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Management of chronic non-cancer pain in Swiss nursing homes: an observational mixed-methods study

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Summary

STUDY AIMS: The management of chronic non-cancer pain in nursing home residents represents a major challenge, given the complexity and fragility of this population. The aim of this study was to evaluate professional practice in this management in nursing homes of the French-speaking part of Switzerland.

METHODS: Our observational study was based on a panel of 124 nursing homes in the Vaud canton. Two convergent parallel approaches were carried out to collect data: an online questionnaire for nurses and referring physicians about the chronic pain management practices of their nursing home, as well as a retrospective observational study analysing analgesic consumption in nursing homes of the Vaud canton between 2017 and 2021.

RESULTS: Our study highlights that mixed pain evaluation (self- and hetero-assessment) and non-pharmacological measures (i.e. physiotherapy, psychological and adapted physical activities) are used in the management of chronic non-cancer pain within the studied nursing homes. Opioid analgesics are mainly considered when non-pharmacological measures and step 1 analgesics are insufficient to manage the pain. When an opioid analgesic is considered, tramadol and morphine are the most frequently prescribed drugs among step 2 and 3 analgesics. Collaboration between nurses and physicians in pain management is evaluated as good or excellent by most interviewees, with mutual recognition of each other's professional role. The pharmacist's role seems more limited, mainly to providing reminders of best prescribing practices for analgesics during quality circle sessions, and routinely verifying the adequacy of analgesic treatments prescribed. The lack of time at the resident's bedside, the nurses' specific skills in pain management, and the reluctance of patients to report their pain were the main obstacles mentioned by the interviewed professionals. A disparity between nursing homes was observed in terms of quantitative and qualitative consumption of analgesics.

CONCLUSION: This study shows that healthcare professionals in nursing homes considered are aware and adhere to recommendations for chronic non-cancer pain management, whether in terms of pain assessment, or non-pharmacological and pharmacological measures. This management is supported by interprofessional practice within these nursing homes, in terms of defining the roles of each and sharing tasks between physicians and nurses. However, a strengthening of the interprofessional collaboration, a more extensive training of nurses as well as audit and feedback on analgesic use would be levers to foster better management of chronic non-cancer pain among nursing home residents.

Introduction

Chronic pain is a major public health issue in nursing homes, due to its prevalence [1] and impact on quality of life in the elderly. In Switzerland, data on self-reported pain suggests that about 60% of nursing home residents suffer from pain [2]. In nursing home residents, chronic pain, defined as pain persisting for more than three months, is predominantly of musculoskeletal or neurogenic origin. It is frequently associated with sleep disturbances, depressive symptoms and functional impairments [3]. Cancer-related pain is less common and typically requires targeted management, either for the pain directly caused by the malignancy or for the adverse effects of cancer treatments. Management of chronic non-cancer pain is particularly complex due to the frailty and cognitive impairment often present in this type of patient [1, 4, 5]. Different strategies can be used to assess and to manage the pain, whether psychological, physical or pharmacological [6, 7], and a combined approach is often recommended [8]. Different healthcare professionals, most often physicians and nurses, but sometimes also pharmacists, are involved, requiring coordination.

Some studies have explored the management of non-cancer chronic pain in Swiss nursing homes. The lack of availability and use of non-pharmacological treatments, the lack of time for comprehensive pain assessment and the residents' reluctance to report their pain were cited by nurses and nursing aides as the main limitation to good pain management [9]. Residents, for their part, expressed concerns about the care workers' ability to manage their pain [10]. Close collaboration between physicians and nurses and nursing aides was highlighted as a factor facilitating pain management [9], in which physicians are perceived as the primary decision-makers by the residents [10]. The implementation of various strategies to improve pain management, such as the introduction of pain management champions or training for nursing staff, have also been evaluated [11]. These studies have assessed the question of chronic non-cancer pain management in qualitative terms within a limited number of German-speaking Swiss nursing homes. The objective of the present study was to obtain a more objective and measurable assessment of professional practices in chronic non-cancer pain management based on a larger number of French-speaking Swiss nursing homes.

Methods

Study design and setting

The study was an observational study based on a mixed-methods research design. It was carried out in 2021 in all nursing homes of the canton of Vaud (124 nursing homes) in Switzerland. The study was part of a Quality of Care programme mandated by the General Health Directorate of Vaud to nursing homes, which structures the collaboration between physicians, pharmacists and nurses, with the goal of optimising drug use in the nursing home. The evaluation of the Quality of Care programme includes an analysis of annual drug consumption data of each nursing homes, based on drug invoice data reported by nursing home-affiliated pharmacies to the monitoring team. The study is reported in accordance with Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines [12].

Data collection

Two convergent parallel approaches were carried out to collect data:

- an online questionnaire for nurses and referring physicians in nursing homes about their personal chronic pain management practices (pain assessment, non-pharmacological and pharmacological measures, professional missions and interprofessional collaboration) and their personal perceptions about chronic pain management in nursing homes;
- a retrospective, observational study of analgesic consumption in the nursing homes of Vaud canton between 2017 and 2021.

Questionnaires

Two online questionnaires were developed, one for nurses and one for referring physicians. Both questionnaires aimed to explore the practices of these two professions regarding four themes: pain assessment, non-pharmacological measures, drug treatments for chronic pain and interprofessional practices within the nursing home. The two questionnaires differed mainly in the section dealing with drug treatments, given the different responsibilities of the two professions in this field (see "additional materials" in the appendix). The questionnaire for nurses contained 32 questions,

and the one for physicians 35. Different types of questions were integrated (single-choice, multiple-choice and 5-point Likert scale) and all were compulsory. The survey was administered online, using LimeSurvey, an open-source, self-hosted tool.

The questionnaires were reviewed by different professionals: four senior researchers from the research team, and two referring physicians and three nurses from nursing homes of Vaud. Their comments, which focused on the clarity, feasibility and relevance of the questions, were taken into account in the final version. Questionnaires were sent via e-mail to the referring pharmacist of all nursing homes participating in the Quality of Care programme, with a flyer detailing the purpose and deadline for completing the survey. Pharmacists then forwarded the questionnaire to physicians and nurses of their nursing homes.

Three days later, these flyers were also sent by e-mail to the professional stakeholders (nursing home associations, personal assistance service providers, association of nursing home physicians) to support the completion of the questionnaires.

A reminder e-mail was sent to the pharmacists two weeks after the first mailing. A month later, reminder e-mails were also sent directly to nursing homes whose referring nurses and/or physicians had not yet responded to the first e-mail.

The data collection period lasted 40 days, from February to 24 March 2023.

Analgesic consumption

In parallel, an analysis of analgesic consumption in the nursing homes of Vaud canton was carried out. Data on drug consumption was provided by the Quality of Care programme and analysed at nursing home level to ensure residents' anonymity.

Data on drug consumption between 2017 and 2021 was extracted using Microsoft Excel Power Query and analysed using Microsoft Excel Power Pivot. The following criteria were applied for data inclusion in this study:

As different populations are accommodated in Swiss nursing homes, only data from nursing homes with a geriatric, gerontopsychiatric or mixed population was used.

Only data concerning residents aged over 65 and who were present in the nursing home on 1 January of the considered year was included: as the drug consumption data is provided annualised to the Quality of Care programme by the community pharmacy supplying the nursing homes, distinguishing from drugs used before and after entry in the nursing home is impossible.

Only data on drugs appearing in the World Health Organization (WHO) pain steps [13] was used; the drugs were selected based on Anatomical Therapeutic Chemical (ATC) classification [14] and considered within the framework of the three-step analgesic ladder, which reflects an escalating approach to pain management:

- Step 1: non-opioids, i.e. all drugs in ATC N02B (except gabapentinoids, N02BF) and non-steroidal anti-inflammatory drugs (NSAID), either systemic (M01A, except chondroitin sulphate, M01AX25) or topical (M02A, except drugs classified in Various, M02AX10).
- Step 2: weak opioids, i.e. tramadol (N02AX02), tramadol combined with paracetamol (N02AJ13), and codeine combined with paracetamol (N02AJ06) (note: codeine alone is not marketed for pain relief in Switzerland).
- Step 3: strong opioids, i.e. morphine (N02AA01), fentanyl (N02AB03), buprenorphine (N02AE01), hydromorphone (N02AA03), tapentadol (N02AX06), oxycodone (N02AA05) and the oxycodone-naloxone combination (N02AA55).

Data analysis

Online questionnaires

All responses, even partial ones, were analysed. The responses from the questionnaires were extracted from the LimeSurvey software into an Excel Microsoft 365 file. The accuracy of the extracted dataset was verified (completeness, absence of inconsistent data). Each question was analysed, and for most of them, a histogram or bar chart was created to compare the prevalence of each response.

Analgesic consumption

Analgesic consumption was analysed through the use of two indicators for several active drugs or pharmacological classes: the average daily analgesic consumption perresident, expressed in Daily Defined Dose per day and per resident (DDD/d/resident),and the prescription frequency. This analysis assessed the analgesic consumption of each nursing home and compared it between nursing homes.

The use of Defined Daily Doses (DDD) to define analgesic consumption in nursing homes allowed us to study drug consumption independently of the different drugs' potency [15]. DDD/day/resident was computed by multiplying the number of intake units in a box, the dosage for each unit and the number of boxes consumed in the year, divided by the number of days spent in the nursing home in the year and the DDD of the considered drug. As drug combinations have no assigned DDD, the DDD of the most potent active drug was used. DDD/d/resident was not computed for topical products (ATC M02A), as no DDD can be established for these products.

Prescription frequency was computed, for each year, by dividing the number of residents with at least one invoice for the selected active drug or drug class by the total number of residents who stayed in the nursing home.

Based on these two indicators, different analyses were carried out:

– analgesic consumption, overall and by WHO pain step;
– for each WHO step, consumption analysis by active drug;
– distribution of analgesic consumption between nursing homes, overall and by WHO pain step.

Ethical approval

According to the Human Research Act (HRA), this study did not require the approval of the Ethics Committee because it involved non-identifying data collected as part of the evaluation of the quality of care and data from an opinion survey [16].

Results

Professional practices

Among the 124 nursing homes of the canton of Vaud invited to fill in questionnaires, 41 physicians and 72 nurses responded, of whom 36 and 51, respectively, fully completed the questionnaire. These returns corresponded to 34 and 30 nursing homes, respectively, as several physicians or nurses of the same nursing home had answered. It is also worth noting that some physicians answered for more than one nursing home as they are involved with several of them. Table 1 presents the characteristics of the nurses and physicians who participated in the survey.

Table 1: Characteristics of nurses and physicians surveyed.

		Nurses	**Physicians**
		n = 72	**n = 41**
Years of experience	<5	5 (6.9%)	0
	5–10	13 (18.1%)	2 (4.9%)
	11–20	12 (16.7%)	11 (26.8%)
	>20	22 (30.6%)	23 (56.1%)
	No response	20 (27.8%)	5 (12.2%)
% of residents followed in the nursing home	<10%		3 (7.3%)
	10–30%		6 (14.6%)
	31–60%		13 (31.7%)
	61–90%		3 (7.3%)
	>90%		11 (26.8%)
	No response		5 (12.2%)
Employment rate in the nursing home	<30%	0	
	30–50%	0	
	31–70%	6 (8.3%)	
	>70%	46 (63.9%)	
	No response	20 (27.8%)	
Number of beds in nursing home	Min	29	20
	Mean	58.8	58.0
	Median	51.5	50.0
	Max	161	108

Regardless of the configuration, all returns were considered. To make the results easier to read, physician data is systematically presented first, followed by nurse data.

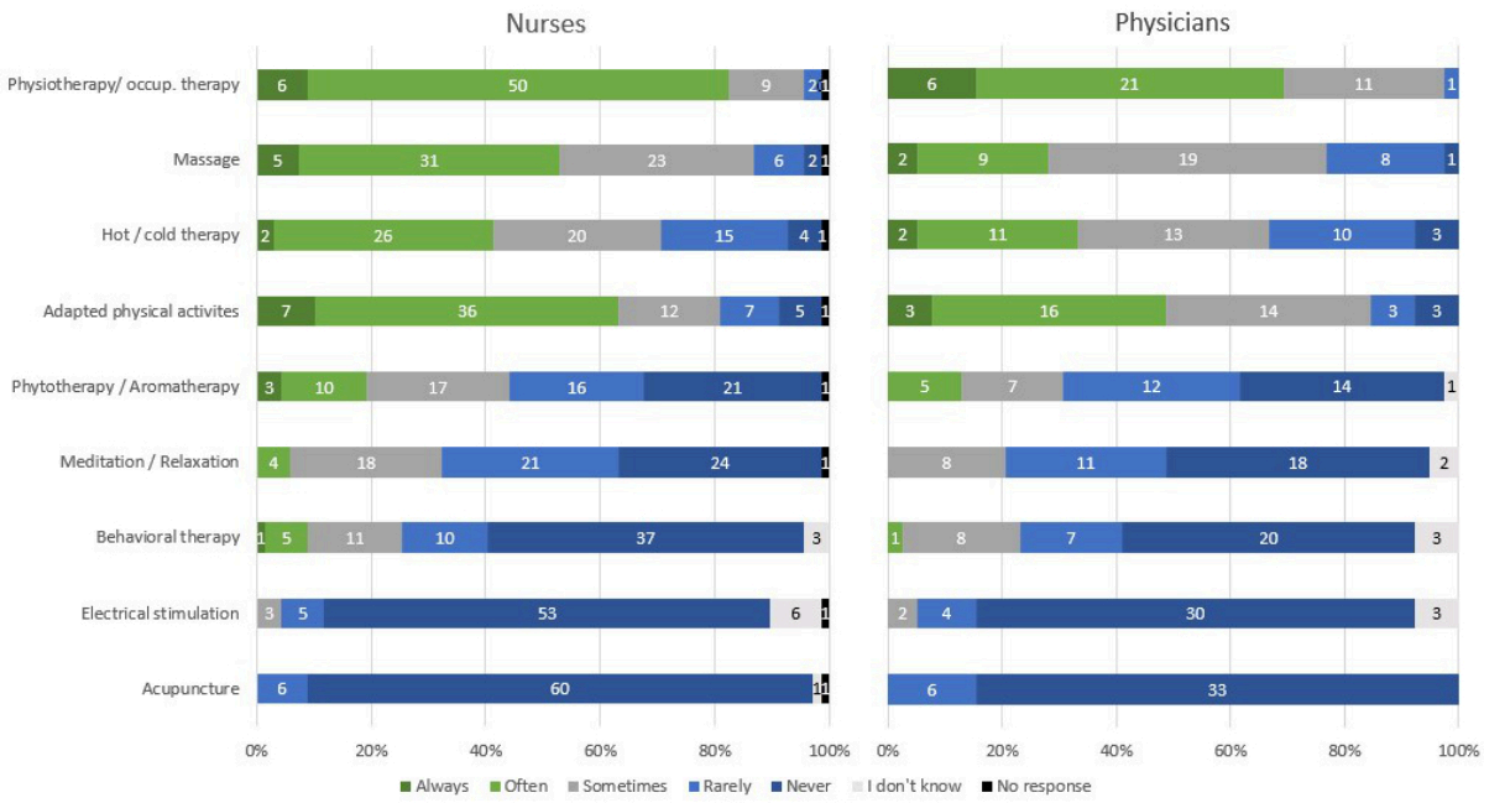
Pain assessment

Among pain self-assessment scales, a numerical scale is predominantly used by the two professions (33/41 for physicians and 64/72 for nurses). Facial and verbal scales are also widely used (28/41 and 22/41, respectively, for physicians; 49/72 and 52/72, respectively, for nurses). Concerning pain hetero-assessment scales, physicians declared to be more likely to use the Doloplus scale [17] (24/41), while the Algoplus scale [18] was cited as the most widely used by nurses (51/72). The Pain Assessment in Advanced Dementia (PAINAD) scale [19] was cited by only two nurses and one physician (appendix I). Nearly two-thirds of physicians (25/41) and nurses (45/72) did not consider ("*No, somewhat*" or "*Not at all*") the self-assessment sufficient to assess residents' pain. Most physicians (27/41) and nurses (64/72) declared the existence of recommendations or guidelines for assessing pain at their nursing home. Five physicians stated that there were no guidelines at their nursing home on this matter, and nine did not know.

Non-pharmacological measures

Almost all responding healthcare professionals (38/39 physicians; 68/68 nurses) considered that non-pharmacological measures have a place in the management of chronic pain in nursing home residents. Figure 1 shows the frequency of use for each method reported by each healthcare profession.

Figure 1: Frequency of use of non-pharmacological measures by nurses (n = 68) and physicians (n = 39).



Many measures other than those suggested were mentioned, such as hypnosis, with or without relaxation, therapeutic interview, listening interview, balneotherapy, thermo-spa, art therapy, music therapy, zootherapy, Snoezelen, regular follow-up with the physician for a targeted assessment, reflexology, touch techniques or infiltration. A large majority of physicians (29/39) and nurses (57/68) were in favour of introducing or reinforcing specific psychological care for patients.

Lack of training for healthcare professionals (31/39 physicians; 53/68 nurses), lack of qualified staff (i.e. nurses) (29/39; 51/68) and/or time (31/39; 50/68) and lack of reimbursement (27/39; 50/68) were the most frequently cited obstacles to implementing these measures.

Pharmacological measures

When pharmacological measures are required, paracetamol is considered the first-line analgesic for elderly patients suffering from pain by almost all physicians (35/37) and nurses (57/61). NSAIDs are reserved for second-line treatment by a large majority of nurses (47/61); more than half of physicians (22/37) declared that they rarely prescribed NSAIDs for chronic pain management, or never (3/37). Notably, side effects are the main reason cited by the two professions for restricting their use.

Weak opioids (WHO step 2 analgesics) were considered a second-line treatment by most professionals: almost two-thirds of nurses (41/61) mentioned that weak opioids are not the first choice for the elderly and three-quarters of physicians (28/37) declared that they use them as second-line. For the nine physicians who stated that they rarely use them, weak opioids have no place in the management of chronic pain because of their side effects, their lack of efficacy and/or their risk of interaction with other treatments.

Concerning the use of strong opioids (WHO step 3 analgesics), more than two-thirds of physicians (26/37) declared prescribing them as a third-line treatment, versus less than a third (10/37) as a second-line treatment. More than two-thirds of nurses (42/61) mentioned that strong opioids should be used as a second-line treatment when WHO step 1 analgesics are insufficient, and that they should only be introduced if other treatments fail (43/61). The majority of nurses (50/61) declared that strong opioids are not reserved for end-of-life pain relief and did not agree with the idea that strong opioids are a bad option due to their side effects (40/61) and the risk of dependence (38/61). More than three-quarters of physicians (28/37) mentioned being comfortable prescribing opioids because their administration is managed by nursing home nursing staff. Most have no hesitation in prescribing opioids, even considering their side effects (19/37), the risk of interactions (20/37), the risk of dependence (31/37) or the bad image of opioids for residents and their relatives (33/37). Morphine was considered the strong opioid of choice for chronic pain in the elderly by most physicians (28/37) and almost half of nurses (28/61), particularly for end-of-life pain (34/37; 43/61).

A large majority of physicians (31/37) said that they prescribe a rescue opioid for elderly residents when a long-term opioid treatment is prescribed. One and four others, respectively, declared that they do not prescribe them for fear of abuse or because they prefer to be informed by nursing home nursing staff when long-term opioid treatment is insufficient. Most of them (26/37) declared having confidence in nursing staff to manage rescue opioid treatments and wished for nurses to have more autonomy (23/37). Almost all nurses (56/61) felt comfortable administering a rescue opioid. More than half of nurses (32/61) mentioned administering a rescue opioid if the resident needed it and most of them reported doing so without contacting the physician before (51/61). Three-quarters of nurses (46/61) said that the information on how to administer rescue opioid analgesics is always very clear.

Professional missions and interprofessional collaboration

Within the online questionnaire, 37 physicians and 56 nurses provided an answer on the respective role of healthcare professionals in chronic pain management. Most physicians (34/37) and nurses (45/56) believed that each of the two professions has a role to play in the assessment of chronic pain in the elderly. Almost all physicians and nurses expressed that the nursing staff's mission is to check that long-term (35/37; 53/56) and rescue (34/37; 53/56) analgesic treatments are appropriate, and to pass on to physicians if adjustments are necessary. Approximately two-thirds of physicians and nurses perceived the role of community pharmacists in chronic pain management as being limited to two main activities: promoting good prescribing practices during interprofessional discussion sessions, such as quality circles (QCs) (respectively 24/37 and 34/56), and routinely checking the appropriateness of analgesic therapy when dispensing prescriptions (respectively 21/37 and 36/56). However, most physicians (25/37) and nurses (49/56) considered that the involvement of community pharmacists in QC or medication reviews improves pain management for nursing home residents (appendix II).

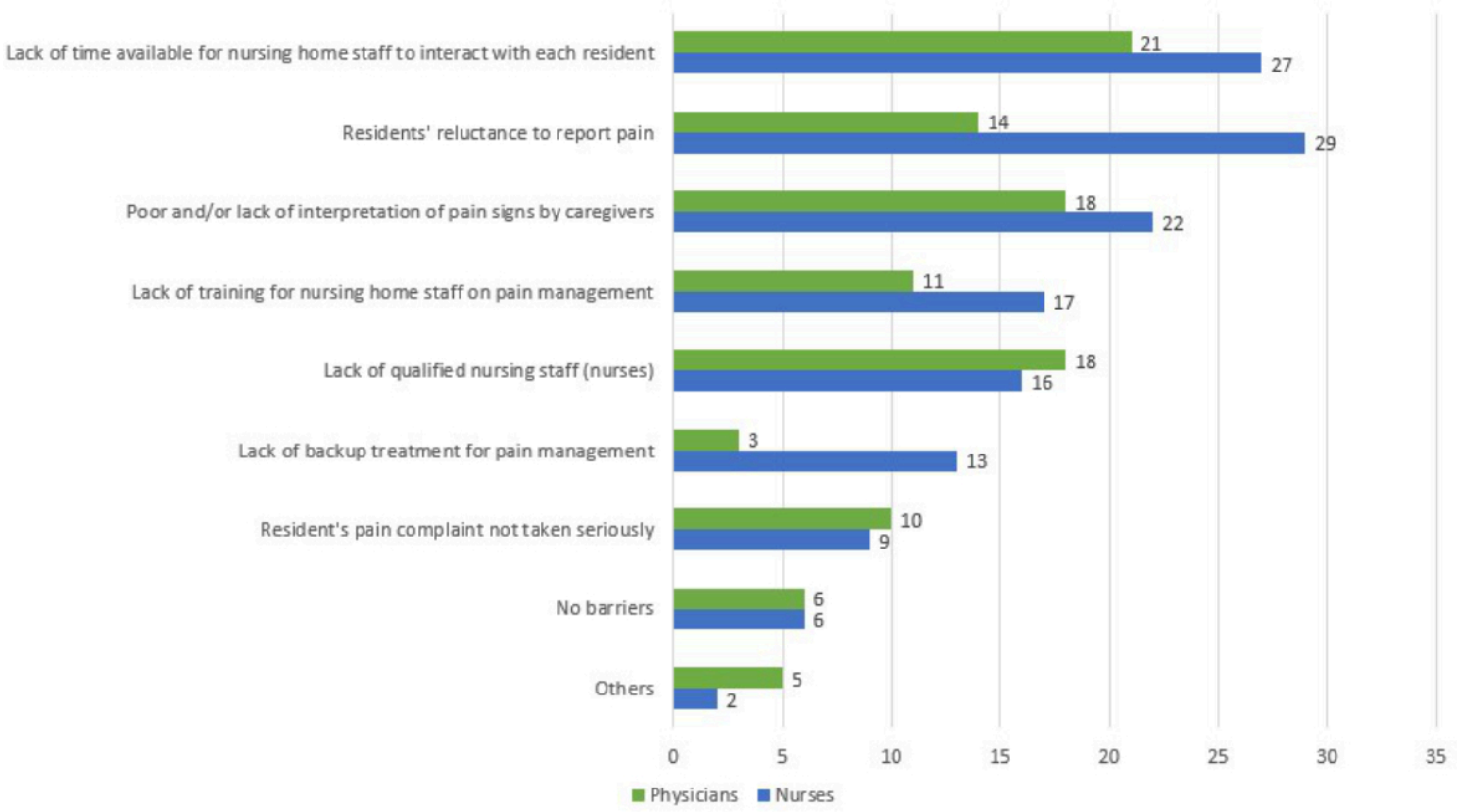
Most physicians and nurses considered the collaboration between nursing staff and physicians to be good (19/37; 27/56) or excellent (15/37; 14/56) and almost half of the professionals (17/37; 24/56) said they did not encounter any obstacles to this collaboration. However, the majority (23/37; 49/56) believed that a better collaboration could improve the management of chronic

non-cancer pain. The lack of transmission of patient information by the nurse to the physician is the main obstacle cited by the latter (12/37), while the time taken to prescribe an analgesic treatment and the partial consideration of nursing staff opinions by the physician are the main obstacles cited by nurses (respectively 17/56 and 12/56).

Personal perceptions of chronic pain management in nursing homes

The majority of physicians and nurses (24/37 and 43/53) reckon that less than one-third of the residents are not correctly treated. Among the list of possible barriers to effective chronic pain management in nursing homes, the three most frequently chosen were structural or cultural and include lack of time at residents' bedside, nurses' specific pain management skills and patients' reluctance to report pain (see figure 2). Other, freely cited difficulties were the presence of severe neurocognitive disorders in some residents, a reluctance on the part of residents to take opioid analgesics, pain that sometimes goes unnoticed, signs that are difficult to interpret, or too many changes in nursing staff, leading to a lack of follow-up.

Figure 2: Barriers to effective chronic pain management according to physicians (n = 37) and nurses (n = 53).



The reactions of residents to strong opioid prescriptions and those of their relatives are mostly positive according to the physicians (16/37 and 18/37, respectively) and nurses interviewed (47/61 and 34/61, respectively). In the view of the professionals, the main reasons for the reluctance of residents and their relatives are the fact that opioid analgesics are often specifically used at the end of life (23/37; 33/61), the risk of dependence (16/37; 23/61) and the risk of side effects (13/37; 19/61). More than a third of physicians (14/37) and nurses (26/61) considered that the reluctance of residents and their relatives to use strong opioids represents an obstacle to good chronic pain management in nursing homes.

Analgesic consumption between 2017 and 2021

Data from 124 nursing homes were used for the analysis; the number of nursing homes varied each year because of openings, closures or mergers of nursing homes. A total of 12,749 unique residents meeting the inclusion criteria stayed in the included nursing homes between 2017 and 2021; table 2 summarises the number of included nursing homes and residents.

Table 2: Characteristics of nursing homes and number of residents included in the analysis.

Year	Number of nursing homes [1]	Mean age at time of admission (years) [2]	Length of stay in nursing home (years) [2]	Percentage of full-time equivalent healthcare staff (physicians, nurses, nursing assistants) within the total staff of nursing home (%) [2]	Number of residents *[1]	Number of residents with analgesic consumption [1]
2017	120	85.4	2.2	49.9%	6064	4639
2018	123	84.1	2.4	50.2%	5764	4720
2019	115	84.3	2.2	50.4%	5419	4394
2020	118	84.3	2.2	50.4%	5500	4620
2021	112	84.3	1.9	50.3%	4855	4017

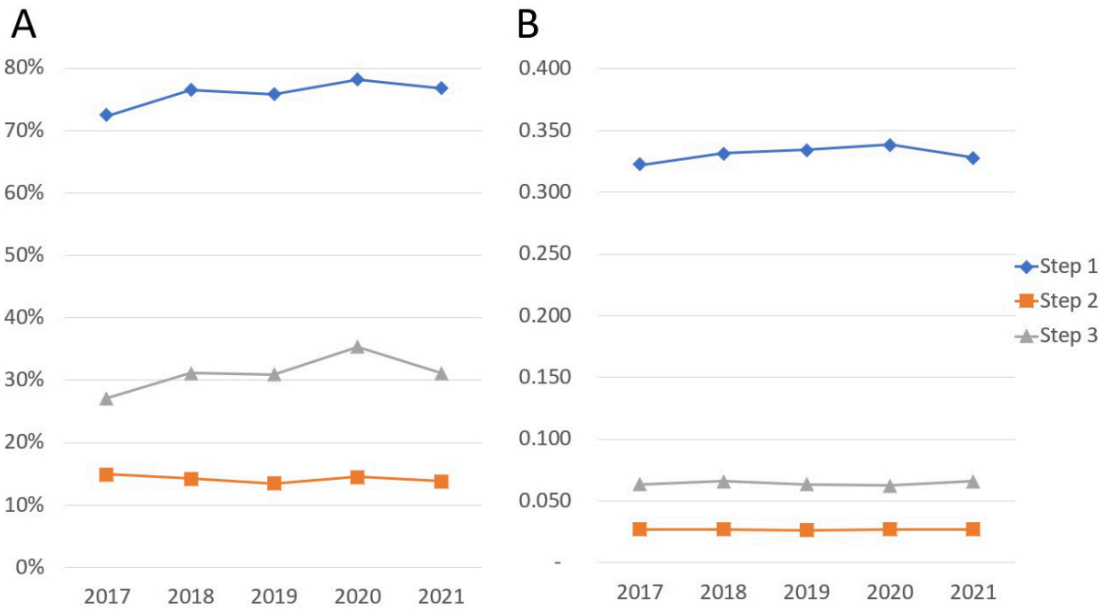
* Irrespective of analgesic consumption; number used as denominator for computing the prescription frequency.
Sources: [1] Data from the Quality of Care Programme; [2] the database of Statistics on Medical and Social Institutions (SOMED) [20].

Overall consumption

During the analysis period, 11,012 residents used an analgesic at least once (overall prescription frequency 86.4%); the yearly prescription frequency increased from 76.5% in 2017 to 81.7% in 2021, with a maximum of 84.0% in 2020, caused by a rise in the use of strong opioids (see figure 3). The overall prescription frequency is higher than any yearly prescription frequency, as not all residents who received analgesics received them every year of their stay in the nursing home.

This increase in prescription frequency was not reflected in the amount of analgesics used, as the yearly DDD/d/resident remained nearly constant (0.41 in 2017 vs 0.42 in 2021, with a peak of 0.43 in 2020), indicating that residents received lower doses; slight changes were seen for non-opioid analgesics, whose use went from 0.32 DDD/d/resident in 2017 to 0.34 in 2020, but not for opioid analgesics (appendix III).

Figure 3: Evolution of analgesic consumption expressed in prescription frequency (A) and Defined Daily Dose/resident/day (B), by WHO pain step, in the nursing homes of Vaud between 2017 and 2021. Topical NSAIDs (ATC M02A) are included in the prescription frequency analysis, but not in the Defined Daily Dose/resident/day analysis.



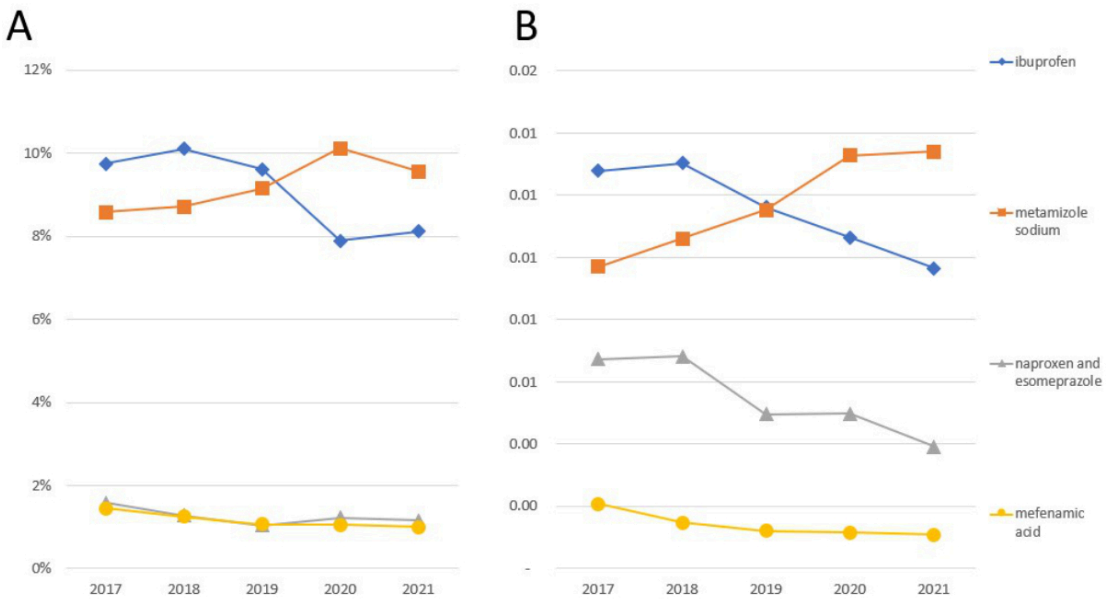
Non-opioid consumption

Paracetamol was the most-used non-opioid analgesic, with an average prescription frequency of 64.4% over the analysis period; its prescription frequency was 62.0% in 2017 and 65.0% in 2021, with a peak of 67.3% in 2020. The amount used increased as well, from 0.28 DDD/d/resident in 2017 to 0.29 in 2021.

Among the other systemic non-opioid analgesics, ibuprofen and metamizole were the most widely used; both prescription frequency and DDD/d/resident of ibuprofen dropped between 2017 and 2021, while metamizole's use increased (figure 4) (appendix III).

Among topical treatments, diclofenac was the most used, with an average prescription frequency of 31.5% over the study period, increasing from 30.2% in 2017 to 33.0% in 2021. Other topical treatments were significantly less used, with only 7.0% of residents using preparations with salicylic acid derivatives, on average. No DDD/d/resident were computed for topical analgesics.

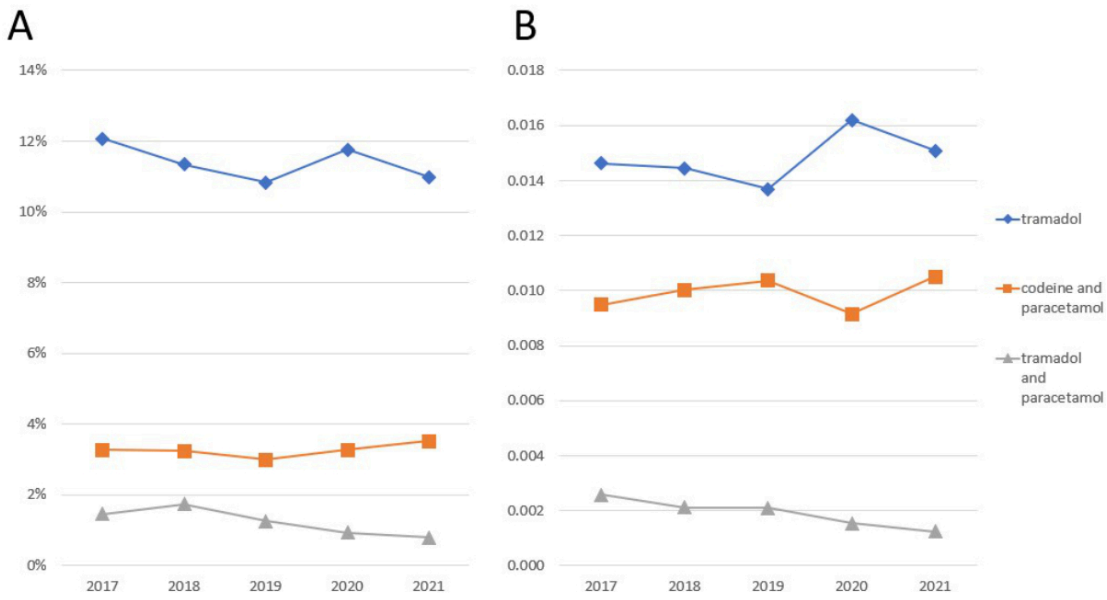
Figure 4: Evolution of non-opioid systemic analgesic consumption expressed in prescription frequency (A) and Defined Daily Dose/resident/day (B), in the nursing homes of Vaud between 2017 and 2021. To improve readability, paracetamol and analgesics with prescription frequency <1% are not shown.



Weak opioid consumption

Tramadol was the most widely used weak opioid during the study period, prescribed at 3 times the frequency of codeine and paracetamol (see figure 5). Its prescription frequency decreased between 2017 and 2021, both as a single substance (12.1% vs 11.0%) and in combination with paracetamol (1.5% vs 0.8%), but the amount used remained constant, indicating that residents using tramadol received higher doses. A sharp increase, both in prescription frequency and amount used, was seen in 2020 for tramadol, matched by a sharp decrease in the amount of codeine and paracetamol used (appendix III).

Figure 5: Evolution of weak opioid consumption, expressed in prescription frequency (A) and Defined Daily Dose/resident/day (B), in the nursing homes of Vaud between 2017 and 2021.

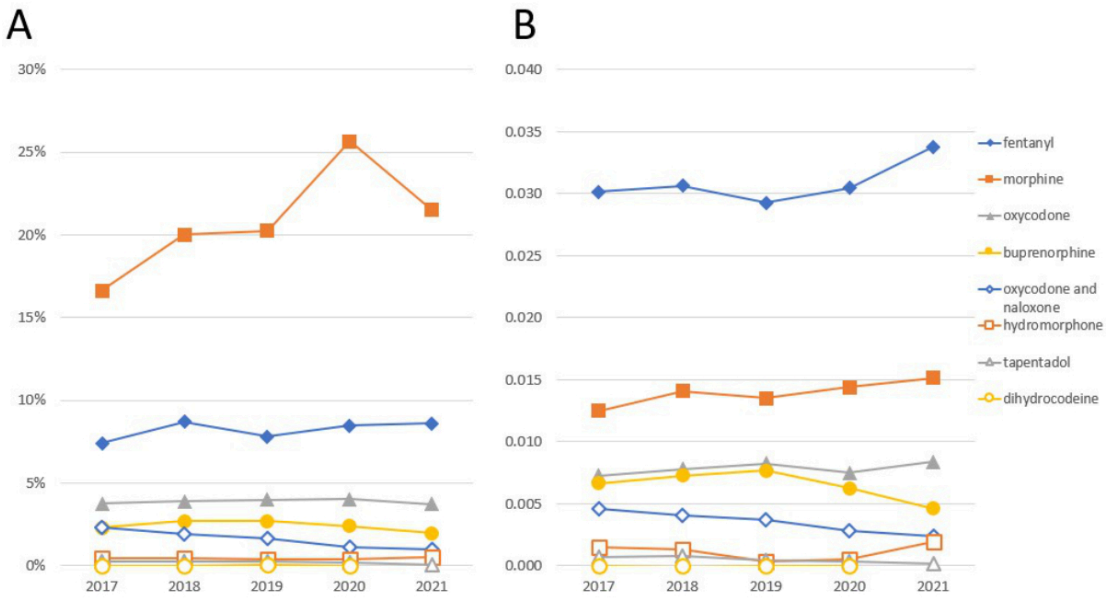


Strong opioid consumption

The overall increase in strong opioid prescription frequency seen in figure 3 is due to a rise in morphine use, from 16.6% in 2017 to 21.5% in 2021, with a spike in 2020 to 25.7% of residents having received the drug at least once. The overall amount of strong opioids used was nearly constant (0.0634 DDD/d/resident in 2017 vs 0.0663 in 2021), the rise in fentanyl use being compensated by a decline in the use of both buprenorphine and the oxycodone-naloxone combination (see figure 6) (appendix III).

Oxycodone use remained relatively stable, at around 4.0% and 0.0075 DDD/d/resident, while other strong opioids were less widely used.

Figure 6: Evolution of strong opioid consumption, expressed in prescription frequency (A) and Defined Daily Dose/resident/day (B), in the nursing homes of Vaud between 2017 and 2021.

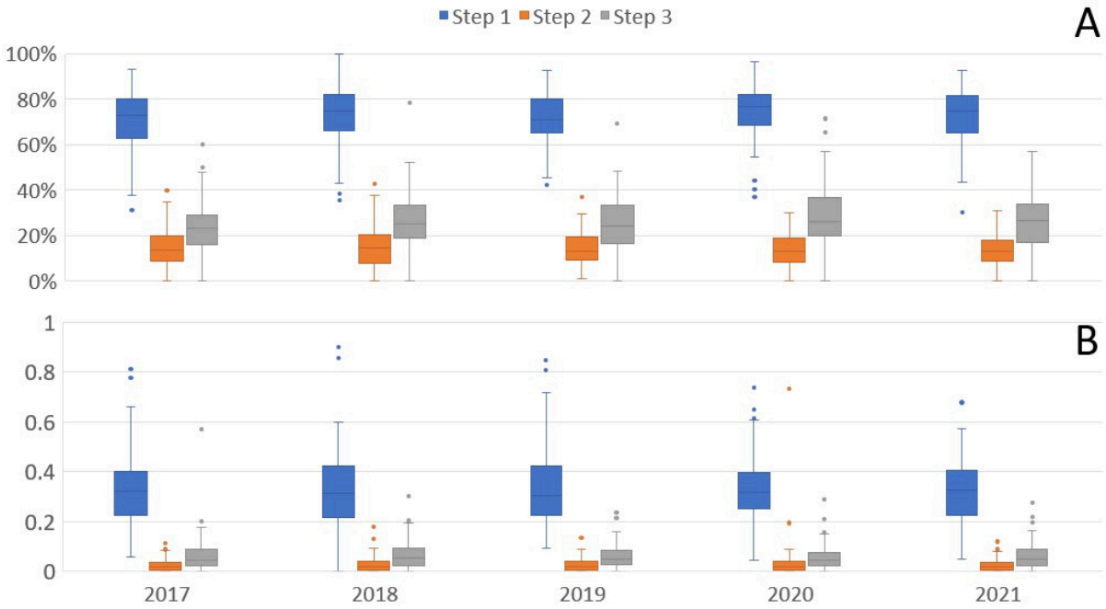


Distribution of consumption between nursing homes

Consumption varied wildly between nursing homes, with, for example, prescription frequency ranging from 2% to 71% of residents for strong opioids (Step 3) in 2020, or the amount used ranging from 0.05 to 0.74 DDD/d/resident for systemic non-opioids (Step 1) in the same year.

Excluding nursing homes for which data were missing for one or more years, nursing homes were grouped in quartiles according to the amount (in DDD/d/resident) of analgesics used each year. For overall use (ignoring WHO steps), 7 nursing homes were consistently in the 1st quartile (lowest users) for the 5 years of the study period and 10 were consistently in the 4th quartile (highest users). For WHO step 1, no nursing homes were consistently among the lowest or highest users, whereas for steps 2 and 3, 8 and 6 nursing homes, respectively, were consistently among the lowest users, and 10 and 5 nursing homes, respectively, were consistently among the highest users.

Figure 7: Distribution of analgesic consumption among nursing homes in Vaud, from 2017 to 2021, expressed in prescription frequency (A) and Defined Daily Dose/resident/day (B), WHO pain step.



Discussion

Adherence to recommendations

Although there are no recommendations for the management of chronic pain in the elderly in Switzerland, the majority of nurses and physicians tend to follow the few existing international recommendations for pain management for older patients [7, 21–24].

The results of this study highlight some significant points relevant for practice. First, various self-assessment and, where appropriate, hetero-assessment scales are used by the professionals in a complementary and interprofessional way. The prevalence of residents with diagnosed or suspected dementia (nearly two-thirds) in Swiss nursing homes can explain the need for these professionals to use hetero-assessment scales as a complement [25]. The greater use of pain scales by nurses can be supported in part by their role in pain monitoring and their proximity to the patient in this management. The most commonly mentioned self-assessment scales (numerical, facial), whose reliability and preference in the elderly are emphasised, make them the preferred choices [26]. Among the hetero-assessment scales, the PAINAD scale, which is a scale recommended for people with severe cognitive impairment [4], appears to be under-used.

Second, our survey shows that non-pharmacological measures, such as physiotherapy and adapted physical activities, have a role in chronic pain management for the professionals surveyed. Although the benefit of most non-pharmacological measures is not totally established in this indication [23, 27], adapted physical exercise is an essential measure for maintaining muscle function and the management of chronic pain in the elderly [22, 23, 27]. The reinforcement of psychological management, with cognitive behavioural therapy for example, is welcomed by a large number of the surveyed professionals, which is interesting in view of its benefits in the management of pathologies frequently encountered in older people such as chronic lower back pain [27].

Third, this study showed that both the professionals' stated practice and their actual drug use are concordant with pain management guidelines [7, 21–23], which place paracetamol as the first-line treatment, limit the role of systemic NSAIDs and present opioids as a last-resort option. Opioids, however, are not used according to the WHO pain management guideline, which states that weak opioids (tramadol, codeine) should be preferred if they provide sufficient relief [13]; on the contrary, strong opioids are used both more widely, with a prescription frequency twice as high, and in larger amounts, with nearly three times the amount of DDD/d/resident, than weak ones. This practice could be explained by the higher side effect and interaction risk of weak opioids compared to strong opioids and by a preference for prescribing low doses of strong

opioids to the detriment of weak opioids to treat moderate pain [28] and this in the absence of recommendations on the type of opioid (weak or strong) to be used in various guidelines on chronic pain management [29, 30]. Among strong opioids, morphine is the most widely prescribed drug due to its historical first-choice status in this class and its low cost; this "gold standard" status is however questioned [31], and our results show that practice in the included nursing homes favours fentanyl as the opioid of choice for people using larger amounts of drugs: the residents receiving it tend to use larger amounts, as evidenced by its lower prescription frequency and its larger DDD/d/resident compared to morphine. The sharp increase in morphine consumption in 2020 is not necessarily related to the management of non-cancer chronic pain but is likely to be due to its recommended use at the end of life during the COVID-19 pandemic [32]. Concerning the use of weak opioids, tramadol is widely prescribed compared with codeine (around three times more), despite the risks of drug interactions as well as the relatively high risk associated with its serotonergic effects [33, 34]. This larger use may be explained by practical reasons, such as the availability of an oral liquid form and the unavailability of codeine as a single substance for pain relief on the Swiss market, or by pharmacological ones, such as tramadol's usefulness in cases of neuropathic pain, due to its serotoninergic activity [35].

Role of interprofessional collaborative practice

The benefits of interprofessional collaborative practice in improving the quality of care are well established [36, 37]. Good interprofessional collaboration involves effective communication and a clear division of roles between professionals. Our study shows that physicians and nurses share an interprofessional approach of pain management in nursing home residents. The checking of the adequacy of long-term and rescue analgesic treatment by nurses is well recognised by both professions, as is the shared responsibility for assessing pain in residents. This sharing of tasks and responsibilities partly explains the comfort felt by physicians and nurses in pain management and in the use of rescue doses. Although nurses and physicians are aware of the pharmacist's potential contributions in optimising patients' drug therapy, they perceive the role of community pharmacists in chronic pain management as limited. Explanations for this could be that pharmacists have no direct contact with residents or do not participate in interprofessional meetings to discuss clinical situations. On a daily basis, interprofessional collaboration often works but its strengthening, even if appreciated by most physicians, nurses and other healthcare professionals, requires investing time and a joint project, which makes it difficult to achieve in practice.

In addition, patients are now more prominently integrated in the decision-making process, through the concept of patient-centred care [38] and taking into account their perceptions and behaviours. Although most physicians and nurses report a fairly positive reaction from residents and their relatives to the introduction of strong opioid therapy, their occasional reluctance can affect the effectiveness of pain management and underlines the importance of involving them in these decisions.

Levers for improving pain management in nursing homes

Although most professionals believed that the majority of residents were adequately treated in terms of pain relief and considered that cooperation within their medical care team was good or excellent, some perspectives could be put forward to improve pain management in nursing home residents.

First, better communication between nurses and physicians could improve chronic pain management. However, the current shortage of nurses in Swiss nursing homes, noted by the physicians interviewed, and the constant renewal of care teams may limit this prospect. Better training of nurses and rules to better interpret pain signs by residents could be potential levers to facilitate pain management in nursing home residents [9, 39] as well as a more optimal use of rescue treatment. Specific audit and feedback on analgesic use could also be reinforced within the annual analysis of nursing home drug consumption [40] by the pharmacists, in order to favour molecules with the best efficacy and safety profile in elderly patients. Their involvement in training nursing staff and leading medication reviews could be other possible interventions.

Second, the heterogeneity of analgesic use between nursing homes shows that some of them find adequate ways to manage the pain of their residents without using large amounts of analgesics. A part of this heterogeneity could be explained by the individual circumstances of some residents, who may require large quantities of drugs to manage severe pain. However, 21 of the 124 nursing homes included consistently used either high or low amounts of analgesics over the 5 years of the study, showing that care practices are also a driver of analgesic use: as the average

duration of residents stay is less than 3 years [41], it is unlikely that their individual circumstances would consistently drive up the use of analgesics over 5 years. Further studies in these "high-consumer" and "low-consumer" nursing homes could identify the parameters and practices influencing analgesic use, opening perspectives to optimise chronic pain management among nursing home residents.

Limitations and strengths

One of the strengths of our study is the use of a mixed-methods research approach, integrating the combined use of an online questionnaire with drug consumption data. This method enabled us to obtain rich results and to triangulate findings concerning the use of analgesic drugs within nursing homes. Although the number of responses from professionals in this study was fairly low, the collection of data from two different professions lends a certain interest to the data collected. However, the inclusion of other professionals involved in pain management, such as care assistants, could have enabled a more comprehensive analysis of chronic pain management in these establishments. We did not explore the impact of the COVID-19 pandemic on the practices of the professionals interviewed. However, our consumption data don't suggest a more restrictive use of strong opioids during the pandemic. Instead, morphine and fentanyl use increased in 2020–2021, possibly reflecting the higher mortality rates in nursing homes and the resulting increase in end-of-life care, including palliative sedation.

This study, conducted across a substantial sample of nursing homes in the French-speaking region of Switzerland, aimed to provide deep insights on chronic non-cancer pain management practices in nursing homes rather than to identify determinants of this management with statistical reliability. Although these results cannot be directly generalised to the whole of Switzerland – given that differences in pain management practices between regions may exist due to medical, organisational or cultural factors [42] –, the findings may nevertheless provide a useful basis for reflection and inform potential improvements in regions facing similar challenges in the management of chronic non-cancer pain in elderly populations. Future research incorporating more detailed analyses – such as resident characteristics, nursing home profiles and staffing variables – combined with robust statistical testing and inclusion of nursing homes from German- and Italian-speaking cantons, could enable a more comprehensive understanding of chronic non-cancer pain management and its influencing factors in Swiss nursing homes.

Conclusions

This study shows that surveyed healthcare professionals are aware and adhere to recommendations for chronic pain management, whether in terms of pain assessment, or non-pharmacological and pharmacological measures. Chronic pain management is supported by interprofessional practice in these nursing homes, in terms of defining the roles of each profession and sharing tasks between physicians and nurses. However, an enlargement of interprofessional collaborations, more-extensive training of nurses, audit and feedback on analgesic use and an exploration of care practices in nursing homes using low amounts of analgesics would be levers to improve the management of chronic pain in nursing home residents.

Data sharing statement

The data underlying this study was collected as part of a Quality of Care programme and is not publicly available, but may be obtained from the corresponding author upon reasonable request.

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Potential competing interests

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflict of interest related to the content of this manuscript was disclosed.

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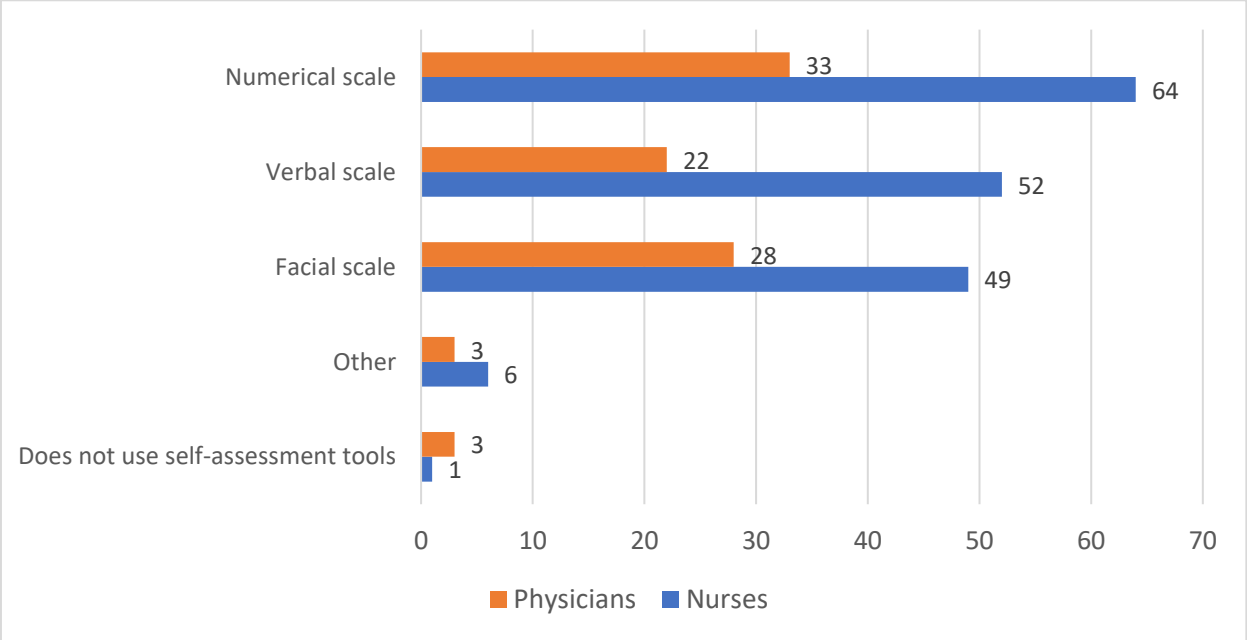
Appendix I Use of assessment scales by NHs professionals in the management of chronic pain

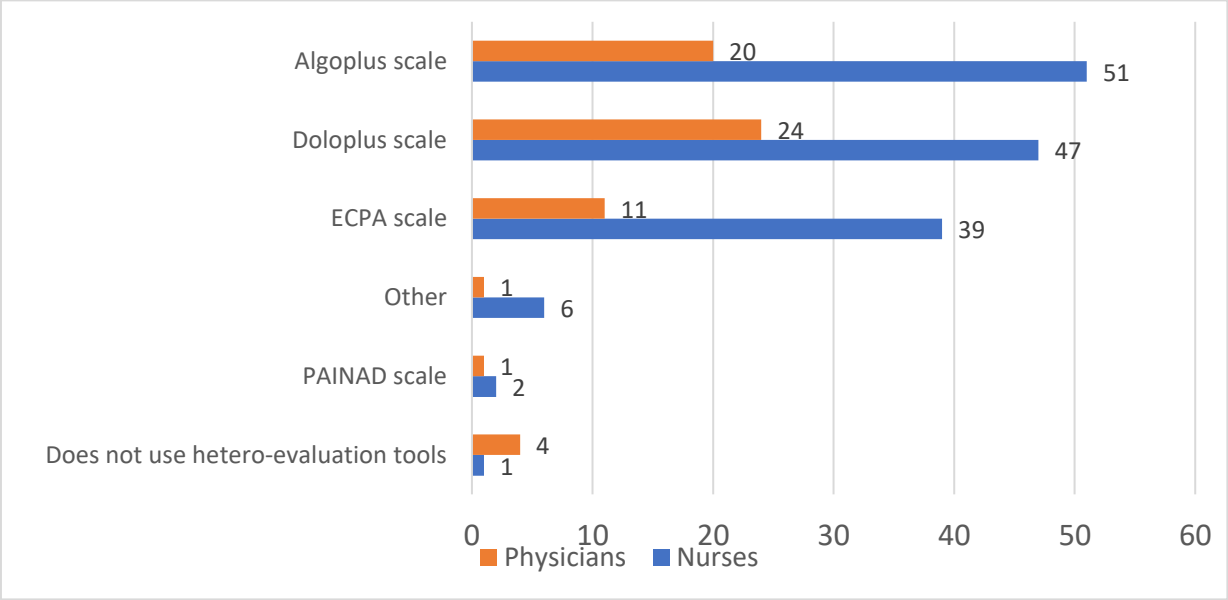
Pain self-assessment scales



Use of different pain self-assessment scales by physicians (n=41) and nurses (n=72)

The Edmonton symptom assessment system (ESAS), Visual analogue scale (EVA) and Scale for neuropathic pain (DN4) scales were mentioned in the 'other' answers on the nursing questionnaire.

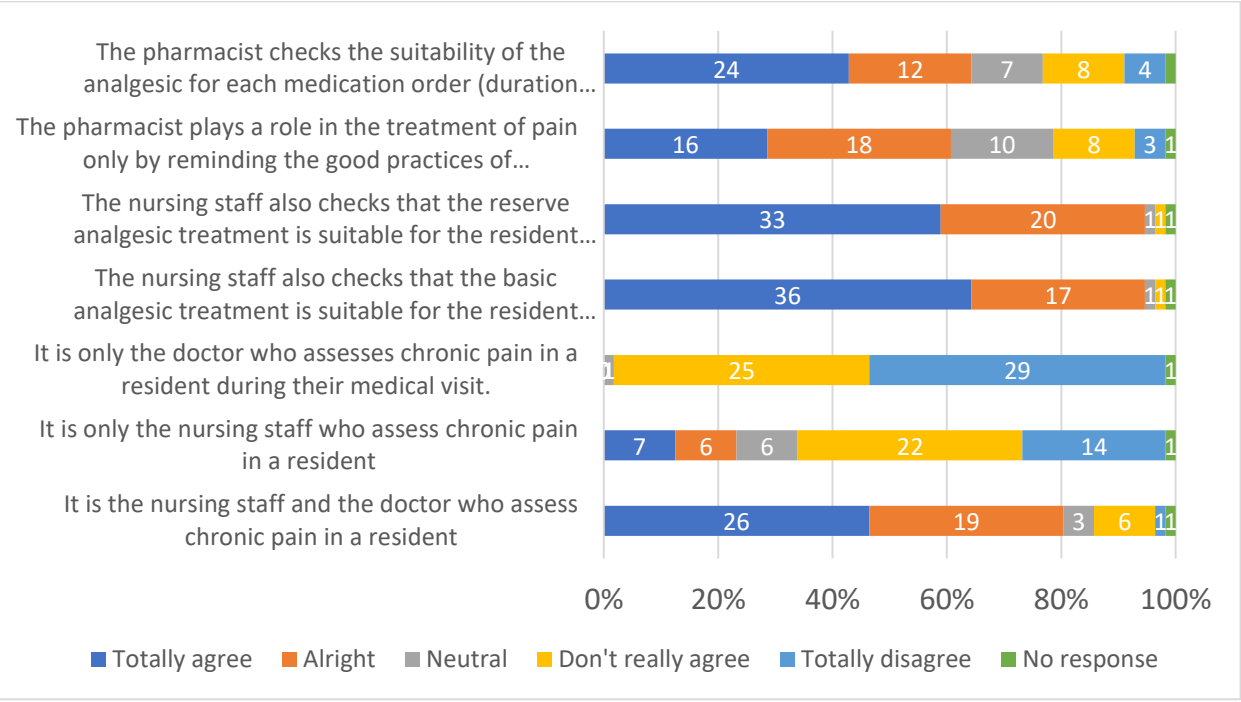
Pain hetero-assessment scales



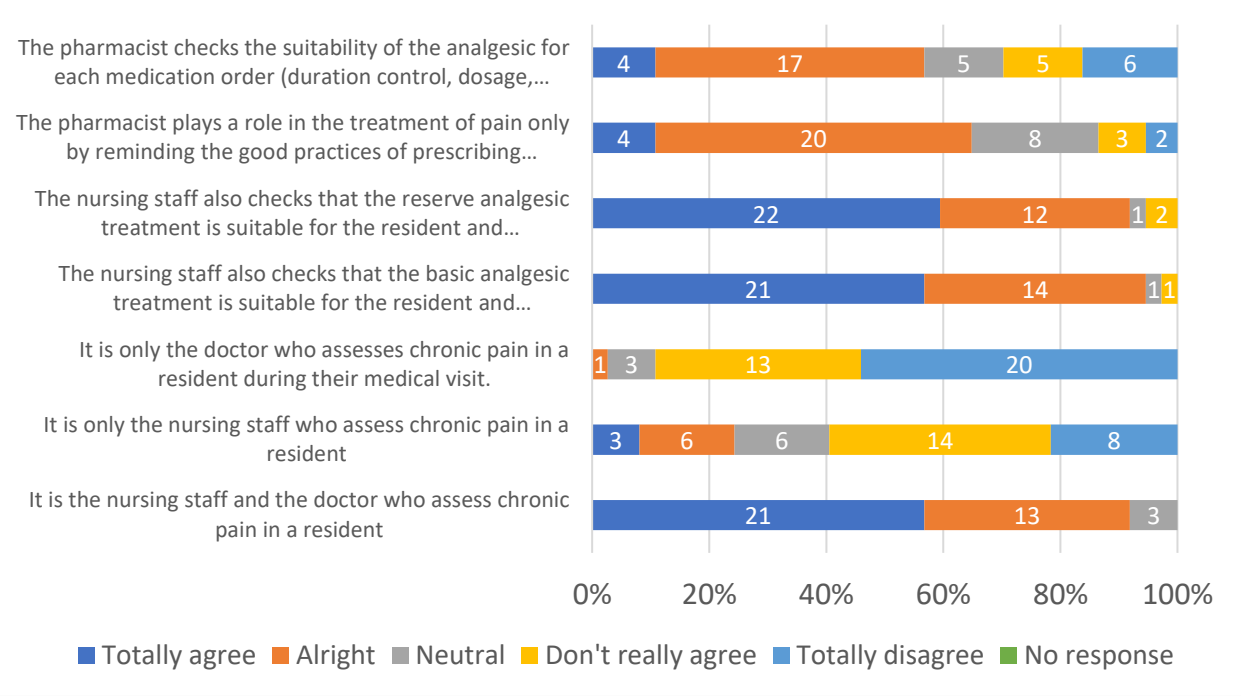
Use of different pain hetero-assessment scales by physicians (n=41) and nurses (n=72)

Appendix II Physicians' and nurses' views on the role of professionals and coordination about chronic pain management in NHs

Views on the roles of healthcare professions in chronic pain management

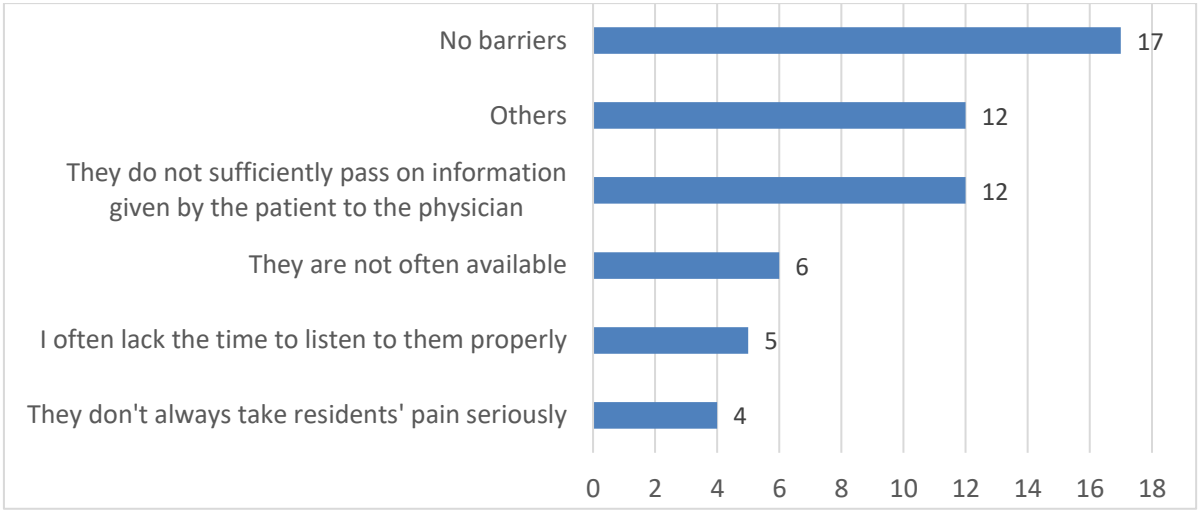


Nurses' views on the roles of healthcare professions in pain management (n=56)

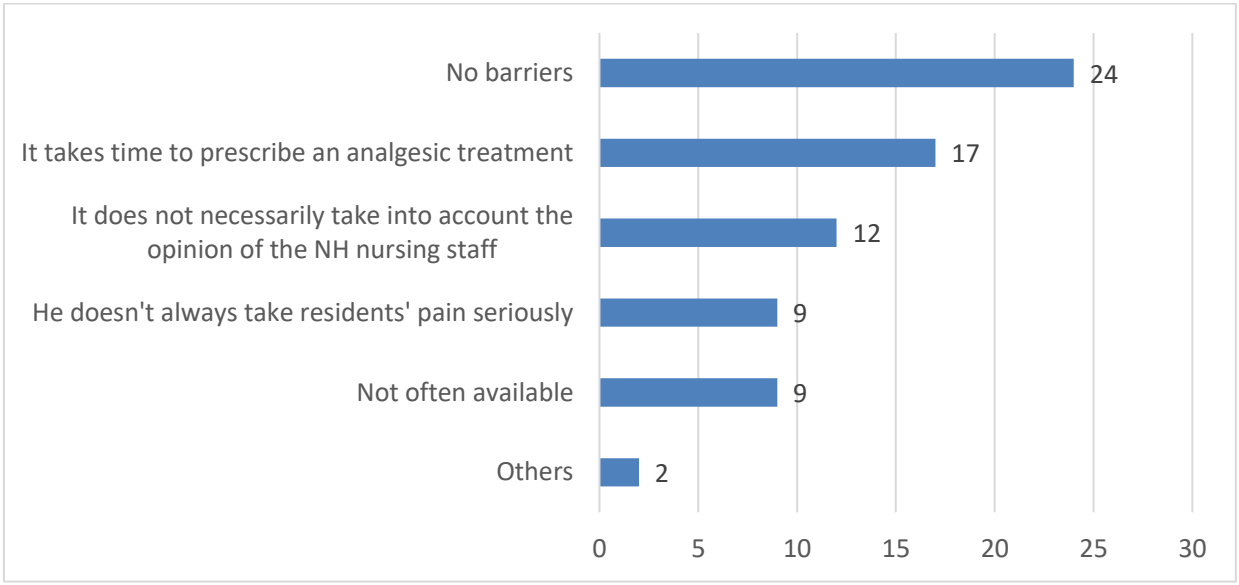


Physicians' views on the roles of healthcare professions in pain management (n=37)

Views on coordination between healthcare professionals regarding chronic pain management in NHs



Barriers to good collaboration between nursing staff and physicians, according to physicians (n=37)



Barriers to good collaboration between nursing staff and physicians, according to nurses (n=56)

Appendix III Analgesic consumption between 2017 and 2021

Overall consumption

	Step 1 analgesics	Step 2 analgesics	Step 3 analgesics
2017	71.5%	16.1%	26.1%
2018	75.7%	15.5%	30.0%
2019	74.4%	14.5%	30.0%
2020	77.1%	15.2%	34.7%
2021	75.5%	14.4%	30.6%

Evolution of analgesic consumption expressed in prescription frequency (PF), by WHO pain step, in the nursing homes of Vaud between 2017 and 2021

	Step 1 analgesics	Step 2 Analgesics	Step 3 analgesics
2017	0.32	0.03	0.06
2018	0.33	0.03	0.07
2019	0.33	0.03	0.06
2020	0.34	0.03	0.06
2021	0.33	0.03	0.07

Evolution of analgesic consumption expressed in Defined Daily Doses/resident/day (DDD/d/res), by WHO pain step, in the nursing homes of Vaud between 2017 and 2021

Non-opioid systematic analgesics consumption

	2017	2018	2019	2020	2021
paracetamol	62.0%	64.4%	63.2%	67.3%	65.0%
ibuprofen	9.7%	10.1%	9.6%	7.9%	8.1%
metamizole sodium	8.6%	8.7%	9.2%	10.1%	9.6%
diclofenac	1.6%	1.4%	1.1%	1.0%	1.2%
naproxen and esomeprazole	1.6%	1.3%	1.0%	1.2%	1.2%
mefenamic acid	1.5%	1.2%	1.1%	1.1%	1.0%
celecoxib	0.7%	0.7%	0.6%	0.6%	0.7%
acemetacin	0.7%	0.5%	0.5%	0.5%	0.7%
etoricoxib	0.5%	0.5%	0.3%	0.4%	0.3%
naproxen	0.2%	0.3%	0.4%	0.4%	0.2%
etodolac	0.2%	0.2%	0.4%	0.3%	0.3%
acetylsalicylic acid	0.4%	0.2%	0.4%	0.2%	0.1%
Harpagophytum	0.2%	0.2%	0.1%	0.3%	0.3%
nimesulide	0.1%	0.2%	0.2%	0.1%	0.1%
paracetamol, combinations excl. psycholeptics	0.2%	0.2%	0.1%	0.1%	
diclofenac, combinations	0.2%	0.2%	0.1%	0.0%	0.1%
piroxicam	0.1%	0.2%	0.1%	0.0%	0.1%
lornoxicam	0.1%	0.0%		0.0%	
cannabinoids	0.0%	0.1%	0.0%	0.0%	
indometacin	0.0%		0.0%		
ketorolac			0.0%		0.0%
dexketoprofen				0.0%	0.0%
acetylsalicylic acid, combinations excl. psycholeptics	0.0%	0.0%	0.0%	0.0%	0.0%
carbasalate calcium					0.0%
Total	**66.2%**	**69.7%**	**68.3%**	**71.4%**	**69.4%**

Evolution of non-opiod systemic analgesics consumption expressed in prescription frequency (PF) in the nursing homes of Vaud between 2017 and 2021

	2017	2018	2019	2020	2021
paracetamol	0.28	0.29	0.29	0.29	0.29
ibuprofen	0.01	0.01	0.01	0.01	0.01
metamizole sodium	0.01	0.01	0.01	0.01	0.01
naproxen and esomeprazole	0.01	0.01	0.00	0.00	0.00
celecoxib	0.00	0.00	0.00	0.00	0.00
diclofenac	0.00	0.00	0.00	0.00	0.00
naproxen	0.00	0.00	0.00	0.00	0.00
mefenamic acid	0.00	0.00	0.00	0.00	0.00
etodolac	0.00	0.00	0.00	0.00	0.00
Harpagophytum	0.00	0.00	0.00	0.00	0.00
acemetacin	0.00	0.00	0.00	0.00	0.00
etoricoxib	0.00	0.00	0.00	0.00	0.00
diclofenac, combinations	0.00	0.00	0.00	0.00	0.00
piroxicam	0.00	0.00	0.00	0.00	0.00
nimesulide	0.00	0.00	0.00	0.00	0.00
acetylsalicylic acid, combinations excl. psycholeptics	0.00	0.00	0.00	0.00	0.00
acetylsalicylic acid	0.00	0.00	0.00	0.00	0.00
lornoxicam	0.00	0.00		0.00	
cannabinoids	0.00	0.00	0.00	0.00	
indometacin	0.00		0.00		
paracetamol, combinations excl. psycholeptics	0.00	0.00	0.00	0.00	
dexketoprofen				0.00	0.00
ketorolac			0.00		0.00
carbasalate calcium					0.00

Evolution of non-opiod systemic analgesics consumption expressed in Defined Daily Doses/resident/day (DDD/d/res) in the nursing homes of Vaud between 2017 and 2021

Topical treatment consumption

	2017	2018	2019	2020	2021
diclofenac	30.2%	30.9%	30.9%	32.4%	33.0%
Preparations with salicylic acid derivatives	7.7%	7.4%	6.7%	6.8%	6.3%
etofenamate	1.1%	1.5%	1.5%	1.3%	1.3%
ketoprofen	1.7%	1.6%	1.5%	1.2%	1.3%
idrocilamide	0.4%	0.2%	0.2%	0.0%	
bufexamac	0.2%	0.2%			
Capsaicin and similar agents	0.0%	0.0%	0.0%		0.0%
indometacin	0.0%				0.0%
piroxicam	0.0%	0.0%			
ibuprofen			0.0%		
Total	**37.0%**	**37.5%**	**36.9%**	**37.8%**	**38.8%**

Evolution of topical treatment consumption expressed in prescription frequency (PF) in the nursing homes of Vaud between 2017 and 2021

Weak opioids consumption

	2017	2018	2019	2020	2021
tramadol	12.1%	11.3%	10.8%	11.8%	11.0%
codeine and paracetamol	3.3%	3.2%	3.0%	3.3%	3.5%
tramadol and paracetamol	1.5%	1.7%	1.3%	0.9%	0.8%
Total	**16.1%**	**15.5%**	**14.5%**	**15.2%**	**14.4%**

Evolution of weak opioids consumption expressed in prescription frequency (PF) in the nursing homes of Vaud between 2017 and 2021

	2017	2018	2019	2020	2021
tramadol	0.015	0.014	0.014	0.016	0.015
codeine and paracetamol	0.009	0.010	0.010	0.009	0.011
tramadol and paracetamol	0.003	0.002	0.002	0.002	0.001
Total	**0.027**	**0.027**	**0.026**	**0.027**	**0.027**

Evolution of weak opioids consumption expressed in Defined Daily Doses/resident/day (DDD/d./res.) in the nursing homes of Vaud between 2017 and 2021

Strong opioids consumption

	2017	2018	2019	2020	2021
morphine	16.6%	20.0%	20.2%	25.7%	21.5%
fentanyl	7.4%	8.7%	7.8%	8.5%	8.6%
oxycodone	3.8%	3.9%	4.0%	4.0%	3.7%
buprenorphine	2.3%	2.7%	2.7%	2.4%	2.0%
oxycodone and naloxone	2.3%	1.9%	1.7%	1.1%	1.0%
hydromorphone	0.4%	0.5%	0.4%	0.4%	0.5%
tapentadol	0.3%	0.3%	0.2%	0.2%	0.1%
dihydrocodeine	0.0%	0.0%	0.1%	0.0%	
Total	**26.1%**	**30.0%**	**30.0%**	**34.7%**	**30.6%**

Evolution of strong opioids consumption expressed in prescription frequency (PF) in the nursing homes of Vaud between 2017 and 2021

	2017	2018	2019	2020	2021
fentanyl	0.0302	0.0307	0.0293	0.0305	0.0338
morphine	0.0125	0.0141	0.0135	0.0144	0.0151
oxycodone	0.0073	0.0078	0.0083	0.0075	0.0084
buprenorphine	0.0067	0.0073	0.0077	0.0063	0.0046
oxycodone and naloxone	0.0046	0.0040	0.0037	0.0029	0.0024
hydromorphone	0.0015	0.0014	0.0004	0.0006	0.0019
tapentadol	0.0007	0.0008	0.0004	0.0004	0.0001
dihydrocodeine	0.0000	0.0000	0.0000	0.0000	
Total	**0.0634**	**0.0660**	**0.0633**	**0.0624**	**0.0663**

Evolution of strong opioids consumption expressed in Defined Daily Doses/resident/day (DDD/d./res.) in the nursing homes of Vaud between 2017 and 2021

Additional Materials

Online questionnaires for referring physicians

1. Assessment of chronic pain

a. Which pain self-assessment tool(s) do you and/or your care team (nurse, ASSC, nursing auxiliary, etc.) use with residents? (Multiple answers possible)
   i. Numerical scale (degree of pain from 0 to 10)
   ii. Facial scale (face mimics pain expression)
   iii. Verbal scale (no pain, mild pain, moderate pain, etc.)
   iv. I don't use pain self-assessment tools
   v. I use another tool: _____

b. Which pain **hetero-assessment** tool(s) do you and/or your care team use with residents? (Multiple answers possible)
   i. Algoplus scale
   ii. Doloplus scale
   iii. ECPA scale (Behavioral Evaluation of Pain in the Elderly)
   iv. PAINAD scale (pain assessment in advanced dementia)
   v. I don't use pain hetero-assessment tools
   vi. I use another tool: _____

c. In your opinion, is the resident's self-assessment sufficient to evaluate pain? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

d. Does the Nh you work with have any recommendations or guidelines for pain assessment?
   i. Yes
   ii. No
   iii. I don't know

2. Non-pharmacological measures for chronic pain management

a. Do you think that non-pharmacological measures have a place in the management of chronic pain in NH? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

b. In the NH with which you collaborate, how often do you use the following non-pharmacological measures to relieve chronic pain:

	Always	Often	Sometimes	Rarely	Never	I don't know
Physiotherapy and occupational therapy						
Hot / cold techniques						
Adapted physical activities						
Massage						
Acupuncture						
Behavioral therapy						
Phytotherapy / Aromatherapy						
Meditation / Relaxation						
Electrical stimulation						

c. If you use other methods, please indicate which ones and how often you use them:

d. What is/are the barrier(s) to carrying out non-pharmacological measurements in an NH? (Several answers possible)
   i. Lack of caregiver time
   ii. Lack of training for caregivers
   iii. Lack of qualified personnel to carry out these measurements (psychologists, etc.)
   iv. Reluctance of nursing staff to use this type of treatment
   v. Physician's reluctance to use this type of treatment
   vi. Residents' reluctance towards this type of treatment
   vii. Reluctance of the resident's family to accept this type of treatment
   viii. Lack of reimbursement for certain measures/lack of supplementary insurance
   ix. There are no barriers
   x. Others : _____

e. In your opinion, could the introduction and/or reinforcement of specific psychological care improve pain management in NH? (One answer only)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

3. Drug treatments for chronic pain management

a. What role do you see for paracetamol in the treatment of chronic pain in a resident? (Only one answer possible)
   i. 1ère intention in the absence of contraindication
   ii. 2ème intention if other treatment insufficient
   iii. Rarely involved in treatment
   iv. No place in treatment
   v. I don't know

b. If you answered rarely or never to the previous question, what is/are the reason(s) why, in your opinion, it does not really have a place in the treatment of chronic pain in algic residents? (Several answers possible)
   i. Lack of efficiency
   ii. Risk of adverse effects
   iii. Risk of interactions with other treatments
   iv. I don't know
   v. Others : _____

c. What role do you see for NSAIDs in the treatment of chronic pain in a resident? (Only one answer possible)
   i. 1ère intention in the absence of contraindication
   ii. 2ème intention, if other treatment insufficient
   iii. Rarely involved in treatment
   iv. No place in treatment
   v. I don't know

d. If you answered rarely or never to the previous question, what is/are the reason(s) why, in your opinion, they have no place in the treatment of chronic pain in residents suffering from algae?
   i. Lack of efficiency
   ii. Risk of adverse effects
   iii. Risk of interactions with other treatments
   iv. I don't know
   v. Others : _____

e. What role do you give to weak opioids in the treatment of chronic pain in a resident? (Only one answer possible)
   i. 1ère intention in the absence of contraindication
   vi. 2ème intention, if tier 1 drugs are insufficient
   ii. Rarely involved in treatment
   iii. No place in treatment
   iv. I don't know

f. If you answered rarely or never to the previous question, what is/are the reason(s) why, in your opinion, they have no place in the treatment of chronic pain in residents suffering from algae?
   i. Lack of efficiency
   ii. Risk of adverse effects
   iii. Risk of interactions with other treatments
   iv. Dependency risk

v. I don't know
vi. Others : _____

g. What role do you give to strong opioids in the treatment of chronic pain in a resident? (Only one answer possible)
   i. 1ère intention in the absence of contraindication
   ii. 2ème intention, if tier 1 drugs are insufficient
   iii. 3ème intention, if tier 1 and 2 drugs are insufficient
   iv. Rarely involved in treatment
   v. No place in treatment
   vi. Only in end-of-life situations
   vii. I don't know

h. If you answered rarely or never to the previous question, what is/are the reason(s) why, in your opinion, they have no place in the treatment of chronic pain in residents suffering from algae?
   i. Lack of efficiency
   ii. Risk of adverse effects
   iii. Risk of interactions with other treatments
   iv. Dependency risk
   v. Complex administrative management (counterfoil prescription)
   vi. I don't know
   vii. Others : _____

i. What is your opinion on the following statements concerning weak and strong opioids in the treatment of chronic pain in the elderly in NH?

	I couldn't agree more.	I agree.	Neutral	I don't really agree	Strongly disagree
I'm quite at ease when prescribing opioids to NH residents, because I know that their administration will be managed by the nursing staff.					
I'm rather cautious and hesitant about prescribing opioids to NH residents because of the many side effects they cause					
I'm rather cautious and hesitant about prescribing opioids to NH residents because of the many interactions with their usual treatment.					
I'm rather cautious and hesitant about prescribing opioids to NH residents because of the risk of dependence and abuse.					
I am rather cautious and reluctant to prescribe opioids to NH residents because of the bad image they have on the resident's and/or family's side.					

I am rather cautious and reluctant to prescribe opioids to NH residents because of the difficulty of dosing and/or converting them.					
I think opioids can be a good alternative in the elderly when non-opioid analgesics are insufficient.					
I don't think opioids are a good alternative, as the risks/side effects often outweigh the expected benefit.					
I'm more comfortable prescribing opioids to end-of-life patients than to chronic pain patients					

j. What is your opinion on the following statements concerning rescue opioid analgesic treatment for an NH resident suffering from chronic pain?

	I couldn't agree more.	I agree.	Neutral	I don't really agree	Strongly disagree
When there is an opioid-based long-term treatment, I always prescribe a rescue opioid treatment for an algic resident.					
When there is a long-term opioid treatment, I don't often prescribe a rescue opioid treatment to an algic resident for fear of abuse.					
When there is an opioid-based long-term treatment, I don't often prescribe a rescue opioid treatment to an algic resident, as I prefer the nursing staff to warn me if the long-term treatment is not sufficient.					
I regularly prescribe a rescue opioid treatment for an algic resident who has no long-term opioid treatment.					
I have complete confidence in the nursing staff's management of rescue opioid analgesic treatments					
My preference is for caregivers to be as autonomous as possible in managing rescue opioid analgesic treatments.					

k. In your opinion, which strong opioid is best suited to treating severe chronic pain in an algic resident? (One answer only)
   i. Morphine
   ii. Fentanyl
   iii. Oxycodone
   iv. Tapentadol
   v. Hydromorphone
   vi. Buprenorphine
   vii. I don't know

l. In your opinion, which strong opioid is best suited for analgesia in residents at the end of life? (One answer only)
   i. Morphine
   ii. Fentanyl
   iii. Oxycodone
   iv. Tapentadol
   v. Hydromorphone
   vi. Buprenorphine
   vii. I don't know

m. What is the most common reaction to the announcement/proposal of strong opioid therapy?

	Positive	Quite positive	Neutral	Rather negative	Negative
Resident's reaction					
Relatives' reaction					

n. What is/are the most frequently cited reluctance(ies) of a resident or his/her loved ones towards strong opioids? (Several answers possible)
   i. Too many side effects
   ii. Dependency risk
   iii. Analgesics too strong for her pain
   iv. Analgesics for end-of-life use only
   v. There's no hesitation
   vi. Other concerns : _____

o. In your opinion, is/are the reluctance(ies) of the resident or his/her loved ones an obstacle to good pain management?
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

4. Interprofessional management of chronic pain

a. How would you rate your collaboration with the NH care team in general? (Only one answer possible)
   i. Excellent
   ii. Good
   iii. Normal
   iv. Pretty bad
   v. Wrong
   vi. I don't know

b. Do you think that better collaboration with the NH care team would improve residents' pain management? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

c. What is/are the barrier(s) to good collaboration with the NH care team in pain management? (Multiple answers possible)
   i. They are not often available
   ii. I often lack the time to listen to them properly
   iii. They do not sufficiently pass on information given by the patient to the physician
   iv. They don't always take residents' pain seriously
   v. There are no barriers
   vi. Others : _____

d. Do you think the involvement of pharmacists in quality circles and/or medication reviews improves pain management for residents? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

e. What is your opinion of the statements concerning the roles of the various healthcare professionals in the management of chronic pain in the NH?

	I couldn't agree more.	I agree.	Neutral	I don't really agree	Strongly disagree
It is the nursing staff (nurse, ASSC, orderly, etc.) and the physician who assess a resident's chronic pain.					
Only nursing staff assess a resident's chronic pain					
It is only the physician who assesses a resident's chronic pain during his or her medical visit.					
The nursing staff also check that the long-term analgesic treatment is appropriate for the resident and inform the physician if any adjustments are necessary.					
The nursing staff also check that the rescue analgesic treatment is suitable for the resident and inform the physician if any adjustments are necessary.					
The pharmacist plays a role in pain management only by reminding people of good analgesic prescribing practices during quality circle sessions.					
The pharmacist verifies the suitability of the analgesic for each medication order (checking duration, dosage, rescue doses).					

5. Comprehensive management of chronic pain :

a. What is your estimate of the proportion of residents with chronic pain who are adequately treated in the NH in which you practice? (Only one answer possible)
   i. <30%
   ii. 30-60%
   iii. 61-90%
   iv. >90%
   v. I don't know

b. Generally speaking, what barrier(s) to good pain management in NH could there be other than those already mentioned? (Several answers possible)
   i. Lack of time for NH nursing staff to interact with residents
   i. Lack of qualified care staff (nurses)
   ii. Residents' reluctance to report pain
   iii. Lack of rescue treatment in case of pain
   iv. Resident's declaration of pain not taken seriously (attention-seeking, "it's normal to be in pain at your age")
   v. Lack of pain management training for NH nursing staff
   vi. Poor and/or lack of interpretation of signs of pain by caregivers
   vii. There are no barriers
   viii. Others : _____

6. General questions :

a. Please indicate the NH with which you collaborate the most: (only one answer possible)
   i. ...

b. What percentage of patients do you follow at this NH? (Only one answer possible)
   i. < 10%
   ii. 10-30 %
   iii. 31-60%
   iv. 61-90%
   v. > 90%

c. How long have you had your medical degree? (Only one answer possible)
   i. < 5 years
   ii. 5-10 years
   iii. 11-20 years
   iv. > 20years

d. General remarks :

I would like to thank you for taking part in this questionnaire and remain at your disposal for any questions you may have at the following e-mail address: marion.yerly@unisante.ch

Online questionnaires for nurses

1. Assessment of chronic pain

a. What pain self-assessment tool(s) do you use with residents? (Multiple answers possible)
   i. Numerical scale (degree of pain from 0 to 10)
   ii. Facial scale (face mimics pain expression)
   iii. Verbal scale (no pain, mild pain, moderate pain, etc.)
   iv. I don't use pain self-assessment tools
   v. I use another tool: _____

b. Which pain hetero-assessment tool(s) do you use with residents? (Multiple answers possible)
   i. Algoplus scale
   ii. Doloplus scale
   iii. ECPA scale (Behavioral Evaluation of Pain in the Elderly)
   iv. PAINAD scale (pain assessment in advanced dementia)
   v. I don't use pain hetero-assessment tools
   vi. I use another tool: _____

c. In your opinion, is the resident's self-assessment sufficient to evaluate his pain? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

d. Are there any recommendations or guidelines for pain assessment in your establishment? (Only one answer possible)
   i. Yes
   ii. No
   iii. I don't know

2. Non-pharmacological measures in chronic pain management :

a. Do you think that non-pharmacological measures have a place in the management of chronic pain in NH? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

b. In your NH, how often do you use the following non-pharmacological measures to relieve chronic pain:

	Always	Often	Sometimes	Rarely	Never	I don't know
Physiotherapy and occupational therapy						
Hot / cold techniques						
Adapted physical activities						
Massage						
Acupuncture						
Behavioral therapy						
Phytotherapy / Aromatherapy						
Meditation / Relaxation						
Electrical stimulation						

c. If you use other methods, please indicate which ones and how often you use them:

d. What barrier(s) to non-pharmacological measures do you observe in your practice? (Multiple answers possible)
   i. Lack of caregiver time
   ii. Lack of training for caregivers
   iii. Lack of qualified personnel to carry out these measurements (psychologists, etc.)
   iv. Reluctance of nursing staff to use this type of treatment
   v. Physician's reluctance to use this type of treatment
   vi. Residents' reluctance towards this type of treatment
   vii. Reluctance of the resident's family to accept this type of treatment
   viii. Lack of reimbursement for certain measures/lack of supplementary insurance
   ix. There are no barriers
   x. Others : _____

e. In your opinion, could the introduction and/or reinforcement of specific psychological care improve chronic pain management in NH?
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

3. Drug treatments for chronic pain management

a. What is your opinion of the following statements concerning non-opioid analgesics for the treatment of chronic pain in the elderly in NH?

	I couldn't agree more.	I agree.	Neutral	I don't really agree	Strongly disagree
Paracetamol is the analgesic of choice in 1 er					
Paracetamol is generally effective, with few side effects					
Paracetamol is usually ineffective					
Paracetamol is not a good choice, as it carries a risk of adverse effects					
In the absence of contraindications, paracetamol should be increased to its maximum daily dose (3 g/day in the elderly) before switching to another analgesic.					
NSAIDs are the preferred analgesics in 1er choice					
NSAIDs are generally effective, with few side effects					
NSAIDs are not a good choice because of their risk of adverse effects					
NSAIDs are usually ineffective					
Paracetamol and NSAIDs (= step 1 analgesics) are usually sufficient to treat chronic pain.					

b. What is your opinion regarding the statements below concerning weak opioids, such as codeine and tramadol, for treating chronic pain in the elderly in NH?

	I couldn't agree more.	I agree.	Neutral	I don't really agree	Strongly disagree
Weak opioids are the analgesics of choice in 1 er					
In the event of inadequate pain management with NSAIDs and/or paracetamol, weak opioids are the best alternative.					
Weak opioids are generally effective, with few side effects					
Weak opioids are not a good choice as they present a risk of dependence					

Weak opioids are not a good choice because they have many undesirable effects					

c. What is your opinion on the following statements concerning the use of strong opioids to treat chronic pain in the elderly in NH?

Note: strong opioids include morphine, fentanyl, oxycodone, buprenorphine, tapentadol and hydromorphone

	I couldn't agree more.	I agree.	Neutral	I don't really agree	Strongly disagree
Appropriate doses of strong opioids should be used in 2ème cases (if NSAIDs and paracetamol are insufficient).					
Strong opioids are treatments to be introduced only when other therapies have failed.					
Strong opioids should be reserved for analgesia in people at the end of life					
Strong opioids are not a good choice because they have many undesirable effects					
Strong opioids are not a good choice as they present a risk of dependence					

d. In your opinion, which strong opioid is most appropriate for severe chronic pain in an algic resident? (One answer only)

i. Morphine (Sevre-long®, M-Retard®, MST Continus® ...)
ii. Fentanyl (Actiq®, Durogesic®, Effentora®, ...)
iii. Oxycodone (Oxycontin®, Oxynorm®, ...)
iv. Tapentadol (Palexia®)
v. Hydromorphone (Palladon®)
vi. Buprenorphine (Temgesic®, Transtec®)
vii. I don't know

e. In your opinion, which strong opioid is best suited for analgesia in residents at the end of life? (One answer only)

i. Morphine (Sevre-long®, M-Retard®, MST Continus® ...)
ii. Fentanyl (Actiq®, Durogesic®, Effentora®, ...)
iii. Oxycodone (Oxycontin®, Oxynorm®, ...)
iv. Tapentadol (Palexia®)
v. Hydromorphone (Palladon®)
vi. Buprenorphine (Temgesic®, Transtec®)
vii. I don't know

f. What is your opinion on the following statements concerning rescue opioids for **the treatment of the elderly suffering from pain** in NH?

	I couldn't agree more.	I agree.	Neutral	I don't really agree	Strongly disagree
If the resident has a rescue opioid, I administer it immediately.					
I always seek the advice of at least one of my colleagues (if available) before administering a rescue opioid.					
As a general rule, I do not administer any rescue opioid without consulting the physician.					
In general, I feel comfortable administering a rescue opioid.					
Information on how to administer rescue opioid analgesics is always very clear					

g. What is the most common reaction to the announcement/proposal of strong opioid therapy?

	Positive	Quite positive	Neutral	Rather negative	Negative
Resident's reaction					
Reaction of his relatives					

h. What is/are the most frequently cited reluctance(ies) of a resident or his/her loved ones towards strong opioids? (Several answers possible)
   i. Too many side effects
   ii. Dependency risk
   iii. Analgesics too strong for her pain
   iv. Analgesics for end-of-life use only
   v. There's no reluctance (remove I don't know)
   vi. Other concerns : _____

i. In your opinion, is/are the reluctance(ies) of the resident or his/her loved ones an obstacle to good pain management?
   ii. Yes, totally
   iii. Rather yes
   iv. Rather no
   v. Not at all
   vi. I don't know

4. Interprofessional management of chronic pain

a. How would you rate collaboration within the NH care team in general? (Only one answer possible)
   i. Excellent
   ii. Good
   iii. Normal
   iv. Pretty bad
   v. Wrong
   vi. I don't know

b. Do you think that better collaboration within the NH care team would improve residents' pain management? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

c. What is/are the barrier(s) to good collaboration within the care team in managing residents' pain? (Multiple answers possible)
   i. Lack of communication during care team rotas
   ii. A lack of clarity in the information transmitted within the care team
   iii. Lack of time to transmit information properly
   iv. Lack of clarity in assigning responsibilities
   v. There are no barriers
   vi. Others : _____

d. How do you rate the collaboration between nursing staff and physicians working in the NH? (Only one answer possible)
   i. Excellent
   ii. Good
   iii. Normal
   iv. Pretty bad
   v. Wrong
   vi. I don't know

e. Do you think better collaboration with physicians would improve pain management for residents? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

f. What is/are the barrier(s) to good collaboration with physicians in managing residents' pain? (Multiple answers possible)
   i. Not often available
   ii. It does not necessarily take into account the opinion of the NH nursing staff.
   iii. It takes time to prescribe a drug
   iv. He doesn't always take residents' pain seriously
   v. There are no barriers
   vi. Others : _____

g. Do you think the involvement of pharmacists in quality circles and/or medication reviews improves pain management for residents? (Only one answer possible)
   i. Yes, totally
   ii. Rather yes
   iii. Rather no
   iv. Not at all
   v. I don't know

h. What is your opinion of the statements concerning the roles of the various healthcare professionals in the management of chronic pain in your NH ?

	I couldn't agree more.	I agree.	Neutral	I don't really agree	Strongly disagree
It is the nursing staff (nurse, ASSC, orderly, etc.) and the physician who assess a resident's chronic pain.					
Only nursing staff assess a resident's chronic pain					
It is only the physician who assesses a resident's chronic pain during his or her medical visit.					
The nursing staff also check that the long-term analgesic treatment is appropriate for the resident and inform the physician if any adjustments are necessary.					
The nursing staff also check that the rescue analgesic treatment is suitable for the resident and inform the physician if any adjustments are necessary.					
The pharmacist plays a role in pain management only by reminding people of good analgesic prescribing practices during quality circle sessions.					
The pharmacist verifies the suitability of the analgesic for each medication order (checking duration, dosage, rescue doses).					

5. Comprehensive **chronic pain management**

a. What is your estimate of the proportion of residents with chronic pain who are not adequately treated in your NH? (Only one answer possible)
   i. <30%
   ii. 30-60%
   iii. 61-90%
   iv. >90%
   v. I don't know

b. Generally speaking, what barrier(s) to good pain management in NH could there be other than those already mentioned? (Several answers possible)
   i. Lack of time for NH nursing staff to interact with residents
   ii. Lack of qualified care staff (nurses)
   iii. Residents' reluctance to report pain
   iv. Lack of rescue treatment for pain
   v. Resident's declaration of pain not taken seriously (attention-seeking, "it's normal to be in pain at your age")
   vi. Lack of pain management training for NH nursing staff
   vii. Poor and/or lack of interpretation of signs of pain by caregivers
   viii. There are no barriers
   ix. Others : _____

6. General questions

a. Please indicate in which NH you work:
   i. ...

b. What percentage of your staff currently works at NH ? (Only one answer possible)
   i. < 30 %
   ii. 30-50%
   iii. 51-70%
   iv. >70%

c. How long have you had your nursing diploma? (Only one answer possible)
   i. < 5 years
   ii. 5-10 years
   iii. 11-20 years
   iv. > 20years

d. General remarks :

I would like to thank you for taking part in this questionnaire and remain at your disposal for any questions you may have at the following e-mail address: marion.yerly@unisante.ch