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Neuropathic Pain in Nursing Homes

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ABSTRACT

Background: In older persons, pain prevalence is estimated to range between 22% and 80%. In nursing home residents, undervaluated pain is common despite pain management quality indicators. This study aims to assess neuropathic pain (NP) prevalence, NP evaluation and treatment, and healthcare professionals' practices and needs to optimise NP management.

Methods: This study received ethical approval [IRB number 2023-CF230]. In order to obtain data from healthcare professionals working in nursing homes, an online survey was conducted on REDCap software between 4 March 2024 and 28 June 2024. The survey was divided into 3 sections: (1) prevalence of NP, (2) assessment of the four steps of the NP management algorithm (detection, evaluation, treatment and re-evaluation), (3) awareness and needs.

Results: Responses to the survey came from nine nursing homes, for a total of 841 residents, half of them aged between 75 and 85 years The prevalence of NP was 8.5% [4.2; 12.7]. The clinical pertinence of each step of the algorithm showed good satisfaction (mean ± SD, 7.9 ± 1.5). A large majority of participants (96.8%) expressed the need to receive a specific training on NP management in their care setting.

Conclusion: The prevalence of NP is close to that described in the literature, but appears to be underestimated by the participants because of diagnostic issues. The decision-making algorithm proposed to the teams has shown good results in terms of its usefulness in current practice. The survey also highlighted the need for training in this field to optimise NP management.

Significance: This survey highlights the underestimated prevalence of neuropathic pain because of lack of diagnosis issues. A 4-step algorithm (detection, evaluation, treatment and re-evaluation) was proposed and validated by healthcare professionals for neuropathic pain management with good results in terms of its usefulness for current practice. Results unveils the still unmet needs for information and training of nursing homes healthcare professionals and medical/nursing students as regards neuropathic pain assessment and treatment.

1 | Introduction

The prevalence of pain is high among older adults and is estimated to range from 22% to 80% (Abdulla et al. 2013; Bauer et al. 2016; Björk et al. 2016; Cole et al. 2022; Kutschar et al. 2020; Lukas et al. 2013; Patel et al. 2013; Schreier et al. 2015; Takai et al. 2010). According to OECD Health statistics, long-term care recipients living at home are more numerous than those living in nursing homes; 1 in 3 women and 1 in 5 men aged 65 years and over will need long-term care (World Social Report 2023). Moderate to severe cognitive impairment will affect 64% of these individuals, taking into account that this rate is underestimated by at least 10% (Bartfay et al. 2013). The prevalence of diseases that can cause chronic pain, including neuropathic pain (NP),

increases with age (Pickering et al. 2016; Schmader et al. 2010). NP is defined as pain caused by a lesion or disease of the somatosensory nervous system (Scholz et al. 2019). Prevalence estimates of NP in the general population are 6%–8% (Bouhassira et al. 2008) and are highly variable in older persons, reaching up to 14.4% in some studies (Mbrah et al. 2022). Information on the prevalence of NP in older persons living in nursing homes is generally less well reported than in the general population, while pain is a common symptom among people with dementia (Achterberg et al. 2020; Corbett et al. 2014; Helvik et al. 2023; van Dam et al. 2019). Another underassessed area is the care journey of the resident when NP is evaluated, and when treatment failure occurs; the care journey being proposed includes different available options in different countries, including retirement homes, senior homes, residential care homes, continuing care homes, or nursing homes.

Pain detection and evaluation is particularly difficult in older persons with cognitive impairment, and underassessed pain is common among nursing home residents despite pain management quality indicators (Pimentel et al. 2015). Pain has also been reported to be untreated or undertreated for approximately 40% of residents with persistent pain (Hunnicutt et al. 2017). In order to palliate the difficulties of managing pain in older nursing home residents with or without cognitive impairment, a 4-step algorithm ranging from pain detection to re-evaluation has been proposed (Pickering et al. 2016), and items have been reviewed recently in a European consensus (Pickering et al. 2024b). This validated algorithm for geriatric NP management includes detection, evaluation, treatment and re-evaluation steps. Detection, evaluation, and re-evaluation steps are pivotal in older persons, especially when cognitive impairment may impede pain report. Treatment options are adapted to geriatric specificities and international recommendations (Bates et al. 2019; By the 2023 American Geriatrics Society Beers Criteria Update Expert Panel 2023; Finnerup et al. 2015; Moisset et al. 2020) on NP and drug safety. The detection step is essential because older adults may underreport pain, especially if communication is impaired, leading to undertreatment. NP can be masked by nociceptive pain, requiring careful observation for behavioural changes and specific symptoms like allodynia and hyperalgesia. A thorough medical history, family input, and clinical examination are essential for an accurate diagnosis and effective management of NP. A comprehensive evaluation of older patients includes pain scales, quality of life assessments and questionnaires addressing cognitive, psychological and emotional status. The treatment section of the algorithm has been recently implemented according to new recommendations. As of April 2019, pregabalin and gabapentin are being controlled under the Misuse of Drugs Act 1971 as Class C substances and scheduled under the Misuse of Drugs Regulations 2001 as Schedule 3 (2019) in the UK, with variations according to countries (i.e., in France only pregabalin is concerned). A history of drug abuse and observation of the patients for the development of signs of abuse and dependence are recommended. The second point concerns 8% capsaicin patches, which have been shown in the literature to be efficacious and well tolerated in individuals older than 75 years (Pickering et al. 2024a; Pickering and Lucchini 2020). Finally, the effectiveness of pain treatment in older patients with communication and cognitive disorders should be regularly reassessed through pain evaluations involving all caregivers. The primary goal of this step is to minimise adverse drug effects and optimise the benefit–risk ratio. Frequent evaluations, discussed by a multidisciplinary team, can guide necessary adjustments to the therapeutic strategy. In order to better circumscribe the needs of nursing homes healthcare professionals as regards NP assessment and treatment, this study aims to evaluate the prevalence, the interest, and use of the NP management algorithm and the need for more training on NP management.

2 | Methods

2.1 | Study

The NEPAL (NEuropathic PAin in oLder persons) study is a collaboration between Clermont-Ferrand University Hospital and the regional Health Agency, ARS Auvergne Rhone-Alpes. Ethical approval was obtained from the Clinical Research and Innovation Ethics Committee of Clermont-Ferrand University Hospital, France [IRB number 2023-CF230]. A declaration was made to the Data Protection Officer of the Clermont-Ferrand University Hospital in which the sponsor undertakes to conduct the study in compliance with the reference methodology MR004, a study recorded in the institution's data processing register under number M23PG1206.

In order to obtain data from experienced healthcare professionals working in nursing homes, an online survey was conducted on REDCap software between 4 March 2024 and 28 June 2024.

2.2 | Participants and Methods

A total of 31 nursing homes were selected to take part in the study. Healthcare professional participants potentially included 96 nurses and 34 doctors listed for a theoretical total of 1000 residents to be reached. Survey questions were selected on the basis of a literature search, previous publications, and expert consultation with members of the Doloplus collective group and the Geriatrics group of the French Geriatrics Association. The survey was divided into three sections: (1) the prevalence of NP and care setting, (2) the different stages of the algorithm, and (3) awareness and the need for training sessions. The survey was in French only and comprised 59 questions, of which $n = 31$ were yes/no questions, $n = 21$ were multiple-choice questions, $n = 5$ were rating questions on a scale from 0 to 10, and $n = 2$ were open-ended questions requiring a numerical response. The content of the algorithm was adapted from the published version (Pickering et al. 2016).

Participants were encouraged to answer all questions according to their expertise, and were also given the opportunity to suggest the need for training and to add priorities not covered in the survey by an open-ended question. The full survey and results are available in File S1.

2.3 | Analysis and Statistics

Descriptive statistics were used to summarise participant characteristics. Counts and percentages were used for categorical

data, whereas continuous data were expressed as means and standard deviations or medians and interquartile ranges according to the statistical distribution. The assumption of normality was analysed using the Shapiro–Wilk test. Prevalence was reported with 95% confidence intervals. Results are presented using polar histograms for categorical data and scatterplots for continuous data. Stratification of survey responses via graphic presentation was conducted through polar histograms. Data exported from REDCap were analysed using Stata software (version 15, College Station, USA).

3 | Results

3.1 | Participants

A total of thirty-one nursing homes were contacted to take part in the study, 14 of them agreed to participate and nine nursing homes responded to the survey, for a total of 841 residents. Of the 38 questionnaires collected, 10 were completed by doctors (nursing home coordinators and general practitioners/attending physicians) and 28 by nurses. More than 50% of the residents were aged between 75 and 85 years.

3.2 | NP Prevalence and NP Algorithm

The prevalence of NP was 8.5% [4.2; 12.7]. The polar histogram displays the results (Figure 1). It shows the answers to the 49 survey questions, which are divided into several topics: (1) care setting, (2) the different stages of the algorithm divided into 4 subgroups (2a. Detect; 2b. Assess; 2c. Treat; 2d. Reassess), and (3) awareness and the need for training sessions (Figure 2).

3.3 | Care Setting

For the majority of participants (89.5%), the diagnosis of pain is most often made at the time of the patient's complaint, but can also be made following a suggestion from the team (52.6%) or the observation of a behavioural disorder (50.0%). More than half of respondents (60.5%) routinely assess pain on admission.

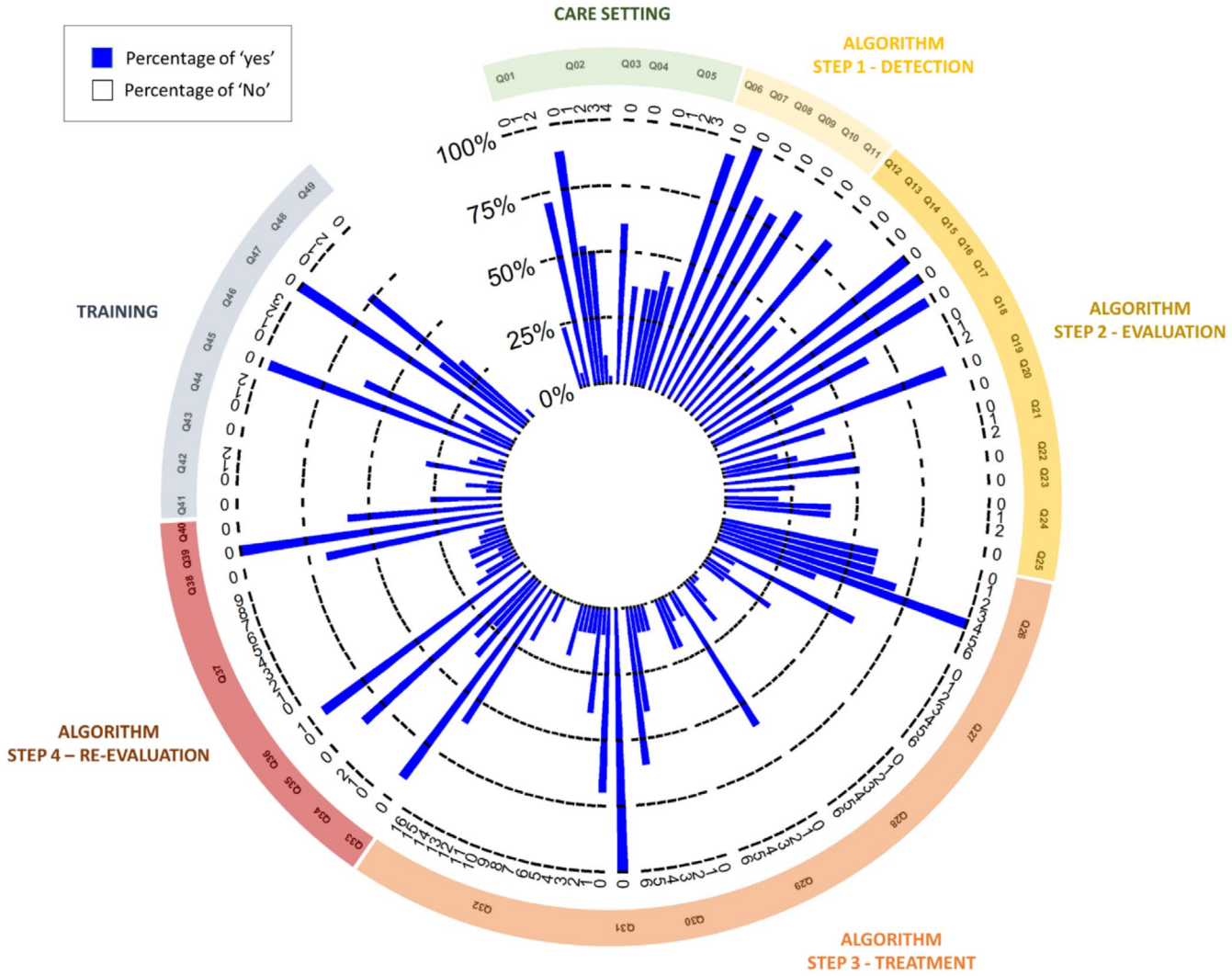

FIGURE 1 | Polar graph illustrating the responses to 49 questions included in the survey. These are presented clockwise in the same order as they appear in the survey. Questions belonging to the same topic are grouped with the same colour. The six topics are indicated around the circle. The percentage of yes is represented in blue.

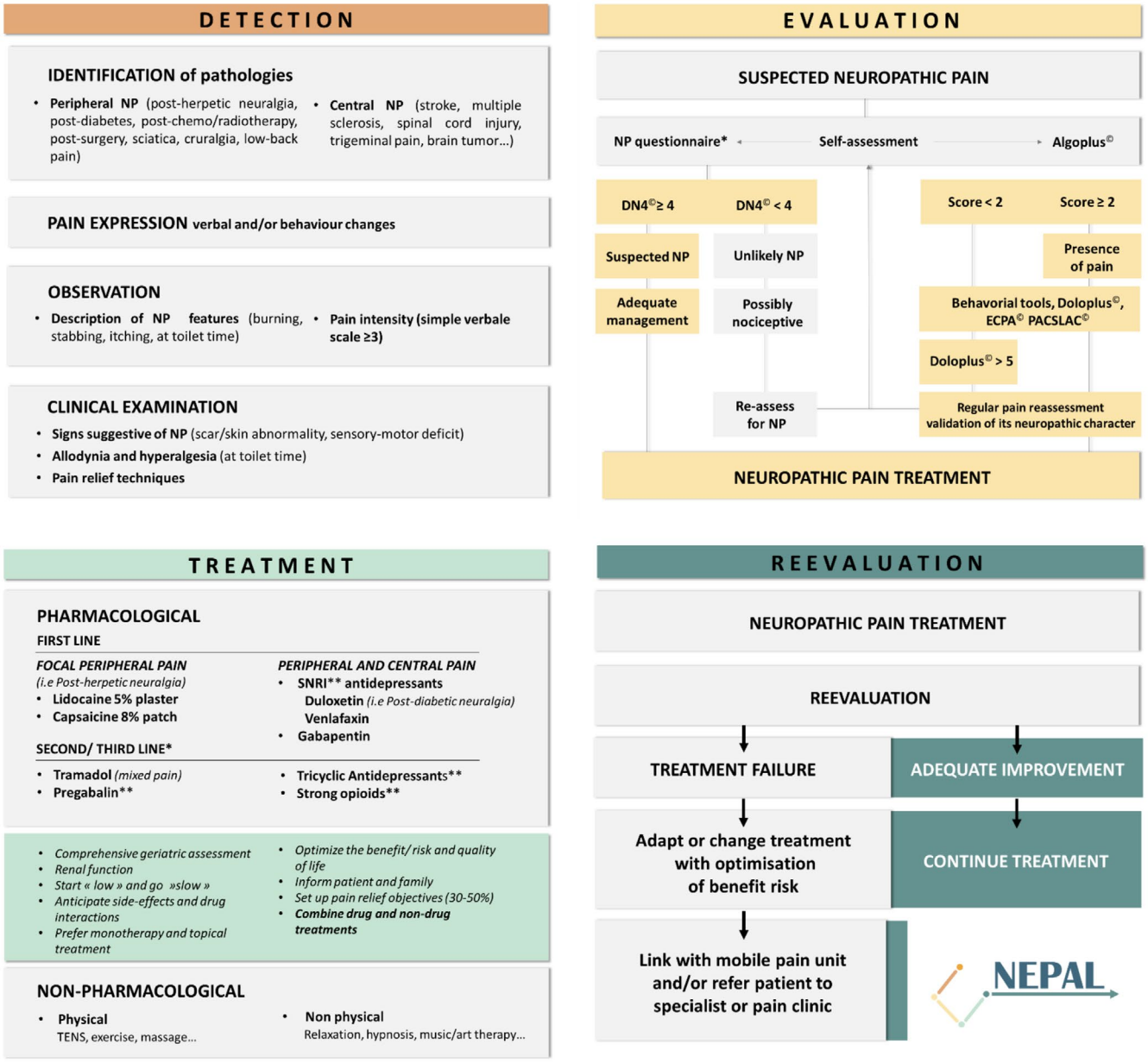

FIGURE 2 | Neuropathic pain algorithm. *According to clinical status, comorbidities, co-medication, and tolerance; **Caution with tricyclic antidepressants: Cardiac and/or cognitive adverse effects; SNRI: Serotonin-Norepinephrine reuptake inhibitors.

In the case of chronic pain, only 37.1% of participants looked specifically for NP. Assessment of pain appears to be relatively evenly distributed between the various professions: 36.8% by the coordinating doctor, 36.8% by the attending general practitioner, 44.7% by the nurses and 39.5% by the nursing auxiliaries.

3.4 | Algorithm

3.4.1 | Step 1—Detection

When NP is suspected, the majority of participants (94.1%) look for the presence of a past history or disease that could have led to this type of pain. All participants (100%) check whether the patient is able to express a verbal complaint. Characteristics of NP are sought in 83.3% of participants. 80% of participants evaluate if the patient has pain intensity (numeric assessment pain scale) ≥ 3. The majority of respondents (85.7%) said they were looking for behavioural problems that could be linked to pain. Finally, only 42.4% of participants checked whether the clinical examination is compatible with NP.

3.4.2 | Step 2—Evaluation

The vast majority of participants (83.8%) use self-assessment with their patients. Less than half are familiar with the DN4 (Douleur Neuropathique 4) questionnaire (46.0%), and only 29.4% of those use it. All responders carry out observational assessments, and 66% of participants knew and used the Algoplus scale in first line, and 33% in second line. Almost all participants (91.9%) were familiar with the Doloplus scale, but only 41.2%

used it, of which 21.4% in first line, 28.6% in second and 50.0% in third line. The ECPA scale (Echelle Comportementale d'évaluation de la douleur chez la Personne Agée non communicante) seems to be less familiar, with only 51.4% of participants, and therefore less used (26.3%). On the other hand, the Canadian scale PACSLAC (Pain Assessment Checklist for Seniors with Limited Ability to Communicate) is not known to respondents.

3.4.3 | Step 3—Treatment

Prescription for NP is fairly diversified: antiepileptics are prescribed unanimously; 70% prescribe antidepressants; 60% prescribe step 1, step 2 or step 3 analgesics of the World Health Organisation classification (Organization 1986); and 40% of doctors prescribe local analgesics (lidocaine, capsaicin patch). As first-line treatment, 60% of doctors prescribe step 1 analgesics, 30% antiepileptics, 10% step 2 analgesics, antidepressants, or topical drugs, while step 3 analgesics are not prescribed. As a second-line treatment, most doctors prescribe antiepileptics (70%), 40% prescribe antidepressants and only 10% prescribe step 3 analgesics. When NP is localised, as in postherpetic neuralgia, 60% prescribe step 1 analgesics as first-line treatment. 20% prescribe antiepileptic drugs or topical drugs (lidocaine, capsaicin patch), while 10% prescribe step 2 analgesics or antidepressants. For second-line treatment of localised NP, most doctors prescribe local analgesics (60%) or antiepileptics (40%), versus 10% who prescribe step 2 or step 3 analgesics or antidepressants. All doctors use nonpharmacological treatments such as physiotherapy (70%), psychological support (60%), TENS (40%), relaxation or spa treatments (20%) and 10% use other alternatives (physical activity, osteopathy, hypnosis, acupuncture, sophrology and phytotherapy).

3.4.4 | Step 4—Re-Evaluation

Most participants (90.6%) re-evaluate the patient once NP has been diagnosed. In cases of treatment failure, 36.8% of respondents choose to adapt the dosage, compared with 23.7% who opt to modify the treatment. For further treatment, 84.6% of participants refer to other structures, but only in the event of therapeutic failure (94.1%). Among the specialties that are contacted, 31.8% of respondents choose to contact a neurologist, 27.3% the mobile pain unit doctor, the geriatrician or palliative care doctor, 22.7% the rheumatologist, 18.2% the pain structure or psychiatrist, 13.6% physical medicine and rehabilitation and finally, 9.1% the pain clinic. Agreements with other care structures are reported by 68.4% of respondents for hospital networks and by 58.3% for the outpatient network.

3.4.5 | Clinical Relevance of the Algorithm

Responders were asked to rate the clinical relevance of each step in the algorithm (Figure 3). The overall rating of the algorithm showed good satisfaction (mean ± SD, 7.9 ± 1.5).

3.5 | Awareness and Need for Training Sessions

Only 26.5% of participants answered that their team was trained in the management (assessment, treatment) of NP, with 5.3% holding a diploma in pain medicine and 13.2% a diploma in palliative care. Only 29.2% of respondents said they had a pain referent in their facilities (13.2% represented by a doctor, 10.5% by a nurse). A large majority of participants (96.8%) expressed the need to receive a training in NP management in their care

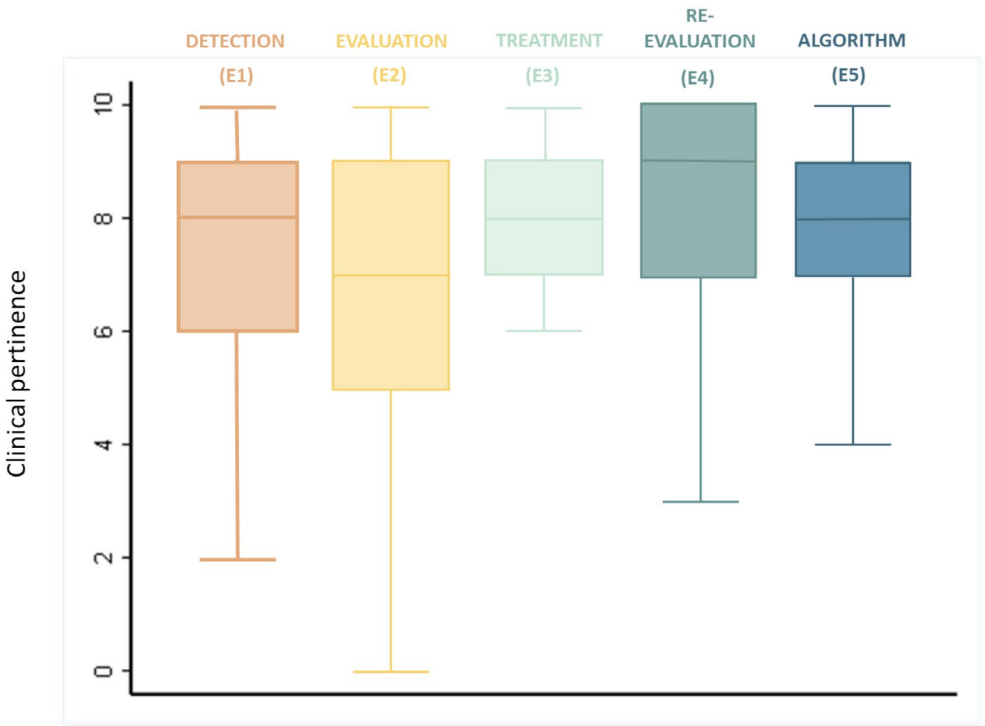

FIGURE 3 | Appreciation of the clinical pertinence of the different steps of the neuropathic pain algorithm on a 0–10 scale (E1: Detection; E2: Evaluation; E3: Treatment; E4: Re-evaluation; E5: Global appreciation).

setting: 60.5% in face-to-face training, 13.2% in distance learning and 21.1% in paper form. For all participants, 39.5% of staff would be interested in such training, 76.3% in nursing and 34.2% in care assistants. All participants (but 1) were aware of the National French pain society recommendations on NP (Moisset 2021; Pickering et al. 2016).

4 | Discussion

Management of NP in older persons is complex, requiring a multidisciplinary approach and a comprehensive follow-up. In this context, the NEPAL survey revealed a prevalence of NP of 8.5% among 841 nursing home residents. This prevalence is close to that described in the literature, but appears to be underestimated in this study by the participants because of the lack of diagnostic and therapeutic management aids. Indeed, a number of factors complicate the assessment and treatment of NP, sometimes making it a real diagnostic challenge, not to mention the increased iatrogenic risk in this population and cognitive impairment, which may further complicate management. The decision-making algorithm proposed to the teams has shown good results in terms of its usefulness in current practice. The patient's complaint initiates the diagnosis of pain, as pain assessment is not systematically performed on admission. In the case of chronic pain, NP is only rarely investigated, and is assessed in the same way by the different professions. In general, the successive stages of NP diagnosis are well performed (history/disease, patient's ability to express a complaint, specific characteristics of NP, pain intensity ≥ 3 and behavioural disorders). However, it is not sufficiently checked whether the clinical examination is compatible with NP. Self- and observational assessments are carried out by the teams, and the Algoplus and Doloplus scales are well known, Algoplus being used more frequently as a first-line tool. The DN4 questionnaire and the ECPA scale are less well known and therefore less used, while the PACSLAC tool is unknown to all teams. It becomes essential to have a specific focus for continuing professional education due to the lack of use of the DN4 questionnaire, the absence of a neurological examination or the ignorance of the French guidelines. Furthermore, the neurological examination is frequently overlooked in many medical school curricula, a situation worsened by the phenomenon of neurophobia (Rodrigues et al. 2023; Solorzano and Józefowicz 2015). The creation of a theoretical and practical course, covering areas such as general neurological examination, screening assessments, and neurological evaluation in pain management, could greatly improve the training of healthcare professionals and help mitigate neurophobia. Additionally, since the management of NP is often based on individual signs and symptoms, this training could lead to better patient care. Lastly, a nationwide care protocol, supported by continuous monitoring of quality indicators, could be established.

Antiepileptics are unanimously prescribed for NP, closely followed by antidepressants. However, when asked which treatments are prescribed in first line, doctors preferentially prescribe non-opioid analgesics, while antiepileptics are prescribed in second intention. In the case of localised NP, non-opioid analgesics are prescribed in first intention, followed by topical treatments such as lidocaine/capsaicin in second intention. The most commonly used nonpharmacological treatments are physiotherapy and psychological support. Reassessment of postdiagnosis management is well performed, with recourse to other structures/specialists in the event of therapeutic failure (neurologist, geriatrician, palliative care, etc.). Few doctors refer to a pain clinic or pain medicine specialist. This survey also highlights the fact that a specialist is only called in when treatment fails. As NP is often inadequately assessed and treated, a significant number of patients are exposed to avoidable risks. Incorporating regular consultations with neurologists or other specialists skilled in neurological examinations could enhance diagnostic accuracy and treatment efficacy. This approach has the potential to mitigate unnecessary risks, optimise resource utilisation, and reduce healthcare costs.

This survey also highlighted the need for training in this field. Indeed, only 26.5% of the teams appeared to be specifically trained for NP management (assessment, treatment). All participants would be interested in either face-to-face or distance learning training.

In our knowledge, there are no studies offering tools to help manage NP in nursing homes. Indeed, several studies assess the characteristics of pain in older people (Foroughan et al. 2019), suffering from dementia (Myrenget et al. 2023), or describe the prevalence of pain, whether neuropathic (Mbrah et al. 2022; van Kollenburg et al. 2012) or not (Sjölund et al. 2021). In addition, other authors propose guidelines on general pain assessment in older persons (Akker et al. 2021; Gnass et al. 2021; Manietta et al. 2022), that are not specifically on NP. Our survey has highlighted the challenges encountered in the field, thereby providing clinical perspectives to attend to older persons' needs. Indeed, a greater awareness among healthcare staff, combined with more robust knowledge, would enable proper management of NP and, consequently, a better quality of life.

One of the limitations of this survey is the observational approach, which, although essential and valuable in this vulnerable population, presents biases inherent to the subjectivity of the evaluators, the communication difficulties of the residents, and the influence of contextual factors (available resources, organisation of care, etc.).

In conclusion, the prevalence of NP, the good acceptation and usefulness of the NP management algorithm, and the expressed need for more training have underlined the importance of better managing NP in nursing homes. A multidimensional programme is hence being developed in collaboration with the French Health Agency, specifically designed for nursing homes healthcare professionals, in order to bring information and training for better NP detection, evaluation, treatment and overall management in older nursing home residents at regional and national level. Independently of this type of training, it would be interesting to intervene earlier by raising awareness, both in the medical student curriculum and in nursing programmes. In parallel, an annual follow-up on the evolution of practices and management of NP would provide validation indicators for all these training programmes, in order to most effectively adapt the tools to be deployed.

Author Contributions

G.P., E.S. and N.M. conceived the study, G.P., M.V. and E.S. designed and wrote the protocol. M.V., E.S. and F.G. carried out the logistics of the study. B.P. performed the analyses. G.P. and M.V. wrote the first draft and all authors agreed on the final version. G.P. is the guarantor; she had full access to all the data in the study, and takes responsibility for the integrity of the data and the accuracy of the data analysis. The corresponding author attests that listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

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Disclosure

Checklist or Guidelines, Artificial Intelligence: Not required for this type of study.

Originality of Work: Better circumscribe the needs of nursing home healthcare professionals as regards neuropathic pain management and improve residents' overall quality of life. Suggested reviewers: Guillaume Léonard, Magdalena Kocot-Kepska, masquelier Etienne, Felicia Cox, lavand'homme Patricia.

Conflicts of Interest

The authors declare no conflicts of interest.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.