

Attitudes of Physiotherapy Students toward People Experiencing Homelessness through a Musculoskeletal Health Program

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Keywords

Homeless · Attitudes · Physiotherapy · Social inclusion · Stigmatization

Abstract

Introduction: People experiencing homelessness (PEH) are more susceptible to developing musculoskeletal (MSK) conditions. However, they often lack access to adequate healthcare due to factors such as stigmatization and discrimination by healthcare professionals, which impacts their social integration. This study aimed to improve the attitudes of physiotherapy students toward PEH through a program focused on enhancing MSK health among PEH, implemented in homeless shelters. **Methods:** The project involved PEH from (shelter name) and undergraduate physiotherapy students from (institution name). MSK health in PEH was assessed using the Musculoskeletal Health Questionnaire and the Work Ability Index. Students' attitudes were measured using the Escala de Atitudes Face à População em Situação de Sem-Abrigo (EAFPPSA) and a survey with six open-ended questions subjected to thematic analysis. **Intervention:** The program consisted of 20 sessions led by the students and defined by the coordinator, combining MSK health education with strength and aerobic training. Prior to this, students participated in sessions on education about homelessness, the program's presentation, and a simulation of a session. **Results:** None of the PEH met

the criteria for project completion. All students demonstrated positive attitudes in 11 of the 17 ATHS items, but no significant improvements were observed in any domain. By the end of the project, students perceived PEH as individuals and reported enhanced interaction, which was shaped throughout the project. Students recognized the role of physiotherapy in social inclusion, education, and promoting self-efficacy among PEH. Participation impacted students as citizens, enhancing their appreciation for the psychosocial domain and improving skills such as communication and flexibility. **Conclusion:** Given the students' perceptions, the implementation of projects aimed at bringing healthcare professionals closer to PEH is considered beneficial. It is recommended that PEH be involved in the design and implementation of such projects to increase their engagement.

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Atitudes de estudantes de fisioterapia face a pessoas em situação de sem-abrigo através de um programa de saúde musculoesquelética

Palavras Chave

Pessoas em situação de sem-abrigo · Atitudes · Fisioterapia · Inclusão social · Estigmatização

Resumo

Introdução: As pessoas em situação de sem-abrigo (PSSA) têm maior suscetibilidade a desenvolver condições musculoesqueléticas (ME). Contudo, não têm acesso aos cuidados de saúde adequados, devido, entre muitos fatores, a atitudes de estigmatização e discriminação pelos profissionais de saúde, impactando a integração social. Através de um programa de melhoria da saúde ME das PSSA implementado nas casas de abrigo, pretendeu-se melhorar as atitudes dos estudantes de fisioterapia face às PSSA. **Métodos:** O projeto envolveu PSSA do (nome da casa de abrigo) e estudantes do curso de licenciatura em fisioterapia da (nome da instituição). Nas PSSA utilizou-se o Musculoskeletal Health Questionnaire para avaliar a saúde ME e o Índice de Capacidade para o Trabalho. Aos estudantes aplicou-se a Escala de Atitudes Face a PSSA (EAFPSSA) e um inquérito de 6 questões abertas submetidas a análise temática. **Intervenção:** O programa consistiu em 20 sessões dinamizadas pelos estudantes e definidas pelo coordenador, em que se combinou educação para a saúde ME e treino de força e aeróbio. Previamente, os estudantes participaram em sessões educacionais sobre as PSSA, de apresentação do programa e de simulação de uma sessão. **Resultados:** Nenhuma PSSA atingiu os critérios de conclusão do projeto. Todos os estudantes apresentaram atitudes positivas em 11 das 17 questões da EAFPSSA, mas não se verificaram melhorias significativas em nenhum domínio. No final do projeto, os estudantes percecionavam as PSSA como pessoas que melhoraram a sua interação, algo moldado durante o projeto. Os estudantes reconheciam a fisioterapia com papéis de inclusão social, educação e promoção da autoeficácia face às PSSA. A participação impactou enquanto cidadão, na valorização do domínio psicossocial e no ganho de competências (comunicação e flexibilidade). **Conclusão:** Devido às perceções dos estudantes, considera-se uma mais-valia a implementação de projetos que visem aproximar os profissionais da área da saúde das PSSA. Propõe-se o envolvimento das PSSA no desenho e implementação dos projetos de modo a aumentar a sua adesão.

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Introduction

People experiencing homelessness (PEH) are defined as people who, regardless of their sociodemographic background, lack housing or shelter. In Portugal, it is

estimated that approximately 9,604 PEH, according to the National Strategy for the Integration of PEH 2025–2030 [1]. This population is more susceptible to chronic conditions and severe health issues [2–4]. Regarding musculoskeletal (MSK) conditions, they are particularly vulnerable to bacterial infections in soft tissues, traumatic injuries, fractures, and chronic pain [5], which are globally significant causes of disability, early workforce withdrawal, presenteeism, and absenteeism [6, 7].

Despite the high costs associated with treating MSK conditions, particularly in PEH due to comorbidities, necessary interventions and priorities are often not reflected in available healthcare services [8]. Recommended practices such as patient-centered care, addressing psychosocial factors, providing education about conditions, and promoting self-management [9] are frequently overlooked. MSK health is not solely about the absence of physical impairments; it also encompasses mental well-being and the ability to live independently and comfortably, underscoring the critical role of physiotherapy [10].

However, PEH exhibit higher rates of missed physiotherapy appointments compared to the general population, leading to reluctance among physicians to prescribe physiotherapy [11]. Reports of stigmatization and discrimination – including perceived lack of interest by healthcare professionals, interactions influenced by appearance, inadequate communication, and biases related to time management or assumptions of drug-seeking behavior – are significant barriers to accessing healthcare [12–15]. Such experiences foster feelings of shame and dehumanization, resulting in delays in seeking care and reduced use of primary and specialized healthcare services, even in severe cases [14, 16, 17].

In Portugal, there is no specific data on discrimination or inequity in healthcare access for PEH. However, broader evidence highlights stigma surrounding mental health issues, which are often associated with homelessness [11]. Additionally, financial constraints contribute to inequities in healthcare access, which were exacerbated during the COVID-19 pandemic [18, 19]. Consequently, PEH are more likely to use emergency hospital services while underutilizing primary or specialized care, hindering timely and appropriate management of MSK conditions [3, 20].

To address these barriers, the literature suggests offering physiotherapy in shelters to eliminate obstacles such as time, cost, and discomfort [21] and encouraging voluntary interactions between healthcare professionals, students, and PEH to improve awareness and sensitivity

[22–24]. Improving MSK health in this population can contribute to better employability and access to housing, education, and healthcare [25]. This study aimed to understand the improvements in physiotherapy students' attitudes toward PEH by involving them in a program designed to enhance MSK health in PEH, implemented in shelter homes.

Methodology

The study was conducted at the [a social support center], an institution dedicated to supporting PEH and other vulnerable populations. The center provides various services, including health support, meals, personal hygiene, and recreational activities. The sessions of the project were held twice a week at previously defined times, considering the internal organization of the institution.

The sessions were led by students from the Bachelor's Degree in Physiotherapy at the [Institution Name], under the supervision of a fourth-year student who possessed the necessary competencies to conduct interventions with PEH. The primary challenge was aligning the institution's schedule with the academic timetables of the physiotherapy students. The project lasted for 3 months, with weekly sessions conducted between February 26 and May 31, 2023.

Recruitment and Intervention

Student recruitment was carried out through an informational video and an online form, resulting in the selection of nine students to participate in the study. These students were equally divided among the second, third, and fourth years of the Bachelor's Degree in Physiotherapy.

The recruitment of PEH was managed by the fourth-year student in charge. During 2 weeks of activities conducted at the institution, the participants were informed about the project. Those expressing interest were provided with informed consent forms.

The intervention consisted of active sessions combining strength training, aerobic training, and educational components focusing on promoting MSK health and the role of physical exercise. The program was adjusted due to limited resources at the center and was designed to respect the conditions and needs of participants. The educational program addressed topics such as the neurophysiology of pain, the importance of physical exercise, common MSK conditions, and associated risk factors. Sessions were conducted over 3 months, from February to May 2023 [9, 26–29].

Measurement Instruments

To evaluate physiotherapy students' attitudes toward HIs, the Escala de Atitudes Face à População em Situação de Sem-Abrigo (EAFPSSA) was used. This questionnaire comprises 17 items divided into three domains: behavioral, emotional, and cognitive [30]. The scale was applied to students at the beginning and end of the project, enabling the assessment of changes in their attitudes toward the target population. The data collection was conducted using an online survey on the Microsoft Forms platform, chosen for its ability to facilitate an open survey process and asynchronous data collection.

Additionally, a supplementary section with six open-ended questions was included in the final survey to assess students' perceptions at the end of the project. These questions prompted students to reflect on their perceptions of PEH, how their participation in the project contributed to their academic and professional development, how it shaped their perception and interaction with PHE, and the role of physiotherapy in the context of homelessness. The final survey was distributed on May 20, 2023, with a submission deadline of June 2, 2023. Each student could respond only once to each question. The collected survey data were stored exclusively by the student responsible, in a secure folder on their personal computer, ensuring data confidentiality and protection.

Data Analysis

Quantitative data analysis was performed using Microsoft Excel for descriptive statistics and SPSS for inferential analysis. The Wilcoxon non-parametric test was used to compare students' initial and final data.

Additionally, qualitative analysis was conducted on the open-ended responses collected at the end of the program, using the thematic inductive analysis framework described by Braun and Clarke [31]: familiarizing yourself with your data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; producing the report. This analysis focused on students' reflections on the project, their interaction with PEH, and the program's impact on their academic and professional development.

Ethical Considerations

This study did not require ethical committee approval, as per the applicable regulations. Nevertheless, written informed consent was obtained from all participants, including PEH and students, prior to their involvement in the study and the collection of any data.

Table 1. Descriptive and inferential analysis of students' responses across behavioral, cognitive, and emotional domains as measured by the Escala de Atitudes Face à População em Situação de Sem-Abrigo (EAFPSSA), before and after participation in the intervention

Domains	N	Baseline	Post-intervention	p value
Behavioral	8	15.00	16.38	0.673
Cognitive	8	16.00	15.75	0.330
Emotional	8	6.89	5.62	0.248

Results

During the recruitment of students, 75 were contacted, of whom 13 volunteered to participate (17.33%). Of the nine selected volunteers, all participated in every scheduled session and completed the project.

Regarding PEH, 17 individuals were contacted during the recruitment weeks, and eight participated in the sessions (50%). Of these eight, three completed the initial evaluation (37.5%). However, no participant completed the program. Of the 20 planned sessions, 14 were conducted (70%), 5 were canceled due to the absence of participants, and 1 due to a lack of available spaces (a situation that had been anticipated). Consequently, it was impossible to evaluate the program's impact on mental health and work capacity for the participants.

In EAFPSSA, no statistically significant changes ($p < 0.05$) were observed in any of the evaluated dimensions (Table 1). However, the goal was achieved, with 80% of the students responding positively (three or below in the questions for the Emotional and Cognitive dimensions, and three or above in the Behavioral dimension) in 11 out of 17 questions, with the Emotional dimension standing out as the goal was met in all its questions.

The qualitative analysis allowed for the exploration of students' perceptions of PEH, as well as the impact of participating in the project on how students interact with these individuals and view the role of physiotherapists in this context.

Overall, students tended to perceive these individuals as people, with one student anonymously stating: *"Perhaps I should start with the word itself: people. I unconsciously judged them long before knowing them."* Additionally, subthemes were identified regarding their perception of PEH, including being excluded by society, having a desire to change, possessing the same rights and values as others, and feeling discouraged.

When analyzing the impact of project participation, the following themes were identified: improvement in the quality and quantity of communication with PEH, impact as citizens, reduction of fear towards PEH, appreciation of the psychosocial domain, better understanding of the context of homelessness, and gaining flexibility skills. Two statements highlight this impact: *"These people became visible to my eyes"* and *"Eliminating certain stigmas or, in a way, discrimination by avoiding approaching them to avoid giving money, for example."*

Regarding the influence on academic and professional training, students highlighted the positive impact in terms of citizenship, the development of psychosocial and communication skills, as well as the appreciation of knowledge in the field of intervention with vulnerable populations. Participation was considered a relevant complementary experience to the academic curriculum, enhancing specific skills and contributing to a more humanized and flexible approach in professional practice.

Discussion

Although no significant improvements were observed in the results obtained through the ATHPS, achieving the goal of 80% positive responses in 11 out of 17 questions reinforces the positive impact of this project on students' attitudes toward PEH. Notably, the emphasis on the theme "People" as the main perception of the students aligns with Axis No. 1 of the National Strategy for the Integration of PEH 2025–2030, which highlights the promotion of a unified and inclusive concept of PEH [32]. This alignment suggests that the project successfully achieved its purpose of raising awareness and educating students about the realities of PEH, while also providing physiotherapy services, as recommended in the literature [21–24]. These quantitative outcomes gain further depth when interpreted alongside the qualitative data, which shed light on the students' evolving perceptions and experiences throughout the intervention.

Thematic analysis revealed that students began to perceive PEH as individuals with history, uniqueness, and value. This shift in perception aligns with the principles of humanized care, namely, respect for dignity, empathy, and relational communication [33]. The dehumanization of care, often linked to service fragmentation and procedural routinization, can be countered through experiences like this one, which provide training and bring students closer to the lived reality of PEH, promoting person-centered practices [22, 34, 35]. Furthermore, due to the shortage of human resources,

involving volunteers in real contexts has been identified as a strategy to overcome structural and organizational barriers in the provision of care to vulnerable populations [33].

This evolution in perspective was accompanied by a notable educational impact. Students reported developing essential competencies such as communication, empathy, adaptability, and a stronger appreciation for the social role of physiotherapists. These findings echo those of other studies on student-led clinics, which similarly highlight gains in professional identity and awareness when working with underserved populations [22–24, 34], which show improved awareness of the role of health professionals among underserved populations. However, the only study specifically involving physiotherapy students to which we had access also reported no significant changes in objective attitude scales toward PEH [36]. Additionally, in the study by Annappureddy et al. [35], training and education led to significant improvements in attitudes toward PEH, while the intervention itself did not result in further improvements beyond those gains – thus validating the methodological structure adopted in this project. In that study, which also involved voluntary student participation, it was found that students who volunteered already held significantly more positive attitudes toward PEH than those who did not, a factor that may have also influenced the intervention's limited margin of effectiveness [35].

This possibility is further supported by our own data: only 17.3% of the contacted students chose to participate, for reasons that remain unclear. Nonetheless, the emergent themes illustrate the added pedagogical value of such experiences within academic curricula, particularly in cultivating psychosocial, communicative, and civic skills. These competencies are increasingly prioritized in frameworks such as the Recovery and Resilience Plan for promoting health equity in socially vulnerable settings [19].

In this context, the adoption of a mixed-methods design was crucial. Relying solely on quantitative results might have led to an underestimation of the project's impact, while qualitative data alone could risk social desirability bias. The integration of both allowed for a more comprehensive interpretation, highlighting both the subjective growth of students and the persistent challenges in shifting ingrained attitudes.

While the intervention primarily targeted MSK health, the collected data and broader literature underscore the potential for physiotherapy to address a wide range of health needs among PEH. These include conditions and risk factors for circulatory diseases (like stroke and ischemic heart disease) and respiratory dis-

eases, which are among the leading causes of premature death in Portugal. These can be primary focuses of physiotherapy care, as well as needing to be considered when treating people with MSK conditions, in consideration of safety and maximizing patient outcomes. These constitute areas in which physiotherapists are well qualified to provide added value [37–43].

Future projects could benefit from involving PEH in the design and implementation phases, thereby enhancing relevance and adherence [44, 45]. Additionally, fostering interdisciplinary collaboration between physiotherapists and other health professionals, including street medicine, shelter-based initiatives, or home-adaptation programs, may expand access and improve outcomes. Such efforts could also facilitate the development of creative, realistic, and context-sensitive health promotion strategies tailored to this population's lived experiences [38, 44].

Despite the project's contributions, some limitations must be acknowledged. The inability to evaluate the program's impact on PEH due to the absence of participants who met the adherence criterion (16 of 20 sessions) restricted the generalizability of findings. Although based on recommendations for effective MSK condition management [9, 26–29], this threshold proved overly ambitious in a preventive context, where PEH may prioritize basic needs over health interventions. Attendance was also affected by unmet primary needs and schedule conflicts with other institutional activities. These barriers, already documented in the literature [11], highlight the importance of developing more flexible and responsive strategies. Furthermore, the exclusion of low-adherence participants from data analysis further limited conclusions regarding direct outcomes for PEH. Regarding the students, only 17.3% of those contacted volunteered, a rate for which no objective justification was identified. These limitations reinforce the call for future studies to adopt adaptable designs, address systemic access issues, and focus on outcomes that hold tangible value for participants.

Conclusion

This project demonstrated a positive impact on students' attitudes toward PEH, aligning with the objectives of the National Strategy for the Integration of PEH 2025–2030 and highlighting the importance of educational and awareness-raising initiatives in academic training. The data collected, both quantitative and qualitative, underscore the relevance of projects that foster psychosocial skills and a more humanized approach to professional practice. These findings emphasize the need to adapt future projects to the priorities and realities of PEH, ensuring greater

flexibility and accessibility, while continuing to explore innovative ways to integrate engagement with vulnerable populations into academic curricula.

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Statement of Ethics

This study did not require approval from an Ethics Committee. Nonetheless, all participants, including students and PEH, provided written informed consent to participate in the study and for the publication of this study before participation in the project.

Conflict of Interest Statement

The author has no conflicts of interest to declare.

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Author Contributions

D.S.S. conducted all stages of the study, including study design, data collection, data analysis, manuscript preparation, and approval of the final manuscript.

Data Availability Statement

The data supporting the findings of this study are available upon request from the corresponding author.

References

- 1 Presidência do Conselho de Ministros. Resolução do Conselho de Ministros n.º 107/2017. Diário da República n.º 142/2017, Série I de 2017-07-25; p. 3923–31.
- 2 Bensken WP, Krieger NI, Berg KA, Einstadter D, Dalton JE, Perzynski AT. Health status and chronic disease burden of the homeless population: an analysis of two decades of multi-institutional electronic medical records. *J Health Care Poor Underserved*. 2021;32(3):1619–34. <https://doi.org/10.1353/hpu.2021.0153>
- 3 Fazel S, Geddes JR, Kushel M. The health of homeless people in high-income countries: descriptive epidemiology, health consequences, and clinical and policy recommendations. *Lancet*. 2014;384(9953):1529–40. [https://doi.org/10.1016/S0140-6736\(14\)61132-6](https://doi.org/10.1016/S0140-6736(14)61132-6)
- 4 Williams A, Kamper SJ, Wiggers JH, O'Brien KM, Lee H, Wolfenden L, et al. Musculoskeletal conditions may increase the risk of chronic disease: a systematic review and meta-analysis of cohort studies. *BMC Med*. 2018;16:167–9. <https://doi.org/10.1186/s12916-018-1151-2>
- 5 Kale NN, Marsh J, Kale NK, Miskimin C, Mulcahey MK. Musculoskeletal injuries and conditions among homeless patients. *JAAOS Glob Res Rev*. 2021;5(11):e21. <https://doi.org/10.5435/jaasglobal-d-21-00241>
- 6 de Kok J, Vroonhof P, Snijders J, Roullis G, Clarke M, Peereboom K, et al. Work-related musculoskeletal disorders: prevalence, costs and demographics in the EU. Luxembourg: 2019.
- 7 Cieza A, Causey K, Kamenov K, Hanson SW, Chatterji S, Vos T. Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 2021;396(10267):2006–17. [https://doi.org/10.1016/S0140-6736\(20\)32340-0](https://doi.org/10.1016/S0140-6736(20)32340-0)
- 8 Briggs AM, Shiffman J, Shawar YR, Åkesson K, Ali N, Woolf AD. Global health policy in the 21st century: challenges and opportunities to arrest the global disability burden from musculoskeletal health conditions. *Best Pract Res Clin Rheumatol*. 2020;34(5):101549. <https://doi.org/10.1016/j.berh.2020.101549>
- 9 Lin I, Wiles L, Waller R, Goucke R, Nagree Y, Gibberd M, et al. What does best practice care for musculoskeletal pain look like? Eleven consistent recommendations from high-quality clinical practice guidelines: systematic review. *Br J Sports Med*. 2020;54(2):79–86. <https://doi.org/10.1136/bjsports-2018-099878>
- 10 Clark PM, Ellis BM. A public health approach to musculoskeletal health. *Best Pract Res Clin Rheumatol*. 2014;28(3):517–32. <https://doi.org/10.1016/j.berh.2014.10.002>
- 11 Dawes J, Deaton S, Greenwood N. Homeless people's access to primary care physiotherapy services: an exploratory, mixed-method investigation using a follow-up qualitative extension to core quantitative research. *BMJ Open*. 2017;7(6):e012957. <https://doi.org/10.1136/bmjopen-2016-012957>
- 12 Cernadas A, Fernández Á. Healthcare inequities and barriers to access for homeless individuals: a qualitative study in Barcelona (Spain). *Int J Equity Health*. 2021;20:1–17. <https://doi.org/10.1186/s12939-021-01409-2>
- 13 Carmichael C, Schiffler T, Smith L, Moudatsou M, Tabaki I, Doñate-Martínez A, et al. Barriers and facilitators to health care access for people experiencing homelessness in four European countries: an exploratory qualitative study. *Int J Equity Health*. 2023;22(1):206. <https://doi.org/10.1186/s12939-023-02011-4>
- 14 Purkey E, MacKenzie M. Experience of healthcare among the homeless and vulnerably housed a qualitative study: opportunities for equity-oriented health care. *Int J Equity Health*. 2019;18:101–7. <https://doi.org/10.1186/s12939-019-1004-4>
- 15 Gilmer C, Buccieri K. Homeless patients associate clinician bias with suboptimal care for mental illness, addictions, and chronic pain. *J Prim Care Community Health*. 2020;11:2150132720910289. <https://doi.org/10.1177/2150132720910289>
- 16 Becker JN, Foli KJ. Health-seeking behaviours in the homeless population: a concept analysis. *Health Soc Care Community*. 2022;30(2):e278–86. <https://doi.org/10.1111/hsc.13499>
- 17 Omerov P, Craftman AG, Mattsson E, Klarare A. Homeless persons' experiences of health-and social care: a systematic integrative review. *Health Soc Care Community*. 2020;28:1–11. <https://doi.org/10.1111/hsc.12857>

- 18 OECD. Portugal: Perfil de Saúde do País 2023. Paris: Organisation for Economic Co-operation and Development; 2024. <https://doi.org/10.1787/6be7d83c-pt>
- 19 Escoval A, Duarte-Ramos F, de Barros H, Gonçalves J, Perelman J, Lopes M, et al. E Agora? relatório de Primavera. Coimbra: Observatório Português dos Sistemas de Saúde; 2022.
- 20 Field H, Hudson B, Hewett N, Khan Z. Secondary care usage and characteristics of hospital inpatients referred to a UK homeless health team: a retrospective service evaluation. *BMC Health Serv Res*. 2019;19:857–15. <https://doi.org/10.1186/s12913-019-4620-1>
- 21 Oosman S, Weber G, Ogunson M, Bath B. Enhancing access to physical therapy services for people experiencing poverty and homelessness: the Lighthouse Pilot Project. *Physiother Can*. 2019;71(2):176–86. <https://doi.org/10.3138/ptc.2017-85.pc>
- 22 Feldman CT, Stevens GD, Lowe E, Lie DA. Inclusion of the homeless in health equity curricula: a needs assessment study. *Med Educ Online*. 2020;25(1):1777061. <https://doi.org/10.1080/10872981.2020.1777061>
- 23 Walker JN, Vanderhoef D, Adams SM, Fleisch SB. The impact of an educational intervention on nursing staff attitudes toward patients experiencing homelessness and mental illness. *J Am Psychiatr Nurses Assoc*. 2022;28(6):474–9. <https://doi.org/10.1177/10783903211011669>
- 24 Mercadante SF, Goldberg LA, Divakaruni VL, Erwin R, Savoy M, O'Gurek D. Impact of student-run clinics on students' attitudes toward people experiencing homelessness. *PRiMER*. 2021;5:19. <https://doi.org/10.22454/PRiMER.2021.489756>
- 25 Griggs DJ, Nilsson M, Stevance A, McColm D. A guide to SDG interactions: from science to implementation. Paris: International Council for Science; 2017.
- 26 Gwinnutt JM, Wiczorek M, Balanescu A, Bischoff-Ferrari HA, Boonen A, Cavalli G, et al. 2021 EULAR recommendations regarding lifestyle behaviours and work participation to prevent progression of rheumatic and musculoskeletal diseases. *Ann Rheum Dis*. 2023;82(1):48–56. <https://doi.org/10.1136/annrheumdis-2021-222020>
- 27 Rajan P, Hiller C, Lin J, Refshauge K, Lincoln M, Leaver A. Community-based interventions for chronic musculoskeletal health conditions in rural and remote populations: a systematic review. *Health Soc Care Community*. 2021;29(6):1621–31. <https://doi.org/10.1111/hsc.13263>
- 28 Norris E, van Steen T, Direito A, Stamatakis E. Physically active lessons in schools and their impact on physical activity, educational, health and cognition outcomes: a systematic review and meta-analysis. *Br J Sports Med*. 2020;54(14):826–38. <https://doi.org/10.1136/bjsports-2018-100502>
- 29 Meyer C, Denis CM, Berquin AD. Secondary prevention of chronic musculoskeletal pain: a systematic review of clinical trials. *Ann Phys Rehabil Med*. 2018;61(5):323–38. <https://doi.org/10.1016/j.rehab.2018.03.002>
- 30 Cardoso ASF, Galhardo AO. Desenvolvimento do Questionário de Atitudes em Relação à População em Situação de Sem-Abrigo: estudo da estrutura fatorial e características psicométricas. 2021.
- 31 Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101. <https://doi.org/10.1191/1478088706qp0630a>
- 32 Presidência do Conselho de Ministros. Resolução do Conselho de Ministros n.º 61/2024. Diário da República n.º 65/2024, Série I de 2024-04-02; p. 1–15.
- 33 Busch IM, Moretti F, Travaini G, Wu AW, Rimondini M. Humanization of care: key elements identified by patients, caregivers, and healthcare providers: a systematic review. *JPCRR*. 2019;12(5):461–74. <https://doi.org/10.1007/s40271-019-00370-1>
- 34 Wilson OW, Broman P, Tokolahi E, Andersen P, Brownie S. Learning outcomes from participation in student-run health clinics: a systematic review. *J Multidiscip Healthc*. 2023;16:143–57. <https://doi.org/10.2147/JMDH.S385709>
- 35 Annapureddy D, Teaw S, Kumar P, Turlington WM, Wang E, Speed S, et al. Assessing educational and attitudinal outcomes of a student learner experience focused on homelessness. *Fam Med*. 2024;56(1):30–4. <https://doi.org/10.22454/FamMed.2023.112960>
- 36 Geelhoed MA, Callaway SM, Cruz JM, Subramanian SK. Attitudes of physical therapy students toward the population currently experiencing homelessness: a pilot study. *J Allied Health*. 2019;48(3):220–5.
- 37 Chan V, Estrella MJ, Baddeliyanage R, Shah R, Babineau J, Colantonio A. Rehabilitation among individuals experiencing homelessness and traumatic brain injury: a scoping review. *Front Med*. 2022;9:916602. <https://doi.org/10.3389/fmed.2022.916602>
- 38 Carroll Á, O'Brien S, Harrington D, Cheal-laigh CN, Lawlee A-M, Sukumar P. The unmet rehabilitation needs in an inclusion health integrated care programme for homeless adults in Dublin, Ireland. *Int J Environ Res Public Health*. 2021;18(15):7917. <https://doi.org/10.3390/ijerph18157917>
- 39 Eshun E, Burke O, Do F, Maciver A, Mathur A, Mayne C, et al. Exploring the role of rehabilitation medicine within an inclusion health context: examining a population at risk from homelessness and brain injury in Edinburgh. *Int J Environ Res Public Health*. 2024;21(6):769. <https://doi.org/10.3390/ijerph21060769>
- 40 Hurwitz M, Lam J. Unmet needs: bringing physical rehabilitation to people experiencing homelessness. *PM R*. 2025;17(4):445–51. <https://doi.org/10.1002/pmrj.13311>
- 41 Dean E, Skinner M, Myezwa H, Mkumbuzi V, Mostert K, Parra DC, et al. Health competency standards in physical therapist practice. *Phys Ther*. 2019;99(9):1242–54. <https://doi.org/10.1093/ptj/pzz087>
- 42 Dean E, Söderlund A. What is the role of lifestyle behaviour change associated with non-communicable disease risk in managing musculoskeletal health conditions with special reference to chronic pain? *BMC Musculoskelet Disord*. 2015;16:87. <https://doi.org/10.1186/s12891-015-0545-y>
- 43 Jiménez-Sánchez C, la Cruz NB, Lafuente-Ureta R, Francín-Gallego M, Calvo S, Fortún-Rabadán R, et al. Physical therapy interventions for people experiencing homelessness to improve pain and self-perceived health status. *BMC Public Health*. 2024;24(1):993. <https://doi.org/10.1186/s12889-024-18453-6>
- 44 Kennedy CJ, Grewal J, Warren G, Schmidt J, Biagioni JB, Garcia-Barrera MA. Brain injury, mental health and substance use in homeless populations: community-generated recommendations for healthcare service delivery and research. *BMC Health Serv Res*. 2025;25(1):715. <https://doi.org/10.1186/s12913-025-12835-1>
- 45 Walker SC, Baquero B, Bekemeier B, Parnes M, Arora K. Strategies for enacting health policy codesign: a scoping review and direction for research. *Implement Sci*. 2023;18(1):44. <https://doi.org/10.1186/s13012-023-01295-y>