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Perspectives and challenges of physiotherapists, special educators and other healthcare workers in implementing eco-integration for persons with disabilities

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Abstract: Eco-integration, as a multidimensional model of inclusive rehabilitation is designed to bring together environmental, social, and institutional domains to stimulate participation and quality of life for persons with disabilities. Despite its conceptual acceptance, the practical application of eco-integrative in clinical environment is insufficiently researched. This research investigates the perceptions and challenges experienced by 64 healthcare workers and special educators in North Macedonia in implementing eco-integration. With structured questionnaire, the study assessed familiarity with the concept, viewed implementation levels, and factors contributing to social isolation among persons with disabilities. Descriptive statistics and one-way analysis of variance were used to compare perceptions among the professions. Results indicate that while 78.1% of participants reported familiarity with eco-integration, only 7.8% believed it was fully implemented in their workplace. Significant interprofessional differences were observed ($F = 4.031$, $p = 0.022$), with physiotherapists more likely to report partial implementation. Key barriers were inaccessible environments, social stigma, and lack of interdisciplinary cooperation. The definitions of eco-integration from the participants included community-based services, assistive technologies, and family-centred care. On the other hand, institutional adoption of these components was limited. The results showed a gap between awareness and operationalization of eco-integration in practice. Responding to this requires strategic policy adjustments, capacity building through interprofessional education, and the development of context-sensitive models to enable systematic implementation. The study contributes new knowledge on eco-integrative rehabilitation and points to the need for a more structured, inclusive, and collaborative approach in disability care.

Keywords: eco-integration, rehabilitation, disability, inclusion, physiotherapy, interprofessional collaboration.

1. Introduction

Over the past few years, the concept of inclusion evolved, showing wider societal change in diversity, equity and accessibility (Hayes & Bulat, 2017). The aim of the inclusion as basic human right in rehabilitation is to provide equal opportunities, eliminating challenges that prevent persons with disabilities fully participating in society (Long & Guo, 2023); (Saran, Hunt, White, & Kuper, 2023). For this evolution, healthcare workers are important since they have become main

characters in promoting eco-integration and reducing social isolation among this population (West, et al., 2021); (Khan, Addo, & Findlay, 2024).

The concept of eco-integration according to some authors is about the harmonization of persons with disabilities within different environments, whether natural or social (Lopatynska, Omelchenko, Deka, Protas, & Dobrovolska, 2023); (Caragiani, 2020). However, this definition increases in addition to include the needs for accessible spaces and adaptive technology usage that meet the needs of the different abilities of all persons with disabilities (Persson, Åhman, Yngling, & Gulliksen, 2015). Rehabilitation and other healthcare workers are important for eco-integration because they implement rehabilitation that improves mobility, increase functional independence and motivate active community participation (Khalid, Sarwar, Sarwar, & Sarwar, 2015). With the gap between persons with disabilities and their environment, physiotherapists and other healthcare workers helps through exercises, assistive technology and ergonomic interventions (Vitoulas, et al., 2022).

Social isolation is common problem for persons with disabilities that results with decreased quality of life and negative psychological outcomes (Emerson, Fortune, Llewellyn, & Stancliffe, 2020), and physical barriers, stigmatization, limited social skills and fewer opportunities for meaningful everyday interactions are some contributing factors (Brandt, Liu, Heim, & Heinz, 2022). Rehabilitation and other healthcare workers are impactful for reducing social isolation by focusing on comprehensive care that is not limited only to physical rehabilitation, but goes beyond it (Connaughton & Gibson, 2016). These professionals work to improve communication skills, social confidence and to create ways for social participation through group therapy sessions, community or government programs and different initiatives with other healthcare workers and social services (ShahAli, et al., 2023). The integration of these healthcare workers and special educators in the inclusion is more than showing physical limitations - it requires knowledge about the complexity of physical, social and environmental factors that influence the activities of daily living (Maharaj, et al., 2018). Through individualized approach, the rehabilitation and other healthcare workers are customizing their interventions for satisfying each goal, preference and social context for persons with disabilities (Killingback, Green, & Naylor, 2022).

Healthcare workers, especially those in rehabilitation are recommended for changes that support all levels of inclusion (Narain & Mathye, 2019). This involves working with teachers, helping them understand the concept of eco-integration in rehabilitation, urban planners that are responsible for architectural needs for persons with disabilities and organizations that aim to increase inclusivity, design accessible public spaces and promote awareness about the importance of inclusion for persons with disabilities (Sahoo & Choudhury, 2023). With those solutions, these professions can help to deconstruct the challenges from the exclusion, promoting more inclusive society that shows diversity and inclusivity (Layton, Rachelle, Bourke, & Kayes, 2024); (Mahon & Cusack, 2002); (Haldane, et al., 2019). With their expertise and commitment, they can help building a more inclusive world, where people can live with dignity, autonomy and a sense of belonging (Deshmukh & Harjpal, 2024). Evaluating these contributions and their impact, this research aims to analyse the practices, perceptions and barriers by rehabilitation workers, especially physiotherapists and special educators focused on disability in promoting eco-integration and inclusion for persons with disabilities.

2. Methodology

2.1. Participants

This research included 64 respondents, healthcare workers in the medical and rehabilitation fields with 23 physiotherapists, 21 special educators and 20 healthcare workers from other related fields to rehabilitation. Initially, the questionnaire was distributed to 150 rehabilitation and other healthcare workers, but only 64 of them fulfilled all the answers. The participants were selected through purposive sampling and this sampling guaranteed that the participants had direct experience with eco-integration and preventing social isolation for persons with disabilities. The demographic distribution of this research included 36 males (56.25%) and 28 females (43.75%).

In order to be included in this research, participants had to be healthcare workers, rehabilitation or special educators and rehabilitators working with persons with disabilities. Also, participants had to have the experience in eco-integration and social inclusion in the healthcare system or other rehabilitation institutions, and participants had to be capable to provide the informed consent anonymously and to participate in electronic platforms, so they had to have computers.

The exclusion criteria were persons which did not work in the healthcare system, rehabilitation centres or any other kind of institution where workers are in the field of special education, or they had minimal knowledge in implementing eco-integration in their everyday work. The exclusion was also chosen if participants didn't had experience with persons with disabilities or were unable to understand the purpose of the research or if they didn't complete the questionnaire, failed to submit all the answers or didn't gave the informed consent.

2.2. Measures

For the aim of this research, structured questionnaire was developed to collect data from the participants, made up of five main sections. The first section of the questionnaire was basic demographic information such as age, gender, profession and years of experience. The second section of the questionnaire focused on assessing the familiarity with the concept of eco-integration of the participants and their perceptions of its importance in reducing social isolation. Participants rated their familiarity on a Likert 5-point scale. The third section examined perspectives on the length to which eco-integration is being implemented into the healthcare system. Participants also rated the implementation level on a Likert scale from 5 to 1. The aim of this section of the questionnaire was to find any challenges and opportunities that could improve the eco-integration in the healthcare system and rehabilitation centres. The fourth section of the questionnaire assessed the perceptions of the participants for social isolation among persons with disabilities in their communities and everyday life activities. The participants were asked to assess the social isolation and identify its primary causes such as lack of accessible environments, social stigma, discrimination, limited social support networks and insufficient healthcare services. Participants were also asked whether they observed any direct impacts of social isolation on the mental or physical health of persons with disabilities. The last section of the questionnaire assessed the role of healthcare workers in promoting eco-integration and reducing social isolation. Respondents rated the length to which they believed physiotherapists and other healthcare workers could influence eco-integration and any challenges they face in promoting eco-integration for persons with disabilities. For qualitative purposes and its interpretation some of the questions were open.

2.3. Procedure

The questionnaire was electronically distributed through email and online platforms for wider participation. Participants were informed about the purpose of the research and their responses were strictly anonymous and confidential. Data collection took several weeks and all responses were stored for maintaining data integrity and confidentiality. Prior to participation, all of the participants were required to provide informed consent electronically, in accordance with ethical standards.

2.4. Statistical analysis

The collected data were analysed with descriptive and inferential statistics. For the descriptive part of the statistics, it was used frequencies, percentages, means and standard deviations for summarizing the demographic characteristics and responses. For inferential analysis, chi-square tests were used to examine associations between categorical variables, such as gender and year of experience. One-way analysis of variance was used to evaluate differences in perceptions of the implementation of eco-integration among various professional groups included in this research. Effect sizes were calculated with eta-squared for analysis of variance and Cohen's d for post hoc comparisons to quantify the strength of observed differences. Open-ended responses were thematically analysed to identify recurring patterns in the perceptions of eco-integration from the participants. Responses were grouped into key theme such as environmental accessibility, interprofessional collaboration, and social stigma.

3. Results

The results section shows the findings of the study in two main segments - descriptive statistics that summarizes the demographic characteristics and general perceptions of participants, and inferential analyses examining the relationships between profession, gender, experience, and perceptions of eco-integration. These results show the primary aim of this study: to evaluate how healthcare workers view, understand, and apply the concept of eco-integration in their practice, and to identify perceived barriers to its implementation. At the end, qualitative interpretation of several open questions was analysed. The demographic profile of the participants is summarized first to contextualize their professional and experiential background, which is relevant to interpreting their perspectives on eco-integration.

Table 1 shows the analysis of gender of participants in this research. From the total participants, 56.25% were male (n=36) and 43.75% were female (n=28). This table shows a slightly higher representation of male participants compared to female participants, but generally the sample maintains a balanced gender distribution.

Table 1. Gender distribution of participants.

Count	Percent
36	56.25%
28	43.75%

Table 2. Profession distribution of respondents.

Profession	Count	Percent
Physiotherapists	23	35.94%
Special educators	21	32.81%
Other healthcare workers	20	31.25%

Figure 1.Gender distribution across included professions.

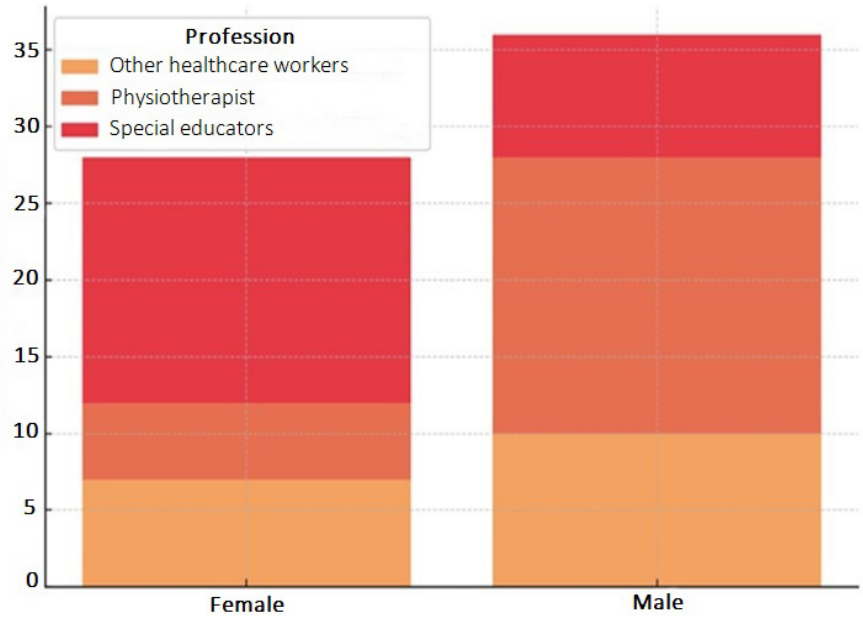

Table 2 shows the administration of profession of the respondents. Physiotherapists represent the largest group with 35.94% of the total sample (n=23). Special educators followed with 32.81% (n=21), while other healthcare workers such as doctors, nurses and radiology technicians with 31.25% (n=20).

Figure 1 visualizes the distribution of male and female participants in different professional categories. The results show clear gender representation patterns with a higher proportion of males in physiotherapy and more females in special education. Other healthcare workers show a relatively balanced gender distribution. It was supposed that this trend may be affected by societal norms, career preferences or access to education in these fields in North Macedonia.

Table 3. Years of experience of participants

Years of experience	Count	Percent
4-6 years of experience	21	32.81%
1-3 years of experience	19	29.69%
7-10 years of experience	15	23.44%
Less than 1 year	9	14.06%

Table 3 shows the administration of years of experience of the participants. The largest group is formed of participants with 4-6 years of experience, then came participants with 1-3 years of

experience. A smaller sample of participants had 7-10 years of experience, while the least experienced group consists of those with less than 1 year of experience.

Table 4. χ^2 for gender and years of experience.

Variable	χ^2	df	p-value	Interpretation
Gender versus years of experience	43.88	3	< 0.001	Significant association

Table 4 shows the results of the chi-square test that assessed the relationship between gender and years of experience. This analysis shows a statistically significant relationship ($\chi^2 = 43.88$, with $p < 0.001$), showing that experience levels vary between male and female participants. The results show that male participants are more concentrated in the lower experience levels and female participants tend to have more years of experience.

To assess how professional background affects the views of the implementation of eco-integration, analysis of variance was conducted. The analysis compared perception scores among three professional groups: physiotherapists, special educators and other healthcare workers.

Table 5. Analysis of variance for profession versus perception of the implementation of eco-integration among participants.

Source	Sum squares	ofdf	Mean square	f-value	p-value	η^2
Profession	17.30	2	8.65	270.19	<0.001	0.291 – large
Residual	1.95	61	/	/	/	/

Table 5 shows the analysis of variance that assessed the relation between profession and the perception of the implementation of eco-integration. This analysis shows a statistically significant effect of profession on the perception scores ($F(2,61) = 270.19$, $p < 0.001$). The effect size ($\eta^2 = 0.291$) shows that profession explains 29.1% of the variance in perception scores, with a large effect. This confirms that profession plays important role in the perception of eco-integration meaning that different healthcare workers recognize eco-integration implementation in different ways. Additionally, from Table 6 the post hoc analysis shows that physiotherapists have a higher perception scores than both special educators and other healthcare workers, showing that training, exposure and successful application of practice influence the perceptions of eco-integration in the different professional groups in this study.

Table 6. Post hoc analysis for differences in perception of eco-integration implementation by profession.

First group	Second group	Mean difference	p-value	Significance
Physiotherapists	Special educators	0.71	<0.001	Significant
Physiotherapists	Other healthcare workers	1.42	<0.001	Significant
Special educators	Other healthcare workers	0.71	<0.001	Significant

After the analysis of variance, it was conducted post hoc analysis and based on Table 6 it was shown that physiotherapists have higher perception scores compared to both special educators ($p < 0.001$) and other healthcare workers ($p < 0.001$). It is worth mentioning that special

educators reported higher perceptions of eco-integration than other healthcare workers ($p < 0.001$). These results showed that profession plays important role in the point of the view about the implementation of eco-integration. Physiotherapists may be more focused on rehabilitation, while special educators might include eco-integration into the broader education. In contrast, other healthcare workers outside these fields have less training in the principles of eco-integration.

Figure 2. Perception of the implementation of eco-integration in the healthcare system.

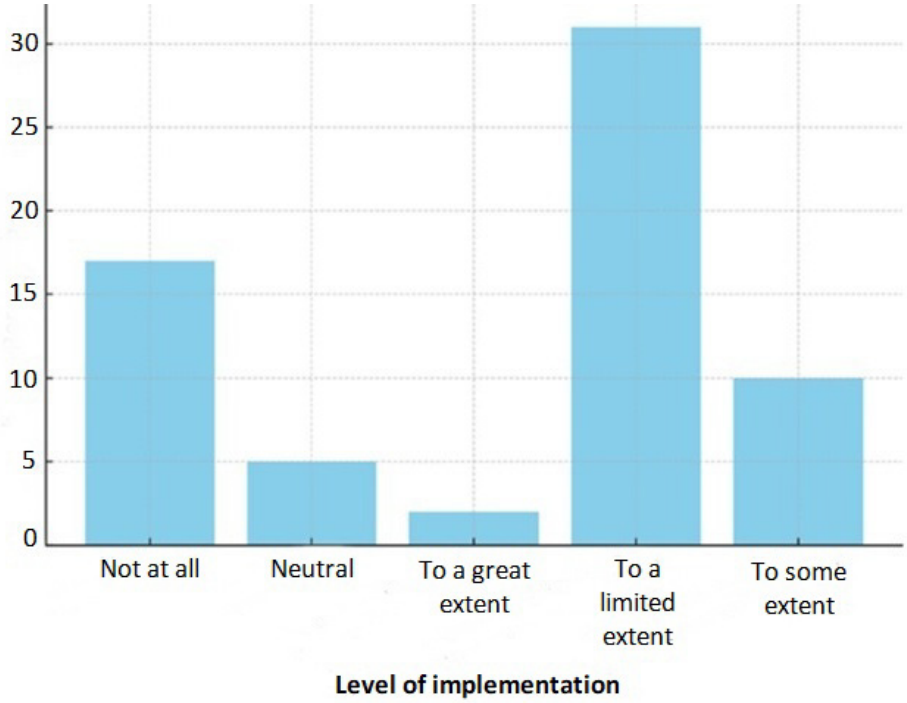

Figure 2 shows the distribution of the perceptions of the participants about the level of eco-integration implementation in the healthcare system. The majority of participants note that eco-integration is implemented to a limited extent or not at all and with this answer it was suggested that awareness or visibility of these kind of practices may be low. A smaller proportion of participants believe that eco-integration is implemented to some extent and very few participants view it as being incorporated to a great extent.

Table 7. Eta-squared for profession versus perception of eco-integration implementation.

Source	Sum of squares	df	Mean square	f-value	p-value	η^2	Effect size interpretation
Profession	27.229	2	13.614	25.499	<0.001	0.291	Large effect
Residual	66.208	61	1.085	/	/	/	/

Table 7 shows the effect size analysis obtained from the one-way analysis of variance, assessing the influence of professional background on perceptions of the implementation of eco-integration. The eta-squared value was 0.291, showing a large effect size and this suggests that 29.1% of the variance in perception scores can be attributed to the professional group of the participants. The substantial effect shows that profession influences how the implementation of eco-integration is viewed.

Table 8 presents Cohen's d values quantifying the magnitude of differences in perception scores across the included professional groups. According to standard interpretation, values above 0.8 indicate a large effect, and values exceeding 2.0 are considered extremely large. The analysis shows that physiotherapists reported higher perception scores than both special educators (d = 3.41, very large effect), and other healthcare workers (d = 7.14, extremely large effect). On the other hand, special educators scored higher than other healthcare workers (d = 3.93, very large effect).

Table 8. Cohen's d for post hoc comparisons of perception scores by profession.

Comparison	Mean difference	Cohen's d	Effect size interpretation
Physiotherapists versus special educators	0.71	3.41	Very large effect
Physiotherapists versus other healthcare workers	1.42	7.14	Extremely large effect
Special educators versus other healthcare workers	0.71	3.93	Very large effect

In addition to statistical comparisons, participants were asked about their familiarity with eco-integration, viewed levels of implementation in the healthcare system, and views on causes and consequences of social isolation among persons with disabilities. The following tables summarize these descriptive findings.

Table 9. Familiarity with the concept of eco-integration.

Response option	Frequency	Percent
Very familiar	18	28.1%
Somewhat familiar	32	50%
Not familiar	14	21.9%

Table 9 shows the distribution of the familiarity of the participants with the concept of eco-integration. The majority of respondents showed a positive orientation toward the concept, with 50% reporting being somewhat familiar and an 28.1% answering very familiar. Only 21.9% indicated no familiarity. These results show a strong conceptual awareness of eco-integration among rehabilitation workers either physiotherapists or special educators which may serve as a foundation for future efforts aimed at promoting its practical implementation. However, the gap between familiarity and institutional application showed elsewhere in the data defines the need for personalized strategies to translate this awareness into consistent, real-world practices.

Table 10. Viewed level of eco-integration implementation in healthcare.

Response option	Frequency	Percent
Fully implemented	5	7.8%
Implemented to some extent	18	28.1%
Minimally or not implemented	41	64.1%

Table 10 shows the perceptions of the participants of the level of the implementation of eco-integration within their healthcare institutions. While 28.1% recognized partial implementation

and only 7.8% viewed full integration, majority (64.1%) reported that eco-integration is either minimally implemented or entirely absent. This disparity between conceptual familiarity (as shown in Table 9) and viewed practical application show a critical implementation gap. The results show the need for systemic institutional support, clearer operational frameworks, and interprofessional collaboration to ease the translation of eco-integrative principles into routine rehabilitation.

Table 11. Viewed primary causes of social isolation among persons with disabilities.

Cause of social isolation	Frequency	Percent
Lack of accessible environments	38	59.4%
Social stigma and discrimination	44	68.8%
Limited social support networks	31	48.4%
Insufficient healthcare services	27	42.2%

Table 11 shows the perceptions of the participants of the primary contributors to social isolation among persons with disabilities, allowing for multiple responses per participant. The most frequently cited causes were social stigma and discrimination (68.8%) and lack of accessible environments (59.4%), indicating that both societal attitudes and environmental barriers are viewed as major obstacles to inclusion. Additionally, nearly half of the respondents identified limited social support networks (48.4%) and insufficient healthcare services (42.2%) as contributing factors.

Table 12. Observed impact of social isolation on persons with disabilities.

Impact observed	Frequency	Percent
Decreased mental health	46	71.9%
Reduced physical activity	39	60.9%
Social withdrawal	51	79.7%

Table 12 presents the observations of the participants regarding the effects of social isolation on persons with disabilities, with multiple responses allowed per participant. The most frequently reported impact was social withdrawal (79.7%), followed by decreased mental health (71.9%) and reduced physical activity (60.9%). These results show that social isolation is viewed as having a profound, many sided effects on well-being, limiting not only emotional and psychological health, but also physical engagement and participation in everyday life.

3.1. Perceptions and practical understanding of eco-Integration

Although 78.1% of participants reported being somewhat or very familiar with the concept of eco-integration (Table 9), the qualitative content within the questionnaire showed various interpretations. When asked to describe what eco-integration means in practice, several themes appeared based on the multiple-choice and open-ended sections. Participants most frequently associated eco-integration with modifying physical environments to improve accessibility such as ramps, and wide corridors (47 of them). 42 respondents answered that eco-integration is associated with assistive technology such as adaptive seating, walkers, electronic communication devices, 39 of the respondents associated the eco-integration with engaging persons with disabilities in community-based rehabilitation activities, and 36 of them associated eco-

integration involving families and caregivers in the rehabilitation process. The participants could choose multiple answers. On the other hand, 12 participants indicated that eco-integration was formally addressed or included in their institutional protocols. Many respondents reported a lack of guidelines, insufficient interdisciplinary collaboration, or organizational support as barriers. Open responses also showed limited time and training opportunities, unclear institutional responsibility for implementing eco-integration, and eco-integration being treated as a theoretical concept, not applied practically.

4. Discussion

This research showed that most healthcare workers are familiar with the concept of eco-integration, but see its implementation as minimal or absent. Some differences were observed among the included and divided professional groups, with physiotherapists reporting the highest awareness and engagement. The results imply that eco-integration is influenced by professional training and practice environment. The higher perception of the physiotherapists scores shows their routine involvement in mobility, environmental adaptation, and patient-centred care as key elements of eco-integration. In contrast, other healthcare workers may lack the exposure or institutional support to apply eco-integrative principles. These findings call for systematic efforts to incorporate eco-integration into clinical protocols, interdisciplinary education, and institutional policy. A comprehensive strategy should include interprofessional workshops, modifications in healthcare infrastructure, and improved collaboration between rehabilitation workers, urban planners, and community organizations.

In addition to some researches similar to our study, one research is focusing on the importance of integrating ecological principles in rehabilitation for improving functional outcomes. According to the International Classification of Functioning, Disability, and Health, effective rehabilitation should not only focus on minimizing pathological conditions, but also on promoting the activity of the persons in their relevant contexts. The authors in this research show information with ecological approach, which considers the interactions between the performer, task and environment to a more comprehensive framework that understands and improves rehabilitation compared to some theories for traditional motor control that focus on the organism (Vaz , Silva, Mancini, Carello, & Kinsella-Shaw, 2017). Our results further support this ecological perspective, showing that professionals who integrate environmental and contextual factors into rehabilitation, particularly physiotherapists show a stronger perception of eco-integration.

Another research shows the factors that influenced attachments of the physiotherapists to some evidence-based care practices, especially in regional areas. This research shows that while physiotherapists accept the importance of evidence-based care, their clinical decisions are often affected by many factors. This research focuses on barriers like time constraints and administrative problems that limits the ability of physiotherapists to access and apply evidence-based practices effectively (Gleadhill, et al., 2022). In alignment with our results, this study shows that institutional and systemic barriers such as time constraints and administrative burdens also restrict the effective implementation of eco-integration, despite widespread recognition of its importance among physiotherapists.

One study shows the challenges and support for implementing behaviour change-informed exercise intervention with aim to prevent repetitions of low back pain among the patients. With focus groups and a framework informed by the Behaviour Change Wheel and the COM-B model, this research shows some barriers. Supports were positioned of intervention rationale with existing practices and the perceived benefits for both patients and physiotherapists (Moniz, et

al., 2024). Comparing these results to our research, we can tell that both studies focus on similar challenges faced by physiotherapists and other rehabilitation workers in implementing new practices. In addition to this, another research explores gender differences within healthcare workers for promoting patient-centred care, person-centred care and family-centred care. Through scoping review among multiple medical specialties, this research finds that fields with a higher proportion of female physicians (paediatrics specialists and gynaecologists) more frequently reference patient centred care. This research indicates that these differences may be affected by cognitive differences between genders, with female physicians showing higher levels of empathy (Lim, Khorrami, Wassersug, & Agapoff, 2023). This finding connects with our results, where gender differences also showed in the perceptions of eco-integration, suggesting that female healthcare workers may be more sensitive to comprehensive and patient-centred rehabilitation approaches.

Another research with its results well connects with our research (Rimmer, et al., 2023). Both studies focus on the important role of environmental, social and systemic factors in improving the inclusion of persons with disabilities. This research found some community engagement challenges, resource constraints and defined the importance of informed, compassionate leadership in promoting inclusive environments within low-resource environments. Another research shows data that connects closely with the results from our research. Both studies focus on the importance of community and family support in promoting social inclusion for persons with disabilities. This research shows some key factors as very dominant in easing the social integration of children with disabilities in Saudi Arabia (Medabesh , Malik, Shafi, & Rashid, 2024). Our research recognized the role of healthcare workers, especially physiotherapists for creating supportive environments through eco-integration aiming to reduce social isolation for persons with disabilities.

One review shows eight types of social support that improves participation for persons with disabilities in community gyms. These kinds of supports include direct supervision, peer support, specialist guidance, orientation, education, logistical support, motivational encouragement and organized social activities. This review suggests that structured support from trained staff and peers can promote social connection and increase participation, making gym more accessible and welcoming for persons with disabilities (Kennedy , McKenzie, Holmes, & Shields, 2023). Another research uses Bronfenbrenner's ecological systems theory for exploring perspectives on the social inclusion of children with intellectual disabilities. Interviews with parents, guardians and teachers showed some significant challenges (Hervie, 2023). Our study found that environmental inaccessibility and social stigma remain main barriers to eco-integrative rehabilitation, showing the continued relevance of ecological models in understanding inclusion-related challenges. Another review examines how perceptions of disability develop from early childhood through adolescence with focus on the impact of societal, familial, school and individual factors. The research applies a developmental approach, defining the perception of disability through an in-group versus out-group lens, where persons with disabilities may be viewed as out-group members, often leading to social exclusion (Babik & Gardner, 2021). Our research revealed that social stigma continues to obstruct the practical implementation of eco-integration, validating the demand for early and sustained educational interventions to reform attitudes toward disability across systems.

One qualitative study (Shakya, et al., 2024) showed multilevel barriers and facilitators for physiotherapy development in Nepal using a socio-ecological framework. Their findings showed challenges at the individual, interpersonal, community, organizational and policy levels. Our study revealed systemic gaps between eco-integration awareness and practice in North Macedonia,

with barriers such as environmental inaccessibility, institutional fragmentation, and limited interdisciplinary coordination. Both studies underscore the lack of public and professional awareness of physiotherapy's role as a foundational issue. However, while Shakya et al. emphasized policy-level and structural system barriers in a low-resource setting, our study placed greater focus on differences in perception and implementation among professional groups. Notably, physiotherapists in our study demonstrated higher eco-integration perception scores, suggesting that training and professional identity strongly influence implementation, a layer less emphasized in the Nepalese context.

Our research contributes to the growing domain of eco-integration in rehabilitation by quantitatively connecting professional roles to viewed implementation. Unlike previous studies that focused only on barriers or qualitative narratives, this research provides statistical evidence of disparity in perception and implementation across healthcare roles. Future studies should consider intervention designs that evaluate how targeted eco-integration training influences clinical practice.

4.1. Future research and limitations

While this research focuses on the perceptions of eco-integration implementation in the healthcare system, several limitations should be accepted. This research included 64 participants and while this number is sufficient for statistical analysis may not fully represent all healthcare workers working with eco-integration and social inclusion. This research relied on self-reported perceptions, which may be subject to social disadvantages or subjective interpretation of eco-integration practices. Also, this research used a cross-sectional design, representing the views of participants at one point in time. As future direction, longitudinal study could track changes in perceptions over time, especially if eco-integration programs are expanded or improved. This study confirmed some statistical associations, but some relationships were not tested. Future research should seek several specific directions such as intervention studies to design and evaluate training programs on eco-integration principles for different healthcare professions and assess their impact on practice and patient outcomes, longitudinal tracking to follow changes in perception and implementation of eco-integration over time, especially in institutions adopting inclusive strategies, qualitative depth to conduct in-depth interviews or focus groups to explore how eco-integration is defined and experienced in various environments, interdisciplinary approaches to include occupational therapists, psychologists, and urban planners to study collaborative eco-integration models and system evaluations to assess how institutional policies, infrastructure, and funding structures affect the translation of eco-integration from concept to clinical reality.

5. Conclusions

This study shows new information about how physiotherapists and other healthcare workers view and implement eco-integration within rehabilitation practice. The findings show that while awareness of eco-integration is relatively high, its practical application remains limited, particularly among special educators and other healthcare workers. Significant differences were observed across professions, suggesting the need for focused educational and institutional strategies to improve implementation. Identifying the perception-implementation gap and quantifying how profession and experience shape these attitudes, this research shows the need for interdisciplinary training, systemic support, and clearer integration of eco-integration principles in clinical and educational environments.

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7. Bibliography

Babik, I., & Gardner, E. (2021). Factors affecting the perception of disability: A developmental perspective. *Frontiers in Psychology*, *12*, 1–26. https://doi.org/10.3389/fpsyg.2021.702166

Brandt, L., Liu, S., Heim, C., & Heinz, A. (2022). The effects of social isolation stress and discrimination on mental health. *Translational Psychiatry*, *12*. https://doi.org/10.1038/s41398-022-02178-4

Caragiani, E. S. (2020). Social and economic inclusion of disabled individuals: A literature review. *Facta Universitatis*, 275–284. https://doi.org/10.22190/FUEO200118020C

Connaughton, J., & Gibson, W. (2016). Do physiotherapists have the skill to engage in the "psychological" in the bio-psychosocial approach? *Physiotherapy Canada*, *68*(4), 377–382. https://doi.org/10.3138/ptc.2015-66

Deshmukh, M., & Harjpal, P. (2024). Integrated physiotherapeutic intervention for rehabilitation of a patient with intellectual disabilities: A case report. *Cureus*. https://doi.org/10.7759/cureus.56476

Emerson, E., Fortune, N., Llewellyn, G., & Stancliffe, R. (2020). **Loneliness, social support, social isolation and wellbeing among working age adults with and without disability: Cross-sectional study**. *Disability and Health Journal*. https://doi.org/10.1016/j.dhjo.2020.100965

Gleadhill, C., Bolsewicz, K., Davidson, S., Kamper, S., Tutty, A., Robson, E., . . . Williams, C. (2022). Physiotherapists' opinions, barriers, and enablers to providing evidence-based care: A mixed-methods study. *BMC Health Services Research*, *22*, 1–16. https://doi.org/10.1186/s12913-022-08741-5

Haldane, V., Chuah, F., Srivastava, A., Singh, S., Koh, G. C., Kee Seng, C., & Legido-Quigley, H. (2019). Community participation in health services development, implementation, and evaluation: A systematic review of empowerment, health, community, and process outcomes. *PLOS ONE*, 1–25. https://doi.org/10.1371/journal.pone.0216112

Hayes, A., & Bulat, J. (2017). *Disabilities inclusive education systems and policies guide for low- and middle-income countries*. RTI Press. https://doi.org/10.3768/rtipress.2017.op.0043.1707

Hervie, V. M. (2023). Social inclusion of children with intellectual disabilities in Accra, Ghana: Views of parents/guardians and teachers. *Children and Youth Services Review*. https://doi.org/10.1016/j.childyouth.2023.106845

Kennedy, R., McKenzie, G., Holmes, C., & Shields, N. (2023). Social support initiatives that facilitate exercise participation in community gyms for people with disability: A scoping review. *International Journal of Environmental Research and Public Health*, *20*(1). https://doi.org/10.3390/ijerph20010699

Khalid, M. T., Sarwar, M. F., Sarwar, M. H., & Sarwar, M. (2015). Current role of physiotherapy in response to changing healthcare needs of the society. *International Journal of Education and Information Technology*, 105–110

Khan, H., Addo, K. M., & Findlay, H. (2024). Public health challenges and responses to the growing ageing populations. *Public Health Challenges*. https://doi.org/10.1002/puh2.213

Killingback, C., Green, A., & Naylor, J. (2022). Development of a framework for person-centred physiotherapy. *Physical Therapy Reviews*, *27*(6), 414–429. https://doi.org/10.1080/10833196.2022.2129157

Layton, N., Rachelle, M., Bourke, J., & Kayes, N. (2024). Structures of oppression or inclusion: What systemic factors impact inclusion in disability and rehabilitation research? *Social Sciences*, *13*(5). https://doi.org/10.3390/socsci13050229

Lim, S. A., Khorrami, A., Wassersug, R., & Agapoff, J. (2023). Gender differences among healthcare providers in the promotion of patient-, person- and family-centered care—And its implications for providing quality healthcare. *Healthcare*, *11*(4). https://doi.org/10.3390/healthcare11040565

Long, T., & Guo, J. (2023). Moving beyond inclusion to belonging. *International Journal of Environmental Research and Public Health*, *20*(20). https://doi.org/10.3390/ijerph20206907

Lopatynska, N., Omelchenko, M., Deka, I., Protas, O., & Dobrovolska, N. (2023). The role of inclusive education in the social integration of children with special educational needs. *Cadernos de Educação Tecnologia e Sociedade*, *16*(1), 135–142. https://doi.org/10.14571/brajets.v16.n1.135-142

Maharaj, S., Chung, C., Dhugge, I., Gayevski, M., Muradyan, A., McLeod, K., Cott, C. (2018). Integrating physiotherapists into primary health care organizations: The physiotherapists' perspective. *Physiotherapy Canada*, *70*(2), 150–158. https://doi.org/10.3138/ptc.2016-107.pc

Mahon, J., & Cusack, T. (2002). Physiotherapists' role in integration of children with cerebral palsy into mainstream schools. *Physiotherapy*, *88*(10), 595–604. https://doi.org/10.1016/S0031-9406(05)60511-1

Medabesh, A., Malik, N., Shafi, M., & Rashid, J. (2024). Strategies for facilitating social integration of children with disabilities in Saudi Arabia. *Journal of Disability Research*, *3*(7), 1–10. https://doi.org/10.57197/JDR-2024-0089

Moniz, A., Duarte, S., Aguiar, P., Caeiro, C., Pires, D., Fernandes, R., . . . Cruz, E. (2024). Physiotherapists' barriers and facilitators to the implementation of a behaviour change-informed exercise intervention to promote the adoption of regular exercise practice in patients at risk of recurrence of low back pain: A qualitative study. *BMC Primary Care*, *25*, 1–18. https://doi.org/10.1186/s12875-024-02274-y

Narain, S., & Mathye, D. (2019). Do physiotherapists have a role to play in the Sustainable Development Goals? A qualitative exploration. *South African Journal of Physiotherapy*, *75*(1). https://doi.org/10.4102/sajp.v75i1.466

Persson, H., Åhman, H., Yngling, A. A., & Gulliksen, J. (2015). Universal design, inclusive design, accessible design, design for all: Different concepts—one goal? On the concept of

accessibility—historical, methodological and philosophical aspects. *Universal Access in the Information Society*, *14*, 505–526. https://doi.org/10.1007/s10209-014-0358-z

Rimmer, J., Quach, P., Ward, S., Young, H.-J., Singh, H., & Lai, B. (2023). The silent majority: Understanding and supporting access and inclusion for people with disabilities living in predominantly low-resource communities. *Disabilities*, *3*(4), 639–647. https://doi.org/10.3390/disabilities3040041

Sahoo, S. K., & Choudhury, B. B. (2023). Wheelchair accessibility: Bridging the gap to equality and inclusion. *Decision Making Advances*, *1*(1), 63–85. https://doi.org/10.31181/dma1120239

Saran, A., Hunt, X., White, H., & Kuper, H. (2023). Effectiveness of interventions for improving social inclusion outcomes for people with disabilities in low- and middle-income countries: A systematic review. *Campbell Systematic Reviews*, *19*(1), 1–32. https://doi.org/10.1002/cl2.1316

ShahAli, S., Shahabi, S., Etemadi, M., Hedayati, M., Barth, C., Mojgani, P., . . . Lankarani, K. B. (2023). Barriers and facilitators of integrating physiotherapy into primary health care settings: A systematic scoping review of qualitative research. *Heliyon*, *9*(10). https://doi.org/10.1016/j.heliyon.2023.e20736

Shakya, N. R., Emén, A., Webb, G., Myezwa, H., Karmacharya, B., & Stensdotter, A.-K. (2024). Barriers and facilitators for strengthening physiotherapy services in Nepal: Perspectives from physiotherapists and health providers. *BMC Health Services Research*, *24*, 1–13. https://doi.org/10.1186/s12913-024-11272-w

Vaz, D. V., Silva, P. L., Mancini, M. C., Carello, C., & Kinsella-Shaw, J. (2017). Towards an ecologically grounded functional practice in rehabilitation. *Human Movement Science*, *52*, 117–132. https://doi.org/10.1016/j.humov.2017.01.010

Vitoulas, S., Konstantis, V., Drizi, I., Vrouva, S., Koumantakis, G., & Sakellari, V. (2022). The effect of physiotherapy interventions in the workplace through active micro-break activities for employees with standing and sedentary work. *Healthcare*, *10*. https://doi.org/10.3390/healthcare10102073

West, K., Purcell, K., Haynes, A., Taylor, J., Hassett, L., & Sherrington, C. (2021). “People associate us with movement so it’s an awesome opportunity”: Perspectives from physiotherapists on promoting physical activity, exercise and sport. *International Journal of Environmental Research and Public Health*, *18*(6). https://doi.org/10.3390/ijerph18062963

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