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Incontinence care in nursing homes: a cross-sectional study

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Abstract

Aims. To describe the quality of incontinence care in nursing homes. Main outcome measures were: (1) availability of structural quality indicators on ward and institutional levels; (2) use of nursing interventions as quality indicators on a process level; (3) prevalence of incontinence as an outcome indicator.

Background. Incontinence in older people is a major problem in nursing care that presents a high workload for nurses, increases costs and places a high burden on affected individuals. The availability of structural indicators, and the use of nursing interventions, is recommended to improve the quality of care. Only limited amounts of reliable and valid data are available regarding the quality of incontinence care in nursing homes.

Design. A cross-sectional multicentre study in 16 nursing homes (N = 1302) in 2013.

Methods. A standardized and validated questionnaire was used for data collection. Each resident was assessed by two trained nurses.

Results/findings. The primary outcome of the study indicated that structural indicators, such as the availability of information brochures, are limited in nursing homes. On a process level, the provision of body worn pads or underlay pads to protect beds or chairs were most frequently used and training interventions were only delivered to a small proportion of residents with incontinence. The prevalence of all types of incontinence, particularly double incontinence, was high (69·2%).

Conclusion. Due to the high prevalence of double incontinence and low rate of training interventions regarding this type of incontinence, ongoing efforts to improve the quality of incontinence care are warranted.

Keywords: continence, long-term care, practice nursing, quality of care

Why is this research or review needed?

- Incontinence increases the workload for nurses, costs to the care facility and places a high burden on affected individuals.
- Knowledge about nursing care regarding incontinence on structure, process and outcome level needs to be improved.

What are the key findings?

- Structural indicators, such as the availability of specialized continence nurses or information brochures, are limited in availability in nursing homes.
- On a process level, nursing interventions such as body worn pads were the most frequently used.
- The prevalence of all types of incontinence was high.

How should the findings be used to influence policy/practice/research/education?

- Nursing homes should provide structural indicators such as guidelines and information brochures about incontinence.
- Nursing homes should improve the knowledge of their employees on this topic by providing specialized education and/or continence nurses.
- Researchers should investigate the effectiveness and implementation of nursing interventions with regard to incontinence.

Introduction

Incontinence is a major health issue that affects women and men during any stage of life; its prevalence increases with ageing (Stenzelius *et al.* 2004, Chiarelli *et al.* 2005, Pretlove *et al.* 2006). Although its prevalence increases with ageing, incontinence is not a normal consequence of ageing (Nelson *et al.* 2001, Zhu *et al.* 2010, Gerst *et al.* 2011). Incontinence has significant psychological and social impacts, places major limitations on the quality of life (Hägglund 2010, Hayder & Schnepp 2010, De Mello Portella *et al.* 2012) and increases the risk of admission into a nursing home (Stenzelius *et al.* 2004, Weatherall *et al.* 2004, Leung & Schnelle 2008).

Incontinence can be described as an involuntary loss of urine or faeces or a combination of both. Urinary incontinence (UI) is defined as 'any involuntary loss of urine' and faecal incontinence (FI) is defined as 'any involuntary loss of faecal material' (Abrams *et al.* 2010, p. 213-214). Consequently, a combination of UI and FI, also known as double incontinence (DI), is 'any involuntary loss of urine and faecal material' (National Collaborating Centre for Acute Care 2007, p. 16). In the nursing home setting, nurses are the first in-house point of contact for residents and relatives. Therefore, nurses play a major role in the treatment and care of people with incontinence (Royal College of Nursing 2006).

Background

A systematic review reported international prevalence rates of UI in nursing homes from 30-65%, FI from 22·4-55·5% and DI from 20·5-64% (Roe *et al.* 2011). Annual prevalence measurements about different care problems, including incontinence, in the Netherlands reported UI prevalence rates in nursing homes up to 60% and FI and DI prevalence rates at about 30% (Halfens *et al.* 2013). International prevalence rates for European countries, Japan and USA were reported between 42·9–65·2% (Sgadari *et al.* 1997).

High rates of reported international prevalence for all types of incontinence have serious consequences such as increased anxiety (Ahnis *et al.* 2000), a self-reported decrease in the overall health of nursing home residents (Yip *et al.* 2013), represent an increased workload for the nurses (Landefeld *et al.* 2008) and contribute to rising costs for the health system (Wilson *et al.* 2001, Xu *et al.* 2012). Furthermore, Bürge *et al.* (2013) described incontinence as one risk factor in nursing home residents, which leads to a decline in the performance of the 'Activities of Daily Living' (ADLs).

The most commonly mentioned risk factors for UI in the literature are age, gender and dementia (Shamliyan *et al.* 2007, Landefeld *et al.* 2008, Offermans *et al.* 2009). Furthermore, incontinence can be affected by multiple factors including diabetes, stroke and can be related to decreasing mobility and impairments in eating and drinking (Offermans *et al.* 2009, International Continence Society 2013, Townsend *et al.* 2013).

Not only individual characteristics, but also structural and process level indicators (as described by Donabedian) influence the health outcomes of residents (Donabedian 1966). Donabedian described three categories (structure, process and outcome), within which conclusions with regard to the quality of care can be drawn (Donabedian 1988). Structure includes material resources (equipment), human resources (staffing) and organisational aspects; process includes, for example, nursing diagnoses and nursing interventions; the outcome category shows the effect of care on the health status, such as an improvement in resident's knowledge (Donabedian 1988).

The application of such structural indicators, such as keeping voiding records or food and fluid diaries, is

recommended in the international literature to improve the process of incontinence care (Abrams *et al.* 2010, Roe *et al.* 2013).

On a process level, international guidelines recommend nursing interventions such as monitoring of diet, bowel habits or toilet training, and the revision and adaption of incontinence affecting medication (National Collaborating Centre for Acute Care 2007, Registered Nurses' Association of Ontario 2011).

A relationship between structural, process level and outcome indicators, as proposed by Donabedian, has been confirmed by some studies (German Network for Quality Development in Nursing 2009, Registered Nurses' Association of Ontario 2011). A multi-professional team approach (structural) is considered crucial for optimal continence care (German Network for Quality Development in Nursing 2009, Registered Nurses' Association of Ontario 2011), while Sackley *et al.* (2008) showed that staff education (structural) and group exercise (process level) improved the outcomes of residents by decreasing urinary incontinence (outcome).

In addition, specific behavioural interventions like exercise and prompted voiding (process level) have been reported to improve continence outcomes for nursing home residents (outcome) (Schnelle *et al.* 2002). Morgan *et al.* (2008) also confirmed the relationship between structural, process level and outcome indicators. They showed a decrease in the rate of incontinence (outcome) after implementation of a bowel and bladder incontinence assessment tool (structural), which included an individualized toileting schedule (process level).

However, Roe *et al.* (2013) concluded that studies on incontinence are necessary due to the fact that most descriptive studies on the management of urinary incontinence in nursing homes have been conducted in the USA. This is especially relevant because of the fact that the applicability of their results may not be transferrable to the European setting, where structural indicators (e.g. organisational structure, staff mix) and delivery of care (process level indicators) could differ. Furthermore, Roe *et al.* (2011) reported that most research methods may have limited reliability and validity, due to the use of patient files.

The study

Aims

The overall aim of this study was to describe the quality of incontinence care in nursing homes. The main aims of this study were: (1) to describe the availability of structural indicators on ward and institutional levels; (2) to describe the use of nursing interventions as a level indicators; as process level indicators; and (3) to assess the prevalence of incontinence as an outcome indicator in various risk groups.

Design

The International Prevalence Measurement of Care Problems is an internationally conducted, cross-sectional, multicentre study, which is annually conducted on one specific day in healthcare settings such as hospitals and nursing homes. This study scrutinizes the prevalence, prevention and intervention measures and quality indicators with regard to incontinence, pressure ulcers, restraints, malnutrition, intertrigo and falls (Halfens *et al.* 2013). This article concentrates only on the incontinence data. Data are collected using a comprehensive and standardized questionnaire that asks questions on three levels: institutional, ward and patient/resident (Halfens *et al.* 2013). This study was conducted in 2013 in 16 Austrian nursing homes as the Austrian version of the *International Prevalence Measurement of Care Problems* (Lohrmann 2012, Van Nie-Visser *et al.* 2013).

Participants

All nursing homes in Austria with more than 50 beds, which are registered in a national database (Federal Ministry of Labour, Social Affairs & Consumer Protection 2012), were invited via email and leaflets to take part in the study. Residents were eligible for participation if they were living in the nursing home on the day of data collection.

Training on conducting the measurement was offered by staff members of the Institute of Nursing Science at the Medical University of Graz using the questionnaires and the web-based data entry program. Standardized training materials were made available (Van Nie-Visser *et al.* 2013).

Data collection

For data collection purposes, the Austrian version of the International Prevalence Measurement of Care Problems was used (Van Nie-Visser *et al.* 2013). This questionnaire was based on Donabedian's structure, process and outcome model for health care organisations (Donabedian 1988). With reference to incontinence, the structural and process level indicators were developed and regularly updated by consulting experts. These were based on guidelines, e.g. the

EAU Guideline in Urinary Incontinence 2010 (Thüroff *et al.* 2010) and those appearing in the primary literature (e.g. Hannestad *et al.* 2000, Rohr *et al.* 2005). Specific details for the development of these indicators can be found in Van Nie-Visser *et al.* (2013).

The focus of this study was to directly assess the incontinence data. Therefore, the first step was to question the nursing home residents. If this was not possible, patient files or caregivers could be used to collect relevant information. The last course taken was to ask the relatives. The reason for this was that most of the relatives have been observed to have little insight into the nursing practices, care and intervention measures with regard to care problems such as incontinence and, therefore, were not expected to be able to answer the questions.

Seven structural indicators on the institutional level were specified that could be answered with a simple 'yes' or 'no', for example, whether guidelines or information brochures were available. On the ward level, seven structural indicators with dichotomous (yes/no) answers were assessed (e.g. multidisciplinary meetings on incontinence, availability of incontinence experts). The process level indicators were conceptualized as the use of nursing interventions for UI (e.g. individual schedules for fixed-time bathroom visits, bladder training), where multiple answers were possible.

The prevalence of incontinence without a catheter was delineated as an outcome indicator. To ensure a clear distinction between types of incontinence, the previously mentioned International Continence Society (ICS) definitions (Abrams *et al.* 2010) for UI and FI were used and elaborated on. A resident experiencing UI was defined as involuntarily losing urine, without any involuntary loss of faecal material. Residents were defined as experiencing FI when they suffered from any involuntary loss of faecal material, without any involuntary loss of urine. If a resident lost both urine and faecal material, they were identified as experiencing DI.

In addition to these indicators, demographic data (e.g. age, gender) and medical diagnoses according to ICD 10 (World Health Organization 2011) were measured. Decreased mobility or impairment in eating and drinking were measured with the German version of the Care Dependency Scale-CDS, where lower scores referred to higher levels of care dependency (Dijkstra *et al.* 1996, Lohrmann 2003). The CDS sum score of the residents could range from completely care dependent (15-24 points), to a great extent care dependent (25-44 points), partially care dependent (45-59 points), to a limited extent care independent (60-69 points) and up to almost care independent (70-75 points) (Dijkstra *et al.* 2012).

Ethical considerations

Written informed consent was given by the participating nursing home resident or their legal representative. The study was approved by the ethical committee of a university.

Data analysis

Statistical analyses were performed using the SPSS 20.0 statistical software for Windows (IBM Corp. Released, Armonk, NY, USA 2011). The data file was checked for discordant values and contradictions. Descriptive data analysis was used for nominal variables and ordinal variables. Age was described as the mean with standard deviation. Metric variables that were not normally distributed were revealed as the median and percentile (25%; 75%).

Validity and reliability

For data collection purposes, the *International Prevalence Measurement of Care Problems*, a standardized and psychometrically tested questionnaire, was used (Van Nie-Visser *et al.* 2013). The development process, and reliability and validity of the whole questionnaire and included instruments, has already been described in detail (Van Nie-Visser *et al.* 2013). The Austrian version was professionally translated and language changes were discussed with members of an international, fluent, German-speaking research team (Schoberer *et al.* 2012, Schoenherr *et al.* 2012, Shahin & Lohrmann 2014). In 2008, a pilot measurement was conducted in 11 Austrian hospitals to assess the comprehensibility and applicability of the Austrian version. Feedback, with minor linguistic changes suggested by staff at the 11 pilot hospitals, was included into the questionnaire (Schoberer *et al.* 2012, Schoenherr *et al.* 2012, Shahin & Lohrmann 2014).

To increase the objectivity of the assessment, each resident was assessed by one nurse from the ward and one independent nurse from another ward. Disagreements were resolved through discussion. No independent researcher was involved in the data collection process.

Results

Characteristics of sample

16 Austrian nursing homes including 43 wards with 1397 nursing home residents (response 80·1%) participated in the study. Additional exclusion criteria included the use of a catheter ($N = 74$) and whether data for incontinence were missing ($N = 21$).

The mean age of participants in the final sample was 83·7 years (standard deviation: 9·6) and more than three-quarters were female (78·8%). The three most prevalent diagnoses were cardiovascular diseases (73·2%), dementia (53·3%) and motor disorders (46·3%). The median sum score of the CDS was 47·5 (percentiles: 29·0; 65·0). Nearly half of the residents were completely or to a great extend care dependent (46·0%) and more than one-third (36·3%) were completely care dependent with regard to their 'continence'. Table 1 illustrates structural indicators on both institutional and ward levels.

Table 1 Availability of structural indicators on institutional (N = 16) and ward (N = 43) levels.

	Number	Percentage
Availability of structural indicators on the institutional level		
Guidelines for incontinence treatment	10	62·5%
Expert to update guidelines	10	62·5%
Availability of incontinence expert	8	50·0%
Protocol for management of incontinence products	15	93·8%
Refresher course for caregivers	9	56·3%
Information brochure	3	18·8%
Standard policy for handover	4	25·0%
Availability of structural indicators on the ward level		
Availability of incontinence expert	16	37·2%
Multi-disciplinary incontinence team meetings	9	20·9%
Control of compliance with guidelines	30	69·8%
Care file includes nursing interventions for incontinence	41	95·3%
Standardized availability of incontinence products	42	97·7%
Information brochure	7	16·3%
Standard policy for handover	42	97·7%

Structural level

The most frequent incontinence-related structural quality indicator on the institutional level was the availability of a management protocol for incontinence products at the institutional level (15 out of 16 nursing homes). A continence nurse was available in half of the nursing homes. The least-used structural quality indicator on the institutional level was the availability of an informational brochure about incontinence for residents and/or caregivers (3 out of 16 nursing homes).

The average number of structural quality indicators available on the institutional level was 4·3 (range: 1 to all = 7). The most frequent quality indicators on the ward level were the review of continence status during admission/discharge the documentation of nursing interventions for incontinence in the care file and the availability of incontinence products in the ward (42 out of 43 wards). An incontinence specialist was available on the ward for 16 of 43 wards.

The least frequently used structural quality indicator on a ward level was again the availability of informational brochures about incontinence for residents and/or caregivers (7 out of 43 wards). The average number of structural quality indicators available on the ward level was 4·9 (range: 3 to all = 7).

Process level

Table 2 shows diverse incontinence-related interventions for the management of UI that were offered to the nursing home residents.

Disposable or washable absorbent bodyworn pads (84·9%) or pads/mats for placing under the participant (68·9%) were the interventions most frequently used for all

Table 2 Application of UI nursing interventions for UI, DI and incontinence in %.

Application of UI nursing interventions*	UI residents (N = 359)	DI residents (N = 529)	INC residents (N = 888)
Body worn disposable or washable pads	85·2%	84·7%	84·9%
Disposable or washable underlay pads	68·8%	69·0%	68·9%
Adapted and comfortable clothing	51·8%	58·2%	55·6%
Individual schedule for fixed-time bathroom visits	51·5%	38·6%	43·8%
Adaptation of the environment	44·3%	42·3%	43·1%
Evaluation of medication	27·9%	26·8%	27·3%
Disposable (under) pants	15·9%	19·7%	18·1%
Ward schedule for fixed-time bathroom visits	9·7%	18·5%	15·0%
Bladder training/pelvic muscle/relaxation exercise	5·0%	5·5%	5·3%
Medication	6·7%	2·8%	4·4%
Others	1·9%	0·9%	1·4%
No actions (e.g. use of catheter)	1·1%	0·6%	0·8%

*Multiple answers possible.
UI, urinary incontinence; DI, double incontinence; INC, incontinence.

Table 3 Prevalence of UI, FI, DI and incontinence in various at risk groups.

	UI prevalence	N	FI prevalence	N	DI prevalence	N	INC prevalence	N
Age								
≤80 years	34·8%	201	3·7%	136	52·9%	278	62·9%	353
≥81 years	51·7%	559	2·9%	278	58·6%	652	71·5%	949
Female (%)	53·0%	581	3·2%	282	61·5%	709	73·4%	1026
Male (%)	28·5%	179	3·0%	132	42·1%	221	53·6%	276
Diabetes Mellitus (%)	53·9%	152	4·1%	73	62·2%	187	74·3%	272
Stroke (%)	43·8%	89	5·7%	53	67·9%	156	74·7%	198
Dementia (%)	58·0%	314	4·3%	138	73·9%	506	81·0%	694
CDS mobility								
Completely care dependent	77·1%	35	38·5%	13	97·1%	277	97·4%	309
Great extent care dependent	80·0%	70	12·5%	16	89·6%	135	92·7%	193
Partially care dependent	64·9%	74	4·8%	42	60·8%	102	77·5%	178
Limited extent care dependent	58·5%	183	1·3%	77	40·2%	127	67·7%	235
Almost care independent	26·5%	358	1·1%	266	9·0%	289	32·0%	387
CDS eating & drinking								
Completely care dependent	52·9%	17	20·0%	10	96·2%	208	96·3%	219
Great extent care dependent	81·1%	37	30·0%	10	95·3%	149	96·2%	182
Partially care dependent	63·7%	128	2·7%	75	61·4%	189	77·1%	319
Limited extent care dependent	49·1%	224	3·4%	118	28·3%	159	58·2%	273
Almost care independent	29·2%	281	1·0%	201	11·6%	225	35·6%	309

UI, urinary incontinence; FI, faecal incontinence; DI, double incontinence; INC, incontinence.

types of incontinence. Adapted and comfortable clothing was offered for approximately 50% of the residents with incontinence (55·6%). Individual schedules for fixed bathroom visits were chosen as interventions for about a third of the residents with DI (38·6%) and an adaptation of the environment was made for 42·3% of the residents with DI. An evaluation of medication given was performed for about one quarter of the residents with incontinence (27·3%). In contrast, medication was used as an intervention for 4·4% of the residents with incontinence. Departmental scheduling at a fixed time for bathroom use was made for 15·0% of the residents. Training interventions such as bladder training/pelvic muscle exercise/relaxation exercise were used only for a small number of residents with incontinence (5·3%).

Outcome level

The overall prevalence of incontinence (UI, FI, or DI) in Austrian nursing homes was 69·2% (N = 1302; 95% CI: 66·7-71·7%) and UI was prevalent in 27·6% (95% CI 25·6-29·6%) of the residents.

Most of the residents with UI had experienced this condition for more than a year (58·5%) and had experienced UI every day of the month before the assessment (74·4%). The prevalence of FI was 1·0% and 46·2% of these FI residents had been suffering from FI for more than a year. Most of the residents experienced FI twice a week (38·5%). The prevalence rate of DI was 40·6% (95% CI 38·6-42·6%). Most of the DI residents had been suffering from UI (62·0%) and FI (59·0%) for more than a year. In addition, most of the DI residents experienced UI (96·6%) and FI (44·6%) every day.

In Table 3, the prevalence rates for incontinence, UI, FI and DI are shown in different risk groups. Nearly three-quarters of residents older than 81 years were incontinent. The exception here is FI, whereby residents younger than 81 years suffered more often from FI than older residents. With regard to gender, the results show that female residents experienced incontinence more often than male residents. Between 43·8% and 73·9% of the residents with diabetes, stroke and dementia suffered from UI or DI.

Of the residents that were completely care dependent in the sub-item 'mobility' as well in the 'eating and drinking' categories, nearly 100% (97·1%; 96·2%) had DI. Of the residents that were to a great extent care dependent for these two sub-items, more than three-quarters had UI (80·0%; 81·1%).

Discussion

Until now, little data have been collected in Europe with regard to incontinence care in nursing homes and most existing studies have been conducted in the USA (Roe *et al.*

2013). The result of this study provides an initial insight into the quality of incontinence care with respect to structural, process level and outcome indicators in Austrian nursing homes. The primary outcome of the study indicated that structural indicators, such as the availability of specialized continence nurses or information brochures, are still limited in Austrian nursing homes. On a process level, nursing interventions such as the provision of body worn pads or underlay pads to protect beds or chairs were most frequently used. In contrast, training interventions (e.g. bladder training, relaxation techniques) were delivered to only a small proportion of residents with incontinence. Nevertheless, the prevalence of all types of incontinence measured was still high, especially DI, which underlines the urgent need for improvements in incontinence care in Austrian nursing homes.

The most commonly applied structural indicator in Austrian nursing homes was the availability of management protocols for incontinence products. This could be explained by the fact that, for management/financial reasons, incontinence products have to be organized and documented.

Furthermore, protocols/guidelines on the prevention and treatment of incontinence were commonly available. With regard to this, Dugan *et al.* (2001) found an improvement in incontinence care through the implementation of clinical guidelines for women, but not for men, because the latter were less likely to be asked about incontinence. Furthermore, we stress that the availability of these protocols and/or guidelines does not necessarily indicate their appropriate application and use. The reasons for this could be a lack of knowledge, IT-resources, or specific language requirements. These could impede the implementation of evidence based recommendations as described by Harvey *et al.* (2012).

Nine out of 16 nursing homes had offered a minimum two hour refresher course on incontinence at some point during the 2 years prior to the study. This is noteworthy because every 5 years all nurses in Austria are legally required to have 40 hours of training regardless of the topic (Republic Austria 2013). This was in accordance to Sackley *et al.* (2008) who described staff education as an obligatory precursor for beneficial outcomes for residents. Nurse education and the cooperation of the nurses with advanced geriatric nurses can help increase overall knowledge on incontinence assessment and can positively influence the attitudes of the nurses (Saxer *et al.* 2009).

The least-used structural quality indicator on the institutional and ward levels was the availability of informational brochures about incontinence. A possible explanation could be that, on one hand incontinence might still be considered a taboo subject (Ahnis *et al.* 2000) and on the other hand, a societal misconception that incontinence is a normal consequence of aging may still exist (Nelson *et al.* 2001, Zhu *et al.* 2010, Gerst *et al.* 2011). The infrequent use of informational brochures is consistent with the findings of studies with regard to other care problems and the use of informational brochures as structural indicators (Schoberer *et al.* 2012, Schoenherr *et al.* 2012).

The results of this study with regard to structural indicators confirm other findings published in international literature (Sackley *et al.* 2008, Schoberer *et al.* 2012, Schoenherr *et al.* 2012). Protocols and guidelines are commonly available, but this does not imply that they are used in practice. For this reason, ongoing efforts about the development/adoption of guidelines, focusing on their usability for nursing practice, is warranted.

At a process level, international guidelines recommend, for example, prompted voiding and keeping diet, food and fluid diaries and voiding records (National Collaborating Centre for Acute Care 2007, Registered Nurses' Association of Ontario 2011, International Continence Society 2013). In contrast, in the Austrian nursing homes the most commonly applied nursing intervention was the use of disposable or washable body worn pads or underlay pads. This is consistent with the results of Rodriguez *et al.* (2007) where 50% of the nursing homes used absorbent products to manage incontinence. Wagg *et al.* (2007) also reported that 63% of care home residents received such absorbent products. Our results are also in agreement with the results from Sgadari *et al.* (1997), where 71·6-92·9% of incontinent residents received pads or absorbent diapers.

With regard to this, Hägglund (2010) ranked the use of incontinence aids, such as absorbent products, on the lowest level of evidence in a systematic review about incontinence in nursing home residents with dementia, which is the clinical experience. In addition, the author recommended the use of absorbent products only while waiting for or during an investigation or as supplements to other interventions (Hägglund 2010).

An explanation for the frequent use of absorbent products in Austrian nursing homes might be the high workload of the nurses. Bliss *et al.* (2004) explained that only a few nursing homes might be able to achieve a staff ratio that allows for high quality incontinence interventions. Another explanation could be that the nursing labour costs of implementing behavioural therapies were higher than the laundry costs (Flanagan *et al.* 2014).

There is evidence that active management of incontinence (bladder training or pelvic floor muscle training) is seen as

an successful intervention for long-term management (Eustice *et al.* 2000, Wallace *et al.* 2004, Dumoulin *et al.* 2014), in contrast to the results of this study, where only about 5% of the residents with incontinence were offered such programs. This result is in agreement with the result of Wagg *et al.* (2007), who found that between 3-16% of the care home residents received pelvic floor muscle or bladder training. This can be explained by the fact that a high number of residents with dementia might not be able or willing to participate in such active training programs. Another explanation could be that Austrian nurses are not aware that active training programs could be an effective intervention for older people.

On an outcome level, the prevalence rates for UI differ from the international and European prevalence rates reported. On the other hand, rates for FI seem much lower in the Austrian nursing home context as compared with international rates. These differences could be explained by the definition of the mutually exclusive incontinence categories, which we used in our study. When comparing the international and national prevalence rates without mutual exclusive categories, Austrian prevalence rates for UI (68·2%) and FI (41·6%) were higher than prevalence rates reported from other European countries (Halfens *et al.* 2013), however, they are consistent with international prevalence rates reported by Roe *et al.* (2011). Our observations and data collected indicate that nurses, in general, perceive incontinence as a normal consequence of aging and, therefore, the nurses do not deem it necessary to actively prevent it in the nursing practice. This general observation was also noted by Roe *et al.* (2011), who recommended that studies regarding the maintenance/promotion of continence were warranted.

Limitations

In this study, certain limitations might have influenced the data quality. The first limitation was that only 16 Austrian nursing homes participated in this study, which represented only 3·4% of all Austrian nursing homes. On this basis, a comprehensive overview of the Austrian nursing home situation could not be achieved.

A second possible limitation was a potential selection bias. Participation was voluntary and may be only nursing homes that already focussed on the quality of care participated, leading to the potential for bias in the results. The residents had to give their written informed consent, which could have led to the event that only residents with a 'good health status' participated and residents with a 'poorer health status' refused to participate, although those with a 'poorer health status' would have been of great interest for inclusion.

This study provided a brief insight into the quality of nursing incontinence care in Austrian nursing homes. Nevertheless, the study design does not allow for an evaluation of causalities between the structural, process and outcome levels.

Implications for practice and research

Based on our results, we recommend the further development and provision of guidelines and informational brochures about incontinence in Austria. In addition, knowledge about incontinence could be improved by educating nurses in the nursing homes and/or through implementation of specialized continence nurses. With regard to the research aspect, one major recommendation would be to investigate the effectiveness and implementation of nursing interventions related to incontinence in nursing homes. Overall, the results of the data analysed indicate that it is necessary to overcome societal misconceptions regarding incontinence and ageing in nursing practice, research and education.

Conclusion

In Austrian nursing homes, structural indicators, such as the availability of specialized continence nurses or informational brochures, remain limited. Furthermore, on a process level, active training interventions (e.g. bladder training, relaxation techniques) are only delivered to a small proportion of residents with incontinence. In contrast, nursing interventions such as the provision of body worn pads or underlay pads are most frequently used.

Overall, the prevalence of all types of incontinence was still high, especially in the case of DI. This study aimed to increase the knowledge base about incontinence and exemplifies the urgent need for improvements in the structural and process level indicators of incontinence care in Austrian nursing homes.

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Conflict of interest

No conflict of interest has been declared by the authors.

Author contributions

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/recommendations/)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

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