

Satisfaction of geriatric patients with neuromusculoskeletal conditions with the Feldenkrais method in physical medicine

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Abstract: The satisfaction of geriatric patients requires evaluative dimensions to measure health services in the field of physical medicine or the area to be treated, since satisfaction instruments are adapted to individual particularities and the methods applied according to their pathology. To determine satisfaction with the Feldenkrais method in geriatric patients with neuromusculoskeletal diseases in physical medicine, an observational, cross-sectional, and descriptive study was conducted. Perception of satisfaction with the Feldenkrais method was measured using a custom instrument with a sample of 100 geriatric patients, both men and women, from a physical rehabilitation center, and under informed consent. A questionnaire with 20 items across 3 dimensions was applied. The average score was 68.29; the median was 68, and the mode was 65, with a standard deviation of ± 8.55 . The predominant sex was 60% women, and the most common age group was 60 to 69 years old. Regarding diseases, 25% of patients presented scoliosis, while Parkinson's disease and herniated discs were less common, each affecting 5%. In the HUMAN dimension, 65% of patients were very satisfied, and 35% were satisfied. In the SCIENTIFIC dimension, 55% of patients were satisfied, 35% were very satisfied, and 10% were indifferent. In the ENVIRONMENT dimension, 55% of patients were satisfied, 40% very satisfied, and 5% indifferent. Overall, 55% of geriatric patients were satisfied, and 45% were very satisfied with their treatment. These studies underscore the urgent need for systems to incorporate new, evidence-based methodologies into their treatments, promoting the combination of clinical applications of physical rehabilitation and innovation as pillars of health treatments that transcend classical medicine and now challenge more distant areas such as quantum physics, the effect of vibrational waves, and other principles. This leads to a new era of universal physics in human rehabilitation and its benefits in medicine.

Keywords: *Body, Diagnosis, Feldenkrais method, Geriatric assessment, Geriatrics, Health services for the aged, Health treatment, Human, Medicine, Mind, Musculoskeletal diseases, Neuroplasticity, Neurorehabilitation, Patient satisfaction, Physical medicine and rehabilitation, Physiotherapy, Quantum mechanics, Quantum physics.*

1. Introduction

Human beings have always sought answers to their personal and collective needs within society. Thus, satisfaction is conceptualized as arising from a desire connected to reason, action, and the manner in which these needs are fully sustained, resulting in a reflection of the quality of care received by the individual. Nevertheless, this concept is often limited due to the lack of analysis of key dimensions such as structure or process necessary to achieve a result [1].

In the field of health care, satisfaction also traverses multiple evaluative dimensions when receiving a service, including the impact of diseases, potential treatments, physical-emotional well-being, and social aspects of everyone, which are linked to the medical field across physical, mental, pathological, and general perception dimensions [1, 2]. In countries such as Perú and other parts of Latin America, the transformation of health systems concerning the elderly population has brought forth important aspects for the planning of resources and the improvement of prevention policies and programs

targeting this sector [3].

Consequently, better outcomes in the continuity of clinical processes among patients have become indicators of quality within the population. Evaluation parameters for satisfaction are now adapted to the specificities of everyone, both to their culture, condition, possible pathologies, feelings, thoughts, religion, personal development as well as, based on the selection of treatments that improve the results of research in areas related to health [4]. These parameters provide references and evidence to compare and inform expectations regarding care services and how they can be improved. Already in the present 21st century, and especially in the last years of the present decade, patient perceptions of the services received in Perú have become a critical indicator for corroborating the quality of health personnel [5] health services, and additional factors influenced by availability, cost, accessibility, applied methods, diagnosis, treatment, among others [5].

In this sense, the elderly population is considered a vulnerable group due to their high mortality rates compared to other age groups, requiring specialized healthcare tailored to their pathologies, conditions, frailty, disabilities, immunodeficiencies, or dependency-related health problems. These individuals also seek satisfaction not only with the treatment process but also with the perception of the healthcare services they receive [6]. Therefore, the geriatric patient sector is among the most impacted in terms of diagnosis, disease progression, organ damage, and treatment of conditions that affect their mental health, recreational activities, physical mobility, and even their independence; all influenced by economic, familial, cognitive, and other social factors. These combined factors justify the application of new methodological foundations for comprehensive rehabilitation tailored to their clinical conditions. [6].

Additionally, as a result of physiological changes in various organs and systems, the aging process involves continuous losses in muscle mass, strength, body balance, speed of movements, optimal tissue function, organismal performance, etc; affecting their kinesic spatial intelligence and leading to clinical pathologies such as sarcopenia, spinal cord injuries, stroke, scoliosis, peripheral nervous system injuries, middle low back pain (dorsolumbalgic), high back pain (cervicalgic), among other potential traumatic injuries and post traumatic [7].

Consequently, governments and health systems are obligated to raise awareness and train healthcare personnel to identify these diseases both in geriatric settings and in the general community. This is crucial to prevent irregular activities, unfounded invasive methods, pharmacological treatments without clinical basis, empirical alternative procedures or unsupervised exercises promoted through virtual applications and social media without professional oversight, which otherwise could worsen dysfunctions related to aging. Therefore, proper intervention by specialists or physiotherapists could help regulate dysfunction levels, significantly promoting efficient activities with better states of health [7, 8].

Similarly, patients with traumatic, mechanical traumatic, neuro traumatic, neurological or neurodegenerative injuries, must receive neurorehabilitation comprehensive treatments that identify their alterations and develop adequate phenomena of functional and structural neuroplasticity in the brain, thus guiding plasticity in the human body. This approach aims to minimize the repercussions and maximize recovery from progressive degenerative syndromes resulting from systemic disintegration [9]. Since, therapeutic methodologies that accelerate the reorganization of neural systems are crucial for patient recovery.

In neurology, both physical medicine and physiotherapy or rehabilitation are also based in cerebral neuroplasticity, harmonizing various neuronal and functional phenomena. This process requires the existence of specialized interdisciplinary teams, composed of rehabilitation doctors, technologists, neurologists, physiotherapists and other professionals who combine conventional rehabilitation techniques in neurological disorders, applying multiple concepts to patients to promote reversibility of their conditions, enhance their organic functionality, and foster physical-emotional well-being [9]. So that ultimately, these interventions aim to achieve the highest possible level of human autonomy.

For this reason, the World Health Organization (WHO) has promoted physical activity through

scientifically validated treatment methods as a strategy to address health risk factors while simultaneously raising awareness and supporting the implementation of systematic changes, health promotion strategies and public health policies [10]. Consequently, integral rehabilitation treatments must be applied across multiple areas, targeting patients with various neuromusculoskeletal pathologies that allow outpatient management or home treatments. This approach also offers benefits to neurocognitive patients by helping them to slow down the progression of their conditions such as Parkinson's disease [11] depression, stress, and among other related injuries such as hypertension, diabetes, cardiovascular pathologies, osteopenia, osteoporosis, arthritis and more.

Among these methodologies, the Feldenkrais Method stands out, proposing a global approach to human beings through cerebral neuroplasticity and psychomotor re-education, structured in two phases: "Awareness Through Movement" (ATM) and "Functional Integration" (FI) [12]. This method is a learning system that optimizes internal musculoskeletal, neurological and emotional organization, leading people to act more effectively in their environment. This allows for more refined spatial intelligence and enhances the interaction, development, and integration of the nervous system with the musculoskeletal system within the functional environments that we inhabit and interact with, both internally and externally. Furthermore, it stimulates the patient's learning capacities based on the concept of neuronal plasticity, promoting movement and discriminative self-awareness [13]. In doing so, new motor schemas are created, gravitationally modifying kinetic responses, reeducating the somatic system through a more precise and natural human learning that enables more efficient pathways for proper bodily function, thus enhancing physical motor quality and human kinesthesia. Which in effect, facilitates the reintegration of patients into their daily into daily life activities [13].

Based on these considerations, the objective of this study was to determine satisfaction with the Feldenkrais Method among geriatric patients with neuromusculoskeletal conditions in physical medicine.

2. Methods

A descriptive, cross-sectional, analytical-type study with a quantitative approach was conducted in the physical medicine area of a physiotherapy center in Lima, between April and June 2021. The study population consisted of 100 patients who met the inclusion criteria: individuals aged 60 years and older, patients capable of coherently responding to the questionnaire, and patients who underwent physical rehabilitation sessions based on the physiotherapeutic method known as Feldenkrais.

The sample comprised 100 geriatric patients, both male and female, from the physical medicine area. Procedures commenced after obtaining informed consent from all geriatric patients who met the criteria established under the Spanish Data Protection Law (LOPD) 3/2018 and were fully aware of their ARCO rights (access, rectification, cancellation, and opposition).

INFORMED CONSENT

“QUALITY OF SERVICE AND SATISFACTION IN GERIATRIC PATIENTS WITH LIMITED MOVEMENT TREATED WITH THE FELDENKRAIS METHOD IN A PHYSIOTHERAPY CENTER. LIMA 2021”

Investigator: Carbajal Alvarado, Mitchell Walter

Purpose: To determine the relationship between quality of service and satisfaction in geriatric patients with limited geriatric patients with limited movement treated with the Feldenkrais method in a physical therapy center. Lima 2021.

Participation: Geriatric patients aged 60 years and older, of both sexes.

Study Risks: This study does not represent any risk.

Benefits of the Study: With your participation, you contribute to future scientific and academic studies.

Confidentiality: The study is completely confidential.

Participation requirements: Belong to the physical therapy center. Be 60 years of age or older and not present psychological, psychiatric or cognitive problems.

Voluntary declaration: “I have been informed of the objective of the study; I have been informed of the risks, benefits and confidentiality of the information obtained. I understand that participation in the study is free of charge. In addition, I have been informed of how the study will be conducted and how measurements will be taken. I am also aware that I can participate or not continue in the study at any time I consider it necessary or for any specific reason without having to pay or receive any reprisal from the team.

For the above, I voluntarily agree to participate in the investigation of: **“QUALITY OF SERVICE AND SATISFACTION IN GERIATRIC PATIENTS WITH LIMITATION OF MOVEMENT CARED FOR WITH THE FELDENKRAIS METHOD IN A PHYSIOTHERAPY CENTER. LIMA 2021”**.

Signature _____ Date: ____/____/2021

Figure 1.
Informed Consent for Geriatric Patients.

Accordingly, 10 minutes prior to each session, patients completed one informed consent form, ensuring the confidentiality of the data collected and guaranteeing the non-disclosure of personal or family information; thereby maintaining full transparency throughout the research process. This was carried out in accordance with the procedural norms of the institutional research ethics committee and the principles of the Declaration of Helsinki of 1975, revised in 1983, for medical research involving human subjects.

Once the rehabilitation session concluded, the application of the research instrument continued. Subsequently, the descriptive results of the data analysis, corresponded to sociodemographic aspects such as sex and age, obtained from the information provided in the questionnaire.

Similar to other instruments developed with high reliability and validity such as the WHOQOL-OLD, WHOQOL-BREF, OPQOL-35 [14] and more for clinical elderly patients with illnesses or based on satisfaction dimensions, a validated questionnaire approved through expert judgment in the field was applied during treatment with the Feldenkrais Method. A Cronbach's alpha coefficient of 0.726 was obtained, indicating high acceptable reliability.

The questionnaire structure consisted of 3 dimensions and 20 items in total.

Table 1.
Questionnaire on Satisfaction with the Feldenkrais Method.

N°	Human Dimension Related to Satisfaction	Score				
		1	2	3	4	5
1	Cordial, kind, harmonious and pleasant treatment provided by the staff before their health sessions and integral treatment.					
2	Consistency of health personnel with regard to patients' scheduling policies.					
3	Consideration and empathy of health personnel for the human conditions of patients' schedule and policies.					
4	Interest, vocation and mastery of the staff before their pathology, clinical pictures or possible modern technological treatments and methodologies of neuroplasticity, cognitive-motor referencing, such as consultations and doubts based on their health condition.					
5	Consideration and respect of privacy policies, physical belongings and other conditions of patients during care and treatment by health personnel and more.					
6	Care under one rich field: medicine, clinical procedures, medical technology, physical therapy or others as a basis by qualified health care personnel and more.					
7	Compliance with hygiene policies (uniform, cleanliness, cleanliness, grooming, etc.) by health personnel and others.					
N°	Scientific Dimension Related to Satisfaction	1	2	3	4	5
8	Recognition of lectures, fundamentals and scientific advances of the specialized area in neurorehabilitation, medical technology, physical rehabilitation and scientifically with the methodologies or concepts and analysis with others of the subject while waiting to be attended.					
9	Attention, orientation, information and advice from the staff on the methods, concepts, techniques or clinical procedures applied in your health treatment.					
10	Understanding of the indications related to the methodology, concepts, techniques, physical agents or others psycho-cognitive and health procedures to be developed in your clinical treatment.					
11	Additional guidance from health personnel on the related area and recommended diagnoses regarding the methodology, concept, technique, physical agents or other psycho-cognitive and health procedures to be developed in your clinical treatment at home and in your daily life.					

12	Understanding and application of all the development of the recommended method, as well as of the possible concepts, techniques, application of physical agents or other psycho-cognitive and health procedures used or developed in your integral rehabilitation sessions by your area specialists and more.					
13	Protocol times and duration of the integral treatment such as individual sessions, evaluations, reevaluations, post diagnostics, clinical tasks, physical and psycho-cognitive activities of recommendation at home and more.					
14	Compliance with privacy policies (confidentiality, safeguarding, etc.) of staff in their diagnosis, comprehensive history, recovery process, in the face of certain hazards, third parties and more.					
N°	Environmental Dimension Related to Satisfaction	1	2	3	4	5
15	Satisfaction of people and patients around you with the Feldenkrais method as other methods, concepts, techniques, physical agents, applied in your clinical treatment in your regular physiotherapy services.					
16	Perception, sensation and tangible conceptualization of noticeable improvements under the Feldenkrais method and other health aggregates in their sessions and usual health process.					
17	Maintenance of hygiene policies such as ventilation, cleanliness and more in the spaces assigned to the office.					
18	Implementation of equipment, objects, elements and more in the office, as well as the maintenance of hygiene policies.					
19	Maintenance of hygiene policies (ventilation, cleanliness, etc.) in the spaces and more, such as clinical environments and offices with biosecurity instruments and more.					
20	Satisfaction of users with the methods and you in sessions under the Feldenkrais method, noting the improvements in your life and health process and recognizing the substantial improvement of the context in which you live.					

A five-point Likert scale was used to assess the importance of each item, where a score of 5 indicated the highest level of satisfaction (completely satisfied) and a score of 1 indicated the lowest level (not satisfied at all), according to the patient's judgment. Consequently, the satisfaction percentages related to the Feldenkrais Method were calculated by averaging the sum of individual patient responses on the questionnaire, as pointed out by other authors [15] in their research article [15].

Cohen's classification was employed, categorizing satisfaction levels as follows: Very satisfied (4.2 to 5), Satisfied (3.4 to 4.2), Neutral (2.6 to 3.4), Dissatisfied (1.8 to 2.6), and Very dissatisfied (1 to 1.8) [16]. Data collected were processed using Microsoft Excel 2021 on Windows 10, and tables were generated in SPSS Statistics Viewer. Similarly, the study included personal data from the integral rehabilitation center in the area of physical medicine selected in Lima, Perú; who voluntarily signed the informed consent form to participate.

3. Results

Among the 100 participants (Table 2), a mean score of 68.29, a median of 68, and a mode of 65 were obtained; with a standard deviation of ± 8.55 . The predominant sex was female, representing 60% of the sample, and the most frequent age group was between 60 and 69 years.

Regarding the most important neuromusculoskeletal conditions (Figure 3), 25% of the participants had scoliosis and 20% had sarcopenia, while on the contrary, lower percentages were observed for Parkinson's disease and disc herniation, with 5% in both cases. All of them within the total number of patients in integral treatment.

Moreover, it should be noted that despite the application of medical technology in physical agents with high-end machines, scientific concepts in rehabilitation, kinesic techniques applied also to multiple processes of psychotherapy for adjacent cases and other pathologies to be treated in the clinical area under our effective processes; the number of sessions or ambulatory service within the treatment

protocol can influence the magnitude of improvements and patient satisfaction, since the continued commitment in the physiotherapeutic process (especially with the applied method) generates greater confidence and optimal results in the rehabilitative experience of patients in the area of physical medicine. From which, feelings of comfort and affective neuroplasticity will be created in the conscious and subconscious of the human being, developing a particular recovery more focused on their transitory pathologies and their behavioral state of life on a daily basis.

Table 2.

Sociodemographic Characteristics of Geriatric Patients with Neuromusculoskeletal Conditions in the Physical Medicine Area.

Characteristic	Description	Mean	Standard Deviation
Age	Average	68.29	± 8.55
		Frequency	Percentage
	60 to 69 years	58	58.0 %
	70 to 79 years	37	37.0 %
Age Group	80 a 89 years	5	5.0 %
	Male	40	40.0 %
Sex	Female	60	60.0 %
Total		100	100%

Sociodemographic characteristics such as age, sex, and pathologies were identified. The predominant patient group was female (60%), with a mean age of 69 years, ranging from 60 to 89 years, and a standard deviation of ± 8.55 (Table 2). Regarding pathologies, scoliosis was the most prevalent condition, observed in 25% of the total patients (Figure 2).

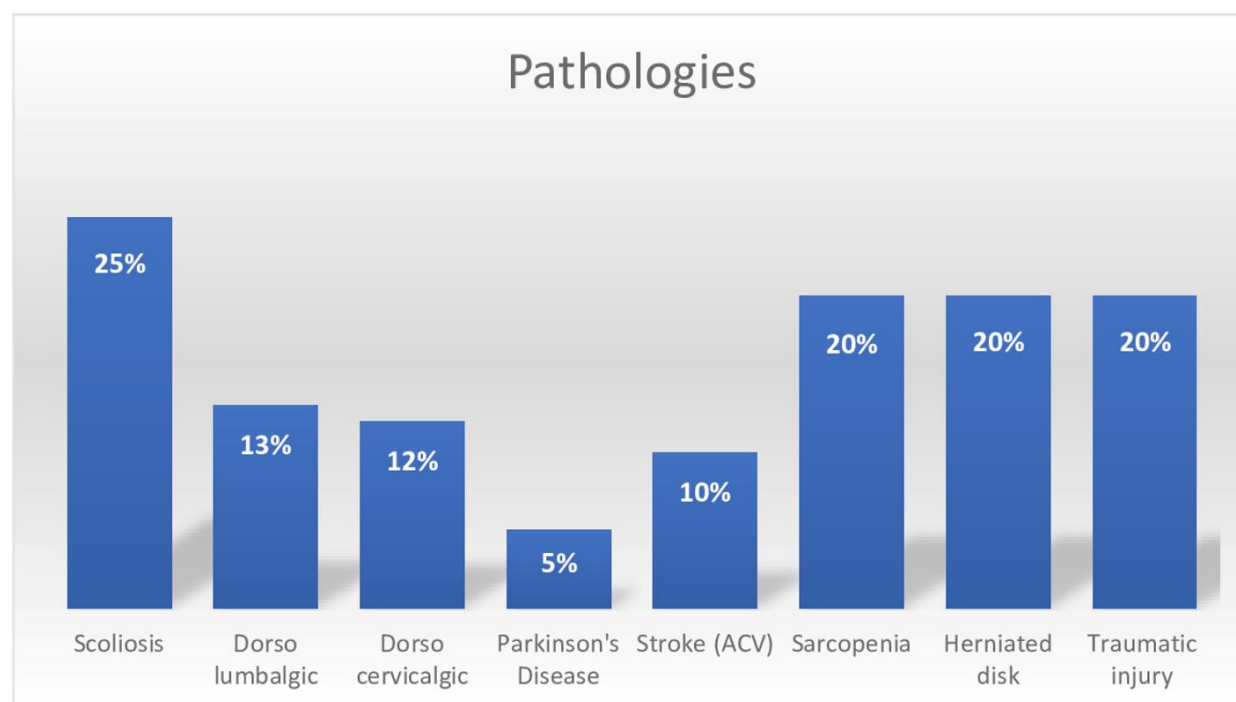


Figure 2.

Diagnosed Conditions in Geriatric Patients with Neuromusculoskeletal Disorders in the Physical Medicine Area.

Additionally, patient satisfaction percentages were determined based on the questionnaire. The results indicated that 55% of patients reported being "Satisfied" with the applied method, while 45% were "Very satisfied."

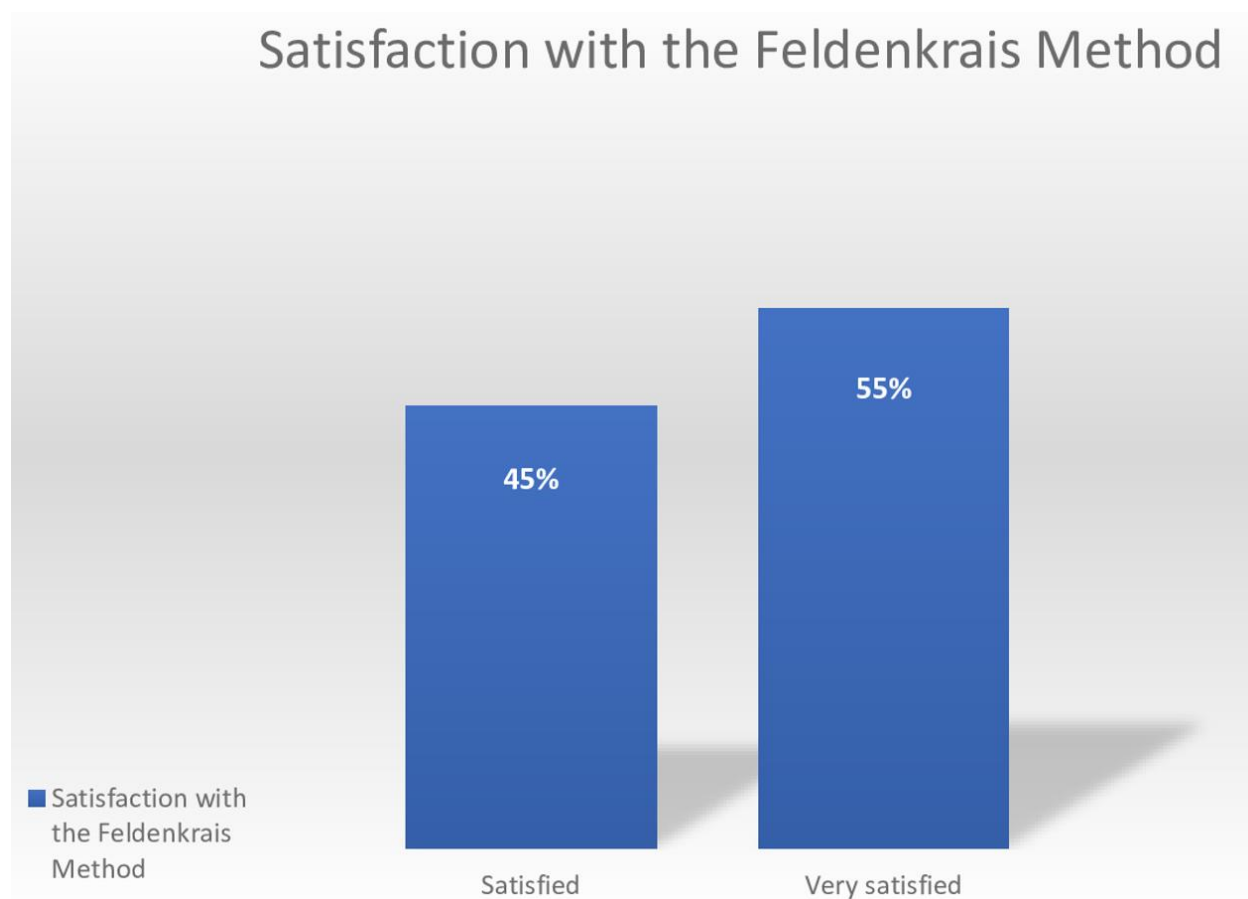


Figure 3.
Overall Satisfaction with the Feldenkrais Method in Geriatric Patients with Neuromusculoskeletal Conditions.

Finally, satisfaction percentages with the Feldenkrais Method were analyzed by dimension. In the Human Dimension, 65% of patients reported being Very Satisfied and 35% Satisfied. In the Scientific Dimension, 55% were Satisfied, 35% Very Satisfied, and 10% Neutral. And in the Environmental Dimension, 55% of patients were Satisfied, 40% Very Satisfied, and 5% Neutral according to the applied questionnaire.

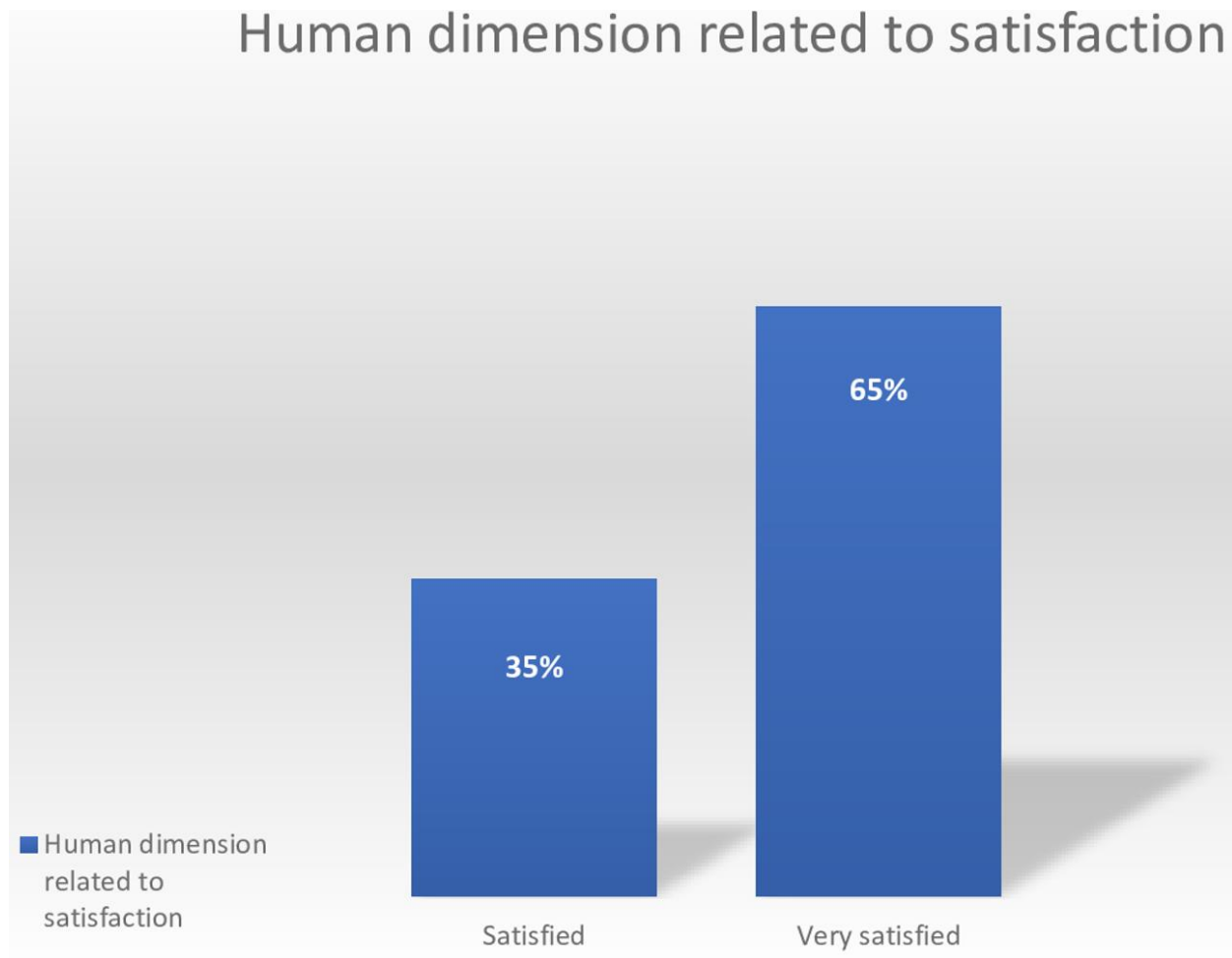


Figure 4.
Human Dimension of Satisfaction with the Feldenkrais Method in Geriatric Patients with Neuromusculoskeletal Conditions

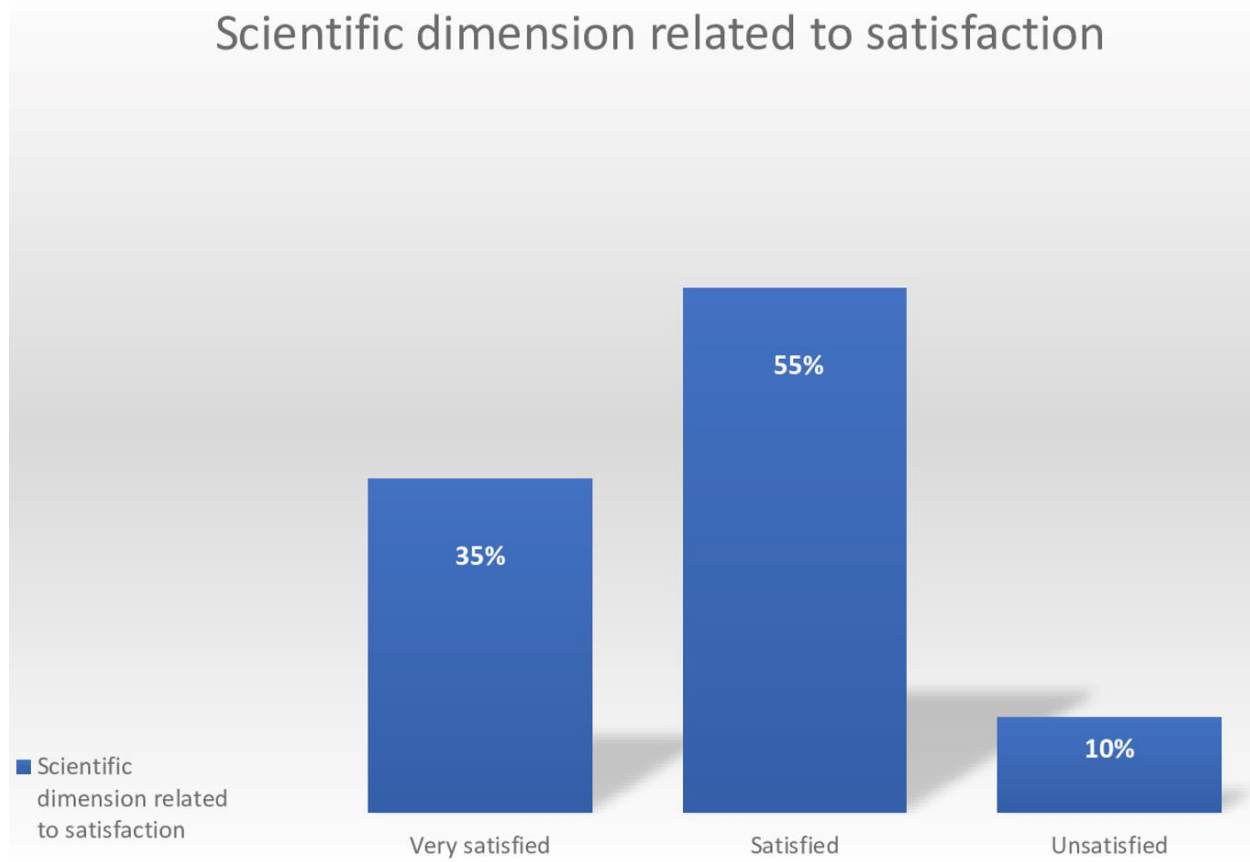


Figure 5. Scientific Dimension of Satisfaction with the Feldenkrais Method in Geriatric Patients with Neuromusculoskeletal Conditions.

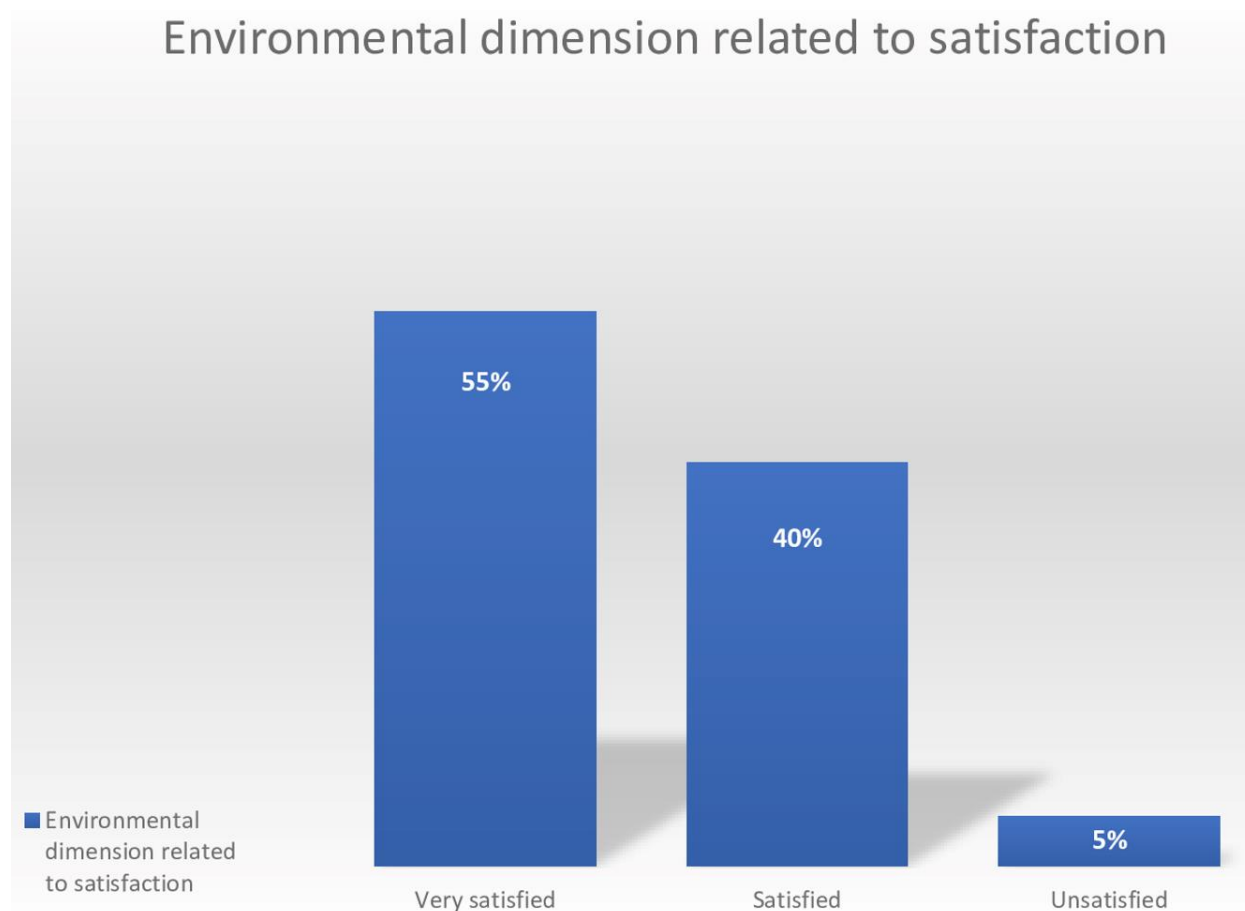


Figure 6.

Environmental Dimension of Satisfaction with the Feldenkrais Method in Geriatric Patients with Neuromusculoskeletal Conditions.

4. Discussion

Following the pandemic, role of physical medicine professionals, physiotherapists, medical technologists and others, has become highly demanded by the elderly population to address and prevent the complications associated with aging and pathophysiological changes related to various clinical conditions, cognitive impairments, cardio respiratory, poly traumatic, central and peripheral neurological spinal conditions together with other diseases related to integral rehabilitation as highlighted by Betancourt-Peña, et al. [17] leading to a greater integration of health specialists in these areas through the review of the available scientific evidence.

Consequently, healthcare services have started to incorporate quality demands in healthcare institutions, optimizing geriatric patient functionality and facilitating their reintegration into daily activities. Similarly, Jorna Calixto, et al. [18] highlighted in their descriptive qualitative study conducted in the Physiotherapy Department of the Van, et al. [11]. Polyclinic (2021-2022) the rehabilitation services that constitute a key axis in the diagnosis, treatment, evaluation and recovery of patients. In view of this, the specialists in the area applied techniques and methods related to the analysis, design and improvement of processes, in particular using the Lean methodology to review organizational aspects, eliminate non-value activities and maximize functions that required adjustments.

In Europe, bibliographic reviews analyzed by Guerra-Martín and Ramírez Fernández-Pro [19] contribute to updating knowledge regarding the quality of care provided to elderly individuals in

residential centers [19] improving professional satisfaction and their ability to detect individual patient needs as managing neurodegenerative conditions; traumatic injuries; cardiorespiratory, musculoskeletal affecting other organs of the human body, as well as its mobility, balance and various functions. Similarly, Alibrandi's study at the University Polyclinic of Messina (Italy) [20] provided a detailed evaluation of patient satisfaction through a specific survey analyzed using a radar chart. Satisfaction factors included treatment effectiveness, facility cleanliness, and evaluations of physicians' treatment approaches.

In Africa, authors like Fuseini conducted a descriptive cross-sectional quantitative study using a validated questionnaire applied to 206 older adults in three public hospitals in Tamale, Ghana [21] where descriptive statistics, independent samples t-tests, and one-way ANOVA were employed. Findings indicated that 72.3% of participants reported moderate satisfaction with the quality of care, while 23.8% declared themselves very satisfied, specifying that patient satisfaction levels varied according to the medical centers. Agreeing, in Ethiopia [22] a cross-sectional study involving 375 adult patients revealed moderate satisfaction levels using systematic random sampling where bivariate and multivariate analyses were used to assess satisfaction levels; showing that 64.1% of patients expressed satisfaction with services. Significant associations were found between satisfaction, age, and modifiable injury factors with notable findings in medium perception (AOR = 0.23, 95% CI: 0.12–0.43) and high perception (AOR = 0.16, 95% CI: 0.07–0.38); which in effect also concluded that Patient satisfaction was significantly associated with levels of stigma and discrimination.

In Hispanic America, Carbajal, et al. [23] demonstrated that elderly patients with mobility limitations treated with the Feldenkrais Method showed a direct relationship between the two variables studied ($p < 0.05$), obtaining a Cronbach's alpha of 0.79, indicating high acceptable reliability. Spearman's rho correlation coefficient was strong, with Rho values of 0.789 for overall satisfaction; 0.578 for reliability; 0.543 for sensitivity and 0.513 for safety. Based on these findings, the author recommends creating impactful strategies that induce innovation of developing methods and applied sciences to improve the quality of service and patient satisfaction with physiotherapeutic and psychocognitive treatments; in addition to applying state-of-the-art medical technology in high-end machinery and other concepts or techniques in the kinesic area where they take the Feldenkrais Method as an effective example in a similar way.

Resembling, Adiazola-Jofré, et al. [24] employed validated questionnaires among a population of geriatric patients, establishing correlations between health conditions and muscle weakness in the physic medicine area. The descriptive-correlational study included 87 elderly participants (32 men and 65 women) from three community centers in Talca, Chile; using non-probabilistic convenience sampling. Chi-square tests revealed significant associations between muscle weakness and excess body weight ($p = 0.042$), central obesity ($p = 0.015$), and diabetes mellitus ($p = 0.041$) among women. Inactivity was also significantly associated under sarcopenia characteristics with muscle weakness in both male and female elderly populations.

However, a systematic qualitative review without meta-analysis Araujo [25] pointed out that measurements are subject to different indicators between the quality of health services and user satisfaction, where perceived discrimination related to lack of accessibility due to physical conditions, violence by health personnel and limited availability of diagnostic medical tests were highlighted. In addition, the omission of the opinions of health professionals is mentioned, which underlines the need for a comprehensive analysis that incorporates both the experiences of patients sensitized to their state of comfort or happiness [26] and the evaluations of the treating area and multidisciplinary professionals.

Therefore, studies suggest that cutting-edge multidisciplinary clinical rehabilitation treatments represent the future of healthcare strategy for overcrowded hospitals, clinics, and medical centers, allowing for faster consultation management, therapeutic processes, and the diagnosis of neuromusculoskeletal conditions and all types of pathologies that do not require hospitalization [25]. They are also supported by outpatient services or the outsourcing of services in specific or extreme

cases, minimizing latent risks of suicide related to aging due to acute depression, stress, and other chronic conditions that may be hidden in their reality far from clinical staff [27]. This approach allows hospitals and other private healthcare centers to reduce patient volumes, alternatively offering more efficient care and, therefore, potentially more effective short-term treatments, benefiting patients with a high risk of death.

Finally, the well-being of older adults is multifactorial, supported by scientific evidence that correlates geriatric well-being with life satisfaction [26] social relationships, physical and mental health, and satisfaction levels. For health professionals, this constitutes a crucial issue of validated information for the development of clinical intervention policies and practices aimed at promoting physiotherapy treatments in different areas, consequently contributing to a better quality of life for the population at the national and international levels [26].

5. Conclusions

The findings of this study confirm that the Feldenkrais Method has a physiotherapeutic approach of effective neuroplasticity and motor re-education well received by geriatric patients as an immediate treatment for their neuromusculoskeletal conditions. The high levels of patient satisfaction, particularly in the human dimension (65% Very Satisfied), demonstrate that beyond technical execution, empathetic and personalized interaction are a key determining factor for perceived care quality in geriatric rehabilitation. Moreover, the acceptable high reliability of the instrument (Cronbach's $\alpha = 0.726$) strengthens the validity of these results and supports its future use in similar clinical settings.

Based on these results, the method not only stands out as a potentially scalable intervention for physical medicine, but also allows through human neuroplasticity new applications in medical treatments sustained in modern medicine; being promising for the elderly population as it could not be achieved before under all the scientific foundations and knowledge demonstrated.

In fact, the integration of new principles into broader clinical, therapeutic and comprehensive rehabilitation programs could exponentially improve the condition of patients based on neuromusculoskeletal physiotherapy to produce immense positive results in many health domains and in all age groups. Which would improve their functional autonomy, emotional well-being, and many of their potential pathologies, reversing their side effects as a preventive measure and strengthening their human biology against new diseases.

Now, such studies break boundaries of what was classical medicine and challenge other areas further away to us such as quantum physics, the effect of vibrational waves and among other principles. Which undoubtedly leading us to a new era of physics in human rehabilitation and its benefits in medicine.

In agree, this underscores the urgent need for health systems to incorporate new methodologies based on scientific evidence for their treatments, whether classical or more contemporary that promote combinations of clinical applications of physiotherapy and innovation as pillars of healthcare treatments. Otherwise, the focus would not only be on classical medicine and common procedures to treat diseases such as Alzheimer's, neurological injuries, musculoskeletal disorders, physio-cognitive pathologies, and others that afflict the global population; but it would also be applied to the physical-quantum relationship of neuroplasticity, the dual reconnection of learning, the reconnection of the physical-cognitive state, bilateral feedback between specialist and patient or for the benefit of their somatosensory systems related to possible principles such as quantum entanglement [28] the effect of waves, or vibrational frequencies, among others.

In this way, new styles of human interconnection would be developed in the processes of integral rehabilitation, until possibly replicating them in all human beings on the face of the earth, as in other forms of life among animals, plants and other types of matter or sources of non-inert life at a universal level.

Transparency:

The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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References

- [1] J. A. Carias Diaz, P. Simons Morales, and D. A. Naira Borjas, "Evaluation of the quality of care in outpatient services from the perspective of the hypertensive patient," *Revista Cubana de Salud Pública*, vol. 48, no. 1, pp. 1-25, 2022.
- [2] L. De la Torre, L. Echevarria, R. Alarcon, and A. Perez, "Quality of life in patients over 75 years of age with acute coronary syndrome," *Revista Cubana de Medicina*, vol. 61, no. 4, pp. 1-12, 2022.
- [3] K. A. Rodríguez, A. C. Martín, M. d. C. P. Barros, and M. E. Á. Lauzarique, "Disability in older adults due to living conditions," *Revista Cubana de Medicina General Integral*, vol. 35, no. 4, pp. 1-14, 2019.
- [4] C. Manterola, T. Otzen, N. García, and M. Mora, "Evidence-based clinical practice guidelines," *Revista de Cirugía*, vol. 71, no. 5, pp. 468-475, 2019.
- [5] M. R. V. Ramos, G. C. Sermeño, M. E. C. Zuta, and P. M. D. Monteiro, "Satisfaction of external users attending public health facilities in a rural area of Peru," *Atención Primaria*, vol. 56, no. 2, p. 102793, 2024.
- [6] A. Iraizoz-Barrios, V. García-Mir, G. Brito-Sosa, J. Santos-Luna, G. León-García, and R. Jaramillo-Simbaña, "Mental health, safety, and quality of life for older adults during COVID-19," *Revista Cubana de Medicina General Integral*, vol. 12, no. 37, pp. 1-14, 2024.
- [7] J. Hernández Rodríguez, Y. Arnold Domínguez, and M. E. Licea Puig, "Sarcopenia and some of its most important characteristics," *Revista Cubana de Medicina General Integral*, vol. 35, no. 3, pp. 1-19, 2019.
- [8] J. Lopez, J. Rodríguez-Roiz, and C. Salcedo, "Musculoskeletal injuries secondary to exercise during the COVID-19 pandemic lockdown," *Rev Med Clin*, vol. 155, no. 5, pp. 221-224, 2020.
- [9] J. Vidal-Samsó, "Neurorehabilitation, a highly complex process," *Rev. neurol.(Ed. impr.)*, pp. 433-433, 2020.
- [10] J. González-Santamaría *et al.*, "Physical activity levels in the adult population of the Pereira municipality, Colombia," *Revista Cubana de Salud Pública*, vol. 48, no. 3, pp. 1-21, 2022.
- [11] d. K. N. Van, N. de Vries, R. Kessels, H. Joosten, A. Zwinderman, and B. Bloem, "Effectiveness of remotely supervised home-based aerobic exercise in Parkinson's disease: A double-blind randomized controlled trial," *Rev. Lancet Neurol*, vol. 18, no. 11, pp. 998-1008, 2019.
- [12] F. Instituto, "the feldenkrais method: Feldenkrais institute ", Retrieved: <https://www.institutofeldenkrais.com/el-metodo-feldenkrais>, 2023.
- [13] Asociación Feldenkrais de Argentina, "Feldenkrais method," Retrieved: <https://feldenkrais.org.ar/metodo-feldenkrais/>, 2023.
- [14] J. Vélez, "Instruments for the assessment of quality of life in older adults A literature review study," *South Florida Journal of Development*, vol. 2, no. 3, pp. 4060-4073, 2021.
- [15] E. A. Cobo-Mejía, L. Y. Archila-León, E. Gutiérrez-Barrera, and I. D. Araque-Sepúlveda, "Perception of service quality in a physiotherapy center of a university institution," *Revista Investigación en Salud Universidad de Boyacá*, vol. 5, no. 1, pp. 48-67, 2018.
- [16] S. Cohen, M. d. I. Á. Puente, N. Clauser, A. Klusener, and M. Espíndola, "Evaluation of the quality of service provided by a public health center in the province of Misiones," *S.c. Universidad Nacional de Misiones*, pp. 1-12, n.d.
- [17] J. Betancourt-Peña, D. Guerrero-Jaramillo, P. Guerrero-Jaramillo, D. C. Zamudio-Espinosa, and V. Benavides-Cordoba, "Comprehensive rehabilitation in the fight against the COVID-19 pandemic," *Revista Cubana de Medicina General Integral*, vol. 37, 2021.
- [18] A. R. Jorna Calixto, L. Brian Gil, and P. L. Véliz Martínez, "Improvements to healthcare processes in the physical therapy and rehabilitation department at the Nguyen van troi polyclinic," *Revista Cubana de Salud Pública*, vol. 49, no. 2, 2023.
- [19] M. D. Guerra-Martín and M. I. Ramírez Fernández-Pro, "Quality of care provided to the elderly in residential centers," *Gerokomos*, vol. 31, no. 4, pp. 232-238, 2020.
- [20] A. Alibrandi, L. Gitto, M. Limosani, and P. Mustica, "Patient satisfaction and quality of hospital care, Rev," *Eval Program Plan*, vol. 97, no. 1, pp. 1-7, 2025.
- [21] F. Abdul-Ganiyu, B. Rahinatu, G. Abdul, A. Alhassan, and J. Atomlana, "Satisfaction with the quality of nursing care among older adults during acute hospitalization in Ghana," *Rev. Enfermería Abierta*, vol. 9, no. 2, pp. 1286-1293, 2025.

- [22] N. Yimer, Z. M. Assefa, and A. G. Zengye, "Patient satisfaction and associated factors among adults attending ART clinic at Dessie referral Hospital, Amhara Region, Ethiopia," *International Journal of Africa Nursing Sciences*, vol. 14, p. 100297, 2021.
- [23] A. M. W. Carbajal, L. E. P. Gavilano, C. C. Reluz, and R. A. R. Arias, "Quality of service and satisfaction of geriatric patients treated with the Feldenkrais method in physiotherapy," *Polo del Conocimiento*, vol. 8, no. 1, pp. 1539-1551, 2023.
- [24] M. Adiazola-Jofré, J. Oses, C. Troncoso-Pantoja, S. Parra-Soto, and Y. Concha-Cisternas, "Association between muscle weakness, health conditions and lifestyle in older adults," *Revista Cubana de Medicina Militar*, vol. 51, no. 4, p. 02202343, 2022.
- [25] D. Araujo, "Quality of care and level of satisfaction of external users in a health facility," *Ciencia Latina Revista Científica Multidisciplinar*, vol. 6, no. 6, pp. 2616-2629, 2022.
- [26] C. Saravia-Cobo, "Theories of happiness in old age," *Rev Gerokomos*, vol. 34, no. 4, pp. 247-249, 2025.
- [27] M. Stoms, A. Szücs, Y. Wang, K. Szanto, and H. Galfalvy, "Investigating direct and moderating effects of social connectedness and perceived social support on suicidal ideation in depressed aging adults: A prospective study biological psychiatry global open science," Retrieved: <https://www.sciencedirect.com/science/article/pii/S2667174325000679>, 2025.
- [28] J. Bisiani, A. Anugu, and S. Pentyala, "It's time to go quantum in medicine," *Journal of clinical medicine*, vol. 12, no. 13, p. 4506, 2023.