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Original Article

Psychological Interventions within Physiotherapy: A Qualitative Exploration of the Perspectives of Paediatric Physiotherapists in the Kingdom of Saudi Arabia

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Abstract

Background: Children with physical disabilities may struggle psychologically and socially. The biopsychosocial model can be implemented in paediatric physiotherapy as an approach to consider all these aspects. Physiotherapists implement psychologically informed physiotherapy (PIP) to integrate the biopsychosocial model into physiotherapy practice. A previous study found that many physiotherapists had positive attitudes and beliefs about PIP. However, there remains a significant need for further development and enhancement of PIP both globally and within the Kingdom of Saudi Arabia (KSA). The study aims to explore psychological interventions within physiotherapy practice from the perspective of PPTs working in KSA, including their knowledge, implementation experiences and future learning and training needs.**Methods:** A qualitative study was conducted to explore the research aims and objectives. Paediatric physiotherapists in the KSA were invited to focus groups to discuss their experiences of psychological interventions within physiotherapy. Qualitative data were transcribed and analysed using hybrid thematic analysis. Data collection took place between June and July 2023. **Results:** Ten participants in four focus groups, with three to two participants in each group. Thematic analysis identified three themes: knowledge, implementation, and future needs. While PPTs demonstrated a good understanding of PIP and implemented a variety of psychological interventions, they often did not acknowledge the psychological elements involved. To address this gap, recommendations were made to further enhance paediatric physiotherapy practice in KSA. **Conclusion:** This study was the first to explore and provide valuable insights into PPTs' perspectives on psychological interventions and PIP in KSA. The results may inform development of future training to support enhanced use of PIP and holistic treatment.

Keywords: Paediatric, Physiotherapy, Biopsychosocial Model, Psychologically Informed Physiotherapy, Children, Physical Disabilities, Focus Groups, Qualitative Methods

Introduction

Paediatric Physiotherapy Practice in the Kingdom of Saudi Arabia

Paediatric physiotherapists (PPTs) are physiotherapists specialising in the treatment of children with disabilities, or as termed in KSA, 'children with special needs' (Al-Jadid & Al-Jadid, 2013). PPTs help children improve their physical function to achieve independence in activities of daily living, therefore, improving their quality of life and integration into society with their families (Spearing et al., n.d.). Children with physical disabilities may struggle psychologically and socially. As paediatric physiotherapists are involved in the management of physical aspects of disability, they may have a role in the psychological aspects with the aim to improve quality of life.

Biopsychosocial Model in Physiotherapy

The biopsychosocial model is multidimensional which originated as a holistic approach to pain management (Smart, 2023). It has evolved and is no longer specific only to pain. It can be implemented in physiotherapy to include the biological, psychological, and sociological dimensions of well-being (Gervais-Hupé et al., 2023). These three dimensions' overlap and intersect to describe the complexity of well-being.

When working with children, the biological factors are specific to them, but the psychological and social factors extend to their parents and caretakers (Wallander & Varni, 1998). This adds another layer of complexity to designing a holistic patient and family-centred care. Despite being well-documented in the literature and recommended by clinical practice guidelines for physiotherapists, Gervais-Hupé et al. (2023) and Holopainen (2021) found challenges in implementation of the biopsychosocial model. Furthermore, the literature does not specifically address physiotherapists working with the paediatric population (Driver et al., 2021).

Psychologically Informed Physiotherapy

Combining interventions of the body and mind is vital to managing complex patient needs in physiotherapy practice (Hartley, 2019). Psychologically Informed Physiotherapy (PIP), as described by Porter (2017), combines physiotherapy with psychological interventions implemented by physiotherapists when managing individuals with persistent conditions. It aims to provide patient-centred care within the context of the biopsychosocial model (Smart, 2023) and is used to acknowledge and address patients' beliefs, behaviours, and goals related to their condition (Archer et al., 2018). Recognising and supporting the relationship between the physiotherapist and their patient as well as forming a therapeutic alliance including rapport are its' aims. At the 2021 World Confederation of Physical Therapy (WCPT) online congress, Gray et al. discussed that physiotherapists had positive attitudes and beliefs about PIP, but further development and adaptation of practices to different cultures is needed.

Psychological Interventions Implementation by Physiotherapists

Physiotherapists may implement PIP to integrate the biopsychosocial model into physiotherapy practice (Gervais-Hupé et al., 2023; Porter, 2017; Smart, 2023). The psychological interventions follow different approaches, such as the humanistic approach with patient-centred therapy using motivational interviewing (MI) or acceptance and commitment therapy (ACT). Another approach is the cognitive and behavioural approach, which includes cognitive behavioural therapy (CBT) (Porter, 2017). However, psychological interventions used were often not labelled as psychological, presumably due to having no formal training or confidence in psychology by the physiotherapists (Driver et al., 2021). An important consideration is physiotherapists are not the primary providers of psychological interventions and would not replace healthcare professionals trained in psychology and should consult as members of the multidisciplinary team (MDT) if required. PIP should be used to supplement physiotherapy practice but not replace psychology

practice completely.

Presently, there have yet to be studies to explore PIP in KSA. It is unknown whether there were considerations of PPTs in KSA specific to PIP or psychological interventions in general.

Research Question and Hypothesis

What are paediatric physiotherapists (PPTs) experiences of knowledge and implementation of psychological interventions within physiotherapy practice, and what are the learning and training needs on this topic in the Kingdom of Saudi Arabia (KSA)? Due to the exploratory nature of this study, no prior hypothesis was developed to be tested.

Therefore, this study aims to explore psychological interventions within physiotherapy practice from the perspective of PPTs working in KSA, including their knowledge and implementation experiences. And understand related future learning and training needs to improve paediatric physiotherapy practice in KSA. The study objectives are as follows: Explore acquired and applied knowledge of psychological interventions within physiotherapy practice among PPTs working in KSA. Describe implementation experiences of psychological interventions implemented by PPTs working in KSA. Understand PPTs' learning and training needs of psychological interventions used within physiotherapy practice in KSA. Propose recommendations to improve current paediatric physiotherapy practice in KSA.

Methodology

Participants and Study Design

Qualitative research was chosen to explore participants' experiences, thoughts, and emotions, along with recognizing the researcher's perspective (Braun & Clarke, 2012; Potts & Fugard, 2020).

Sampling, Target Participants and Recruitment

The sampling approach was a stratified purposive sampling aiming to select homogeneous hybrid groups that display variation to allow comparison (Ritchie et al., 2014). A sample of convenience was used, rather than a calculated sample size, aiming to recruit sufficient participants for FGs to be manageable and provide a range of experiences. Additionally, data saturation was considered to ensure a comprehensive understanding of the topic. Target participants were invited and recruited using an electronic invitation poster with a QR code and a link which led to an online Microsoft Forms™ demographic questionnaire. The poster was sent on self-regulated WhatsApp group, telegram group, and social media. The Saudi Physical Therapy Association Paediatric subspecialty group (PediaSPTA) was contacted and recruited from with permission granted from its president.

The study inclusion criteria were as follows: Paediatric physiotherapist working in KSA, working with paediatric population for a minimum of one year, and SCFHS-licensed physiotherapist.

Procedure

Participants were allocated to pre-planned focus groups with the same educational level to form a homogenous group ensuring comfortable and in-depth discussions of thoughts, ideas, and experiences without any feelings of superiority or inferiority. Focus Groups (FGs) were used to collect data by encouraging group dynamics and collective idea generation (Krueger & Casey, 2014). Four FGs were planned for from June to July 2023. All FGs were virtual through the internet-based meeting platform Microsoft Teams™ from the researcher's location in London, UK. FGs duration ranged from 60 to 90 minutes. A structured topic guide directed FG discussions through a series of topics influenced by the aims and objectives The topics included knowledge of psychological interventions used in physiotherapy, implementation of these interventions, and whether there are learning and training needs for the psychological interventions.

Data Management

This project is registered under reference no. Z6364106/2023/03/60 social research in line with

UCL's Data Protection Policy. Personal data was pseudonymised to ensure data protection, anonymity, and confidentiality. Demographic data collected was coded with an ID number assigned to each participant and kept separate from the pseudonymised list of participants and the consent forms.

Ethical Considerations

The study was approved by the University College of London (UCL) as a low-risk project ID no. 24941/001. The researcher adhered to the ethical principles of research and abided the regulations of the Saudi Ministry of Health, the Saudi Commission for Health Specialties, and their sponsoring employer, King Saud Medical City in Riyadh, Kingdom of Saudi Arabia.

Data Analysis

Thematic Analysis (TA) approach was used to identify and interpret patterns in the data, using a hybrid of inductive and deductive approaches (Braun & Clarke, 2012; Ritchie et al., 2014; Swain, 2018). The FGs were conducted in both Arabic and English, leveraging the participants' bilingual proficiency. The FGs were held and recorded via Microsoft Teams, which generated the initial transcripts. English segments were transcribed verbatim, while Arabic segments were translated by the moderator guided by participants' self-translations and the moderator's dual-language expertise. The participants then reviewed the translated transcripts to ensure they accurately reflected the original discussions. The data in form of transcripts were coded inductively based on the literature review, aims, objectives, and focus group guide, as well as deductively derived directly from the transcripts, then categorised, then grouped into themes. Frequency of coded quotes was included in the analysis as well to estimate theme density. NVivo 14™ software was used for qualitative analysis.

Results

Ten PPTs working in KSA participated in four FGs held online on Microsoft Teams™. Participants' demographics are presented in Table 10.

Table 10: Participants Demographics

Focus Group	Pseudonym	Gender	Education Degree	Experience Years	Employment Sector	Employment Field	Nationality
FG1	P1	Female	BSc	1-5 Years	Governmental	Clinical	Saudi
	P2	Female	BSc	1-5 Years	Governmental	Clinical	Saudi
	P3	Female	BSc	1-5 Years	Governmental	Clinical	Saudi
FG2	P1	Male	MSc	10+ Years	Governmental	Clinical	Saudi
	P2	Female	MSc	5-10 Years	Private	Clinical	Saudi
	P3	Male	MSc	5-10 Years	Governmental	Clinical	Saudi
FG3	P1	Male	PhD	10+ Years	Governmental	Academic	Saudi
	P2	Female	PhD	10+ Years	Governmental	Academic	Saudi
FG4	P1	Female	PhD	10+ Years	Governmental	Clinical	Saudi
	P2	Female	PhD	5-10 Years	Governmental	Academic	Saudi

BSc: Bachelor of Science degree, FG: focus group, MSc: Master of Science degree, P: participant, PhD: Doctor of Philosophy degree

The FGs transcripts were analysed revealing three themes: knowledge, implementation, and future needs of learning and training. These themes were then examined in terms of their hierarchy and interrelationships. A map of hierarchy and interrelationships between themes, categories and codes is displayed in Figure 6.

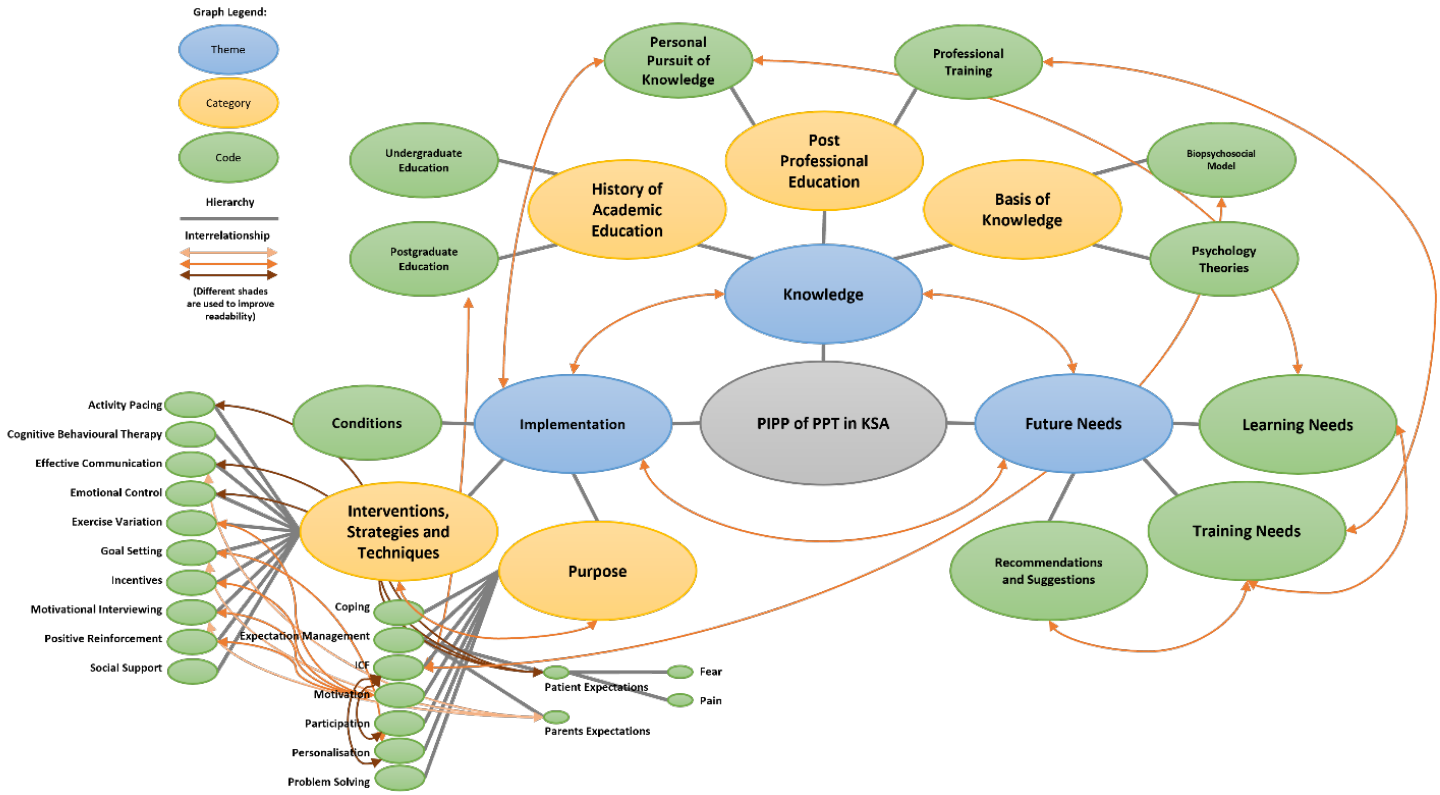

Figure 6: Map of hierarchy and interrelationships between themes, categories, and codes.

Theme: Knowledge

The first theme explored participants' recollections of their knowledge acquisition and educational history regarding psychology and psychological interventions implemented in physiotherapy (PIIP). All FG participants discussed their knowledge, which accounted for 25.5% of the FGs discussions (FGs = 4, Quotes = 85).

Category: History of Academic Education

Graduate Education

The participating physiotherapists recalled their psychology education during their graduate BSc studies (FGs = 4, Quotes = 28). All participants from the four FGs contributed to the discussion and agreed they were taught an introductory psychology module early during their graduate studies. Some participants mentioned the focus of the courses was not theories but more on mental and psychological conditions. In general, the participants reported they did not feel the contents of the graduate psychology module were applicable to their paediatric physiotherapy practice (PPP).

Postgraduate Education

Participants in FG2 to FG4 recalled their education in psychology and PIIP during their postgraduate MSc or PhD degree studies (FGs = 3, Quotes = 18).

During MSc studies, some participants reported this topic was included in their programmes, while others did not. Their experiences varied. Participants in FG3 and FG4 explored the topics of biopsychosocial model and psychological interventions in physiotherapy further in their PhD studies through related topics like the ICF, which is a code under the purpose category.

Category: Post-Professional Education

Personal Pursuit of Knowledge

Discussions of post-professional experiences in terms of personal learning were made in FG1 to FG3 including continuous professional development (CPD) on PIIP in PPP (FGs = 3, Quotes = 26). Participants in FG1 to FG3 elaborated on the various resources they had accessed such as articles, books, lectures, courses, and workshops.

Professional Training

Participants and the moderator discussed their professional training experiences (FGs = 3, Quotes = 5). Participants in FGs 1-3 recalled their experiences with professional training by experts, including internship year training, which is mandatory for graduate certification. This was the first experience of psychological elements of physiotherapy and physical rehabilitation for most participants.

Category: Basis of Knowledge

Psychology Theories

Knowledge of psychology theories of human development, human psyche, and its implications in physiotherapy and rehabilitation had limited discussion (FG = 1, Quotes = 3). Only one participant (FG3 P1) named psychological theories and elaborated on their influences on PPP. Other participants briefly mentioned psychological theories but did not name or describe any particular ones.

Biopsychosocial Model

Descriptions by the participants of the biopsychosocial model as a multidimensional model and its role in patient care were limited (FGs = 2, Quotes = 5). Participants in FG2 and FG3 discussed when they were introduced to the biopsychosocial model and how to implement it. Some participants linked it directly to the international classification of functioning (ICF), a code under the purpose category.

Theme: Implementation

The second theme includes participants' experiences with implementing psychological interventions in PPP. All FG participants contributed to the discussion with great detail. This theme is dense, with 60.4% of references coded (FGs = 4, Quotes = 201).

Category: Conditions

Paediatric conditions and cases were mentioned by the participants when they implemented psychological interventions (FGs = 4, Quotes = 13). Participants in all four FGs briefly mentioned the conditions under which they implemented psychological interventions. A focus on paediatric neurological conditions was observed. Specific conditions were mentioned but not in detail. No confidential patient details were mentioned.

Category: Interventions, Strategies, and Techniques

Participants described the psychological interventions, strategies, and techniques they implemented in their PPP (FG = 4, Quotes = 103).

Some participants labelled the psychological interventions, and others did not. Psychological interventions, as described by PPTs, were coded to the most suitable label by the researcher. Some labels were mentioned and confirmed during the FG. This category has ten psychological interventions coded under it.

Activity Pacing (AP)

Participants reported using AP, a versatile technique that modifies activities to manage pain and energy levels or to help patients cope with and accept their functional abilities (FGs = 2, Quotes = 5).

Cognitive Behavioural Therapy (CBT)

CBT was named by the participants as an intervention used for behavioural problems related to thoughts and feelings (FGs = 3, Quotes = 7).

Effective Communication

Effective use of communication skills with patients (children) and their parents was discussed by participants. It included physiotherapist and patient/parent communication (FGs = 4, Quotes = 23).

Emotional Control

Participants reported implementing non-specific techniques intended to provide emotional support to patients (FGs = 4, Quotes = 16).

Exercise Variation

Providing a variety of exercises was an intervention employed by PPTs to enhance patient motivation and participation by addressing obstacles during exercise performance (FGs = 2, Quotes = 6).

Goal Setting

Participants described setting patient-oriented and realistic goals to encourage goal attainment by the patient (FGs = 4, Quotes = 13).

Incentives

Participants described using incentives of a material nature as rewards to encourage patients for their outcomes (FGs = 2, Quotes = 5).

Motivational Interviewing (MI)

Participants described MI used to motivate and educate children (patients) and their parents about the condition and prognosis (FGs = 4, Quotes = 9).

Positive Reinforcement (PR)

Paediatric physiotherapists compared PR to **Incentives**. PR was described as verbal or vocal, such as praise. Social and cultural factors were used to personalise PR (FGs = 3, Quotes = 8).

Social Support (SS)

Participants described the social support of parents and family to support patients, especially when discharged from medical settings to home (FGs = 3, Quotes = 11).

Category: Purpose

Participants explained their purposes for implementing psychological interventions and techniques in PPP (FGs = 4, Quotes = 85). This category has seven purposes coded.

Coping

One of the purposes was to support patients and parents' coping and acceptance (FG = 1, Quotes = 2). No specific intervention was mentioned.

Expectation Management

A second purpose was to manage expectations, from unrealistic to realistic and negative to positive expectations (FGs = 4, Quotes = 43). Different psychological interventions were used depending on whom it was addressed to, Patient Expectations or Parents Expectations.

Patient Expectations

Managing patients (children) expectations was for either fear of hospitals and clinical environment (FGs = 4, Quotes = 10) or pain and fear-avoidance (FGs = 2, Quotes = 6).

With patients, activity pacing, effective communication, and emotional control were mentioned as effective interventions.

Parents Expectations

To manage parents' expectations, interventions like effective communication, goal setting, and motivational interviewing were used (FGs = 4, Quotes = 20).

ICF

One of the more prominent purposes for using psychological interventions was the implementation of the ICF classification (FGs = 2, Quotes = 18). Two participants from FG2 described their use of ICF in their practices, as well as both participants of FG4. ICF and Biopsychosocial Model were associated with the same participants.

Motivation

Motivation was the targeted purpose of some psychological interventions (FGs = 3, Quotes = 6) and Motivation was associated with techniques like Exercise Variation, Incentives, Motivational Interviewing, and Positive Reinforcement.

Participation

Improving participation in PPP was a purpose PPTs aimed to achieve (FGs = 3, Quotes = 3). Participants also discussed how implementing the ICF improved patient participation.

Personalisation

Personalising physiotherapy sessions using factors like patient preferences was mentioned as a purpose (FGs = 3, Quotes = 7). Participants combined ICF and Personalisation with Goal Setting to design a meaningful plan for the child and their families.

Problem-Solving

Participants explained psychological interventions used to solve problems arising in PPP (FGs = 3, Quotes = 6). They explained that a holistic, multifaceted approach to rehabilitation, including psychological interventions, allowed them to handle complex scenarios. No specific interventions were mentioned.

Theme: Future Needs

This is the third theme. It includes the perceived learning and training needs of psychology and psychological interventions for future PPP. Similar needs were described by participants across all focus groups. This theme has only 14.1% of FGs discussions (FGs = 4, Quotes = 47).

Learning Needs

Participants expressed their preferred learning styles of psychology and psychological interventions implemented in PPP (FGs = 4, Quotes = 20). Learning was perceived as a personal task to acquire information without application, which can be done in a group but with individual efforts. Most participants agreed. This was similar across all participants from the four focus groups and had

discussions in common with Personal Pursuit of Knowledge.

Training Needs

Perceptions of training and related needs of psychological interventions implemented in PPP were coded here (FGs = 3, Quotes = 11). Participants described what training is to them. Participants perceived training as a structured educational activity led by an experienced professional with theoretical and practical elements. This description was similar to Professional Training. Participants from FG1 to FG3 contributed to the discussion. Participants from FG4 did not. However, they had similar discussions in Learning Needs.

Recommendations and Suggestions

Participant's recommendations and future suggestions for psychology education, PIIP and PIP in KSA (FGs = 4. Quotes = 16). This code was generated with participants' afterthoughts. Participants added this as comments at the end of each FG when given the opportunity. Similarities between Learning Needs and Training Needs, and Recommendations and Suggestions were noted. Additionally, this code expanded further than the topic of this study.

Discussion

Describing paediatric physiotherapy practice in KSA, this discussion explores balance of acquired and applied knowledge, the practical implementation experiences, the learning and training needs of physiotherapists, as well as providing future recommendations and implications for research.

Acquired and Applied Knowledge

In physiotherapy graduate programmes, physical aspects of health are widely taught and covered in detail, but not psychological elements. This was one of the limitations reported during the WCPT Congress 2021 (Gray et al., 2021). The content of psychology in physiotherapy modules differed in universities nationally and internationally. Psychology modules in physiotherapy programmes in KSA were introductory and taught early in the BSc curricula similar to UK universities. While the importance of psychological knowledge is acknowledged, opinions on the content of these courses varied, as reflected in current literature (Arvinen-Barrow et al., 2010; Heaney et al., 2012).

From theories of psychology to psychological and mental health-related disorders, there was a gap between knowledge acquired in academic education and learning applicable to physiotherapy practice. Theories are the underpinning of knowledge (Heaney et al., 2012), but they are misunderstood and forgotten if not appropriately linked with clinical applications. This became evident as paediatric physiotherapists (PPTs) with graduate education only did not acknowledge the biopsychosocial model in contrast to PPTs with postgraduate Master of Science (MSc) reflecting the findings of Driver et al. (2019) . Postgraduates were confident in addressing the model's psychosocial elements and reported successful implementation of multidimensional classification systems like the International Classification of Functioning (ICF). Contrary to the graduates' common background of nationwide KSA education, some of the postgraduates were awarded their MSc and Doctor of Philosophy (PhD) degrees from universities abroad.

Postgraduate MSc PPTs approval of holistic physiotherapy approaches was linked to greater comprehension of paediatric patients' needs through the ICF and can be attributed to their

confidence in evidence-based practice (EBP) application compared to graduates (Alghadier et al., 2022; Alsaadi, 2022). This integration of acquired knowledge to application improved patient-centred care. Senior clinical PPTs, as classified by the Saudi Commission for Health Specialities (SCFHS), passed down their knowledge through post-professional training to newly graduated BSc physiotherapists.

Physiotherapists with doctorate postgraduate degrees (PhD) were found to be the most knowledgeable on the topic on PIP. The participants in this study had undertaken doctoral theses on elements from the biopsychosocial model and the ICF. As lecturers, they highly valued solid theoretical foundations in psychology, rehabilitation psychology and integrated approaches such as psychologically informed physiotherapy (PIP). Clinically, their knowledge enhanced their PPP and enabled them to personalise aspects of the therapeutic alliance to promote patient motivation and participation. They also recognised their role in shaping the future of physiotherapy education, emphasising the importance of teaching rehabilitation psychology by educators with knowledge in both physiotherapy and psychology.

Personal pursuits of knowledge varied between graduates and postgraduates. Graduates often preferred hands-on training, which allows them to apply theoretical information in an organized and structured approach, as found by Al Maghraby & Alshami (2013) in their comparison of Saudi physiotherapy undergraduates' learning and training styles. This is further supported by their preference to seek CPD resources (lectures, workshops, and courses) to learn new skills and train in their application.

Postgraduate MSc physiotherapists had similar preferences but were more confident and open to implementing evidence-based practice (EBP) resources in their learning practices, including but not limited to the ICF. Alghadier et al. (2022) found a positive correlation between higher education and the understanding and use of EBP, as postgraduates were more likely to have positive behaviour towards EBP and utilize these resources for learning due to advanced skills. In contrast, graduates were less confident, likely due to insufficient education.

Similar to studies on personal pursuits of learning, training, and EBP implementation, when the graduate PPTs discussed PIP elements or the ICF framework, they preferred practical training opportunities from fellow postgraduates who had confidence in their skills to learn through EBP. Specifically, in this context, EBP resources on the ICF rather than PIP. Stressing the importance of theoretical foundations of knowledge, doctorate-awarded postgraduates leaned towards exploratory learning rather than training, further affirming their roles in the future of physiotherapy education in KSA.

Implementation Experiences

Neurological diagnoses with persistent complications such as deformities are managed conservatively by physiotherapy but may require corrective surgical intervention. This leads to children associating healthcare with negative experiences of pain, leading to the 'fear-avoidance model'. This is often the basis of which PPTs implement psychological interventions as they acknowledge and validate the children's negative experience (Asmundson et al., 2012). This aligns with PPTs expressing traits like sympathy, empathy, and compassion, which may have influenced their choice to work with children. Other purposes include supporting healthy coping mechanisms

and addressing children's expectations of physiotherapy. Psychosocial interventions such as social support (SS), motivational interviewing (MI), and effective communication (EC) were believed to be suitable for managing parental expectations as informal counselling as it is important to acknowledge parents understanding and expectations; however, this was not the aims of this study (Driver et al., 2019).

Participants were conflicted about the term 'psychological intervention' within physiotherapy practices. They believed the interventions they implemented were effective but did not explicitly acknowledge the importance of psychology. They did not identify the psychological nature of the interventions implemented despite identifying them as behavioural, which falls under psychology. This may be attributed to participants' familiarity with managing behavioural and social aspects of rehabilitation, which lead to indirect integration of PIP without explicit intent. This is a potential issue with labelling but not application. This aligns with the findings of Arvinen-Barrow et al. (2010). Descriptions of psychological interventions, strategies, and techniques were found to closely follow named approaches, and the implementation of these interventions was purposeful as well. For example, positive reinforcement (PR) and incentives were used to motivate children in PPP at clinic and home. Motivating children with praise and rewards increased their participation, which was perceived to improve their outcomes.

From a theoretical point of view, the success of using PR and similar interventions was attributed to the operant conditioning theory in psychology. Operant conditioning is a learning theory informed by the law of effect. The theory proposes that behaviour is influenced by its consequences, and if reinforced, it is likely to be repeated (Skinner, 1965). Furthermore, it was proposed by PPTs that PR and incentives may lose effectiveness over time due to factors like habituation and satiation or be directly associated and expected, which could be a disadvantage. This showed a good grasp of the theory underpinning the interventions used. However, not all interventions were as justified by theoretical foundations as previously stated.

Psychological interventions were more likely to be implemented if their effectiveness had been demonstrated by others, particularly experienced PPTs who selected interventions based on individual factors such as expertise, confidence, and intuition. In contrast, junior PPTs tended to rely on interventions passed down by their senior colleagues, which may be attributed to the principles of social learning theory (Bandura, 1977). Similar to the physiotherapists in Driver et al. (2019), it can be assumed that the physiotherapists went through a process of trial and error to establish which interventions were appropriate for their skills and knowledge.

Of the psychological interventions described, some resembled activity pacing (AP), exercise variation (EV), and goal setting (GS). Interestingly, graduate PPTs perceived these psychological interventions to be within the scope of physiotherapy due to their physical elements and similarities with traditional physiotherapy. These interventions were also described to be more easily integrated into physiotherapy practice than others like MI. PPTs only briefly mentioned Cognitive Behavioural Therapy (CBT), contrary to other studies which discussed its application in management of chronic fatigue and complex pain (Lee et al., 2002; White et al., 2011). This finding was unexpected as CBT is one of the most well-known psychological approaches and is commonly applied in physiotherapy to address pain, fear, and avoidance (Lee et al., 2002). However, PPTs valued elements of CBT, such as behavioural modification

and exposure therapy, and were guided by the knowledge they gained from learning CBT (Driver et al., 2017).

The International Classification of Functioning, Disability and Health (ICF) by World Health Organization (WHO) (2001) is a classification system which reflects the biopsychosocial model. It provides a framework for physiotherapists to assess and manage patients multidimensionally. Both PhD and MSc postgraduates have discussed how the ICF can aid PPTs in establishing a consistent understanding of patients. An additional advantage stated by PPTs is the ICF supported the inclusion of KSA's culture as cultural factors are included in the contextual factors of the ICF, in addition to personal factors. Using a family-friendly version of ICF was encouraged to emphasize the importance of communication between physiotherapists and parents (Demyati et al., 2013; Pretis et al., 2020). Similar to Driver et al. (2019) discussion on personalised approaches and their value in enhancing the therapeutic alliance, PPTs were aware of differences in personality traits and were able to incorporate these differences to enhance participation.

Learning and Training Needs

Based on the findings, PPTs had sufficient knowledge to support their application of psychological interventions but had learning needs fundamentally on the role of psychology within physiotherapy practice and related topics like rehabilitation in psychology. There was unanimous agreement on the irrelevance of the current content of psychology modules in undergraduate studies. A move towards aspects of psychology like cognition and behaviour was preferred, as well as integration of psychology within physiotherapy. Considering the taught modules were introductory and placed early in the educational programme, a reconsideration of its' placement and a change in content were encouraged. Overall, there is a need for learning of PIP interventions to bridge the gap between academic psychology modules and deliberate consideration and inclusion in practice.

Recommendations for Future Practice

Recommendations were made to educate and promote the biopsychosocial model and psychological interventions within physiotherapy, and to encourage collaboration between physiotherapists and clinical psychologists to present PIP resources to healthcare professionals (HCPs), patients, and parents. On a larger scale, collaboration between associations such as the Saudi Physical Therapy Association (SPTA) and the Saudi National Centre for Mental Health Promotion (NCMH) could serve as a foundation for designing educational activities on rehabilitation psychology. Further recommendations that could be implemented at a local level, given appropriate resources and training, include encouraging holistic patient-centred care and the implementation of the International Classification of Functioning, Disability and Health (ICF).

Study Strengths and Limitations

A strength of qualitative methods is the empowerment of the participants. The methods enabled participants to express their experiences and allowed the researcher to explore them. However, while the data generated by qualitative methods is rich, it is limited by the context and not as generalizable as data from quantitative studies. Another limitation was the potential for bias. Although participants were recruited from various platforms used by PPTs, the sample might have been biased, specifically the PPTs interested in the topic.

Conclusion

Qualitative data generated from focus groups were thematically analysed into three themes: knowledge, implementation, and future needs. To the researcher's knowledge, this study was the first to explore and provide valuable insights into paediatric physiotherapists' perspectives of knowledge of psychology, psychological interventions and PIP in KSA. While pediatric physiotherapists demonstrated a good understanding of psychologically informed physiotherapy practice and implemented a variety of psychological interventions, they often did not acknowledge the psychological elements involved. To address this gap, recommendations for undergraduate curriculum updates were made. Other recommendations include collaboration with clinical psychologists and professional associations to further enhance paediatric physiotherapy practice and lead to improved patient outcomes through holistic care and the application of the International Classification of Functioning, Disability and Health (ICF).

Future Research

Future research could explore further considerations of PIP in KSA including facilitators and barriers from the perspectives of physiotherapists, patients, families, educational and healthcare systems. This could also extend to MDT HCPs in rehabilitation. A future study could explore perceptions and considerations of PPTs before and after educational activities on PIP have been presented to measure their impact.

Author Contributions

All authors significantly contributed to the work reported, including conception, study design, execution, data acquisition, analysis, and interpretation. They actively participated in drafting, revising, or critically reviewing the manuscript, provided final approval of the version to be published, agreed on the journal submission, and accepted accountability for all aspects of the work.

Data Availability Statement

The authors will transparently provide the primary data underpinning the findings or conclusions of this article, without any unjustified reluctance. If need from editorial team.

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