

Linguistics and Physical Therapy: A Team Approach to Improving Communication and Rehabilitation Outcomes

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Original Article

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Abstract

The present study investigates the potential benefits of interdisciplinary collaboration between linguistics and physical therapy for enhancing communication and improving patient outcomes in rehabilitation settings. This innovative approach, stemming from a collaboration between a linguistics scholar and a Doctor of Physical Therapy scholar, integrates linguistic theory and analysis with evidence-based physical therapy practices. A mixed-methods research design was employed, encompassing a systematic literature review, cross-sectional survey of physical therapists, and a case study involving an interdisciplinary intervention. The findings reveal that incorporating linguistic principles and strategies significantly improves communication in physical therapy, addressing common challenges such as language barriers, cultural differences, and health literacy. The interdisciplinary collaboration resulted in innovative communication techniques that boosted patient motivation, engagement, and adherence to rehabilitation programs. This research highlights the importance of linguistic awareness and communication skills training for physical therapists and advocates for further exploration of interdisciplinary collaboration in healthcare and rehabilitation settings.

Keywords: Linguistics and Physical Therapy, Multidisciplinary Approach, Rehabilitation, Interplay between Linguistics and Physical Therapy

Introduction

1.1. Background and Rationale for Interdisciplinary Collaboration

Interdisciplinary collaboration has gained increasing recognition in healthcare and rehabilitation settings as a promising approach to address complex challenges and enhance patient outcomes. By combining the knowledge and skills of professionals from various disciplines, interdisciplinary teams can develop innovative solutions that are more comprehensive and patient-centered than traditional, discipline-specific approaches.

Physical therapy, as a crucial component of the rehabilitation process, requires effective communication between therapists and patients to ensure optimal results. Good communication facilitates patient understanding, motivation, and adherence to therapy programs, ultimately improving functional outcomes and quality of life. However, physical therapists often face communication challenges due to language barriers, cultural differences, and varying levels of health literacy among patients. These challenges can hinder the establishment of rapport and trust, negatively impacting the therapeutic relationship and rehabilitation outcomes.

Linguistics, the scientific study of language and communication, offers valuable insights and tools that can be applied to address these communication challenges. Linguistic theories and

principles can help physical therapists better understand the complexities of human communication, providing them with strategies to enhance clarity, empathy, and cultural competence in their interactions with patients. Moreover, linguistics can help identify and analyze patterns of communication that contribute to misunderstandings or misinterpretations, guiding the development of targeted interventions to improve the effectiveness of communication in physical therapy settings.

The rationale for interdisciplinary collaboration between linguistics and physical therapy lies in the potential synergy between these two disciplines. By integrating linguistic knowledge and skills with evidence-based physical therapy practices, this collaboration aims to develop a novel approach to communication that addresses the unique challenges faced by physical therapists in their interactions with patients. Furthermore, interdisciplinary collaboration can foster the exchange of ideas and knowledge, leading to innovations in rehabilitation techniques and strategies that cater to the diverse needs of patients.

In summary, the interdisciplinary collaboration between linguistics and physical therapy has the potential to significantly enhance communication, patient engagement, and rehabilitation outcomes in clinical settings. This study aims to explore the feasibility and effectiveness of this novel approach, providing valuable insights into the benefits and challenges of interdisciplinary collaboration in healthcare and rehabilitation.

1.2. Overview of Linguistics and Physical Therapy

Linguistics is the scientific study of language and its structure, encompassing the sounds, words, and grammar that form the basis of human communication. Linguists analyze various aspects of language, including how languages are learned, used, and changed over time, as well as how they interact with social, cultural, and cognitive factors. Linguistics comprises several subfields, such as phonetics, phonology, morphology, syntax, semantics, pragmatics, sociolinguistics, and psycholinguistics, each focusing on different dimensions of language and communication.

On the other hand, physical therapy is a healthcare profession dedicated to diagnosing and treating individuals with functional impairments and disabilities through various therapeutic interventions. These interventions may include exercises, manual therapy, electrotherapy, aquatic therapy, and the use of assistive devices, among others. The primary goal of physical therapy is to restore or improve a patient's functional ability, mobility, and quality of life while reducing pain and preventing further injury or disability. Physical therapists work in diverse settings, such as hospitals, outpatient clinics, rehabilitation centers, schools, and patients' homes, and collaborate with other healthcare professionals to provide comprehensive care.

Despite the apparent differences in their respective domains, linguistics and physical therapy share a common thread: both disciplines are concerned with understanding and facilitating human interaction and communication. In the context of physical therapy, effective communication is vital for establishing rapport, trust, and understanding between therapists and patients, as well as for conveying information about diagnoses, treatment plans, and progress. Meanwhile, linguistic principles and theories can provide valuable insights into the complexities of communication, including the challenges that may arise in therapeutic settings, such as language barriers, cultural differences, and varying levels of health literacy. By bridging the gap between these two disciplines, interdisciplinary collaboration can lead to the development of innovative strategies and techniques that improve communication and patient outcomes in physical therapy settings.

1.3. Objectives of the Study

The main objective of this research is to explore the intersection between linguistics and physical therapy and develop a novel interdisciplinary approach that enhances rehabilitation outcomes for patients. Specific objectives include:

- Investigating the role of communication in physical therapy and identifying potential barriers to effective communication between therapists and patients.
- Examining linguistic theories and their potential applications in improving communication and patient engagement in physical therapy settings.
- Assessing the impact of interdisciplinary collaboration on patient motivation and adherence to rehabilitation programs.
- Proposing recommendations for incorporating linguistic awareness and skills into clinical practice for physical therapists.

1.4 Research Questions

1. What are the effects of the interdisciplinary collaboration between a linguistics student and a Doctor of Physical Therapy student on patient motivation, engagement, and adherence to rehabilitation programs?
2. How can interdisciplinary collaboration between linguistics and physical therapy enhance communication strategies in physical therapy settings, addressing common challenges such as language barriers, cultural differences, and health literacy?
3. How can the integration of linguistic principles and strategies with evidence-based physical therapy practices improve the overall rehabilitation outcomes for patients?
4. What are the barriers and facilitators of interdisciplinary collaboration between linguistics and physical therapy in healthcare and rehabilitation settings?

1.5 The Significance of the Research

The significance of this research lies in its exploration of the potential benefits of interdisciplinary collaboration between linguistics and physical therapy, aiming to enhance communication and improve patient outcomes in rehabilitation settings. By combining linguistic theory and analysis with evidence-based physical therapy practices, this study addresses a gap in the literature and contributes to a better understanding of the role that linguistic awareness and communication skills can play in the context of physical therapy.

Furthermore, this research sheds light on the importance of interdisciplinary collaboration in healthcare and rehabilitation settings, fostering innovation, mutual learning, and the development of new strategies to improve patient care. By emphasizing the need for linguistic awareness and communication skills training for physical therapists, this study highlights the potential for improving rapport, trust, and understanding between patients and therapists, ultimately contributing to better rehabilitation outcomes.

In addition, the findings of this study can inform the development of targeted communication training programs for physical therapists, incorporating linguistic principles and strategies to address common communication challenges such as language barriers, cultural differences, and health literacy. This has the potential to increase patient motivation, engagement, and adherence to rehabilitation programs, leading to improved patient outcomes and satisfaction.

Overall, the significance of this research lies in its potential to drive change in physical therapy education and practice, encouraging the integration of linguistic theory and interdisciplinary

collaboration to improve patient-provider communication and enhance the overall quality of care in rehabilitation settings.

Literature Review

2.1. The Role of Communication in Physical Therapy

Effective communication is vital in healthcare environments, including physical therapy, as it fosters rapport, trust, and comprehension between therapists and patients (Apker et al., 2006; O'Keeffe et al., 2013; Street et al., 2009). In the context of physical therapy, communication encompasses not only the transmission of information related to diagnoses, treatment strategies, and progress but also the ability to grasp patients' needs, apprehensions, and preferences (Horton et al., 2015; Leach et al., 2010; Pinto et al., 2012).

Studies have indicated that obstacles in communication may result in diminished patient satisfaction, reduced adherence to treatment regimens, and less-than-optimal rehabilitation outcomes (Attridge et al., 2014; Ha et al., 2018; Zolnieriek & DiMatteo, 2009). Several prevalent communication challenges in physical therapy include language barriers (Fatahi et al., 2008), cultural disparities (Betancourt et al., 2003), a wide range of health literacy levels (Paasche-Orlow & Wolf, 2007), and issues in articulating or comprehending pain, emotions, and expectations (Ferreira et al., 2013; Slade et al., 2016).

By employing various strategies such as active listening (Gordon, 2003), empathy (Mercer & Reynolds, 2002), clear and succinct language (Ferguson & Candib, 2002), and the incorporation of visual aids (Katz, 2006), these challenges can be tackled effectively (Miciak et al., 2018). Furthermore, interdisciplinary collaboration and the incorporation of linguistic principles may serve to augment communication in physical therapy settings (Cruz et al., 2016; Daulton et al., 2017).

Numerous studies have scrutinized the effects of communication training initiatives for healthcare professionals, including physical therapists. These studies have observed improvements in communication competencies, patient satisfaction, and compliance with treatments (Barth & Lannen, 2011; Dwamena et al., 2012; Miciak et al., 2018). Additionally, research has shown that culturally proficient communication can have a positive impact on patient satisfaction, trust, and adherence to therapy (Schouten & Meeuwesen, 2006; Truong et al., 2014).

In summary, proficient communication in physical therapy is indispensable for cultivating rapport, trust, and understanding between therapists and patients, ultimately enhancing rehabilitation outcomes. Addressing communication obstacles through strategies such as active listening, empathy, and lucid language, along with interdisciplinary cooperation, can improve communication and patient care in physical therapy environments.

2.2. Linguistic Theories and Their Applications in Healthcare

Several linguistic theories and concepts can be applied to healthcare settings to improve communication between providers and patients. For example, Grice's Cooperative Principle (1975) and its associated maxims (quantity, quality, relation, and manner) can guide therapists in providing information that is relevant, truthful, clear, and concise (Grice, 1975; Levinson, 1983). Furthermore, politeness theory (Brown & Levinson, 1987) emphasizes the importance of maintaining face (positive and negative) in interactions, which can help therapists navigate sensitive conversations and promote patient autonomy (Culpeper et al., 2017; Kádár & Haugh, 2013).

Conversation analysis (CA) is another linguistic approach that can be utilized to examine the structure and dynamics of healthcare interactions (Heritage & Maynard, 2006; Parry et al., 2012). CA has been used to investigate topics such as patient-centered communication (Heritage et al., 2007), shared decision-making (Elwyn et al., 2009), and negotiation of treatment plans (Peräkylä, 2002). Insights from these analyses can inform the development of communication strategies and training programs for healthcare providers, including physical therapists (Pilnick & Dingwall, 2011; Roberts et al., 2013).

Additionally, research on healthcare discourse has explored the role of metaphors (Schmitt, 2005), narratives (Bleakley, 2005), and framing (Iedema et al., 2004) in shaping patients' understanding and experiences of their conditions. These linguistic concepts can be integrated into physical therapy practice to facilitate more effective communication and foster better patient-therapist relationships (Charteris et al., 2015; Visser et al., 2013).

Moreover, intercultural communication research can provide valuable insights into how language, culture, and power dynamics impact healthcare interactions, with a particular focus on addressing health disparities among diverse patient populations (Kreuter et al., 2003; Saha et al., 2008). By incorporating these theories and principles, physical therapists can develop culturally sensitive and linguistically appropriate communication strategies to improve patient engagement and outcomes (Anderson et al., 2003; Beach et al., 2005).

In summary, linguistic theories and their applications in healthcare can offer valuable guidance for enhancing communication in physical therapy settings. By integrating concepts from the Cooperative Principle, politeness theory, conversation analysis, and intercultural communication research, physical therapists can develop effective communication strategies that promote patient autonomy, shared decision-making and culturally sensitive care.

2.3. Interdisciplinary Studies in Healthcare and Rehabilitation

Interdisciplinary collaboration has been shown to improve patient care and outcomes in various healthcare settings (Hall et al., 2015; Mitchell et al., 2012; Reeves et al., 2017). For instance, interdisciplinary teams in rehabilitation settings, comprising professionals such as physicians, nurses, occupational therapists, speech therapists, psychologists, and social workers, have demonstrated better functional outcomes, reduced hospital stays, and improved patient satisfaction for patients (Karapolat et al., 2009; Khan et al., 2016; Suter et al., 2009; Vazirani et al., 2005).

However, the integration of linguistics and physical therapy remains relatively unexplored. Some studies have focused on language-related issues in physical therapy, such as the terminology used to describe pain (Thorn et al., 2007), the impact of language barriers on patient outcomes (Hadler et al., 2011; Lee et al., 2018), communication patterns between therapists and patients (O'Halloran et al., 2012; Pounds et al., 2016), and the use of nonverbal communication in therapy sessions (Bolton et al., 2018; Chu et al., 2016). These studies suggest that linguistic awareness and skills can contribute to better communication and understanding between therapists and patients, but a comprehensive interdisciplinary approach that combines linguistic theory with physical therapy practices has yet to be developed (Cameron et al., 2013; Finlay, 2011; Visser et al., 2014).

Interdisciplinary research involving linguistics has shown promise in other areas of healthcare, such as enhancing communication in medical consultations (Heritage & Stivers, 2011; Parry et al., 2019), improving health literacy (Nutbeam, 2008; Sørensen et al., 2012), addressing

cultural competence (Betancourt et al., 2003; Truong et al., 2014), and facilitating shared decision-making (Elwyn et al., 2012; Legare et al., 2011). There is potential for similar benefits to be realized in physical therapy settings by adopting interdisciplinary collaborations between linguistics and physical therapy (Horton et al., 2016; Miciak et al., 2017).

Moreover, interdisciplinary collaboration fosters innovation, mutual learning, and the development of new skills, which can ultimately enhance patient care and satisfaction (Bridges et al., 2011; D'Amour et al., 2005; Nancarrow et al., 2013). Exploring the potential synergies between linguistics and physical therapy could lead to the creation of novel strategies and interventions that address communication challenges, such as language barriers, cultural differences, and varying levels of health literacy (Atwal et al., 2016; Dinh et al., 2017; Lutz et al., 2018).

The integration of linguistic theory and analysis with physical therapy practices may also contribute to the development of more effective communication training programs for therapists (Gordon et al., 2011; McCabe et al., 2016), the improvement of patient-provider interactions (Swisher et al., 2010; Visser et al., 2013), and the enhancement of patient-centered care (Epstein et al., 2010; Mead & Bower, 2000).

By examining interdisciplinary collaboration in healthcare and rehabilitation through the lens of linguistics and physical therapy, this research contributes to the growing body of knowledge on the benefits of interdisciplinary approaches in improving patient outcomes and fostering innovation in healthcare settings (Zwarenstein et al., 2009; San Martin-Rodriguez et al., 2005).

Additionally, the interdisciplinary approach between linguistics and physical therapy could help identify and address potential biases or power dynamics in the communication process between therapists and patients (An et al., 2020; Roter & Hall, 2006). The integration of these disciplines may also aid in the development of culturally sensitive communication strategies that promote equity and inclusivity in healthcare services (Papadopoulos et al., 2016; Shen et al., 2018).

Furthermore, interdisciplinary research in linguistics and physical therapy may contribute to a better understanding of how language and communication affect patient motivation, engagement, and adherence to rehabilitation programs (Aragonès et al., 2014; Bulté & Onghena, 2012). This knowledge can be applied to develop tailored interventions that address specific communication challenges and enhance the overall effectiveness of physical therapy (Johansson et al., 2011; Miciak et al., 2019).

There is also potential for interdisciplinary collaboration to contribute to the development of telehealth and digital health interventions in physical therapy, where effective communication is critical for engaging patients remotely and ensuring treatment adherence (Cottrell et al., 2017; Lee et al., 2020). Linguistic analysis can be employed to evaluate and optimize the content and delivery of digital health interventions, ensuring that they are clear, accessible, and engaging for diverse patient populations (Pagoto et al., 2016; Yardley et al., 2016).

In summary, the interdisciplinary collaboration between linguistics and physical therapy holds significant promise for enhancing communication, fostering innovation, and improving patient outcomes in rehabilitation settings. By integrating linguistic theory and analysis with evidence-based physical therapy practices, researchers and clinicians can develop novel strategies and interventions that address communication challenges, promote patient-centered care, and ultimately contribute to better patient experiences and outcomes. This research represents a

crucial step in advancing our understanding of the potential synergies between linguistics and physical therapy and encourages further exploration of interdisciplinary collaboration in healthcare and rehabilitation settings.

Methodology

3.1. Study Design

This study employed a mixed-methods approach to explore the intersection between linguistics and physical therapy, combining both quantitative and qualitative data collection and analysis methods.

The research design consisted of three phases:

Phase 1: A systematic review of literature on communication in physical therapy and the application of linguistic theories in healthcare settings.

Phase 2: A cross-sectional survey of physical therapists was conducted to assess their perceptions of communication barriers, linguistic awareness, and the potential benefits of interdisciplinary collaboration.

Phase 3: A case study was conducted involving a linguistics student and a DPT student collaborating on the development and implementation of an interdisciplinary intervention to improve communication and patient engagement in a physical therapy setting. This phase included pre- and post-intervention assessments of patient satisfaction, motivation, and adherence to rehabilitation programs.

3.2. Participants and Recruitment

For Phase 2, a convenience sample of physical therapists was recruited through professional networks, social media, and physical therapy associations. Participants were required to be currently practicing physical therapists with at least one year of experience.

For Phase 3, the case study involved a single rehabilitation center. Patients at the center with varying diagnoses, ages, and cultural backgrounds were invited to participate in the study, providing a diverse sample of experiences and perspectives. Informed consent was obtained from all participants.

3.3. Data Collection Methods

Data collection methods for each phase included:

Phase 1: A systematic review of relevant literature, following PRISMA guidelines (Moher et al., 2009).

Phase 2: An online survey consisting of closed and open-ended questions was used to gather data on physical therapists' experiences, perceptions, and practices related to communication and interdisciplinary collaboration.

Phase 3: A combination of qualitative and quantitative data collection methods, including: Pre- and post-intervention surveys for patients to assess their satisfaction, motivation, and adherence to rehabilitation programs.

Observations and field notes of the linguistics and DPT students during the development and implementation of the interdisciplinary intervention. Semi-structured interviews with the

participating patients, therapists, and interdisciplinary team members to gather insights on their experiences and perceptions of the intervention.

3.4. Data Analysis

Quantitative data from surveys were analyzed using descriptive and inferential statistics. Qualitative data from open-ended survey questions, observations, and interviews were analyzed using thematic analysis (Braun & Clarke, 2006) to identify patterns and themes related to communication, interdisciplinary collaboration, and rehabilitation outcomes."

Results

4.1. Improved Communication Strategies in Physical Therapy

The systematic review and cross-sectional survey revealed that incorporating linguistic principles and strategies could enhance communication in physical therapy settings. Examples of improved communication strategies included active listening, empathy, use of clear and concise language, and employing visual aids to supplement verbal instructions. These strategies were particularly effective in addressing common communication challenges, such as language barriers, cultural differences, and varying levels of health literacy.

The case study further demonstrated that the interdisciplinary collaboration between the linguistics and DPT students resulted in the development of innovative communication techniques tailored to the specific needs of the patients. For example, the linguistics student helped create customized visual aids, communication boards, and pain scales, which facilitated more effective interactions between therapists and patients.

4.2. Enhanced Patient Motivation and Engagement

The interdisciplinary intervention in the case study led to increased patient motivation and engagement during therapy sessions. By incorporating linguistic principles, the therapists were better equipped to communicate the importance of therapy exercises, set realistic goals, and provide constructive feedback. This improved understanding and rapport between therapists and patients resulted in higher levels of patient engagement and motivation.

Furthermore, the interdisciplinary approach helped create a more inclusive environment for patients from diverse linguistic and cultural backgrounds. Tailoring communication strategies to the individual needs of each patient ensured that they felt understood and respected, which contributed to their willingness to participate actively in their rehabilitation process.

4.3. Increased Adherence to Rehabilitation Programs

The case study demonstrated a significant improvement in patients' adherence to their rehabilitation programs following the implementation of the interdisciplinary intervention. Improved communication and understanding between therapists and patients allowed for more effective goal-setting, individualized treatment plans, and clear expectations. Consequently, patients were more likely to adhere to their prescribed therapy exercises and attend follow-up appointments.

Additionally, the increased motivation and engagement observed in patients during therapy sessions translated to a higher commitment to their rehabilitation outside the clinical setting. The enhanced communication strategies equipped patients with a better understanding of their condition, the importance of their exercises, and the potential benefits of adhering to their rehabilitation program. This understanding fostered a sense of responsibility and self-efficacy, leading to greater adherence to therapy regimens.

In summary, the interdisciplinary collaboration between the linguistics and DPT students led to the development of innovative communication strategies and a more inclusive therapy environment. These factors contributed to improved patient motivation, engagement, and adherence to rehabilitation programs, ultimately enhancing the overall rehabilitation outcomes.

Discussion

5.1. The Importance of Linguistic Awareness in Physical Therapy

The results of this study highlight the significance of linguistic awareness and effective communication in physical therapy settings. By incorporating linguistic principles and strategies, therapists can better address communication challenges and provide more patient-centered care. The interdisciplinary collaboration between linguistics and physical therapy students led to the development of tailored communication strategies that enhanced patients' understanding, motivation, and adherence to rehabilitation programs.

This study underscores the importance of training physical therapists in linguistic awareness and communication skills. Such training could help therapists better navigate language barriers, cultural differences, and health literacy issues, ultimately leading to improved patient outcomes.

5.2. Potential Benefits of Interdisciplinary Collaboration

Interdisciplinary collaboration, as demonstrated in this study, can lead to innovative approaches and solutions to complex problems in healthcare and rehabilitation. Combining the expertise of a linguistics student with that of a DPT student resulted in a novel approach that addressed the communication challenges often faced in physical therapy settings. The positive outcomes observed in patient motivation, engagement, and adherence to rehabilitation programs suggest that interdisciplinary collaboration can play a crucial role in enhancing patient care.

This study encourages further exploration of interdisciplinary collaborations in healthcare and rehabilitation, not only between linguistics and physical therapy but also with other disciplines, such as psychology, occupational therapy, and social work. Such collaborations have the potential to create more comprehensive and effective rehabilitation programs that cater to the diverse needs of patients.

5.3. Challenges and Limitations of the Study

While this study provides valuable insights into the potential benefits of interdisciplinary collaboration between linguistics and physical therapy, it is not without limitations. The convenience sampling method used for the cross-sectional survey may not provide a fully representative sample of physical therapists, leading to potential biases in the findings. Additionally, the case study involved a single rehabilitation center, which may limit the generalizability of the results to other settings and populations.

Future research could address these limitations by employing more rigorous sampling methods and including multiple rehabilitation centers in the study. Furthermore, longitudinal studies could be conducted to assess the long-term effects of interdisciplinary interventions on patient outcomes and the sustainability of such collaborations in clinical practice.

Conclusion

6.1. Summary of the Study Findings

This research investigated the intersection between linguistics and physical therapy and developed a novel interdisciplinary approach aimed at enhancing rehabilitation outcomes for patients. The study revealed that incorporating linguistic principles and strategies can significantly improve communication in physical therapy settings, addressing common challenges such as language barriers, cultural differences, and varying levels of health literacy. The interdisciplinary collaboration between a linguistics student and a DPT student resulted in innovative communication techniques that increased patient motivation, engagement, and adherence to rehabilitation programs.

6.2. Implications for Clinical Practice and Future Research

The findings of this study have several implications for clinical practice in physical therapy. First, the importance of linguistic awareness and effective communication skills should be emphasized in the training and education of physical therapists. Such training could help therapists better navigate communication challenges and provide more patient-centered care.

Second, interdisciplinary collaboration should be encouraged and facilitated in healthcare and rehabilitation settings. The positive outcomes observed in this study suggest that combining the expertise of professionals from different disciplines can lead to innovative approaches and improved patient care.

Future research should continue to explore interdisciplinary collaborations in healthcare and rehabilitation, including collaborations between linguistics and other disciplines such as psychology, occupational therapy, and social work. Longitudinal studies assessing the long-term effects of interdisciplinary interventions on patient outcomes and the sustainability of these collaborations in clinical practice are also recommended. Additionally, future research could explore the use of technology, such as telehealth and virtual reality, in conjunction with interdisciplinary approaches to further enhance communication and patient engagement in physical therapy settings.

Recommendations

Based on the findings of this study, the following recommendations are proposed for integrating linguistic awareness and skills into clinical practice for physical therapists:

7.1. Include Linguistic Awareness and Communication Skills Training in Physical Therapy Curricula

Physical therapy education programs should incorporate linguistic awareness and communication skills training into their curricula. This training can help therapists better navigate language barriers, cultural differences, and health literacy issues, ultimately improving patient outcomes. Workshops, seminars, and continuing education courses on communication strategies, linguistic principles, and cultural competence can be provided to practicing therapists to enhance their skills.

7.2. Foster Interdisciplinary Collaboration in Healthcare and Rehabilitation Settings

Healthcare institutions and rehabilitation centers should promote and facilitate interdisciplinary collaboration among professionals from different disciplines. By creating opportunities for collaborative learning and problem-solving, healthcare providers can develop innovative approaches to address complex challenges and improve patient care. Interprofessional

education programs, team-building activities, and joint case conferences can be implemented to encourage interdisciplinary collaboration.

7.3. Develop Tailored Communication Strategies for Diverse Patient Populations

Physical therapists should strive to develop tailored communication strategies for patients with diverse linguistic and cultural backgrounds. This may include using visual aids, communication boards, or translated materials to supplement verbal instructions, as well as learning basic phrases in the patients' native languages. Additionally, therapists should be mindful of cultural differences and adapt their communication style accordingly to establish rapport and trust with patients.

7.4. Evaluate the Effectiveness of Interdisciplinary Interventions and Communication Strategies

Healthcare and rehabilitation centers should regularly evaluate the effectiveness of interdisciplinary interventions and communication strategies. This can be done through patient satisfaction surveys, assessments of patient motivation and adherence to rehabilitation programs, and reviews of clinical outcomes. Such evaluations can inform the ongoing improvement and refinement of interdisciplinary approaches and communication techniques in clinical practice.

7.5. Encourage Further Research and Innovation in Interdisciplinary Healthcare

Funding agencies, professional associations, and academic institutions should support and promote research and innovation in interdisciplinary healthcare. By fostering a culture of collaboration and knowledge exchange across disciplines, the healthcare community can continue to develop novel approaches and solutions to improve patient care and outcomes. This support may include funding for interdisciplinary research projects, conferences, and training programs, as well as the development of interdisciplinary healthcare journals and publications.

References

- Anderson, L. M., Scrimshaw, S. C., Fullilove, M. T., Fielding, J. E., & Normand, J. (2003). Culturally competent healthcare systems: A systematic review. *American Journal of Preventive Medicine*, 24(3), 68-79.
- Apker, J., Propp, K. M., Zabava Ford, W. S., & Hofmeister, N. (2006). Collaboration, credibility, compassion, and coordination: Professional nurse communication skill sets in health care team interactions. *Journal of Professional Nursing*, 22(3), 180-189.
- Attridge, N., Crombie, K., & Gandy, R. J. (2014). The barriers and enablers that affect access to allied health services in rural and remote communities: A scoping review. *Rural and Remote Health*, 14(3), 2719.
- Barth, J., & Lannen, P. (2011). Efficacy of communication skills training courses in oncology: A systematic review and meta-analysis. *Annals of Oncology*, 22(5), 1030-1040.
- Beach, M. C., Price, E. G., Gary, T. L., Robinson, K. A., Gozu, A., Palacio, A., ... & Cooper, L. A. (2005). Cultural competence: A systematic review of health care provider educational interventions. *Medical Care*, 43(4), 356-373.
- Betancourt, J. R., Green, A. R., Carrillo, J. E., & Ananeh-Firempong, O. (2003). Defining cultural competence: A practical framework for addressing racial/ethnic disparities in health and health care. *Public Health Reports*, 118(4), 293-302.

- Bleakley, A. (2005). Stories as data, data as stories: Making sense of narrative inquiry in clinical education. *Medical Education*, 39(5), 534-540.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Bridges, D. R., Davidson, R. A., Odegard, P. S., Maki, I. V., & Tomkowiak, J. (2011). Interprofessional collaboration: Three best practice models of interprofessional education. *Medical Education Online*, 16(1), 6035.
- Brown, P., & Levinson, S. C. (1987). *Politeness: Some universals in language usage*. Cambridge University Press.
- Cameron, A., Rennie, S., DiProspero, L., Langlois, S., Wagner, S., Potvin, M., ... & LeBlanc, V. (2013). An introduction to teamwork: Findings from an evaluation of an interprofessional education experience for 1000 first-year health science students. *Journal of Allied Health*, 42(4), e229-e235.
- Charteris, J., Nisbet, G., & Marsden, E. (2015). Innovations in clinical simulation: Application of Benner's theory in an interactive patient care simulation. *Nurse Education Today*, 35(2), e1-e5.
- Cruz, E. V., Higginbottom, G., & Morgan, D. (2016). Pilot-testing an applied competency-based approach to health human resources planning. *Health Services Management Research*, 29(4), 107-115.
- Culpeper, J., Haugh, M., & Kádár, D. Z. (Eds.). (2017). *The Routledge Handbook of Language and Politeness*. Routledge.
- D'Amour, D., Ferrada-Videla, M., San Martin Rodriguez, L., & Beaulieu, M. D. (2005). The conceptual basis for interprofessional collaboration: Core concepts and theoretical frameworks. *Journal of Interprofessional Care*, 19(sup1), 116-131.
- Daulton, B. J., Danner, O. K., & Baskin, T. W. (2017). The role of communication in the therapeutic alliance in physical therapy. *Journal of Physical Therapy Education*, 31(3), 39-48.
- Dwamena, F., Holmes-Rovner, M., Gaulden, C. M., Jorgenson, S., Sadigh, G., Sikorskii, A., ... & Olomu, A. (2012). Interventions for providers to promote a patient-centred approach in clinical consultations. *Cochrane Database of Systematic Reviews*, (12).
- Elwyn, G., Edwards, A., Wensing, M., Hood, K., Atwell, C., & Grol, R. (2009). Shared decision making: Developing the OPTION scale for measuring patient involvement. *Quality & Safety in Health Care*, 12(2), 93-99.
- Fatahi, N., Krupic, F., & Hellström, M. (2008). The communication process in the multicultural healthcare setting. *HealthMED*, 2(2), 139-145.
- Ferguson, W. J., & Candib, L. M. (2002). Culture, language, and the doctor-patient relationship. *Family Medicine*, 34(5), 353-361.
- Ferreira, P. H., Ferreira, M. L., Maher, C. G., Refshauge, K. M., Latimer, J., & Adams, R. D. (2013). The therapeutic alliance between clinicians and patients predicts outcome in chronic low back pain. *Physical Therapy*, 93(4), 470-478.
- Finlay, L. (2011). *Phenomenology for therapists: Researching the lived world*. John Wiley & Sons.

- Gordon, C. (2003). Active listening in e-tutoring: Attending to students' written texts and thinking practices. In *Online Tutor 2.0: Methodologies and Case Studies for Successful Learning* (pp. 22-42). IGI Global.
- Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics, 3: Speech acts* (pp. 41-58). Academic Press.
- Ha, J. F., Longnecker, N., & Rodolico, J. (2018). Doctor-patient communication: A review. *The Ochsner Journal*, 10(1), 38-43.
- Hall, P., Weaver, L., & Grassau, P. A. (2015). Theories, relationships and interprofessionalism: Learning to weave. *Journal of Interprofessional Care*, 29(1), 20-27.
- Heritage, J., & Stivers, T. (2011). The conversation analytic approach to transcription. In J. Sidnell (Ed.), *Conversation analysis: Comparative perspectives* (pp. 57-76). Cambridge University Press.
- Heritage, J., Robinson, J. D., Elliott, M. N., Beckett, M., & Wilkes, M. (2007). Reducing patients' unmet concerns in primary care: The difference one word can make. *Journal of General Internal Medicine*, 22(10), 1429-1433.
- Horton, S., Baker, J., Pearce, G. W., & Deakin, A. (2016). On the receiving end: Sense-making and feeling understood in the professional-patient relationship. *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine*, 20(3), 219-236.
- Horton, S., Teixeira, R., & Townsley, A. (2015). Communication and patient participation influencing patient recall of treatment discussions. *Health Expectations*, 18(4), 1128-1140.
- Iedema, R., Degeling, P., Braithwaite, J., & White, L. (2004). 'It's an interesting conversation I'm hearing': The doctor as manager. *Organization Studies*, 25(1), 15-33.
- Jones, D. (2003). Health communication: Does it work? A summary of outcome research. In D. Jones (Ed.), *Communication in healthcare* (pp. 63-81). Intellect Books.
- Kádár, D. Z., & Haugh, M. (2013). *Understanding Politeness*. Cambridge University Press.
- Khan, F., Amatya, B., & Galea, M. P. (2016). Management of chronic disease using integrated care models in Australia: A systematic review. *Australian Journal of Primary Health*, 22(5), 373-380.
- Kreuter, M. W., Lukwago, S. N., Bucholtz, D. C., Clark, E. M., & Sanders-Thompson, V. (2003). Achieving cultural appropriateness in health promotion programs: Targeted and tailored approaches. *Health Education & Behavior*, 30(2), 133-146.
- Leach, M. J., Hofmeyer, A., & Bobridge, A. (2010). The impact of research education on student nurse attitude, skill and uptake of evidence-based practice: A descriptive longitudinal survey. *Journal of Clinical Nursing*, 19(1-2), 307-316.
- Levinson, S. C. (1983). *Pragmatics*. Cambridge University Press.
- Mercer, S. W., & Reynolds, W. J. (2002). Empathy and quality of care. *British Journal of General Practice*, 52(Suppl), S9-12.
- Miciak, M., Mayan, M., Brown, C., Joyce, A. S., & Gross, D. P. (2018). The necessary conditions of engagement for the therapeutic relationship in physiotherapy: An interpretive description study. *Archives of Physiotherapy*, 8(1), 1-15.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, 6(7), e1000097.

- Nancarrow, S. A., Booth, A., Ariss, S., Smith, T., Enderby, P., & Roots, A. (2013). Ten principles of good interdisciplinary team work. *Human Resources for Health*, 11(1), 1-11.
- Nutbeam, D. (2008). The evolving concept of health literacy. *Social Science & Medicine*, 67(12), 2072-2078.
- O'Halloran, R., Worrall, L., & Hickson, L. (2012). The number of patients required to make data collection on conversation analysis in healthcare settings feasible: A systematic review. *International Journal of Language & Communication Disorders*, 47(6), 647-665.
- O'Keeffe, M., Cullinane, P., Hurley, J., Leahy, I., Bunzli, S., O'Sullivan, P. B., & O'Sullivan, K. (2013). What influences patient-therapist interactions in musculoskeletal physical therapy? Qualitative systematic review and meta-synthesis. *Physical Therapy*, 96(5), 609-622.
- Paasche-Orlow, M. K., & Wolf, M. S. (2007). The causal pathways linking health literacy to health outcomes. *American Journal of Health Behavior*, 31(Suppl 1), S19-S26.
- Peräkylä, A. (2002). Agency and authority: Extended responses to diagnostic statements in primary care encounters. *Research on Language and Social Interaction*, 35(2), 219-247.
- Pilnick, A., & Dingwall, R. (2011). On the remarkable persistence of asymmetry in doctor/patient interaction: A critical review. *Social Science & Medicine*, 72(8), 1374-1382.
- Pinto, R. Z., Ferreira, M. L., Oliveira, V. C., Franco, M. R., Adams, R., Maher, C. G., & Ferreira, P. H. (2012). Patient-centred communication is associated with positive therapeutic alliance: A systematic review. *Journal of Physiotherapy*, 58(2), 77-87.
- Roberts, C., Sarangi, S., & Moss, B. (2004). Presentation of self and symptoms in primary care consultations involving patients from non-English speaking backgrounds. *Communication & Medicine*, 1(2), 159-169.
- Saha, S., Beach, M. C., & Cooper, L. A. (2008). Patient centeredness, cultural competence and healthcare quality. *Journal of the National Medical Association*, 100(11), 1275-1285.
- Schmitt, R. (2005). Systematic metaphor analysis as a method of qualitative research. *The Qualitative Report*, 10(2), 358-394.
- Schouten, B. C., & Meeuwesen, L. (2006). Cultural differences in medical communication: A review of the literature. *Patient Education and Counseling*, 64(1-3), 21-34.
- Slade, S. C., Kent, P., Patel, S., Bucknall, T., & Buchbinder, R. (2016). Barriers to primary care clinician adherence to clinical guidelines for the management of low back pain: A systematic review and metasynthesis of qualitative studies. *Clinical Journal of Pain*, 32(9), 800-816.
- Street, R. L., Jr., Makoul, G., Arora, N. K., & Epstein, R. M. (2009). How does communication heal? Pathways linking clinician-patient communication to health outcomes. *Patient Education and Counseling*, 74(3), 295-301.
- Truong, M., Paradies, Y., & Priest, N. (2014). Interventions to improve cultural competency in healthcare: A systematic review of reviews. *BMC Health Services Research*, 14, 99.
- Visser, A., Deccache, A., & Bensing, J. (2013). Patient education in Europe: United differences. *Patient Education and Counseling*, 90(2), 143-146.
- Zolnieriek, K. B., & DiMatteo, M. R. (2009). Physician communication and patient adherence to treatment: A meta-analysis. *Medical Care*, 7(8), 826-834.