

Health education program and auriculotherapy for the older adults with chronic pain: social technology in Primary Health Care

Programa de Educação em Saúde e auriculoterapia para a população idosa com dor crônica: tecnologia social na Atenção Primária à Saúde

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Authorship

Metadata

ABSTRACT

Introduction: The study identifies as a problem the lack of resoluteness in referrals for acupuncture among older adults in an integrated Outpatient Medical Care/Primary Health Care Unit. **Objective:** To analyze the development of a social technology aimed at addressing the demand related to the lack of resoluteness in referrals for acupuncture among older adults in an integrated Outpatient Medical Care/Primary Health Care Unit. **Methods:** This is a case study developed through the construction of a health education program associated with the provision of auriculotherapy for the older population with chronic pain in the context of Primary Health Care. Using a qualitative approach, eighteen health workers from an integrated Outpatient Medical Care/Primary Health Care Unit located in the southeastern region of the city of São Paulo participated in the study. The methodological framework was based on Participatory Planning, mobilizing Participatory Rapid Appraisal, construction and validation of an Analytical Flowchart, and action planning. **Results:** The product collectively developed was named Health Education Program associated with the provision of auriculotherapy for the older population with chronic pain. This investigation is relevant for discussing participatory processes for implementing educational strategies integrated with Integrative Practices in the context of Primary Health Care, enabling broader reach and replication based on the case presented herein. **Conclusion:** The study highlights challenges and potentialities in implementing a health education program, indicating that the identification of demands in the daily routine of Primary Health Care and the collective participation of professionals in the construction of social technologies are central elements for expanding access to integrative practices.

KEYWORDS: Aged. Chronic Pain. Primary Health Care. Health Education. Auriculotherapy.

RESUMO

Introdução: O estudo delimita como problemática a falta de resolubilidade dos encaminhamentos à acupuntura de pessoas idosas em uma Assistência Médica Ambulatorial/Unidade Básica de Saúde integrada. **Objetivo:** Analisar a construção de uma tecnologia social para atendimento à demanda relacionada à falta de resolubilidade dos encaminhamentos à acupuntura de pessoas idosas em uma Assistência Médica Ambulatorial/Unidade Básica de Saúde integrada. **Métodos:** Trata-se de um estudo de caso desenvolvido por meio da construção de um programa de educação em saúde associado à oferta de auriculoterapia para a população idosa com dor crônica no contexto da Atenção Primária à Saúde. Utilizando abordagem qualitativa, participaram da pesquisa dezoito trabalhadores da saúde de uma Assistência Médica Ambulatorial/Unidade Básica de Saúde integrada na região sudeste da cidade de São Paulo. O referencial metodológico fundamentou-se no Planejamento Participativo, mobilizando Estimativa Rápida Participativa, construção e validação de Fluxograma Analisador e planejamento de ações. **Resultados:** O produto, desenvolvido coletivamente, foi denominado Programa de Educação em Saúde associado à oferta de auriculoterapia para a população idosa com dor crônica. Trata-se de uma investigação relevante por discutir processos participativos de implementação de estratégias educativas integradas às Práticas Integrativas no contexto de Atenção Primária à Saúde, o que possibilita maior alcance e replicação partindo do caso ora apresentado. **Conclusão:** O estudo evidencia desafios e potencialidades na implementação de um programa de educação em saúde, ao indicar que a identificação de demandas no cotidiano da Atenção Primária à Saúde e a participação coletiva dos profissionais na construção de tecnologias sociais são elementos centrais para a ampliação do acesso às práticas integrativas.

PALAVRAS-CHAVE: Idoso. Dor Crônica. Atenção Primária à Saúde. Educação em Saúde.

INTRODUCTION

Complementary and Integrative Health Practices (CIHPS) in Brazil were incorporated into the Unified Health System (SUS) beginning in 2006, through the National Policy on Integrative and Complementary Health Practices (PNPIC), with a focus on disease prevention, health promotion, and recovery, emphasizing Primary Health Care (PHC), which is geared toward continuous, humanized, and comprehensive health care¹.

Auriculotherapy has been included in the PNPIC since 2006 within the scope of Traditional Chinese Medicine, but it only began to be effectively offered in PHC starting in 2017. It is a complementary therapeutic modality that takes a holistic approach and uses local anatomical stimuli located on the ear, through the use of needles, beads, or mustard seeds².

Because the ear is highly innervated, when stimulated by needles, seeds, or other materials, it allows the transmission of electrical signals, activating brain regions such as the brainstem and the cortex³. The use of mustard seeds to stimulate these points on the ear is called auricular acupressure, characterized by the use of non-invasive materials that are easy to handle and apply⁴. This distinguishes it from other forms of application, as it makes it safe and suitable for use in the treatment of men, women, children, the older adult, pregnant women, and athletes. Furthermore, it has few side effects and offers rapid and effective results, acting as an analgesic, muscle relaxant, and anti-inflammatory agent⁵.

The provision of CIHPS in primary care can contribute to the delivery of care for the older adult with health issues, such as chronic pain. This is particularly important given the ongoing demographic transition in Brazil, where the number of people aged 65 or older reached 22,169,101 in 2022, representing 10.9% of the total population. This figure represents a 57.4% increase compared to 2010, when the population in this age group was 14,081,477, equivalent to 7.4% of the population⁶.

This situation directly impacts changes in the population's morbidity and mortality profile, such as the higher incidence of chronic diseases. Among these conditions, pain is one of the most common symptoms and is primarily associated with musculoskeletal disorders that affect the health of the older adult⁷. Chronic pain is defined as pain that persists or recurs for a period exceeding three months⁸. In chronic pain syndromes, pain may be the primary symptom, requiring specific care and treatment. In this regard, the prevalence of chronic pain has been increasing among people over 60 years of age, ranging from 51% to 67%, with musculoskeletal pain being the most common⁹.

As people age, changes also occur in the anatomy and physiology of nociception¹⁰, a condition that leads to inappropriate medication regimens and is frequently observed in polypharmacy among the older adult. Consequently, this condition can lead to worsening physical

fitness, a slow rehabilitation process, cognitive changes, and, consequently, psychological distress, low self-esteem, social isolation, and functional disability¹¹.

Chronic conditions and pain are multifactorial health problems with a gradual onset and a clinical course alternating between periods of exacerbation and stabilization, which can lead to disability. Given their nature, they therefore require complex interventions that combine technology-intensive approaches with strategies that support lifestyle changes¹².

Thus, to ensure universal access for older adult with chronic pain—since many of these individuals rely exclusively on the public health system—it is essential to provide opportunities to offer CIHPS in group settings within the context of primary care. Auriculotherapy, in turn, can serve as an adjunct to the treatment of chronic pain.

Results observed through systematic reviews and meta-analyses demonstrate improvements in self-reported pain and functional outcomes¹³. Another study showed that after four weeks of auriculotherapy treatment within the PHC context, older adults reported reduced pain, suggesting that the technique is an effective option for pain management¹⁴. In general, CIHPS have been used to treat older adults for their overall well-being¹⁵.

The São Paulo Municipal Health Plan (2022–2025) aims to promote health through CIHPS and sets a goal of expanding the number of group activities in Primary Care Center (PCC). To achieve the goal of increasing the number of units offering CIHPS services to 90%, it is necessary to introduce and reorganize work processes that enable the implementation of these practices at the local level.

In this sense, resorting to the construction of social technologies represents a path toward the implementation of CIHPS, since these technologies can bring social problems closer to the responses produced by the people involved, contributing to the production of new meanings and knowledge, and influencing the political dimension through the involvement of citizens¹⁶.

Thus, this case study analyzes the development of a health education program for workers at an Integrated Primary Care Center/Outpatient Medical Care (PCC/AMA) associated with the provision of auriculotherapy to the older adult with chronic pain. The aim is to identify the processes of social technology construction in PHC, as well as the strategies that may contribute to the effective provision of CIHPS

METHODS

Study type

This is a qualitative case study¹⁷ conducted in the context of primary health care, involving health workers in the collective and participatory development of a health education program

linked to the provision of auriculotherapy for the older adult population suffering from chronic pain.

Setting

The study was conducted at a Basic Health Unit integrated with Outpatient Medical Care (PCC/AMA) located in the southeastern region of São Paulo, serving approximately 35,000 registered patients, of whom 7,293 are over the age of 60¹⁸.

Participants

Eighteen employees from the aforementioned healthcare facility participated. The inclusion criteria were professionals with a college degree (nurses, pharmacists, social workers, physical therapists, and physicians), a technical degree (nursing assistants), or a high school diploma (administrative assistants working in the internal scheduling department). Participants were invited regardless of their length of service at the healthcare facility; professionals on vacation or medical leave during the period when the meetings took place were considered exclusion criteria.

Data generation

The Altadir Method of Participatory Planning was used to guide the data collection process. Participatory Planning is a tool used in community work that seeks to foster a comprehensive understanding of the reality of a given community. Through discussions and exercises, the method aims to identify a central problem and develop proposals to address it, resulting in the creation of an action plan. The active participation of residents, teams, committees, and governmental and nongovernmental institutions creates an environment of dialogue and cooperation that strengthens the social commitments necessary to implement the planned actions¹⁹.

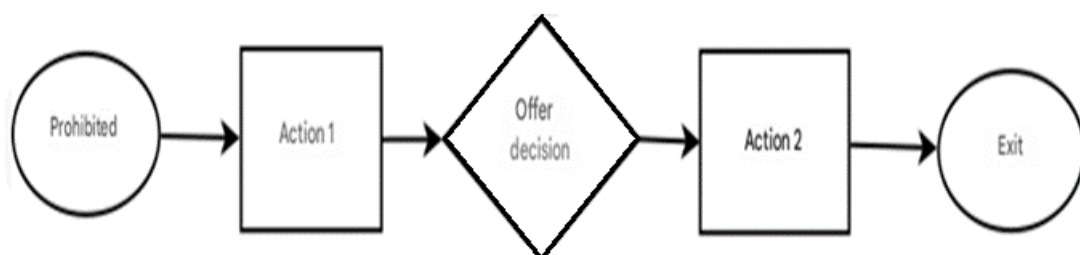
Participatory Planning is a process involving three stages. The first consists of identifying and selecting the problem, carried out through methods such as Rapid Participatory Assessment (RPA), with the identification of key informants, as well as secondary data verified in local regulations. This made it possible to obtain a diagnosis of the situation in the area served by the PCC, with chronic pain among the older adult population being the problem identified, selected, and discussed by the team, local manager, and health supervisors¹⁹. This stage took place between November 2022 and April 2023.

The second stage, conducted in September 2023, involved discussing the selected problem at a health team meeting and led to the creation of an Analysis Flowchart. This is a graphical representation that consists of mapping flows and processes, making it a working tool

for the team, with the aim of guiding or triggering a collective work management process to carry out the necessary interventions in this setting²⁰.

Universally standardized symbols were used for visualization: inputs and outputs in the process are represented by ellipses, as key work stages in the production chain; well-defined resources and products are represented by rectangles; the mediation between these stages is represented by diamonds and squares, which define the decision points regarding available options and the actions carried out in the process²⁰.

Figure 1 – Flowchart Analyzer



Source: Prepared by the authors

The collaborative workspaces for developing the Analytical Flowchart include tools aligned with the analysis of the work process and strategies for Continuing Health Education. Ultimately, this stage served simultaneously as a strategy for generating data for research and as a strategy for analyzing the work process, thereby contributing directly to work management at AMA/PCC.

The third stage of Participatory Planning, held in October 2023, took place through a second team meeting in which the Analytical Flowchart was validated and the measures to be implemented in the action plan were selected. Several issues related to the problems at the unit were raised, such as: chronic pain in the older adult; demand/waiting list for acupuncture; lack of trained professionals to perform auriculotherapy; and problems related to chronic pain in the older adult population, such as self-medication and polypharmacy, smoking, anxiety symptoms, and insomnia.

Based on an understanding of the main causes of the problem, the healthcare team formulated an action plan containing goals, deadlines, budgets, and the agencies/institutions involved. Solutions to the aforementioned issues were discussed, such as conducting health education groups offering auriculotherapy with the participation of members of the multidisciplinary team.

Consequently, the following actions were planned: follow-up and referrals, definition of topics, participating professional categories, number of older adult participants invited, duration, location, and frequency of the sessions. Some challenges that the team might face were also

listed, including: limited physical space at the facility, staff constraints due to professionals' schedules, and low participation among the older adult due to their lack of familiarity with auriculotherapy.

All stages of the Participatory Planning process were audio-recorded and transcribed. In addition, the research team took notes that complemented the analysis of the material derived from the transcriptions and were subsequently systematized by the principal investigator.

It is worth noting that the principal investigator is involved in the field of study as she is also a member of the healthcare team working at the aforementioned facility. At the same time, there is an involvement in the work process at the health unit, particularly regarding the construction of the analytical flowchart. In this sense, by recognizing the principal investigator as a subject involved in knowledge production and the work process, it is argued that there is relevance in the "knowledge produced under conditions of subject-object involvement"²¹.

Data analysis

The data were processed using content analysis²². Among the various methods of content analysis, the meetings were transcribed, and thematic analysis was subsequently employed, since the concept of a theme is linked to a statement regarding a specific subject and can be identified in the text through a word, a phrase, or a summary that serves as a focal point around which relationships are proposed. Operationally, thematic analysis unfolds in three stages²².

- Pre-analysis: a skimming reading is conducted until the corpus is established, taking into account qualitative validity, such as exhaustiveness, representativeness, homogeneity, and relevance; formulation and reformulation of hypotheses and objectives.
- Exploration of the material: a process of classifying the qualitative corpus, seeking the core elements of the text's meaning in order to group and label them.
- Processing of the results obtained and interpretation: the clusters are interpreted, proposing a dialogue with the previously established theoretical framework; furthermore, inferences are developed.

Ethical procedures

The study was conducted in accordance with ethical principles and was approved by the Research Ethics Committees of the Municipal Health Department of São Paulo – SMS/SP (opinion n.º 6.192.679; CAAE n.º 67708423.5.3001.0086) and the Federal University of São Paulo – UNIFESP (opinion n.º 6.086.729; CAAE n.º 67708423.5.0000.5505).

RESULTS

Among the participants, the majority were women aged 41–50, ranging from 28 to 61 years old, and members of the nursing staff. Table 1 provides a breakdown of the participants' characteristics:

Table 1 – Identification of participating professionals. São Paulo, Brazil. 2024.

Participant	Gender	Age	Occupation
Professional 1	Female	39	Nurse
Professional 2	Female	44	Nurse
Professional 3	Female	43	Pharmacist
Professional 4	Female	29	Doctor
Professional 5	Female	38	Nurse
Professional 6	Male	38	Nurse
Professional 7	Female	29	Nursing Assistant
Professional 8	Male	35	Nurse
Professional 9	Female	40	Social Worker
Professional 10	Female	33	Nurse
Professional 11	Female	42	Administrative Assistant
Professional 12	Female	31	Physical Therapist
Professional 13	Female	24	Nursing Assistant
Professional 14	Female	46	Social Worker
Professional 15	Female	48	Nurse
Professional 16	Female	61	Nurse
Professional 17	Female	43	Nurse
Professional 18	Female	28	Administrative Assistant

Source: Prepared by the authors

The qualitative data collected were organized into thematic categories corresponding to the predefined stages of Participatory Planning: (1) characteristics and definition of the problem; (2) discussion of the problem and next steps; and (3) development of the social technology proposal.

Characteristics and scope of the problem

The first stage of Participatory Planning provided a more detailed understanding of chronic pain among the older adult population registered in the health center's catchment area. The issues identified included the number of older adults with chronic pain, referrals for acupuncture

treatment, the need to better assess the demand for referrals, the lack of a dedicated pathway for these cases, and the need for rapid responses to alleviate symptoms and reduce self-medication.

““In 2022, we had a total of 128 patients referred to us, either by doctors at this facility or by other specialists from secondary care services. We have a waiting list of patients, and we know we don’t have an acupuncturist on staff. As a result, patients continue to suffer from pain and wait for specialized care” (Professional 1).

“Currently, the waiting list for acupuncture has 268 patients. However, it is necessary to assess and validate this list to understand why each person is waiting. Many patients suffer from chronic pain, which can have various causes, such as joint issues or headaches. There are many people with anxiety. It is important to analyze each case individually” (Professional 2).

“The main issues relate to musculoskeletal pain. We see a high number of patients in the 71–80 age group, with those over 60 being the most commonly referred. That is why we are focusing on this area, due to the demand. We have an older population, which results in a higher number of referrals for older adults. [...] Currently, we don’t have a well-defined flow for auriculotherapy services regarding how these individuals access and exit the service” (Professional 1).

“So, they need something yesterday, because they want to get rid of the pain. [...] As for medication, the response is faster. So, they adhere better to the treatment. So much so that when opting for herbal treatment, where the response usually takes longer, adherence is lower in that case” (Professional 3).

“And they come in already asking for a referral to an orthopedist because they want anti-inflammatory medication, but we generally can’t prescribe anti-inflammatories to the older adult—it’s a bit tricky, so I try to convince them” (Professional 4).

Discussion of the issue and next steps

During the second phase of Participatory Planning, various approaches were proposed to address the issue outlined above, such as: teamwork; health education groups and the provision of auriculotherapy; and the organization of patient flow.

“Given the complexity of the problem, we’re beginning to understand how important the group is for addressing aspects of health education, because in a group setting, they might actually listen to one another. So, for me this week [the auriculotherapy] didn’t work, but since it worked for someone else, maybe if I wait another week, it’ll get better. So, whether we like it or not, this creates a network of exchanges and shared experiences, strengthening their commitment to the group and slightly reducing this demand for medications—this anxiety for a faster result without considering the risks associated with polypharmacy and the excessive use of anti-inflammatories” (Professional 6).

“That’s why [to avoid resistance from older adults to auriculotherapy], it has to be combined with health education” (Professional 7).

“We need to work on their mindset; it’s not just about referring the patient. We have to work hard to help them develop this perspective [more open to group activities and auriculotherapy]” (Professional 3).

“There will be group sessions rather than individual ones [for auriculotherapy appointments]” (Professional 8).

“Perhaps thinking about the workflow will help in the work process, including helping us figure out how to handle other demands that may arise” (Professional 6).

The professionals identified challenges such as limitations in the scheduling model, a lack of physical space at the facility, and difficulties in managing groups. Regarding the staff, a notable limitation was the shortage of professionals qualified to perform auriculotherapy and with experience working with groups in primary care, which could impact the implementation of the strategy.

Among the identified challenges, the limitation of the scheduling model stood out, as it restricts the work of the multidisciplinary team, resulting in prolonged intervals between appointments and difficulties related to the facility's physical space. Added to this scenario is the shortage of qualified professionals, which limits the scope of the services offered. Given these constraints, it was suggested that group meetings be held monthly or bimonthly as a strategy to bring older adults together, present the proposal, and agree on participation. However, challenges related to group management also emerged, due to the team's limited prior experience with this type of work.

"I see patients on the schedule once a week. That's why appointments are so far apart. For patients I'm seeing for the first time, or who are coming back for follow-ups, I end up fitting them into any gaps that open up. There's also the issue of physical space." (Professional 1)

"We have very few qualified staff—just the two of you. And you have to see children under two, pregnant women, the AMPI patients, and handle clinical issues... And we have other responsibilities, like intake, and the unit's overall operations." (Professional 2)

"An initial strategy for a workflow: a first meeting, an initial gathering every two months, every month and a half, where we can bring together a sizable group of seniors to explain, present, and recruit—to formally enroll the group." (Professional 6)

"I'm going to be honest with you. I've never led a group in my life. I don't know how to manage it. I'll help, obviously, but it's not something I can just say, 'I know how to do this.' I've never done it." (Professional 10)

Validation and development of social technology

The final stage of Participatory Planning served as a process for validating the approaches adopted by the participants to organize the work process and integrate the social technology developed to address the issue of unmet demand among older adults with chronic pain who are referred for acupuncture. The discussion among participants raised the following topics: provision of auriculotherapy, health education program, definition of topics, professional categories included in the participation, frequency and duration of the meetings, evaluation of the meetings, and documentation of the groups' output.

"We decided that there will be eight weekly auriculotherapy sessions for these seniors. Since we don't have the space, we coordinated with the principal of the school [the state school located across from the PCC] to hold the sessions there, in a suitable space on the school grounds. It was decided that the sessions will begin on the 20th, every Friday at 10 a.m. We came to the conclusion that we had initially proposed setting up a workflow for

providing auriculotherapy. However, after discussion, we realized there had been a shift toward actually offering an auriculotherapy program because it will include health education activities” (Professional 1).

“Each professional will play a role; for example, the physical therapist will work alongside providing health education, while the other applies auriculotherapy to these patients” (Professional 1).

“First session: welcoming users in a discussion circle. The responsible team explains the technique and how the sessions will proceed, followed by reading and signing the informed consent form, and administering the sociodemographic characterization instruments, EVA, and IBD. Application of auriculotherapy and guidance on maintaining the points. Subsequent follow-up sessions with health education and further application of auriculotherapy. Second session: Self-medication and medication response. Third session with a physical therapist on the topic of physical activities and balance exercises. Fourth session: Quality of life in older adults, sleep hygiene. Fifth session... Sixth session: Social worker addressing elder abuse. Seventh session... Eighth session: Social gathering” (Professional 11).

“At the third session, I’ll talk about physical activity. This topic will cover everything. Overall functionality. And what I thought of—so we don’t just talk—is to do a balance circuit. It’s easy, doesn’t require much, and is really fun” (Professional 12).

“Diet is very important for weight loss, for osteoarthritis, weight loss—it’s very important. Sometimes they don’t know; for example, a patient who is diabetic doesn’t know what a carbohydrate is, doesn’t know what a protein is. Sometimes I spend time during the consultation explaining it, because they don’t know” (Professional 4).

There was a discussion about how to record the appointments that took place, specifically regarding whether to count them toward the goal:

“I think this is another issue that’s also very important to us: the provision of care and the documentation of that care. Given the municipality’s interest in increasing access to integrative practices, I think this is something we need to pay attention to—documenting the care provided to these patients” (Professional 6).

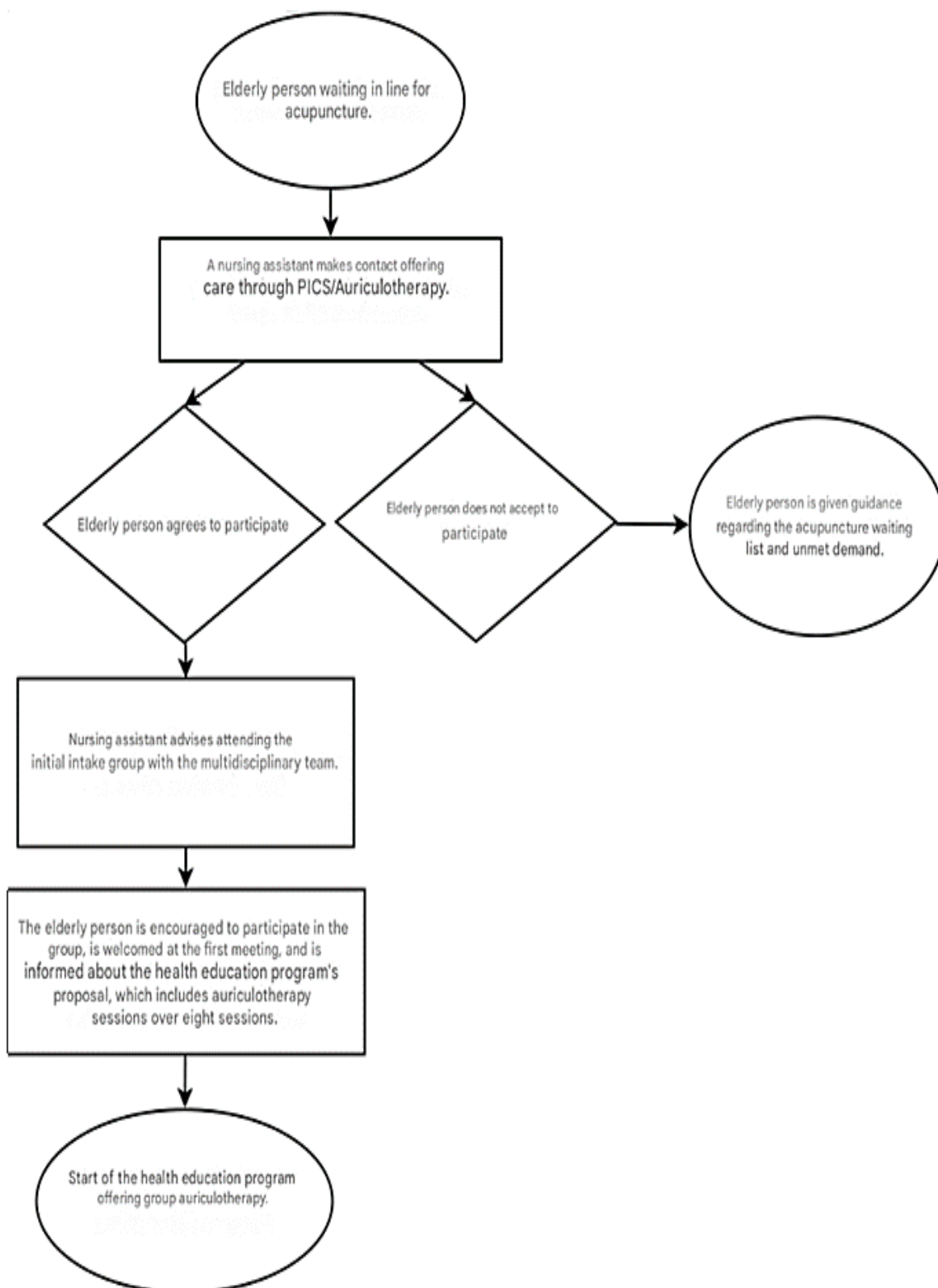
When discussing how users evaluate social technology, the conversation turned to the most appropriate method and timing—whether during the meetings or at the end.

“I think we could have a chat at the end, a roundtable discussion, where they can express themselves verbally—that alone could change this or that” (Professional 13).

“So, I think we could definitely include it, because from what we’ve seen, and how things have changed, it’s not just about offering auriculotherapy now; professionals will also be involved, and these professionals will provide educational activities—which is health education. So it would truly be a comprehensive program. That’s what we understood. That’s what we wanted to confirm: if that’s really the case, we could actually implement the final assessment. The assessment of this patient—so they could be involved in both suggesting topics at the beginning and in the assessment at the end. Because this could serve as a model to be adapted for other CIHPS, other integrative practices, or other PCCs as well. We can think along those lines” (Professional 1).

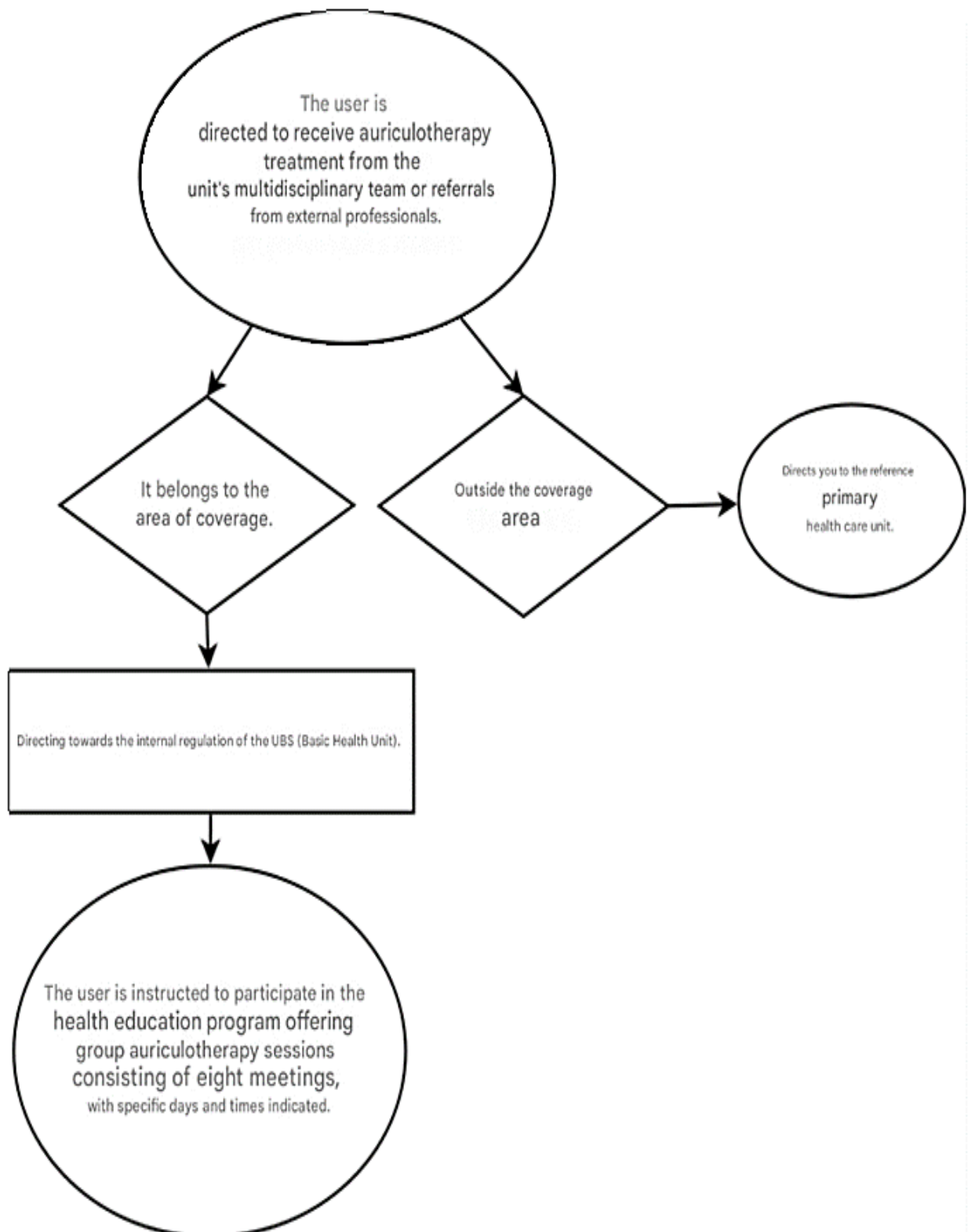
At the conclusion of the Participatory Planning process, two outputs were presented: the flowchart analyzing the social technology; and the social technology itself, titled “Health education program combined with auriculotherapy for the older adult population suffering from chronic pain.” Figures 3, 4, and 5 show the flowcharts developed. Table 4 presents a summary of the social technology developed.

Figure 2 – An older adult person waiting in line for acupuncture. São Paulo, 2024



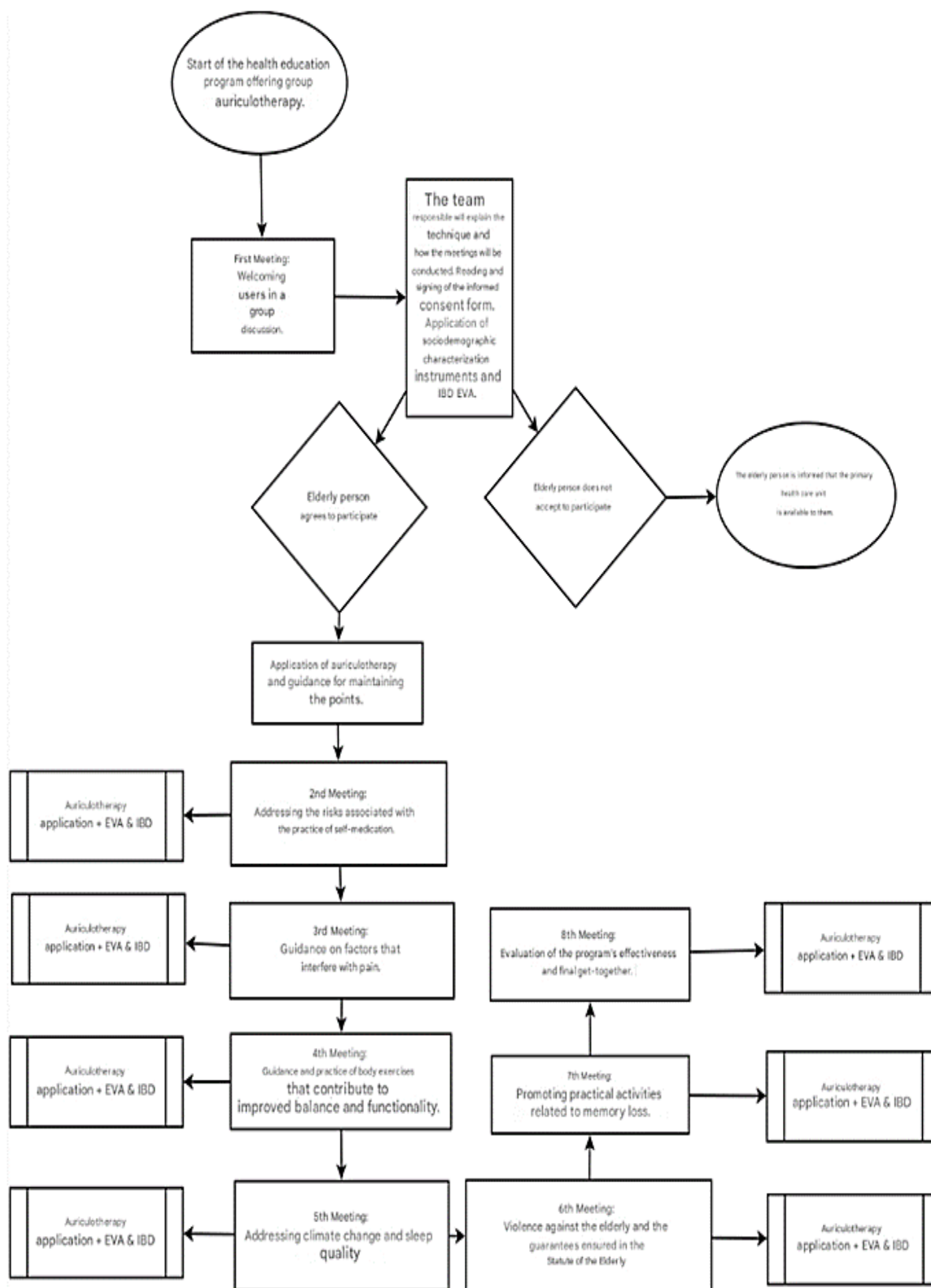
Source: Prepared by the authors

Figure 3 – User access to walk-in auriculotherapy services. São Paulo, 2024



Source: Prepared by the authors

Figure 4 – Access by older adults to the Health Education Program in conjunction with auriculotherapy services. Sao Paulo, 2024



Source: Prepared by the authors

Table 2 – Social technology: Health education program offering auriculotherapy to older adults with chronic pain

Program Structure	
Title: Health education program offering auriculotherapy to older adults with chronic pain.	
Location: State School / Amphitheater and/or video room.	
Duration: 2 hours per session.	
Target Audience: Older adult with chronic pain treated at the AMA/PCC integrated health center in the Ipiranga district, southeastern region of São Paulo (SP).	
Authors: Antonia Telma Rodrigues de Melo and Thiago da Silva Domingos.	
Facilitators: Multidisciplinary team composed of: nursing assistant, pharmacy assistant, administrative assistant, nurse, pharmacist, physician, physical therapist, and social worker.	
Rationale: Following the identification of a waiting list at the local health center, with 268 people awaiting acupuncture treatment, the majority of whom were older adult with chronic pain. During the two initial meetings held with the multidisciplinary team, the issue was discussed, leading to the decision to organize a health education group alongside the provision of auriculotherapy as an accessible and safe means of pain relief.	
General Objective: To implement a health education program offering auriculotherapy for older adult with chronic pain within the context of Primary Health Care	
Human Resources: Members of the multidisciplinary health care team.	
Physical Resources: Printed forms for sociodemographic data and the IBD and VAS scales; pen, notebook, green and red boards labeled “true” or “false”; cones and a soccer ball for balance exercises.	
Materials for auriculotherapy practice: Boards with mustard seed points attached, anatomical forceps, 70% alcohol swabs, and cotton.	
Topics covered: The themes for the second, third, fourth, and sixth meetings were suggested by the multidisciplinary team. The themes for the fifth and eighth meetings were chosen by the older adults	
Session 1: Introduction to the program	Participating professional categories Nurses and nursing assistants
Session 2: Self-medication	Participating professional categories Nurse, Nursing Assistant, and Pharmacist
Session 3: Factors that influence pain	Participating professional categories Nurse, Nursing Assistant
Session 4: Physical activity and functional ability	Participating professional categories Nurse, Nursing Assistant, and Physical Therapist
Session 5: Weather changes and sleep quality	Participating professional categories Nurse and Nursing Assistant
Session 6: Elder abuse and the Older adult Persons Act	Participating professional categories Nurse, Nursing Assistant, and Social Worker
Session 7: Dementia	Participating professional categories Nurse, Nursing Assistant, and Nurse for the Older adult Care Program (EACP)
Session 8: Program evaluation by older adults	Social gathering attended by program staff and senior citizens

Source: Prepared by the authors

DISCUSSION

This study was conducted with the participation of a multidisciplinary team, involving professionals from different fields who combined their knowledge and practices to analyze the issue of older adult with chronic pain waiting in line for acupuncture treatment at the PCC/AMA. The participatory and collaborative nature of the process enabled a broader understanding of the reality under investigation and the development of more consistent responses to the identified needs.

The multidisciplinary approach promotes a comprehensive understanding of health problems by considering the physical, emotional, social, and environmental aspects that influence individuals' well-being, in line with the principle of comprehensiveness advocated by the Unified Health System, as established by the Organic Health Law (Law No. 8,080/1990). In this sense, health institutions constitute privileged spaces for the realization of this principle, since the integrated work of teams contributes to the implementation of a multiprofessional approach in the health practices developed in the region.

In the field of CIHPS, the mobilization of multidisciplinary teams takes on special relevance, since these practices move away from a technocratic model and value the contribution of different professional knowledge. By questioning the centrality of biomedical, technical, and hospital-based models, CIHPS favor the construction of expanded care approaches, aligned with a comprehensive and humanized perspective on health care²³⁻²⁴.

The participation of the multidisciplinary team working at the PCC/AMA showed a predominance of certain characteristics. Women constituted the majority of the sample (n = 16; 88.9%) compared to men, represented by two participants (11.1%). This distribution reflects a historical trend in the health sector, in which women constitute most of the workforce, especially in care-related roles, which relates to socially constructed roles and gender inequalities²⁵.

Regarding age, participants were between 31 and 40 years old (33.3%) and between 41 and 50 years old (38.9%), totaling more than 70% of the sample. The significant presence of workers in middle-age groups suggests a workforce with experience in their careers.

Nursing stood out as the participants' main field of practice, representing 61.1% of the sample, which reflects the composition of this professional category in the Brazilian healthcare system, characterized by the work of nurses and nursing assistants at different levels of care. Data from the sociodemographic survey conducted in partnership with the Federal Nursing Council indicate that the category accounts for approximately 50% of the healthcare workforce in the country, being present in all municipalities and with a strong presence in the SUS, as well as in the private, philanthropic, and educational sectors²⁶. It is also worth noting the historical predominance of women in nursing, an aspect that reinforces the findings of this study.

The presence of professionals in the fields of Social Work and Administration (both at 11.1%) highlights the emphasis on the social and managerial aspects of care, in line with the comprehensive model characteristic of Primary Health Care (PHC) within the Brazilian Unified Health System (SUS). The fields of Medicine, Pharmacy, and Physical Therapy were equally represented (5.6% each). This diversity of professional backgrounds at the PCC/AMA reinforces the need for a multidisciplinary approach to address the multiple needs of users, especially when considering the different dimensions of healthcare management—individual, family, professional, organizational, systemic, and societal²⁷.

The process of constructing social technology initially enabled a systematic reflection on the local reality, allowing for the identification of latent issues that, without this reflective exercise, would remain scattered in the daily routine of the service. Through collective planning, the team recognized as central elements the difficulties regarding the flow of care for acupuncture—reduced to the logic of the specialty—and the high presence of older adult with chronic pain in the territory, aspects that were decisive for defining the program's target audience and for offering auriculotherapy.

In this context, the definition of pain proposed by the International Association for the Study of Pain (IASP) contributes to understanding the complexity of this condition, considering it “an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage”²⁸. This classification has important implications for primary health care, since, although pain affects different age groups and sociodemographic groups, its prevalence is higher among older and socially vulnerable populations. The multidimensional nature of pain and its impact are other points worthy of emphasis. Consequently, in this regard, successful management strategies tend to prioritize these groups, reaffirming the relevance of multidisciplinary interventions targeting the older adult in the context of PHC²⁹.

In the field of Complementary and Integrative Health Practices (CIHPs), discussing their provision to the older adult implies recognizing impacts on both users and health services. Understanding how these practices are offered to older adults can contribute to improving changes in care and the organization of service routines, favoring more comprehensive approaches tailored to the needs of this population²⁴. In this sense, the choice of the older adult population with chronic pain as the target audience for auriculotherapy provision at the PCC was justified by the relevance of this condition and the potential of CIHPS in care management.

Observations made throughout the process also highlighted difficulties related to the referral flow for acupuncture, including the absence or weakness of defined referral pathways, reinforcing the need to improve the management of demands associated with these referrals, in order to enhance the resolvability of care within the PHC setting.

The perceptions of the participating professionals, based on their experience working at

this health unit, point to an issue that extends beyond the local context and reflects a reality present in other PHC services and regions. Studies analyzing the availability of acupuncture within the context of the Family Health Strategy (FHS) indicate that the secondary care network has a limited number of acupuncture practitioners and is overwhelmed by high demand, resulting in long waiting periods. Furthermore, it is observed that acupuncture professionals often work independently of PHC and the family physician, in specialized and scattered clinics, which limits the integration of care with FHS teams and contradicts the principle of care coordination recommended for these users³⁰.

Another issue raised by the participating professionals concerns the need for rapid responses to reduce pain complaints, self-medication, and polypharmacy. It was observed that the main requests initially made by older adults were related to the search for medications, which prompted reflections on the provision of CIHPS, which users often perceive as less effective and, consequently, with lower adherence. This perception relates to a characteristic specific to the older adult, which is more susceptible to inappropriate medication use, has a higher risk of adverse reactions, and experiences slower metabolism, often requiring dosage adjustments³¹.

The identification of this issue, previously scattered throughout the service's daily routine, enabled the formulation of coordinated intervention strategies, centered primarily on three pillars: teamwork, health education, and the provision of auriculotherapy. Based on this recognition, the professionals drew upon their prior experiences—having already worked collaboratively on other initiatives at the PCC/AMA—and identified working in pairs as a positive approach. This organizational structure facilitated the integration of diverse knowledge and practices, enabling a multidimensional approach to chronic pain and the collective development of a care model tailored to the older adult.

This proposal went beyond the isolated provision of auriculotherapy by incorporating educational initiatives aimed at transforming habits and lifestyles, with the potential to influence the health-disease process more comprehensively. By bringing together the necessary elements for organizing the provision of auriculotherapy, the participating professionals identified that aspects related to the lifestyle of older adults had significant links to the experience of chronic pain. In light of this, they recognized the importance of structuring a health education program that would address, in an integrated manner, topics directly related to the experience of pain, such as sleep hygiene, anxiety, and physical activity, thereby also contributing to increased adherence to the proposed interventions.

In this sense, the concept of health education developed by the participants aligns with the principles of popular health education, understood as “a set of educational practices for individuals and the community aimed at increasing the autonomy of people and the community so that they can make choices and adopt healthy lifestyle habits”³². This perspective reinforces

the central role of individuals in their own care and supports the proposal for an intervention that integrates integrative practices, health education, and collective participation within the context of primary health care.

Regarding the provision of auriculotherapy, participants considered that this practice shares the same medical rationale as acupuncture and presents evidence of positive results not only in pain reduction but also in symptoms such as anxiety, insomnia, and other associated conditions³³.

The seed auriculotherapy technique was assessed as suitable for the social technology proposal due to its low cost and easy access, considering that the use of seeds in auriculotherapy is already a resource available through the local network. This assessment aligns with findings in the literature, which indicate that most CIHPS are characterized as low-tech, cost-effective technologies, since they utilize natural external resources and require minimal technological integration²⁴. This characteristic reinforces the potential for viability, sustainability, and expansion of auriculotherapy provision within the PHC context³⁴.

During the process of validating the components of the social technology, the participants identified the steps necessary for implementing the health education program. The selection of topics to be addressed and the professionals involved took into account each team member's area of expertise, as well as their experiences and observations regarding the needs of the target audience, thereby facilitating the development of a proposal aligned with the local context and the needs of older adults.

The determination of the frequency and duration of the meetings was also based on the team's previous experiences at the health center, where similar activities typically lasted one to two hours. This process allowed the professionals to draw on prior learning, recognizing the challenges and potential of initiatives already developed, which contributed to the formulation of a viable and context-specific proposal.

The social technology developed is grounded in the principles of participation and autonomy, understood as central elements for the provision of care. From this perspective, social technology fosters collective processes of decision-making, knowledge formation, and knowledge sharing, supported by values that strengthen the agency of the individuals involved and the collective construction of health actions³⁵.

Finally, the systematic recording of auriculotherapy services was defined within the information systems used by the health unit, establishing that this record be made at each visit. This definition, developed collectively by the participating professionals, is integrated into the daily work of the PCC and aligns directly with the goals of the São Paulo Municipal Health Plan (2022–2025), which calls for expanding the provision of CIHPS as a health promotion strategy.

FINAL CONSIDERATIONS

At the conclusion of this study, it is concluded that the development of the analytical flowchart and the implementation of social technology focused on the care of older adults with chronic pain proved to be effective. This process highlighted the importance of participatory planning and the commitment of the multidisciplinary team, whose active involvement was crucial to the organization of activities and the success of the intervention.

In this regard, it is recommended that future initiatives maintain the centrality of participatory planning and the continuous involvement of staff and users, in order to ensure an approach aligned with the real needs of the served population and to maximize positive impacts on the living conditions of older adults.

With the incorporation of the intervention into the work processes of the PCC/AMA, it became possible to conduct an evaluation that considered both the perspective of the professionals and that of the older adults, considering aspects related to the sustainability, continuity, and outcomes of the program.

Professionals' perceptions regarding the social impact and reach of the social technology developed are a fundamental element for its long-term consolidation, contributing to this strategy effectively benefiting the older adult population and promoting the continuous improvement of living conditions and the management of chronic pain within the context of primary healthcare.

REFERENCES




REFERÊNCIAS

1. Ministério da Saúde (BR), Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Política Nacional de Práticas Integrativas e Complementares no SUS - PNPIC-SUS [internet]. Brasília (DF); 2006. (Série B. Textos Básicos de Saúde). [acesso em 2021 Mar 18]. Disponível em: <http://189.28.128.100/dab/docs/publicacoes/geral/pnpic.pdf>
2. Ministério da Saúde (BR), Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Manual de implantação de serviços de práticas integrativas e complementares no SUS [internet]. – Brasília (DF); 2018 [acesso em 2021 Apr 20]. Disponível em http://189.28.128.100/dab/docs/portaldab/publicacoes/manual_implantacao_servicos_pics.pdf
3. Nogier R. Auriculotherapy. [New York]; Thieme: 2009.
4. Prado JM, Kurebayashi LFS, Silva MJP. Auriculotherapy verdadeira e placebo para enfermeiros estressados: ensaio clínico randomizado. Rev Esc Enferm USP [internet]. 2018 jun 11; 52:1-8. [acesso em 2024 Mar 22]. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/29898171/>. PubMed PMID: 29898171.
5. Mafetoni RR, Rodrigues MH, Jacob LMS, Shimo AKK. Effectiveness of auriculotherapy on anxiety during labor: a randomized clinical trial. Rev Latino-Am Enfermagem [internet]. 2018 set 6;26:e3030. [acesso em 2024 Mar 24]. Disponível

- em: <https://www.scielo.br/j/rlae/a/gxBSgrKtsgRykXtMRhCcJLK/?lang=en>
6. Instituto Brasileiro de Geografia e Estatística. Censo 2022: número de pessoas com 65 anos ou mais de idade cresceu 57,4% em 12 anos [internet]. Rio de Janeiro: IBGE, Agência de Notícias; 2022. [acesso em 2024 Jul 22]. Disponível em: <https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/38186-censo-2022-numero-de-pessoas-com-65-anos-ou-mais-de-idade-cresceu-57-4-em-12-anos>
 7. Ziegler FGG. A utilização de tratamentos não farmacológicos por idosos com dor crônica musculoesquelética [dissertação] [internet]. Londrina: Universidade Estadual de Londrina; 2020. [acesso em 2023 Feb 25]. Disponível em: <https://pos.uel.br/saudecoletiva/wp-content/uploads/2021/09/FLAVIA-G.-G.-ZIEGLER.pdf>
 8. Treede R-D, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R *et al*. Chronic pain as a symptom or a disease: the IASP classification of chronic pain for the International Classification of Diseases (ICD-11). *Pain*. 2019 jan;160(1):19-27. [acesso em 2024 Jun 22]. Disponível em: https://journals.lww.com/pain/abstract/2019/01000/chronic_pain_as_a_symptom_or_a_disease__the_i.asp.3.aspx
 9. Valero MC, Lucca R, Quirino M. Avaliação e tratamento de dor crônica no paciente idoso. *Rev Thema Sci* [internet]. 2016;5(2):129-138. [acesso em 24 Jun 22]. Disponível em: <https://themaetscientia.fag.edu.br/index.php/rtes/article/view/685>
 10. Miguel L. A dor crônica no idoso e seu impacto no desenvolvimento da depressão [dissertação] [internet]. Brasília: Universidade Ceilândia, Faculdade de Ciências e Saúde; 2015. [acesso em 2024 Jun 22]. Disponível em: <https://repositorio.uniceub.br/jspui/bitstream/235/8830/1/21061764.pdf>
 11. Oliveira HC, Martins, Montezeli JH, Souza SM. Compreendendo a vivência dos idosos com dor crônica: à luz da teoria de Callista Roy. *Cienc Cuid Saude* [internet]. 2017;16(2):250-7. [acesso em 2023 Feb 22]. Disponível em: <https://pesquisa.bvsalud.org/portal/resource/pt/biblio-966597>
 12. Ministério da Saúde (BR). Documento de diretrizes para o cuidado das pessoas com doenças crônicas nas Redes de Atenção à Saúde e nas linhas de cuidado prioritárias [internet]. Brasília: Ministério da Saúde, Biblioteca Virtual em Saúde MS; 2012. [acesso em 2024 Sep 22]. Disponível em: https://bvsmis.saude.gov.br/bvs/publicacoes/diretrizes%20cuidado_pessoas%20doencas_cronicas.pdf
 13. Vickers AJ, Vertosick EA, Lewith G, MacPherson H, Foster NE, Sherman KJ *et al*. Acupuncture for chronic pain: update of an individual patient data meta-analysis. *J Pain* [internet]. 2018 maio;19(5):455-74. [acesso em 2024 Feb 2]. Disponível em: [https://www.jpain.org/article/S1526-5900\(17\)30780-0/fulltext](https://www.jpain.org/article/S1526-5900(17)30780-0/fulltext)
 14. Silva JFC, Duque Neto SP, Sousa ACPA. Aplicação da auriculoterapia em idosos atendidos na atenção primária à saúde: um estudo clínico quase-experimental. *Rev Bras Pesqui Saude* [internet]. 2021 jun;22(4):24-31. [acesso em 2024 Apr 5]. Disponível em: <https://repositorio.ufrn.br/handle/123456789/45804>
 15. Azevedo ACB, Câmara ICP, Gois SRF, Benito LAO. Benefícios das práticas alternativas integrativas e complementares na qualidade de vida da pessoa idosa. *Acta Cienc Saude* [internet]. 2016 mar 29;1(1):1-19. [acesso em 2023 Feb 23]. Disponível em: <https://www2.ls.edu.br/actacs/index.php/ACTA/article/view/94>
 16. Instituto Internacional de Tecnologia Social. Tecnologia social: uma estratégia para o desenvolvimento [internet]. *Sinapse*. 2004:117-134. [acesso em 2024 Jul 10]. Disponível

- em: <https://sinapse.gife.org.br/download/tecnologia-social-uma-estrategia-para-o-desenvolvimento>
17. Gomes R. Pesquisa qualitativa em saúde. São Paulo: Instituto Sírio-Libanês de Ensino e Pesquisa; 2014.
 18. Fundação SEADE. População do Município de São Paulo [internet]. São Paulo: Secretaria Municipal da Saúde, Prefeitura da Cidade de São Paulo; 2023. [acesso em 2023 Oct 20]. Disponível em: <https://www.prefeitura.sp.gov.br/cidade/secretarias/saude/tabnet/index.php?p=30417>
 19. Tancredi S, Bernardini F, Lopez Barrios R, Henrique J, Ferreira G. Planejamento em saúde [internet]. São Paulo: Faculdade de Saúde Pública, Universidade de São Paulo; 1998. [acesso em 2022 Jul 22]. Disponível em: <https://colecoes.abcd.usp.br/fsp/files/original/56afd7bd8a246b33b21ec8d839021f46.pdf>
 20. Merhy E. Modelo de fluxograma [vídeo] [internet]. São Paulo: YouTube; 2019 set 11. [acesso em 2026 Feb 22]. 24 min. Disponível em: <https://www.youtube.com/watch?v=WWo82RFswoU>
 21. Martins Filho MT, Narvai PC. O sujeito implicado e a produção de conhecimento científico. Saude Debate [internet]. 2013 out;37(99):646-54. [acesso em 2024 Jun 20]. Disponível em: <https://www.scielo.br/j/sdeb/a/mg98rPPxkvyKSPTyD9h7pBj/>
 22. Minayo MC, Deslandes SF, Gomes R. Pesquisa social: Teoria, Método e Criatividade. [Petrópolis]; Vozes: 2016.
 23. Silva MVS, Miranda GBN, Andrade MA. Sentidos atribuídos à integralidade: entre o que é preconizado e vivido na equipe multidisciplinar. Interface Comunicação, Saúde, Educação [internet]. 2017 fev 13;21(62):589-99. [acesso em 2024 Jun 12]. Disponível em: <https://www.scielo.org/article/icse/2017.v21n62/589-599/#>
 24. Diniz NPMC, Silva JFC, Sampaio ATL, Torres GV, Schweitzer MC, Nobre TTX. Offer of integrative and complementary health practices for the elderly in health services: a protocol for systematic review and meta-analysis. Medicine [internet]. 2023 fev;102(7):e32703. [acesso em 2024 Jun 20]. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/36800612/>. PubMed PMID: 36800612
 25. Hirata H. Novas configurações da divisão sexual do trabalho: tecnologia e sociedade. Cad Pesqui [internet]. 2007 set;37(132):5-24. [acesso em 2024 May 22]. Disponível em: <https://www.scielo.br/j/cp/a/cCztcWVvvtWGDvFqRmidsBWQ/?format=pdf&lang=pt>
 26. Machado MH, Filho WA, Lacerda WF, Oliveira E, Lemos W, Wermelinger M *et al.* Características gerais da enfermagem: o perfil sócio-demográfico. Enferm Foco [internet]. 2016 jan 27;7(espec):9-14. [acesso em 2024 Jun 24]. Disponível em: <http://revista.cofen.gov.br/index.php/enfermagem/article/view/686/296>
 27. Cecilio LCO. Apontamentos teórico-conceituais sobre processos avaliativos considerando as múltiplas dimensões da gestão do cuidado em saúde. Interface Commun Saude Educ. 2011 jun;15(37):589-99. [acesso em 2024 May 26]. Disponível em: <https://www.scielo.br/j/icse/a/sBcTQJFRbBYmMgwSpNRkSrt/abstract/?lang=pt>
 28. DeSantana JM, Perissinotti DMN, Oliveira Junior JO, Correia LMF, Oliveira CM, Fonseca PRB. Definition of pain revised after four decades. Braz J Pain [internet]. 2020;3(3):200-3. [acesso em 2024 May 28]. Disponível em: <https://www.scielo.br/j/brjp/a/GXc3ZBDRc78PGktrfs3jgFR/?lang=pt>
 29. Smith BH, Fors EA, Korwisi B, Barke A, Cameron P, Colvin L *et al.* The IASP classification of chronic pain for ICD-11. Pain. 2019 jan;160(1):83-7. doi:10.1097/j.pain.0000000000001360. [acesso em 2024 Jun 21]. Disponível em: <http://dx.doi.org/10.1097/j.pain.0000000000001360>

- 30 Freitas FPP. Acupuntura no contexto do atendimento aos usuários com dor crônica na atenção primária à saúde do município do Rio de Janeiro [dissertação] [internet]. Rio de Janeiro: Fundação Oswaldo Cruz; 2015. [acesso em 2024 Jul 23]. Disponível em: <https://www.arca.fiocruz.br/handle/icict/14055>
31. Brasil, Ministério da Saúde. Contribuições para a promoção do uso racional de medicamentos [internet]. Brasília: Ministério da Saúde; 2021. [acesso em 2024 May 20]. Disponível em: <https://www.gov.br/saude/pt-br/composicao/assuntos/saude-de-a-a-z/u/arquivos/contribuicoes-para-o-uso-racional-de-medicamentos.pdf>
32. Falkenberg MB, Mendes TPL, Moraes EP, Souza EM. Educação em saúde e educação na saúde: conceitos e implicações para a saúde coletiva. Cienc Saude Colet [internet]. 2014 mar;19(3):847-52. doi:10.1590/1413-81232014193.01572013. [acesso em 2023 Feb 20]. Disponível em: <https://doi.org/10.1590/1413-81232014193.01572013>
33. Azevedo C, Moura CC, Corrêa HP, Assis BB, Mata LRF, Chianca TCM. Auriculotherapy in adults and elderly people with lower urinary tract symptoms: an integrative review. Rev Esc Enferm USP [internet]. 2021;55:e20045. [acesso em 2024 Jun 22]. Disponível em: <https://www.scielo.br/j/reeusp/a/D5PNTqRkGgmYYk7kJzVNQCx/>
34. Queiroz NA, Barbosa FES, Duarte WBA. Uso das práticas integrativas e complementares em saúde por profissionais dos Núcleos Ampliados de Saúde da Família e Atenção Básica. Physis Rev Saude Colet [internet]. 2023;33:e33037. doi:10.1590/S0103-7331202333037. [acesso em 2023 Aug 22]. Disponível em: <https://doi.org/10.1590/S0103-7331202333037>.
35. Roso CC. Transformações na educação CTS: uma proposta a partir do conceito de tecnologia social [tese] [internet]. Florianópolis: Universidade Federal de Santa Catarina; 2017. [acesso em 2023 Jan 22]. Disponível em: <https://repositorio.ufsc.br/handle/123456789/187060>

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