elastic exercise program is a longer sleep duration, better habitual sleep efficiency, and less depression.

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TABLE 1 (Continued)

References	Context of boundedness	Origin	Journal	Purpose/aim/objective/goal or title of the publication	Type of source	Theoretical or empirical design	Target population (n=)	Conceptual/theoretical framework/definition	Major themes/results
Hoeng et al. <sup>40</sup>	Wheelchair-bound and wheel-chair-user	USA	Journal of the American Geriatrics Society	To determine the patterns of wheelchair use in terms of locations of use, whether wheelchair use in one location was related to wheelchair use in other locations and factors associated with wheelchair use in different locations.	Empirical	Longitudinal cohort study	153 consecutive persons who were prescribed a new wheelchair	No definition of wheelchair-bound.	Personal, wheelchair and environmental factors influence the wheelchair use, and are risk factors for life-space confinement.
Kuan et al. <sup>41</sup>	Wheelchair-bound	Taiwan	Biological Research for Nursing	The aim of this study was to test the effects of a 12-week qigong exercise program on the physiological and psychological health of wheelchair-bound older adults in long-term care facilities.	Empirical	Quasi-experimental, pre-post test, nonequivalent control group	72 institutional wheelchair-bound older adults (be 65 years old or older)	No definition of wheelchair-bound.	Qigong exercise is a daily activity to support the control of blood pressure among wheelchair-bound older adults.
Urasaki et al. <sup>42</sup>	Wheelchair-bound	Japan	Disability and Rehabilitation: Assistive Technology	To investigate the characteristics of elderly Japanese people sitting in a wheelchair using pressure mapping and an objective method to classify sitting patterns.	Empirical	Descriptive observational study	107 elderly persons: 37 group A (housebound), 34 group B (wheelchair/chair-bound), 36 group C (bedbound) and 36 able-bodied persons	Definition of homebound, wheelchair-bound, bedriddenness by the Ministry of Health, Labor and Welfare (degree of "bedriddenness")	The occurrence of proper sitting patterns significantly decreased as the degree of independence reduced from homebound to wheelchair-bound to bedbound.

for absences that are infrequent or of short duration.<sup>37</sup> Similarly, homebound is a situation where people are not able to leave the home independently and need help in doing so<sup>18,24,29,42</sup> and those people are independent in daily life activities inside the house.<sup>42</sup> Homebound is also described as leaving the home environment requiring great physical effort, the use of assistive devices, and the assistance of others,<sup>35</sup> or going out of the house once a week or less.<sup>19–21,23,36</sup> Other publications divide homebound into the categories “completely homebound” (people never or rarely leave their home), “mostly homebound” (people go out of their home once a week or less often), and “semi-homebound” (people leave the home with great difficulty and need the assistance of another person).<sup>28,31,33</sup> One study<sup>22</sup> proposes an operational definition of homebound with multifactorial characteristics (see Table 1). The different definitions of homebound in the scientific literature are in discussion.<sup>30,34</sup>

Similarly, culture-bound is defined in five studies<sup>13–17</sup>: “Culture-bound syndromes are considered to be illnesses limited to specific societies or culture areas.”<sup>15</sup>

The bedbound status includes people who spend all their time in bed and need help in all activities of daily living.<sup>42</sup> In one other study,<sup>9</sup> bedbound is defined as the situation where people are unable to reposition, check or maintain their skin health.

Time-bound in context to activities is defined as personal care activities (e.g., dressing, eating, drinking, taking medications, moving around inside and outside the house, or going to the toilet). It differs from shiftable activities as household and organizational activities.<sup>38</sup>

Wheelchair-bound is only defined in one publication. Accordingly, wheelchair-bound people sit most of the time in a wheelchair but keep the posture on it. They need help in daily life activities inside the house and take meals and eliminations on the wheelchair.<sup>42</sup>

#### 4.1.2 | Theme 2: Prevalence of boundedness

The prevalence of boundedness in the context of the homebound status shows a high rate. The lowest rates start at 5.6% of the elderly, community-dwelling Medicare population ( $n = 2$  million people)<sup>28</sup> and in the overall population.<sup>33</sup> Rates then rise to 14.4% of the population of all over 65-year-old in a large city in Japan,<sup>36</sup> to 17.7%–19.5% of older persons in Israel,<sup>20</sup> and finally to 19.6% of new enrollees for Medicare benefits in five states of the United States.<sup>27</sup> Boundedness in a cultural context (culture-bound) can be found in 4%–11.9% of female Koreans.<sup>14</sup>

#### 4.1.3 | Theme 3: Risk factors of becoming bound

Risk factors of becoming bound to the home are old age, being female, obesity, underweight, or living in a multistory house without an elevator.<sup>20</sup> Other reasons are geographic isolation, a lack of transportation<sup>26</sup> or caregiving support,<sup>31</sup> functional limitations, medical conditions,<sup>26</sup> or frailty.<sup>22</sup> Elder homebound adults have often complex medical comorbidities interrelated with social problems.<sup>34</sup> The

most relevant medical factors are metabolic,<sup>30</sup> cardiovascular (e.g., angina), cerebrovascular (e.g., stroke), and musculoskeletal (e.g., arthritis of the spine) diseases, as well as cognitive impairment<sup>21,30</sup> as dementia,<sup>30</sup> and depression.<sup>21,30</sup> Falls are risk factors, especially if people also lose weight and/or develop a functional impairment.<sup>21</sup> Chronic diseases can also be related to the causes for becoming bedbound<sup>10,12</sup> and being dependent on a wheelchair.<sup>39–41</sup> But wheelchair-users are not always wheelchair-bound people, who are thereby restricted in their living space. Reasons are personal factors (e.g., no assistance to drive the wheelchair), the use of an unfit wheelchair, and environmental factors such as non-wheelchair-accessible environment.<sup>40</sup>

#### 4.1.4 | Theme 4: Consequences of being bound

Homebound increases the risk of mortality and can be seen as a predictive factor (risk ratio = 1.33, 95% confidence interval [CI] = 1.08–1.63).<sup>19</sup> Similar to these results, homebound (independent of functional impairment and comorbidity) is an increased risk factor in 2-year mortality (hazard ratio [HR], 2.08; 95% CI, 1.63–2.65,  $p < .001$ ).<sup>33</sup> Further possible consequences of being homebound are a risk of falling<sup>35</sup> and/or undernutrition,<sup>26</sup> functional dependence,<sup>23</sup> social isolation, spiritual consequences (e.g., not able to attend church services),<sup>18</sup> anxiety,<sup>24,29</sup> depressive symptoms,<sup>25</sup> and depression.<sup>18,19,24,29</sup> Homebound people have further difficulties in the ADL (activities of daily living as crossing a small room, washing, dressing, eating, grooming, transferring, and toileting) and in the IADL (instrumental activities of daily living as preparing meals, daily shopping, shopping for clothes, doing light housekeeping, doing heavy housework, taking the bus, and doing laundry).<sup>19</sup> Homebound people have problems going outside the house and see medical care centers. The consequence is a higher symptom burden (e.g., loss of appetite, lack of well-being, tiredness, and pain).<sup>37</sup> If there is no effective home health system, there is a higher risk that these people will end up in hospitals or nursing homes. However, compared to home care services, institutional care would result in even higher health care costs.<sup>30</sup>

Wheelchair-bound and bedbound people have a higher risk of developing a pressure ulcer.<sup>42</sup> Institutional elder wheelchair-bound adults move less and therefore they are susceptible to health problems.<sup>41</sup> Wheelchair-bound people are also more disposed to sleep disturbances and depression.<sup>39</sup> The consequences of being bedbound are blisters, skin damage and infections, incontinence or contact dermatitis,<sup>9</sup> injury,<sup>9,11</sup> and respiratory infections.<sup>10,12</sup>

Culture-bound has effects on health and diseases.<sup>17</sup> One's culture has a strong influence on a person's thoughts, emotions, and behavior, for example with present anxiety and somatic symptoms,<sup>16</sup> a longstanding suppressed anger,<sup>14</sup> loss of appetite, insomnia, listlessness, or social withdrawal.<sup>13</sup> In westernized societies, however, depression is a dominant culture-bound syndrome.<sup>15</sup>

Boundedness correlates also with time. Informal caregivers carry out shiftable (household and organizational activities) and time-bound activities for the personal care recipient (e.g., eating, drinking, and



**TABLE 2** Types and examples of boundedness

Types of boundedness		Types of boundedness in the context of nursing
1	To be bound to one or more person(s)	To the family, <sup>7</sup> to communities <sup>8</sup>
2	To be bound to/in a place, position	To a continent, <sup>8</sup> to prison, <sup>7</sup> to home, <sup>6,18-30,32-34,36,37</sup> sitting or lying posture (in a wheelchair, <sup>6,40,42</sup> or a bed <sup>11</sup> )
3	To be bound to/in an object	To a wheelchair, <sup>6,39-42</sup> to a bed <sup>9-12</sup>
4	To be bound to thoughts, opinions	Having a moral or legal duty, <sup>7</sup> by the own promise, <sup>5</sup> to a culture <sup>13-17</sup>
5	To be bound to activities	To be obliged to act <sup>7</sup> as to work, <sup>8</sup> or as a politician <sup>5</sup>
6	To be bound to/in substances, cells	To another element, substance, or material in chemical or physical union <sup>7</sup>
7	To be bound to time	Time-deadlines (e.g., time to be late), <sup>5</sup> shiftable or fixed activities <sup>38</sup>

dressing). In the long run, time-bound activities by informal caregivers have consequences for their opportunity costs (e.g., a considerable burden or reducing to partake in paid work).<sup>38</sup>

## 4.2 | A synthesized typology of boundedness and nursing interventions

The synthesis of the results of the phenomenon of boundedness answers the second research question - How does boundedness express itself in terms of types and potential differences? - and serves to conceptualize the phenomenon. The conceptualization of boundedness is based on Reynolds' explanations on the development of theory.<sup>43</sup> According to Reynolds, there are two types of terms: primitive terms and derived terms. Primitive terms cannot be described by other terms or symbols. There is widespread mutual agreement on what they mean (e.g., home or wheelchair). Derived terms are coined by blending two or more primitive terms (e.g., home and bound = homebound). Such derived terms can be used to communicate more efficiently. Furthermore, Reynolds describes two types of definitions: dictionary definitions and real definitions. Dictionary definitions describe terms (primitive and derived ones) in a natural language (e.g., home: "A place where one lives; a residence."<sup>44</sup>). Real definitions, on the contrary, describe the real properties of an object or a phenomenon (e.g., home for family, security, happiness<sup>44</sup>). There are also different types of homes, for example, the own home, nursing home, or children's home. When people talk about their own home, they use a real definition. Real definitions describe the real characteristics of a phenomenon,<sup>43</sup> which include antecedents and consequences and are called concepts.<sup>45,46</sup> This means that the dictionary definitions are enriched with further components. The result of the extension can be a typology (e.g., boundedness), that encompasses the various categories of the phenomenon (e.g., being bound to home, a wheelchair, or bed), or a concept. Boundedness in the context of care, therefore, exists as a real definition, it encompasses more than just being tied to something. In addition, various derived terms such as home, person, or culture-bound can be found in the context of nursing. Based on these results, a typology can be developed to understand boundedness as a nursing-relevant concept.

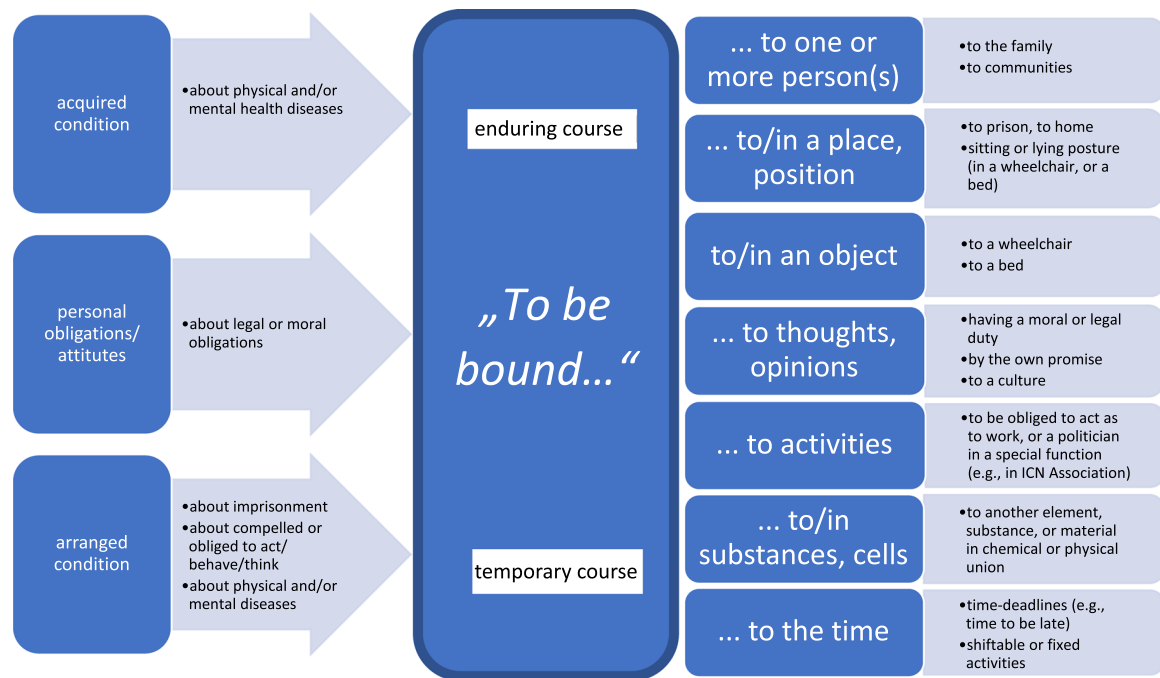
### 4.2.1 | Typology of boundedness

Altogether, seven types of boundedness can be derived from the results of the dictionary definitions and the included scientific literature. Nursing relevant types and examples are presented in Table 2.

Boundedness is a contextual concept and therefore ambiguous. There are three basic causes of boundedness. First, it is an acquired condition caused by an unwanted situation like an illness.<sup>6</sup> Second, personal obligations (e.g., legal or moral) lead to boundedness. Third, arranged conditions of boundedness refer to for example, an arranged imprisonment, or to an arranged act, behavior, or thinking.<sup>7</sup> Boundedness shows two principal courses: enduring (e.g., completely homebound where people never or rarely leave their home<sup>28</sup>) or temporary (e.g., mostly or semi-homebound where people can go outside the house once a week with the assistance of another person<sup>28</sup>). The typology is shown in Figure 2.

### 4.2.2 | Nursing interventions on boundedness

The findings from the included scientific literature also answer the third research question: How might nurses mitigate the effects of boundedness? The results show that nurses and other health care providers contribute significantly to the prevention as well as to the reduction of the consequences of boundedness. It is particularly necessary to prevent the homebound status<sup>19-21,23</sup> (e.g., to reduce the risk of mortality)<sup>20,33</sup> and find a way to deal with the consequences of being homebound (e.g., social isolation,<sup>18</sup> anxiety, depression,<sup>24,25,29</sup> difficulties in the ADL/IADL,<sup>19</sup> risks of under-nutrition<sup>26</sup>). Further, nurses have to examine the risk of falls due to the balance and environmental assessments, as well as to prevent falls of homebound people.<sup>35</sup> Increased care support from family members and paid caregivers (e.g., home health aides, personal care attendants, direct care workers) may also allow homebound people who would otherwise be isolated at home to access social and medical services in the community.<sup>31</sup> Specialized home-based primary care programs are needed to affect individual, caregiver, and the system's outcome.<sup>34</sup> For this purpose, 200 quality indicators were



**FIGURE 2** Typology of the phenomenon of boundedness

researched that cover 23 geriatric conditions and are essential to future innovative care solutions in home-based primary care programs (e.g., to manage problems with constipation, dementia care, to manage diabetes, hypertension, malnutrition, or pain).<sup>32</sup> For identifying and treating depression in homebound people, necessary services,<sup>18,29</sup> especially advanced psychiatric practice nurses (APPN's),<sup>25</sup> are required. A lower degree of independence of wheelchair-bound people also goes hand in hand with the risk of pressure ulcers. It is a major problem in nursing and can be prevented by specialized wheelchair cushions.<sup>42</sup> In nursing homes, group exercise activities with an elastic band exercise program improve the sleep quality and the depression in wheelchair-bound people<sup>39</sup> just like qigong exercise programs suitable as a daily activity help to manage the high blood pressure of wheelchair-bound people.<sup>41</sup> One example of nursing intervention for bedbound people is skincare to prevent blisters, skin tears, pressure injury, or contact dermatitis.<sup>9</sup> Further nursing interventions are frequent to prevent pressure injury with repositioning<sup>11</sup> as well as oral hygiene to prevent and to reduce respiratory infections in bedbound people.<sup>10,12</sup> Clinicians and especially clinical nurses also need an understanding of the culture of the patients and their families.<sup>16</sup> Time-bound nursing activities may have a positive external effect for informal caregivers (e.g., reduce the workload, participation in the labor market, social and leisure activities, or family life).<sup>38</sup>

## 5 | DISCUSSION

Boundedness is a real and common phenomenon in nursing. Concerning the phenomenon of boundedness, it is known that: (1) there are definitions for nursing-related types of boundedness, such as

bedbound, culture-bound, homebound, time-bound, wheelchair-bound; (2) the prevalence of homebound and culture-bound is high; (3) there are many risk factors of becoming bound to home, wheelchair, or bed and (4) the consequences of boundedness are manifold, physically, as well as mentally, and socially. The typology of the phenomenon of boundedness (Figure 2) distinguishes between different conditions, time aspects, types, and examples.

First, acquired conditions of boundedness are physical and/or mental health diseases.<sup>30</sup> Influencing factors of boundedness with implications for nursing are also personal commitments or attitudes towards legal or moral obligations. However, none of the included studies focused on this type of boundedness. Nevertheless, the COVID-19 pandemic shows that nurses and in particular their managers see a dilemma between the moral obligation to do the right thing for the patients and to do something for the well-being of their caregivers.<sup>47</sup> Arranged conditions of boundedness are defined in dictionary definitions (a bound prisoner<sup>7</sup>) but not in the included scientific literature. Still, nurses play a vital role in arranged boundedness, not just in prisons.<sup>48</sup> Such arranged conditions can also be seen in physical constraint in psychiatry, or in the COVID-19 pandemic. People are asked to stay at home or are required to go into quarantine. National borders are more or less closed, and people are bound to a certain country. At the same time, people are obliged to adhere to behavior rules, such as using a face mask or keeping social distance. Suggestions are made to think about the rules of conduct for COVID-19 pandemic, advertising and news information on social media and television determine the thinking. Lockdown or quarantine in a Covid-19 pandemic are risk factors for psychological stress<sup>49</sup> and produce behavioral, psychosocial, and environmental changes that lead to a rapid weight gain in affected people worldwide.<sup>50</sup> Another example of an arranged condition of boundedness to a place or object is the prescribed

bed-rest due to physical and/or mental illness. Therefore, nurses need to prevent the consequences of boundedness.<sup>51</sup>

Second, there are two courses (enduring, temporary) that nurses must consider managing further to adapt nursing interventions. A systematic literature review<sup>52</sup> shows that the use of structured protocols and instruments to control disease processes by trained nurses achieves similar results in the area of disease management and prevention as those of doctors. The effect on the temporal aspects of boundedness is not known and requires further investigation.<sup>52</sup> However, it can be assumed that the longer the state of boundedness persists, the greater the risks and complications. Therefore, further studies must also examine the courses of boundedness.

Third, the results express different types and examples of boundedness (see Table 2). In the scientific literature, it becomes clear that to be bound to a place or position as well as to an object are most relevant for care; homebound is the most common next to wheelchair-bound and bedbound. To be bound to culture, time, substance, activities and persons are less common but are therefore not irrelevant for care. The definitions of the homebound status vary.<sup>30,34</sup> However, a lack of consensus on definitions causes problems, for example in research (e.g., difficulties in meta-analyses).<sup>30</sup> Further investigations are needed to analyze this concept. To be bound to a wheelchair and to a bed is also ambiguous in context as people are bound to an object (wheelchair, bed) as well as to a place. On the one hand, wheelchair-bound people need the wheelchair to move within their life-space, on the other hand, personal and/or environmental factors like no home adaption for wheelchair-use and others, influence the movement in life-space and are part of the risk of home confinement.<sup>40</sup> In a study by Zegelin,<sup>53</sup> to be bound to a place is referred to as local confinement where people remain in one place and need help in transferring (to/in the bed or the wheelchair). The experiences of local confinement are a loss of power and control within the own four walls, and the bed has become a "public workplace." To be bound to a culture strongly influences emotions and behavior, therefore health care providers and nurses need to understand and achieve culturally competent interventions in people with mental health issues.<sup>14,16,17</sup> In nursing, the expression to be time-bound relates to tasks that cannot be postponed, such as personal care (e.g., bathing, dressing, eating). This creates a positive external effect for informal caregivers.<sup>38</sup> Furthermore, nursing research should also focus on being bound in context to activities. The consequences of nurses being bound to time and to work activities are critical to the individual well-being of patients in hospitals, nursing homes, or home care settings and should be further investigated. To be bound to one or more person(s) is related to nursing, for example in family health or community health nursing (e.g., caring for culture-bound refugees). This correlates with the nursing definition by the International Council of Nurses (ICN) where nursing encompasses care for individuals, families, groups, or communities,<sup>54</sup> and at the same time, nurses are bound to thoughts and opinions, e.g., about this ICN definition. Nursing staff play a key role in caring for people who are bound to substances (alcohol, drugs).<sup>55</sup>

The usefulness of a typology includes three criteria (exhaustiveness, mutual exclusiveness, consistence).<sup>43</sup> The comprehensive view from a nursing perspective about the typology of boundedness

fulfills the first criterion (exhaustiveness) that all the phenomena (or "things") are placed in the scheme. The second criterion, as there is no ambiguity about the scheme (or mutual exclusiveness), is also fulfilled. So, the typology of boundedness is a new descriptive theory in form of a classification theory. For the third criterion where "typologies should be consistent with the concepts used in the statements that express the other purposes of science"<sup>43</sup> (p3) further studies are necessary. They should deal more closely with the types of boundedness in form, clearly defined concepts, or middle-range theories. So, nursing concepts are essential for developing nursing theories, nursing knowledge, and a standardized nursing language.<sup>46</sup>

## 6 | LIMITATIONS

Several limitations of this scoping review should be recognized. First, in the search strategy, the research term bedbound was not extended to the synonym bedridden, as the focus in this scoping review was limited to the term boundedness or bound. So, the research term bedbound showed only very few results from partly older publications. Further results to the phenomenon of boundedness should also focus on the research term bedridden. Second, in this scoping review, there was no discussion of the differentiation between the synonyms of boundedness (confinement, limitation). In further research, a linguistic perspective is necessary to work out differences of the term boundedness to other phenomena. Thirdly, some results could not be assigned to the themes of risk factors or the consequences of boundedness, which limits the precision of the results of this scoping review and must be examined in further research (e.g., in clinical validation studies). Fourth, publications of the phenomenon of being bound to the home in the context of the COVID-19 pandemic are missing in this scoping review, because only publications that were published before the pandemic were researched. In follow-up research, however, no publications were found in the context of boundedness. Future studies should investigate this phenomenon in the context of the COVID-19 pandemic. Fifth, due to the exclusion of studies in the search that did not provide an abstract, potential studies may have been lost for this scoping review. Sixth, not all examples of the types of boundedness from the results found in the dictionaries and the scientific literature are included for discussion. Future studies (e.g., concept analyses) should examine all the examples of the specific types of boundedness.

## 7 | CONCLUSION

The objective of the study was to explore and conceptualize the phenomenon of boundedness taking into account the various forms and the consequences for nursing. Understanding people who are bound in various ways is essential to nursing education and practice to prevent or reduce the consequences and related burden of boundedness. For nursing research, further specification and the development of a middle-range theory based on the analysis of the various types of boundedness, their conditions, and courses are

required. This makes an essential contribution to the formation of theories and nursing knowledge.

## AUTHOR CONTRIBUTIONS

*Conception and design of the study, analysis, and interpretation of data:* Johannes Schirghuber and Berta Schrems. *Drafting the article or revising it critically for important intellectual content:* Johannes Schirghuber and Berta Schrems. *Final approval of the version to be published:* Berta Schrems and Johannes Schirghuber.

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