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Review

Foot Reflexology with Caring Consciousness to Reduce Pain in Older Adults: An Integrative Review

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Abstract

AIM: To analyze the evidence available on foot reflexology with application of caring consciousness to reduce pain in older adults

METHODS: Integrative review carried out in Medline/PubMed, CINAHL, EBSCO Host, SCOPUS, Web of Science, and EMBASE databases using the MESH terms "Aged," "Pain," "Musculoskeletal manipulations," "Nursing," and "Nursing theory." in English, Spanish, Portuguese, and French published between 2012 and 2022. The selected studies were exported to Rayyan software and evaluated by title and abstract; after reading the full text, were analyzed according to the PRISMA guide checklist.

RESULTS: In this study, 497 articles were found, 4 were selected. 75% of the studies were based on the Ingham method of reflexology. The elements that demonstrate caring consciousness and enhance the healing effect of the therapy were foot grooming, use of essential oils, implementation of relaxation techniques, description of pressure points and combining other therapies. In 75% of the cases, foot reflexology was effective to reduce pain.

CONCLUSION: Those authors who apply caring consciousness in the technique of reflexology obtained more significant results in the reduction of pain. The incorporation of external elements shows the intention of nursing to enhance the effects of the therapy, as well as the search for connection with the elderly.

Keywords: Aged, musculoskeletal manipulations, nursing, nursing theory, pain

Introduction

Aging is often related to the presence of geriatric syndromes secondary to the decline in organic functionality characteristic of this stage of life, as well as personal risk factors (Luna et al., 2018). Worldwide, it is estimated that between 60% and 70% of adults aged 60–80 years live with multimorbidities (Fernández & Bustos, 2016).

The presence of one or more noncommunicable diseases affects the progression of aging, limiting functional capacity and quality of life, and predisposing older adults to a life with disabilities (Vetrano et al., 2018).

Pain is one of the main disabling symptoms of multiple etiologies, mainly associated with noncommunicable diseases (Cobarrubias et al., 2021). It is defined by the International Association for the Study of Pain (IASP) as an unpleasant sensory and emotional experience related to actual or potential tissue damage, influenced by biopsychosocial factors, and learned through life experience (IASP, 2021).

In older adults, chronic pain is one of the main reasons for requesting health care; the incidence oscillates in a wide range between 25 and 76% of older adults living in the community, increasing to 83–93% during institutionalization (Sáez et al., 2016); Likewise, between 35 and 48% of older adults in the community experience pain daily, compared to 85% of those who live in nursing homes (Andrés et al., 2014).

However, despite being such a common symptom that leads to the appearance of other pathologies such as depression, anxiety, and sleep and social disturbances, evaluation and treatment in older adults are frequently deficient, especially in the presence of cognitive deterioration and considering an increase in the pain threshold due to overexposure to the stimulus (Andrés et al., 2014). On the other hand, medical treatment is mainly pharmacological; between 65 and 95% of older adult patients consume some type of drug. This, coupled with an inefficient diagnosis, leads to minimal or no therapeutic effects, drug interactions, and polypharmacy (Portela & Rivera, 2008).

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Currently, many people resort to complementary therapies to treat their pain because they do not obtain the expected results with conventional treatments (Artioli et al., 2021). The World Health Organization (WHO) defines complementary or alternative medicine as those health practices not included in the prevailing health system (Secretaría de Salud, 2022).

Foot reflexology is a complementary therapy that has gained strength today due to its multiple benefits, highlighting the reduction of various types of pain in people with lymphoma, post-operated tibia fracture, acute low back pain, post-cesarean section, migraine, post-vaccination pain in infants up to 12 months of age, rheumatoid arthritis, colorectal cancer, multiple sclerosis, primiparous women, metastasis, and chronic renal failure (Artioli et al., 2021; Norman & Cowan, 1991).

This therapy consists of nerve stimulation of reflex points on the sole of the foot sole that correspond to organs or glands (Norman & Cowan, 1991; Voner, 2014). Its execution must be a conscious process that requires meticulous preparation, allowing the use of elements to enhance and expand its effect, such as the creation of a healing space and the use of appropriate supports, such as aromas, oils, cushions, inductive therapies, or music (Voner, 2014).

As it is a complex therapy, it demands prepared executors who visualize the curative possibilities and take advantage of them. The nurse is socially recognized for the ability to provide professional and humanized care; likewise, nursing is a science focused on human care, not only physical, but also psychological, ethical, spiritual, emotional, affective, communicative, aesthetic, and sociopolitical (Garavito, 2013; Macharet et al., 2020).

Nursing theories represent a light to understand phenomena that concern the discipline (Raile & Marriner, 2011). Jean Watson, in her Theory of Transpersonal Human Care, considers caring consciousness a fundamental element to achieve human and professional care, which consists of impregnating care with knowledge, energy, intentionality, and human presence; characteristic seals that distinguish nursing care from non-professional care. Caring consciousness remains through time and space and dominates over physical illness, allowing care to be raised beyond the physical dimension (Fawcett, 2006; Watson, 2008).

Therefore, the implementation of foot reflexology as a nursing intervention with caring consciousness could reform care for the elderly and lead to a more significant decrease in pain and, consequently, an improvement in quality of life. For this, it is necessary to identify which elements of the foot reflexology technique applied by other authors demonstrate elements of caring consciousness (knowledge, energy, intentionality, and human presence).

Carrying out an integrative review of the literature on the different uses and possibilities of application with caring consciousness that have been given to foot reflexology in clinical practice represents an opportunity for nursing to transfer the therapy to different contexts and appropriate it as an independent nursing activity. In this way, it would be possible to improve care provided to the elderly with pain, promoting a better quality of life and independence.

For this reason, the present integrative review aimed to analyze the available evidence of foot reflexology with the application of caring consciousness to reduce pain in older adults.

Research Question

What is the available evidence in the scientific literature about foot reflexology with the application of caring consciousness to reduce pain in older adults?

Methods

Study design

Integrative review of the literature developed based on the Whittemore and Knafl methodology that considers five steps: (1) formulation and identification of the problem, (2) data collection, (3) data evaluation, (4) analysis and interpretation of the data, and (5) presentation of data (Whittemore & Knafl, 2005).

Search Strategy

The question developed using the PICo strategy was used as a guide (Table 1).

The literature search was performed in the Medline/PubMed, CINAHL, EBSCO Host, SCOPUS, Web of Science, and EMBASE databases using the MESH terms "Aged," "Pain," "Musculoskeletal manipulations," "Nursing" and "Nursing theory," as well as the keywords in English "Aged," "Elderly," "Middle aged," "Middle age," "Oldest old," " Nonagenerian," "Octagenarian," "Centenarian," "Pain," "Burning pain," "Burning pains," "Physical suffering," "Physical sufferings," "Migratory pain," "Migratory pains," "Radiating pain," "Radiating pains," "Splitting pain," "Splitting pains," "Ache," "Aches," "Crushing pain," "Crushing pains," "Musculoskeletal manipulations," "Reflexology," "Manipulation therapy," "Manipulative therapies," "Nursing," "Nursing theory," and "Nursing theories"; in addition to the Boolean operators AND and OR (Table 2). Inclusion and exclusion criteria: Primary nursing studies on the application of foot reflexology in older adults (60 years or older), up to 10 years old (period 2012 to 2022), in English, Spanish, Portuguese, and French were included. Likewise, articles that included the elderly population with dementia were excluded. The search was conducted on May 16 2022.

Study Selection

All the selected studies were exported to the *Rayyan* software for evaluation by title and abstract by two authors (E.R.C

Table 1.
Acronyms PICo as Controlled Descriptors and Synonyms Celaya, Mexico 2022

Acronyms	Meaning	Controlled Descriptors and Synonyms
P	Population	Older adults
I	Intervention	Foot reflexology with caring consciousness
Co	Context	Pain management

Table 2.
Search Strategy for Database and Results Celaya, México, 2022

Databases	Search Strategy	Results
PubMed	("Aged"[Mesh] OR "Aged" OR "Elderly" OR "Middle Aged"[Mesh] OR "Middle Aged" OR "Middle Age" OR "Oldest Old" OR "Nonagenarian" OR "Octogenarian" OR "Centenarian") AND ("Pain"[Mesh] OR "Pain" OR "Burning Pain" OR "Burning Pains" OR "Physical Suffering" OR "Physical Sufferings" OR "Migratory Pain" OR "Migratory Pains" OR "Radiating Pain" OR "Radiating Pains" OR "Splitting Pain" OR "Splitting Pains" OR "Ache" OR "Aches" OR "Crushing Pain" OR "Crushing Pains") AND ("Musculoskeletal Manipulations"[Mesh] OR "Musculoskeletal Manipulations" OR "Reflexology" OR "Manipulation Therapy" OR "Manipulative Therapies" OR "Manipulative Therapy") AND ("Nursing Theory"[Mesh] OR "Nursing Theory" OR ""Nursing Theories"" OR "Nursing"[Mesh] OR ""Nursing"")	193 articles
CINAHL	("Aged" OR "Elderly" OR "Middle Aged" OR "Middle Age" OR "Oldest Old" OR "Nonagenarian" OR "Octogenarian" OR "Centenarian") AND ("Pain" OR "Burning Pain" OR "Burning Pains" OR "Physical Suffering" OR "Physical Sufferings" OR "Migratory Pain" OR "Migratory Pains" OR "Radiating Pain" OR "Radiating Pains" OR "Splitting Pain" OR "Splitting Pains" OR "Ache" OR "Aches" OR "Crushing Pain" OR "Crushing Pains") AND ("Musculoskeletal Manipulations" OR "Reflexology" OR "Manipulation Therapy" OR "Manipulative Therapies" OR "Manipulative Therapy") AND ("Nursing Theory" OR "Nursing Theories" OR "Nursing")	10 articles
SCOPUS	("Aged" OR "Elderly" OR "Middle Aged" OR "Middle Age" OR "Oldest Old" OR "Nonagenarian" OR "Octogenarian" OR "Centenarian") AND ("Pain" OR "Burning Pain" OR "Burning Pains" OR "Physical Suffering" OR "Physical Sufferings" OR "Migratory Pain" OR "Migratory Pains" OR "Radiating Pain" OR "Radiating Pains" OR "Splitting Pain" OR "Splitting Pains" OR "Ache" OR "Aches" OR "Crushing Pain" OR "Crushing Pains") AND ("Musculoskeletal Manipulations" OR "Reflexology" OR "Manipulation Therapy" OR "Manipulative Therapies" OR "Manipulative Therapy") AND ("Nursing Theory" OR "Nursing Theories" OR "Nursing")	14 articles
Web of Science	("Aged" OR "Elderly" OR "Middle Aged" OR "Middle Age" OR "Oldest Old" OR "Nonagenarian" OR "Octogenarian" OR "Centenarian") AND ("Pain" OR "Burning Pain" OR "Burning Pains" OR "Physical Suffering" OR "Physical Sufferings" OR "Migratory Pain" OR "Migratory Pains" OR "Radiating Pain" OR "Radiating Pains" OR "Splitting Pain" OR "Splitting Pains" OR "Ache" OR "Aches" OR "Crushing Pain" OR "Crushing Pains") AND ("Musculoskeletal Manipulations" OR "Reflexology" OR "Manipulation Therapy" OR "Manipulative Therapies" OR "Manipulative Therapy") AND ("Nursing Theory" OR "Nursing Theories" OR "Nursing")	12 articles
EMBASE	('Aged' OR 'Elderly' OR 'Middle Aged' OR 'Middle Age' OR 'Oldest Old' OR 'Nonagenarian' OR 'Octogenarian' OR 'Centenarian') AND ('Pain' OR 'Burning Pain' OR 'Burning Pains' OR 'Physical Suffering' OR 'Physical Sufferings' OR 'Migratory Pain' OR 'Migratory Pains' OR 'Radiating Pain' OR 'Radiating Pains' OR 'Splitting Pain' OR 'Splitting Pains' OR 'Ache' OR 'Aches' OR 'Crushing Pain' OR 'Crushing Pains') AND ('Musculoskeletal Manipulations' OR 'Reflexology' OR 'Manipulation Therapy' OR 'Manipulative Therapies' OR 'Manipulative Therapy') AND ('Nursing Theory' OR 'Nursing Theories' OR 'Nursing')	268 articles

and K.J.A.R.); a third author (R.A.P.R.) resolved discrepancies. Subsequently, the inclusion criteria were applied and all the authors read the full text (Ouzzani et al., 2016).

Quality Appraisal

The evaluation of the methodological quality of the studies was carried out by one of the authors (D.S.F.) using the McMaster University Occupational Therapy Evidence-Based Practice Research Group's Guidelines for Critical Review Form for Quantitative Studies tool (Fineout & Stillwell, 2019; Law et al., 1998), which evaluates objective, review of the literature, design, sample, measurement instruments, results, methods of analysis, and conclusions (Table 4). Studies were also evaluated by level of evidence (Fineout & Stillwell, 2019) (Table 3).

Results

Search Results

A total of 497 articles were found, of which 158 were eliminated due to duplicates, 280 due to addressing other therapies, 36 due to addressing more youthful, 6 because they are literature reviews, and 2 because they do not include the pain variable. In total, 15 articles were analyzed in full text, 10 of which were eliminated for working with a different population aged over 60 years and one for not analyzing the pain variable. Finally, the integrative review consisted of 4 articles on foot reflexology in older adults (Figure 1).

Study Characteristics

Details of the main characteristics of the selected studies are presented in Table 2. The years of publication of the selected articles range from 2012 to 2021, and the predominant country of publication was Iran in 50% of the cases ($n = 2$). Regarding the type of population addressed by each study, 75% ($n = 3$) focused on older adults with heart problems, while 25% ($n = 1$) focused on cancer survivors (Fazlollah et al., 2021; Hodgson & Lafferty, 2012; Imani et al., 2018; Jones et al., 2013).

Concerning the technique of foot reflexology, 75% ($n = 3$) of the studies mention being based on the principles of the Ingham method of foot reflexology, which suggests that the stimulation of the reflex points of the feet can be carried out in any environment, as long as it provides comfort (not only physical, but also psychological, emotional, and spiritual) (Fazlollah et al., 2021; Hodgson & Lafferty, 2012; Imani et al., 2018; Jones et al., 2013).

The foot reflexology procedures were detailed differently by the authors; however, they agree on important aspects for the creation of a healing environment and enhancement of the expected results:

Table 3.
Main Characteristics of the Selected Studies Celaya, México, 2022

Author / Year	Country	Objective	Design	Sample	Intervention	Comparison Groups	Intervention Characteristic	Results	*p*	Level of Evidence
Hodgson & Lafferty, 2012 (Hodgson & Lafferty, 2012)	USA	To investigate and compare the effects of reflexology and Swedish massage therapy on physiologic stress, pain, and mood in older cancer survivors residing in nursing homes.	Experimental, repeated-measures, crossover design	18 nursing home residents	Foot reflexology and Swedish massage	**Group 1:** 4 weeks of Swedish massage. 1 week off. 4 weeks of reflexology. **Group 2:** 4 weeks of reflexology. 1 week off. 4 weeks of Swedish massage.	Four sessions of 20 minutes each applied once a week for four consecutive weeks.	**Mean pre-intervention pain =** 2.29 ± 1.2 **Mean post-intervention pain =** 2.00±.79	<0.05	II (Clinical Issue/ Intervention)
Jones et al., 2013 (Jones et al., 2013)	UK	To measure the immediate hemodynamic effects of reflexology treatment applied to specific areas of the feet (which are thought to correspond to the heart) in patients with CHF and compare this with treatment applied to other areas which are not.	Randomized controlled double-blind repeated measures	12 patients	Foot reflexology	**Experimental group:** Day 1: Received forefoot reflexology. Day 2: Received reflexology in the calcaneal area. **Control group:** Day 1: Received reflexology in the calcaneal area. Day 2: Received forefoot reflexology.	A unique session of 4.5 minutes.	**Mean pre-intervention pain =** Not reported. **Mean post-intervention pain =** Control group = 0.3 ± 0.4 Intervention group = 0.2 ± 0.4	>0.05	II (Clinical Issue/ Intervention)

Table 4.
Quality Appraisal of the Studies McMaster University Tool

Critical Review for Quantitative Studies	Hodgson y Lafferty 2012	Jones et al., 2013	Imani et al., 2018	Fazlollah et al., 2021
Objective was clear?	Y	Y	Y	Y
Is the literature review relevant to this topic?	N	Y	Y	Y
Describe the design	Y	Y	Y	Y
Sample described in detail	Y	Y	Y	Y
Justification for sample size presented	N	Y	Y	Y
Reliable outcome measures	Y	Y	Y	Y
Valid outcome measures. Intervention described in detail	Y	Y	Y	Y
Contamination avoided	Y	Y	Y	Y
Simultaneous intervention avoided	NI	Y	Y	Y
Results reported in terms of statistical significance	Y	Y	Y	Y
Appropriate analysis methods	Y	Y	Y	Y
Clinical importance has been reported	Y	Y	Y	N
Report of participants who dropped out of the study	N	N	N	N
Conclusions consistent with the methods and results obtained	Y	Y	Y	Y

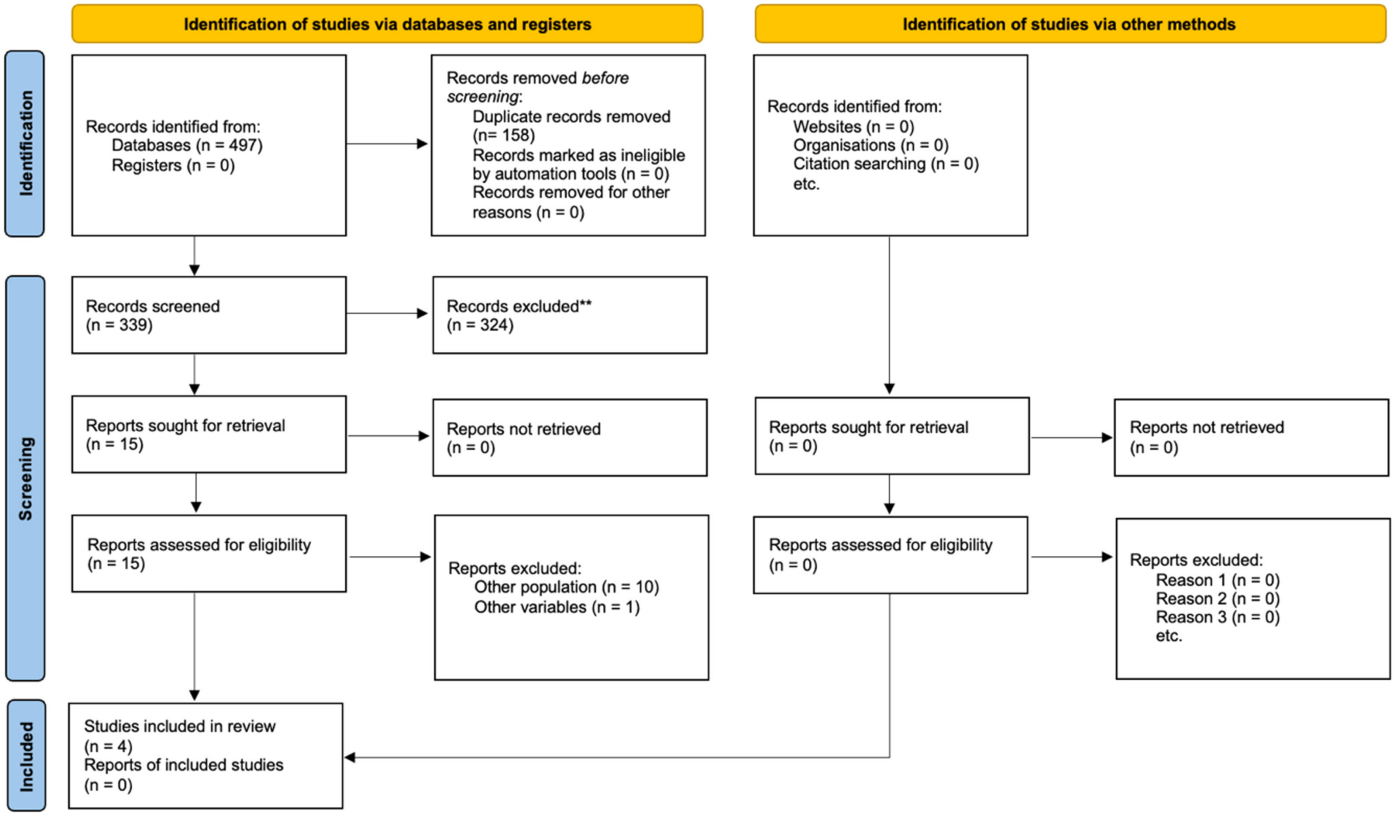

Figure 1.
PRISMA 2020 Flow Diagram for New Systematic Reviews, which included Searches of Databases, Registers, and other Sources. Celaya, Mexico, 2022.

a. Foot grooming: Use of towels soaked in warm water to clean the lower extremities before starting the intervention (Imani et al., 2018).
b. Use of oils to facilitate massage: Use of baby oil due to its lack of therapeutic effects that could bias the results (Fazlollah et al., 2021).
c. Implementation of relaxation techniques before and after reflexology: Recommend allocating two minutes at the beginning and at the end of foot reflexology to relax the lower extremities (Fazlollah et al., 2021).
d. Description of specific pressure points to be stimulated: According to the authors, it is essential to determine the specific pressure points to be worked on during reflexology sessions; in addition, it is recommended to standardize the time and repetitions of the stimulus, the level of pressure to be applied, as well as the anatomical zone or utensil with which the pressure will be applied (Fazlollah et al., 2021; Hodgson & Lafferty, 2012; Imani et al., 2018; Jones et al., 2013).
e. Combination of therapies: Demonstrate the effectiveness of foot reflexology in conjunction with Swedish massage; although suggesting greater benefits with the use of foot reflexology, these were not statistically significant. However, the feasibility of implementing this type of complementary therapy in institutionalized older adults with cancer is concluded (Hodgson & Lafferty, 2012).

Regarding the effects of reflexology on pain, it should be noted that in 50% of the cases (n=2), the intensity of pain was evaluated using the Visual Analogue Scale (VAS), followed by the Numerical Rating Scale of Pain (NRS Pain) and the Non-Verbal Pain Indicator Rating List (CNPI) with a 25% (n=1) incidence (Fazlollah et al., 2021; Hodgson & Lafferty, 2012; Imani et al., 2018; Jones et al., 2013).

In 75% ($n = 3$) of cases, reflexology was effective in reducing pain ($p < .05$) (Fazlollah et al., 2021; Hodgson & Lafferty, 2012; Imani et al., 2018). However, no effectiveness was found in the modification of hemodynamic aspects of patients with chronic heart failure, or for the reduction of delirium or the improvement of sleep quality in patients who are candidates for cardiac surgery (Fazlollah et al., 2021; Jones et al., 2013). The studies were evaluated according to the level of evidence analyzing the objective, review of the literature, design, sample, measurement instruments, results, methods of analysis, and conclusions (Table 4).

Discussion

Pain is an unpleasant symptom that frequently afflicts older adults due to the physiological deterioration of body structures and their functionality, which predisposes them to other pathologies (Utli, 2022). Camacho et al. (2019) point out that musculoskeletal pain has a high incidence among the elderly population, affecting up to 80% at some point in this stage. In addition, Imani et al. (2018) add that even treatments for painful diseases such as angina pectoris managed with nitroglycerin can cause another type of secondary pain such as migraines, which results in a decreased quality of life.

Complementary therapies, including foot reflexology, have gained popularity as they are simple, non-invasive, inexpensive, and have minimal side effects compared to pharmacological treatments (Col·legi Oficial d'Infermeres i Infermers de Barcelona, 2019). Currently, multiple scientific studies have validated the effects of foot reflexology in the treatment of both acute and chronic pain caused by cancer, heart failure, tibia fracture, migraine, appendectomy, natural or surgical birth, vaccines, rheumatoid arthritis, multiple sclerosis, chronic renal failure, invasive procedures in newborns, among others (Artioli et al., 2021; Col·legi Oficial d'Infermeres i Infermers de Barcelona, 2019; Nascimento et al., 2022). Specifically with older adults, the effectiveness of foot reflexology is only reported to reduce migraine secondary to the use of nitroglycerin as well as pain caused by cardiac surgery and cancer, which makes evident the need to continue exploring the possibilities and benefits of the therapy in this population (Fazlollah et al., 2021; Hodgson & Lafferty, 2012; Imani et al., 2018).

The foregoing represents an opportunity for nursing to revolutionize care for older adults; it is important to use a theoretical framework that guides the practice of foot reflexology and recognizes it as part of professional nursing care. Even though, in the case of Fazlollah et al. (2021), Hodgson and Lafferty (2012), and Jones et al. (2013), the scientific production is proper for nursing, no theoretical reference is mentioned as the basis of the study. For their part, Göral and Özkan (2021) evaluated the effects of foot reflexology on anxiety, depression, and quality of life in patients diagnosed with gynecological cancer from the sixth caritas process of Jean Watson's Theory of Transpersonal Human Care, highlighting the importance of the holistic approach from the nurse to the mind, body, and soul of the person, and taking back to the possibility, from the theory, of using care-healing modalities such as foot reflexology, which, seen from this caritas process, was considered as the conscious use of therapeutic touch. Likewise, Aslan and Kiliç (2022) applied reflexology specifically in older adults based on Watson's theory, finding a significant decrease in low back pain and an increase in quality of life.

Although foot reflexology has shown efficacy in reducing pain on its own, implementing it with caring consciousness, considering the impact on each one of the person's spheres, could enhance its healing effect. In this regard, Ardigo et al. (2016) compared the effects on pain of therapeutic massage in any area of the body chosen by hospitalized older adults versus hypnotic therapies, finding a significant decrease in pain in both groups but with a greater impact in the group of hypnotic therapies.

Likewise, Airosa et al. (2013), demonstrated that the inclusion of therapeutic touch in acute emergency situations made the participants feel an existential union, peace, trust, comfort, and security; but other participants confused this practice with feelings of intimacy and sexuality. However, since foot reflexology is a manual practice, it is feasible to include therapeutic touch as an effect enhancer.

Imani et al. (2018) conclude that the use of aromatherapy in conjunction with foot reflexology may be beneficial. Gok and Ozdemir (2016) compared the effect on pain and fatigue of massage with aromatherapy and reflexology in people with rheumatoid arthritis, finding a significant decrease in the

variables, highlighting that the decrease in pain through foot reflexology was observable from week 1 compared to massage with aromatherapy from week 2. It should be noted that some authors have reported adverse effects or adverse reactions to aromatic essences, so the implementation of the foot reflexology technique should be guided by the caring consciousness of the nurse (Candy et al., 2020).

For their part, Hodgson and Lafferty (2012) demonstrated some benefits of Swedish massage compared to foot reflexology, so combining both therapies promises better results.

The four articles included highlight the benefits and some elements of foot reflexology that show the possibility of incorporating it into nursing care which, impregnated with caring consciousness, promises to enhance the healing effect of therapy. These elements, although they may commonly seem like variations of the technique, seen with caring consciousness, from the transpersonal human care theory, represent opportunities to create a special and unique moment of care for each person.

Conclusion and Reccomendations

This review demonstrates the importance of delving into non-pharmacological interventions to reduce pain in older adults, despite the limited information in this regard that restricted the discussion of the data; however, the included studies demonstrate good methodological quality.

Foot reflexology turned out to be effective in reducing pain in older adults from a session of more than 10 minutes per foot; this guarantees the feasibility of implementing the therapy in nursing care settings, whether in hospital or home areas, where there is frequently work overload and little time available.

Regarding the elements found that indicate the incorporation of caring consciousness in foot reflexology, highlights include foot grooming, use of oils to facilitate massage, the implementation of relaxation techniques, the description of specific pressure points to work, and combination with other complementary therapies. Incorporating these elements into foot reflexology, which by itself is beneficial for pain reduction, speaks of the nurse's intention to enhance the effects of therapy, as well as the search for a connection and exchange of phenomenal fields of the interactants.

The results of this review invite nursing to put into practice foot reflexology with caring consciousness as a form of comprehensive and loving care for the elderly, exploring research methodologies of high scientific quality. Nursing practice guided by the transpersonal human care theory is adaptable to any environment, population, or context; it offers the possibility of improving the quality of care provided and contributes to the growth of the discipline.

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