

# Nursing staff knowledge and beliefs about pain in elderly nursing home residents with dementia

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**BACKGROUND:** Aging is known to be associated with a high prevalence (up to 80%) of persistent pain among residents of nursing homes. However, even with high pain prevalence rates, nursing home residents are at risk for undertreatment. Knowledge deficits and beliefs among nurses influence staff behaviour in pain assessment and management.

**OBJECTIVES:** To develop a psychometrically sound questionnaire and to gather information about knowledge and beliefs of nursing staff regarding various aspects of pain in elderly patients with dementia. In addition, the differences among several categories of nurses (based on educational level and work experience) with respect to beliefs about pain were investigated.

**METHODS:** Participants were 123 staff members of psychogeriatric wards in two nursing homes in the Netherlands (mean of 11.4 years of experience). Their results were compared with those of two groups of nurses, one consisting of 25 registered nurse PhD students in nursing science and the other consisting of 20 trainee pain nurse specialists.

**RESULTS:** The main findings indicate that nursing home staff respondents showed knowledge deficits about several aspects of pain, even though they were satisfied about the way pain was assessed and treated at their wards. Specific knowledge deficits were found regarding pain treatment and medication in elderly nursing home residents. Staff educational level seemed to influence their beliefs and knowledge about pain in elderly nursing home patients.

**Key Words:** *Beliefs; Dementia; Knowledge; Nursing; Nursing home residents; Pain*

Pain is highly prevalent among nursing home residents (1-5), with rates sometimes estimated to be as high as 80% (4). The consequences of persistent pain are numerous and include depression, sleep disturbances, anxiety, and disruptive or aggressive behaviour (6,7). Moreover, untreated pain decreases quality of life (8).

Nurses play an important role in decision-making processes and effective pain management among patients (9). In daily practice, it is often a nurse who decides when analgesics that have been prescribed for administration 'as needed' are distributed, and in what dosage. Previous research has identified certain knowledge deficits and incorrect beliefs among nurses with regard to pain assessment and management, and lack of knowledge about pain and its treatment has been mentioned as an important barrier to effective pain management (10). There

## Connaissances et croyances du personnel infirmier relativement à la douleur chez les résidents de CHSLD atteints de démence

**HISTORIQUE :** Le vieillissement est associé à une forte prévalence (jusqu'à 80 %) de la douleur chronique chez les résidents de CHSLD. Par contre, malgré ces taux élevés de prévalence de la douleur, ces malades sont exposés au risque de ne pas être adéquatement soulagés. Le manque de connaissances et certaines croyances parmi le personnel infirmier influent sur le comportement professionnel en matière d'évaluation et de traitement de la douleur.

**OBJECTIFS :** Mettre au point un questionnaire psychométrique valide et colliger des données sur les connaissances et les croyances du personnel infirmier relativement aux divers aspects de la douleur chez les patients âgés atteints de démence. De plus, les différences entre plusieurs catégories d'infirmières/iers (selon leur degré de perfectionnement et leur expérience de travail) en ce qui a trait à leur conception de la douleur ont été explorées.

**MÉTHODES :** Les participants étaient 123 membres du personnel infirmier d'unités psychogériatriques de deux CHSLD des Pays-Bas (moyenne 11,4 ans d'expérience). Les résultats ont été comparés à ceux de deux groupes d'infirmières/iers, l'un, composé de 25 doctorants en sciences infirmières et l'autre, de 20 spécialistes de la douleur en formation.

**RÉSULTATS :** Selon les principaux résultats, les répondants à l'emploi de CHSLD ont montré des lacunes sur le plan de leurs connaissances sur plusieurs aspects de la douleur, même s'ils se disaient satisfaits de la façon dont la douleur était évaluée et traitée dans leurs unités. Certaines lacunes spécifiques sur le plan des connaissances ont été observées en ce qui a trait aux traitements et aux médicaments analgésiques chez les résidents âgés de CHSLD. Le degré de perfectionnement du personnel a semblé influencer sur leurs croyances et leurs connaissances relativement à la notion de douleur chez les résidents âgés de CHSLD.

is some literature about knowledge and beliefs among nursing staff about pain in elderly people (11,12), and specifically in elderly residents of long-term care facilities (9,10,13,14). As part of an intervention study to improve pain practices in nursing homes, Jones et al (10) developed attitude scales by modifying two pre-existing questionnaires to align them with the geriatric pain management guidelines and the nursing home environment. The final scales included general pain biases and attitudes; general beliefs about aging; beliefs and attitudes about the role of religion, culture and sex; pain medication attitudes; and communication issues. Jones et al (10) identified notable knowledge deficits in the areas of pharmacology, drug addiction and dependence, side effect management and the effectiveness of nonpharmacological management strategy. Other knowledge deficits and misconceptions are related to

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pain assessment and can lead nurses to undervalue reports of pain by residents. Similarly, Sloman et al (11) confirmed that there was a significant deficit in knowledge regarding the experience of pain and its management in older adults in a sample of registered nurses (RNs) surveyed using a 14-item questionnaire.

It is even more difficult to obtain a clear picture for the more specific group of older nursing home residents with dementia, because relevant literature information is very scarce (15). Kovach et al (15) used a qualitative approach to describe nurses' perceptions regarding the assessment and treatment of pain in patients with late-stage dementia. These nurses expressed some concerns both about misuse and under-use of medications.

Previous research in other nursing areas (palliative and pediatric care) has revealed that nurses have certain knowledge deficits and misconceptions about a number of issues (16-24). These issues include analgesics, side effects of medication and pain assessment, as well as aspects of the aging process. For example, pharmacological management of pain remains an area in which nurses lack the necessary knowledge to provide optimal treatment (10,19). Nurses also seem to have certain knowledge deficits and negative beliefs about the use of opioids during a diagnostic phase and about the risk of possible addiction (25). While addiction caused by using opioids for pain relief is rare (26), nurses seem to overestimate its risk. Closs (12) also reported on misconceptions about the pharmacological treatment of pain in elderly patients, and Lander (27) found that nurses were very concerned about the possibility of addiction to medications. Meanwhile, nurses play a major role in effective pain management and are confronted on a daily basis with tasks that relate to various aspects of pain.

Researchers have focused on the influence of nurses' characteristics, such as work experience and educational level, on their knowledge about and attitude toward pain. These factors have been reported to relate to what nurses know and believe about pain (13,28). It has also been reported that nurses learn about pain assessment and treatment through work experience (29). Hamers et al (24) examined the influence of expertise on nurses' pain assessment and decisions regarding pharmacological interventions in children. Expertise relates to both the knowledge and experience one acquires over time (30). Hamers et al found that expertise had a distinct impact on both the nurses' confidence in their decisions and the decision to administer analgesics. They suggested that experienced nurses were most confident and were most inclined to administer analgesics to children. Furthermore, Gibbs (13) showed that lack of education among nurses was reflected in the way they responded to questions about pain management.

Because specific research into nurses' knowledge and beliefs about pain in elderly people with dementia is lacking, it remains unclear what nurses know about pain among such nursing home residents. Furthermore, the relationship of experience and level of education with pain management knowledge in this context remains to be investigated. Therefore, the present study was designed to develop a psychometrically sound questionnaire and explore the knowledge and beliefs about various aspects of pain among nursing staff working with elderly nursing home residents with dementia. In particular, we aimed to develop and conduct initial testing of a questionnaire to assess knowledge and beliefs about pain in elderly nursing

home residents, gather information about knowledge and beliefs among nursing home staff regarding various aspects of pain in elderly residents with dementia, and investigate the differences among several categories of nursing staff (based on educational level and work experience) with respect to beliefs about pain in elderly nursing home patients with dementia.

## METHODS

### Design

A cross-sectional study design was used to develop a questionnaire and to evaluate nursing staff knowledge and beliefs about pain in elderly nursing home patients with dementia. The study was based on the assumption that nurses' knowledge and beliefs about pain in elderly nursing home residents with dementia affect nurse behaviour (14). It was hypothesized that previous work experience and educational level would be predictive of a higher level of knowledge about pain and its management.

### Context

Nursing homes offer complex care to very frail elderly people who have physical and/or psychogeriatric disorders that affect self-care, mobility, continence and cognitive functioning (31). Of the 220,000 elderly people with dementia in the Netherlands, more than 30,000 reside in approximately 330 nursing homes (31). Nurses are the largest group of health care professionals providing continuity of care to older adults in both acute and community settings (11). In Dutch nursing homes, care is provided by RNs together with a large number of nursing assistants (NAs).

### Participants

Data were collected in two nursing homes in the Netherlands. All nursing staff (RNs and NAs) from the psychogeriatric wards of the two nursing homes (n=167) were invited to participate in this survey. The questionnaire was returned by 74% of the nursing home staff (n=123). All 123 participants (109 women and 14 men) specialized in the care of elderly nursing home patients (mean  $\pm$  SD years of experience 11.4 $\pm$ 8.9). Their mean age was 36.7 $\pm$ 10.5 years (Table 1).

To investigate the differences in responses based on nurses' educational level, the group was compared with two additional groups, consisting of a convenience sample of 25 PhD students in nursing science and a group of 20 RNs in training to become pain nurse specialists. Table 1 summarizes the demographics of the three groups of respondents.

### Data collection

Because, to the authors' knowledge, no questionnaire was available to assess nursing staff knowledge and beliefs about pain in elderly nursing home residents with dementia, a new questionnaire was developed. The first part of the questionnaire focused on demographic information, including sex, age, educational level and number of years of work experience. The second part included 34 statements about pain; content was derived from the literature and from existing questionnaires designed to measure knowledge and attitudes about pain in other settings (11,12,14,15,17-23). Face validity was established by asking two pain experts and four nurses working in nursing homes to review the questionnaire. Respondents were asked to respond to the statements on a

five-point Likert scale (1 = completely disagree, 2 = disagree to some extent, 3 = no opinion, 4 = agree to some extent and 5 = completely agree).

### Procedures

In each nursing home, a contact person responsible for distributing and collecting the questionnaires was designated. A cover information letter detailing the procedure was attached to the questionnaire, and participants were asked to respond within two weeks. After these two weeks, participants were reminded about returning the questionnaire and were given another two weeks to return it. Permission to conduct the study was obtained from the directors of the nursing homes. Nursing staff participated in this study on a voluntary basis and the information that was obtained was anonymous.

### Data analysis

Descriptive statistics were generated about the characteristics of the nursing staff. A principal components analysis (PCA) was performed to refine the scale (as a part of the scale development) and to investigate its underlying factor structure. Furthermore, internal consistency analyses were carried out for the remaining subscales and the total scale to investigate the homogeneity of the scale. The responses to statements on participants' knowledge and beliefs about pain in the elderly nursing home patients were examined by calculating percentages of extent of agreement with each statement. Because the data were not normally distributed, nonparametric Mann-Whitney U tests were used to investigate whether there was a significant difference in the responses of the nurses among the three study groups. Because of the risk of type 1 errors, a Bonferroni corrected alpha (0.05/17 items = 0.003) was used to correct for multiple testing.

## RESULTS

### Development of the questionnaire

A PCA was used to create the final questionnaire scale and to investigate its underlying factor structure. The number of factors was determined by means of eigenvalues and scree tests. Items were retained if the measure of sampling adequacy was greater than 0.5 and the communality of an item was greater than 0.4. Because subscales correlated, oblimin rotation was used. Item-total correlations were calculated for all items that were retained after the PCA. Items with an item-total correlation below 0.2 were removed. Internal consistency was analysed for the remaining subscales and the complete scale. Based on these criteria, 17 of the 34 items remained in the final scale. Table 2 presents the Cronbach's alpha values resulting from the internal consistency analyses and psychometric statistics with factor loadings of the 17-item final questionnaire. The four-component solution explained 54.4% of the variance. The first factor explained 23.9%, the second factor 12.4%, the third factor 10.1% and the fourth factor 7.9% of the variance. The findings of the PCA showed that the first factor related to knowledge about the pain experience of older compared to younger people, the second to pain management at the ward, the third to pain medication and the last to pain and pain treatment in older adults. Although knowledge and belief are two closely related constructs, the 17 items remaining in the final scale, with the exception of the second factor, mostly measured knowledge. These items are presented in Table 2.

**TABLE 1**  
Characteristics of the respondents

Characteristic	Group 1, n=123	Group 2, n=25	Group 3, n=20
Age, mean $\pm$ SD years (range)	36.7 $\pm$ 10.5 (16–61)	38.6 $\pm$ 9.5 (25–63)	36.2 $\pm$ 8.0 (24–51)
Sex, n (%)			
Female	109 (88.6)	21 (84)	12 (60)
Male	14 (11.4)	4 (16)	8 (40)
Job title, n (%)			
Nursing assistant	19 (15.4)	–	–
Caregiver	99 (80.5)	–	–
RN	5 (4.1)	–	–
RN, trainee pain nurse specialist	–	–	20 (100)
RN, PhD student	–	25 (100)	–
Experience			
Total, years (mean $\pm$ SD) (range)	11.4 $\pm$ 8.9 (0–34)	14.4 $\pm$ 10 (4–43)	14.8 $\pm$ 8.0 (3–26)
<5 years, n (%)*	47 (38.2)	5 (20)	2 (10)
$\geq$ 5 years, n (%)*	72 (58.5)	20 (80)	11 (55)
Gerontology, mean $\pm$ SD years (range)	8.5 $\pm$ 7.6 (0–30)	0.5 $\pm$ 1.3 (0–5)	1.0 $\pm$ 1.7 (0–5)
Hours of employment/week, mean $\pm$ SD (range)	29.1 $\pm$ 6.7 (10–36)	41.9 $\pm$ 6.8 (35–60)	35.7 $\pm$ 4.7 (24–40)

\*Data missing from some respondents. Group 1: Nursing home staff; group 2: Nurses working on their PhD; group 3: Trainee pain nurse specialists. RN Registered nurse

### Cross-sectional survey

**Nursing home staff knowledge and beliefs:** Knowledge and beliefs about pain in elderly nursing home residents with dementia among the 123 nursing home staff were investigated by calculating percentages of extent of agreement or disagreement (based on a five-point Likert scale). Table 3 presents the participants' responses (n=123).

Nursing home staff responses showed a wide variance. All items had five possible responses (minimum 1 = completely disagree; maximum 5 = completely agree), except for "where I work, pain is assessed correctly" (2-5), "where I work, pain is treated correctly" (2-5), "pain medication works longer in the elderly than in young people" (1-4) and "administering pain medication should be postponed as long as possible, because patients with dementia should receive as little pain medication as possible" (1-4).

Most questions in the first factor contrasted aspects of pain in elderly people with corresponding aspects in younger people. Responses varied, but the majority of respondents correctly reported that elderly patients do not experience less pain and that they do not experience pain less intensely than younger patients. When respondents were asked if they thought assessing pain was a matter of guessing, their responses showed a very decisive disagreement with this statement.

A large majority of nursing home staff were convinced that pain was being correctly assessed (83%) and treated (83%) at their ward, and that there was a great deal of attention paid to pain in dementia patients (80%).

The largest percentage of "no opinion" (response option 3 on the five-point Likert scale) responses were found on questions about medication aspects (factor 3), including side effects and risk of addiction. Furthermore, there was a lack of

**TABLE 2**  
**Factor structure and internal consistency of the questionnaire**

Questionnaire items*	Component 1	Component 2	Component 3	Component 4
1 Older people experience pain less intensely than younger people	0.52			
2 Pain medication works better in young people than in the elderly	0.65			0.41
3 Pain medication works longer in the elderly than in young people	0.75			
4 Pain medication has more side effects in the elderly than in younger people	0.58			0.36
5 Dementia patients experience less pain than nondementia patients	0.55			
6 Assessing pain in a dementia patient is a matter of guessing	0.69			
7 Where I work, pain is assessed correctly		0.86		
8 Where I work, pain is treated correctly		0.84		
9 Where I work, much attention is given to pain in dementia patients		0.81		
10 Pain medication should only be administered to patients suffering from severe pain			0.67	
11 Patients are often prescribed too much pain medication			0.69	
12 It is better to administer pain medication 'when necessary', rather than according to a fixed schedule			0.74	
13 Administering pain medication should be postponed as long as possible, because dementia patients should receive as little pain medication as possible	0.31		0.50	
14 A dementia patient should first report pain before receiving the next dose of pain medication			0.57	
15 Pain is part of the aging process				0.71
16 Older people are more likely to be affected by pain than younger people				0.62
17 Pain medication, if administered in large quantities, easily leads to addiction among the elderly	0.30			0.64
<b>Data analysis</b>				
Cronbach's alpha (total scale, 17 items 0.782)	0.74	0.80	0.68	0.58
Eigenvalue	4.06	2.11	1.72	1.35
Kaiser-Meyer-Olkin measure of sampling adequacy.	0.73			
Bartlett's test of sphericity significance	0.00			

\*Factor loadings >0.30 are presented. Extraction method: principal component analysis; Rotation method: oblimin

**TABLE 3**  
**Responses of nursing home staff (n=123) to the 17 items**

Component	Item	Completely disagree, %	Disagree to some extent, %	No opinion, %	Agree to some extent, %	Completely agree, %
1	Older people experience pain less intensely than younger people	44*	30*	15	7	2
	Pain medication works better in young people than in the elderly	26*	31*	35*	7	2
	Pain medication works longer in the elderly than in young people	25*	29*	38*	7	0
	Pain medication has more side effects in the elderly than in younger people	14	26*	44*	14	2
	Dementia patients experience less pain than non-dementia patients	43*	29*	13	14	1
	Assessing pain in a dementia patient is a matter of guessing	28*	34*	31*	5	1
2	Where I work, pain is assessed correctly	0	6	11	59*	24
	Where I work, pain is treated correctly	0	7	9	54*	29*
	Where I work, much attention is given to pain in dementia patients	1	4	15	48*	32*
3	Pain medication should only be administered to patients suffering from severe pain	42*	40*	13	3	2
	Patients are often prescribed too much pain medication	28*	47*	18	6	2
	It is better to administer pain medication 'when necessary', rather than according to a fixed schedule	17	26*	32*	20	5
	Administering pain medication should be postponed as long as possible, because dementia patients should receive as little pain medication as possible	56*	31*	11	2	0
	A dementia patient should first report pain before receiving the next dose of pain medication	39*	31*	18	11	2
4	Pain is part of the aging process	35*	20	26*	15	4
	Older people are affected by pain more often than younger people	20	17	27*	28*	9
	Pain medication, if administered in large quantities, easily leads to addiction among the elderly	19	22	40*	16	2

\*Extreme scores (arbitrary cut-off scores were determined at scores higher than 25%)

**TABLE 4**  
**Significant differences in knowledge and attitude about pain among groups**

Item	Median scores			P
	Group 1, n=123	Group 2, n=25	Group 3, n=20	
<b>Group 1 compared with group 2</b>				
Where I work, much attention is given to pain in dementia patients	4.0		3.0	0.000
Pain medication works longer in the elderly than in young people	2.0		4.0	0.001
Pain medication has more side effects in the elderly than in younger people	3.0		4.0	0.000
Pain medication should only be administered to patients suffering from severe pain	2.0		1.0	0.000
It is better to administer pain medication 'when necessary', rather than according to a fixed schedule	3.0		1.0	0.000
Administering pain medication should be postponed as long as possible, because dementia patients should receive as little pain medication as possible	1.0		1.0	0.001
A dementia patient should first report pain before receiving the next dose of pain medication	2.0		1.0	0.003
Pain is a part of the aging process	2.0		1.0	0.001
Pain medication, if administered in large quantities, easily leads to addiction among the elderly	3.0		1.0	0.000
<b>Group 1 compared with group 3</b>				
Where I work, pain is assessed correctly	4.0	3.0		0.000
Where I work, pain is treated correctly	4.0	3.0		0.000
Where I work, much attention is given to pain in dementia patients	4.0	3.0		0.000
Older people experience pain less intensely than younger people	2.0	1.0		0.000
Pain medication works longer in the elderly than in young people	2.0	2.0		0.003
It is better to administer pain medication 'when necessary', rather than according to a fixed schedule	3.0	1.5		0.000
A dementia patient should first report pain before receiving the next dose of pain medication	2.0	1.0		0.002
Pain medication, if administered in large quantities, easily leads to addiction among the elderly	3.0	2.0		0.000
<b>Group 2 compared with group 3</b>				
Pain medication works longer in the elderly than in young people		4.0	2.0	0.000
Pain medication has more side effects in the elderly than in younger people		4.0	2.0	0.000

Group 1: nurses working in a nursing home; group 2: Highly educated nurses working on a PhD; group 3: Trainee pain nurse specialists. Higher scores represent a greater degree of agreement with statement (response range was 1 to 5); A nonparametric test (Mann-Whitney U) was used to test for significant differences between groups; Bonferroni corrected alpha 0.05/17=0.003

unanimity among respondents about the question of whether medication should be administered when necessary, rather than according to a fixed schedule.

Questions that were part of the last factor (beliefs regarding pain and pain treatment in the elderly) led to the greatest diversity of responses. There was a lack of consensus about the items "pain is a part of the aging process", "older people are more likely to be affected by pain than younger people" and "pain medication, if administered in large quantities, easily leads to addiction among the elderly". Only approximately one-third of the respondents were aware of the fact that older people are affected more often by pain than younger people (ie, that incidence rates of chronic pain are known to be higher for the elderly than for younger people).

**Differences among groups:** The second research question referred to the differences between nurses with a higher educational background (a group of 25 PhD students in nursing science and a group of 20 trainee pain nurse specialists) and regular nursing home staff (n=123).

Although the group of trainee pain nurse specialists was not very large (n=20), their responses about pain in elderly people with dementia differed from those of the nursing home staff. Using an alpha of 0.003, eight of the 17 items showed a significant difference. These items are presented in Table 4.

The trainee pain nurse specialists had more realistic beliefs and knowledge about pain in this patient group, beliefs that

were in agreement with the literature and the current state of the art. Significant differences between the groups were most often related to issues of pain medication. All trainee pain nurse specialists disagreed with the statement "Pain medication should only be administered to patients suffering from severe pain" (median 1; minimum 1, maximum 1). The responses of the group of trainee pain nurse specialists also showed greater consensus, whereas the answers of regular nursing home staff varied more widely (ranging from 1 to 5). While none of the trainee pain nurse specialists agreed that it is better to administer pain medication only 'when necessary', rather than according to a fixed schedule, a large number of nursing home nurses agreed with this statement, not recognizing the value of fixed regular analgesia. Findings also indicated that the nursing home staff respondents were more anxious about the risk of addiction than the trainee pain nurse specialists. For example, there was a significant difference in the response to the statement that "pain medication, if administered in large quantities, easily leads to addiction among the elderly": between the trainee pain nurse specialists (median 1; minimum 1, maximum 3) and the nursing home staff (median 3; minimum 1, maximum 5).

A second comparison included the scores of those who attended higher education in nursing (PhD students in nursing science) and the group of 123 regular nursing home staff. Findings presented in Table 4 show that the group of nursing home staff respondents had higher scores on all items belonging

to the second factor, referring to pain management at the ward. The comparison between these two groups also revealed significant differences in beliefs about pain medication, mostly relating to the same issues as in the comparison between nursing home staff and trainee pain nurse specialists. Table 4 presents a complete overview of the significant differences among all respondent groups.

A final comparison was made between highly experienced nursing staff and less experienced nursing staff working in nursing homes. From the total group of 123 nursing home respondents, two subgroups were created, one with less than five years of experience in working ( $n=47$ ) and one with five or more years of experience ( $n=72$ ). Using an alpha of 0.003, no significant or nearly significant differences in responses between these two subgroups were found.

## DISCUSSION

The main findings of the present study indicate that even though nursing home staff have deficits in knowledge related to pain, they are satisfied about the way pain is being assessed and treated at their ward. The respondents' educational level influenced their beliefs and knowledge about pain in elderly nursing home patients. In particular, we found some evidence of knowledge deficits regarding pain treatment and medication in elderly nursing home residents. The lack of knowledge regarding issues of pain treatment was reflected in the large variety in responses and the high number of "no opinion" scores on these issues. There seemed to be a lack of consensus especially about statements relating to medication, such as "prescription when necessary, rather than according to a fixed schedule" or "pain medication, if administered in large quantities, easily leads to addiction". This might be the result of a lack of education among the participants but could also stem from the fact that pain treatment in elderly nursing home patients is an under-researched area. People with dementia have often been excluded from pain studies (32). As a result, little is known about the effects of analgesics on functional status and well-being of nursing home residents with chronic pain (33). The limited but important knowledge that is available may not reach the nurses and NAs in the field. Our findings confirm that information is not sufficiently being disseminated to practicing staff.

When our nursing home staff respondents were asked about pain assessment and treatment at the place where they worked, they seemed very satisfied with the attention given to these and considered pain to be correctly assessed (over 80%) and treated (over 80%). The highest level of agreement among the respondents was found for the items of factor 2, "pain management at the ward". These findings are not only striking because they are highly inconsistent with the literature on pain assessment and treatment in elderly people with dementia, but also very worrisome because this assumption could lead to inadequate attention and undertreatment. Pain assessment among nursing home patients with dementia has been described as extremely difficult, and evidence of underassessment and undertreatment is available (34,35). Furthermore, nursing home staff do not use pain assessment tools to improve pain detection, and pain assessment depends on nurses' subjective impressions. Thus, it seems that pain assessment in people with severe dementia with limited ability to communicate is sometimes a matter of guessing, even though only 5% of the participants agreed with this statement. Obviously, nursing

home staff do not recognize that pain assessment and management are often considered to be inadequate, so the risk of undertreatment remains. This is a major concern, which may also affect and undermine attempts to improve pain management and assessment. After all, if nursing home staff really underestimate the difficulties of identifying pain or overestimate their own abilities to do so, they may be less willing to invest in pain control and education programs.

The nursing home staff in our sample had reasonable knowledge about pain issues relating to the first factor of our questionnaire (knowledge about the experience of older compared to younger people). Although there is some evidence that pain tolerance is different in people with Alzheimer's disease (36,37), this evidence is still limited and has been found for very specific groups of geriatric patients. Moreover, there is no evidence that the small differences in pain tolerance (identified in experimental investigations) have significant clinical implications. Therefore, until proof to the contrary is found, the safest approach is to assume that, on average, older people do not experience pain less intensely than younger people.

Our final 17-item questionnaire included many items derived from or similar to those of a pain knowledge questionnaire presented by Sloman et al (11). Our findings of knowledge deficits with respect to pain management are consistent with the results of the study by Sloman et al (11). However, we demonstrated a relationship between the nurses' level of experience and their knowledge of pain among elderly persons. We also found differences in responses between regular nursing home staff and a group of trainee pain nurse specialists. As part of their training to become pain nurse specialists, these individuals were more exposed to palliative care, and tended to have different beliefs and higher levels of knowledge about pain treatment. Thus, our findings show that educational level seems to influence nursing staff beliefs and knowledge about pain in elderly nursing home patients with dementia. The more highly educated nurses had better knowledge (ie, in better agreement with current literature) and seemed more aware of several issues related to pain. This result is consistent with findings by Brunier et al (28), who showed that Canadian nurses with a university education also scored significantly better than non-university-educated nurses in a hospital setting. These findings support the view that there is a need not only for continuing education for nurses working in nursing homes, but also for more highly educated nurses to work in nursing home care.

In the present study, PhD students in nursing sciences, with no expertise in geriatrics compared with nursing home nurses, provided responses that were more consistent with the literature. An explanation for the differences between these groups might indicate that more highly educated nurses are more aware of pain as an aspect of the nursing process. Nurses attending higher education courses, and especially trainee pain nurse specialists, have increased pain education. Lack of education could contribute to low priority being given to pain management, as well as misconceptions about pain.

Our study had certain limitations that need to be acknowledged. The relatively small number of respondents in the two groups used for comparison with the nursing home nurses ( $n=20$  and  $n=25$ ) places some limits on generalizability. Although our results should be interpreted with caution, they do suggest that there are differences between regular nursing home staff and more highly educated nurses in their responses

to our statements. These differences were most obvious on aspects related to pain medication and treatment. The findings were convincing and consistent between the two independent samples of highly educated nurses compared with regular nursing home staff. Another issue concerning generalizability relates to the fact that our study took place in the Netherlands. Research is needed to examine the extent to which our findings generalize to other countries. Furthermore, even though the information was obtained anonymously, there is a possibility that nursing home staff responses are biased due to aspects of social desirability with regard to items related to pain at work.

The pain knowledge and belief questionnaire that we used was constructed specifically for the present study. Its internal consistency was satisfactory for newly developed scales and had an alpha greater than 0.7 (38). However, when we calculated alpha for the subscales, factor 4 yielded mediocre scores (alpha = 0.58). Knowing that the value of an alpha depends on the number of items and because none of the items that loaded to the fourth factor met our statistical deletion criterion (item total correlation less than 0.2), we decided to retain all three items that loaded on the fourth factor.

Our intention was to construct a questionnaire to evaluate nursing staff knowledge and beliefs about pain in elderly nursing home residents with dementia. Reflecting on the questionnaire that ultimately remained after the item reduction process, it is debatable whether this questionnaire strictly refers to pain among dementia patients. More than one-half of the items in the questionnaire relate to nursing home patients in general, rather than to the more specific category of dementia patients. Although the final questionnaire covered a broader category of patients than originally intended, it demonstrated good internal consistency and a clear underlying factor structure.

### CONCLUSION

Pain in elderly people with dementia represents a relatively new and fast developing research area, which has made important progress over the past decade. This has resulted in new research information, knowledge and several potentially clinically useful new pain scales (39), such as the Pain Assessment Checklist for Seniors with Limited Ability to Communicate developed by Fuchs-Lacelle and Hadjistavropoulos (40), the Pain Assessment in Advanced Dementia by Warden et al (41) and the DOLOPLUS by Wary and Doloplus (42). Although having a valid, reliable and useful tool represents an important step forward, it is not the only factor contributing to adequate pain treatment. In the present study, we found that many nursing home staff still show knowledge gaps or negative beliefs about pain in elderly people with dementia, which could contribute to inadequate assessment and treatment. Furthermore, our study demonstrated that in a nursing area where care is provided by a large number of NAs, educational level is an important factor.

Pain is a highly relevant issue, impacting greatly on a person's abilities and quality of life. The dissemination of knowledge about pain assessment and management represents an extremely important task for leading nurses, researchers and policymakers. This knowledge needs to be made available to the nurses who have major responsibilities during the whole process of care. Nurses should also be made aware of the consequences of inadequately handling of pain problems.

It seems that basic nursing education is not sufficient to prepare nurses to cope with problems of pain and pain management in daily nursing home practice. Additional specialist education seems the most obvious method of accomplishing the required awareness and knowledge. Given the fact that there is evidence of certain misconceptions, the effects of knowledge deficits, misconceptions about pain management and relevant decision-making processes need to be further examined. We recommend a multidisciplinary intervention that not only focuses on proper pain assessment, using the newly developed evidence-based scales, but also focuses on improved education and knowledge and on overcoming misconceptions.

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