PHYSIOTHERAPISTS' KNOWLEDGE, ATTITUDE AND BELIEFS OF BIOPSYCHOSOCIAL INTERVENTIONS IN NON-SPECIFIC CHRONIC LOW BACK PAIN - A CROSS-SECTIONAL SURVEY OF SOUTH-SOUTH NIGERIA

BY

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CERTIFICATION

This dissertation by ODIMBU, CHIAMAKA JANE is accepted in its present form as satisfying the dissertation requirement of the degree of Bachelor of Physiotherapy of the School of Basic Medical Sciences, College of Medical Sciences of the University of Benin.

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DEDICATION

I dedicate this work first and foremost to God Almighty, the source of all wisdom, strength, and grace. Without His guidance and unwavering mercy, this journey would not have been possible.

To the loving memory of my beloved parents, Late Mr. Odimbu Augustine Afamefuna and Late Mrs. Odimbu Juliet Ifeyinwa — your sacrifices, prayers, and dreams for me continue to light my path even in your absence. This achievement is a testament to the values you instilled in me and the love you gave so selflessly. May your souls continue to rest in perfect peace.

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ABSTRACT

Background: While the biopsychosocial (BPS) model is the recommended framework for the management of Non-specific chronic low back pain (NSCLBP), there is a paucity of study on the knowledge, attitude and beliefs of BPS model among physiotherapists in Nigeria.

Aim: This study investigated the knowledge, attitudes, and beliefs of physiotherapists in South-South Nigeria regarding BPS interventions for NSCLBP and to determine the influence of sociodemographic factors on these variables.

Methods: A cross-sectional survey design was employed, involving 80 licensed physiotherapists (46 male, 34 female). Data were collected via an online questionnaire comprising a self-developed knowledge assessment tool on BPS and the validated Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT). Descriptive statistics were used to summarize the data, and Chi-square tests were used to analyze associations between variables at $p < 0.05$.

Results: The findings revealed that all respondents (100%) agreed that psychological support, participation in return to work and social interaction are core components of BPS interventions. Respondents also demonstrated predominantly positive attitudes and beliefs aligned with the BPS model, acknowledging the influence of mental stress (85%) and coping with stress (91.3%). Gender was significantly associated with knowledge of patient self-management ($p=0.030$), educational level with beliefs about exercise for severe pain ($p=0.016$), and years of experience with knowledge of treatment standardization ($p=0.033$).

Conclusion: Physiotherapists in South-South Nigeria show a strong theoretical understanding and positive orientation towards the BPS model for managing NSCLBP. However, the influence of demographic factors on specific aspects of their knowledge and beliefs suggests a need for targeted continuing education. These findings can inform curriculum development and professional training to enhance the practical application of holistic, evidence-based LBP care across the region.

Keywords: Biopsychosocial Interventions, Non-Specific Chronic Low Back Pain, Knowledge, Attitudes and Beliefs.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Low Back Pain (LBP) can be defined as nociceptive, neuropathic, neuroplastic, non-specific pain or a combination thereof, which is felt at the posterior back between the lower border of the 12th rib and the inferior gluteal folds with or without radiating symptoms down one or both lower limbs lasting for at least 1 day (Ferreira et al., 2021). Non-Specific Chronic Low Back Pain (NSCLBP) is a term used when the aetiology of the pain cannot be attributed to a local or systemic disease (e.g. lumbar spondylosis, spondylolisthesis, ankylosing spondylosis etc) but can be closely linked to ergonomics and lifestyle factors with symptoms lasting for more than 12 weeks (Albazli et al., 2021; WHO, 2023).

LBP is a prevalent condition affecting millions of individuals worldwide, more commonly affecting females and older adults with significant social and economic implications. Global point prevalence of low back pain is approximately 12%, with a one-month prevalence of 23% and a one-year prevalence of 38% (Hoy et al., 2012; Oghumu et al., 2025). Lifetime prevalence is estimated at around 40% (Manchikanti et al., 2014). The incidence of LBP has trended upwards showing a 50% increase from 149.3 million to 223.5 million new low back pain cases between 1990 and 2019 (Wang et al., 2022). The global prevalence of NSCLBP ranges from 8.1% in Singaporeans to 23% in Europe (Balagué et al., 2012; Ge et al., 2022). Approximately 11–12% of those with Non-Specific Low Back Pain (NSLBP) are disabled by it (Balagué et al., 2012).

The point prevalence of LBP in Nigeria varies across different studies and populations and ranges from 14.7% to 39%. The 12-month prevalence of LBP in Nigeria also shows variability

and ranges from 32.5% to 73.53% across different occupational groups (Bello & Adebayo, 2017). Lifetime prevalence rates of LBP in Nigeria are notably high ranging from 47% to 79% (Awosan et al., 2017; Ogunsanya, 2020; Ijabadeniyi& Fasae, 2023).

LBP poses major economic implications. The USA alone spent an aggregate of 315 billion USD on individuals receiving treatment for spinal conditions between 2012 and 2014 (Birabi et al., 2014). Low back pain has also been linked to significant losses in productivity of the working population (Birabi et al., 2014). In Southern Nigeria, the estimated average direct cost of managing LBP over a period ranging from 2 to 52 weeks in patients seeking care in a government hospital was about ₦196,200 (approximately US$1,226), while those in private hospitals faced costs as high as ₦781,500 (around US$4,884) for similar management (Birabi et al., 2014). These costs cover major components of care such as radiographic and laboratory investigations, consultations, in-patient admission, physiotherapy, and prescribed medications. Compared to Nigeria's estimated per capita income of roughly US$2,748, the cost burden of LBP seems unaffordable for many citizens (Birabi et al., 2014). Patients experiencing NSCLBP are largely responsible for the substantial costs associated with LBP (Dixit, 2021).

Chronic, persistent, and at times disabling LBP develops in 7% to 10% of patients following an acute episode of LBP (Waddel, 2004). The chronicity of low back pain is influenced by a range of biophysical, psychological, and social factors, and a precise pathoanatomical diagnosis with identification of the pain generator cannot be established in 85% of patients (Waddel, 2004). Thus, the biopsychological approach developed by Waddel in 2004 is important in assessing and managing NSCLBP (Waddel, 2004). In this way, the biopsychosocial approach addresses not only the biophysical aspects of pain but also considers the psychological and social aspects of NSCLBP (Ojala et al., 2016).

Growing evidence suggests that psychosocial factors are significant contributors to the progression and manifestation of NSCLBP (Ojala et al., 2016). This understanding has consequently led to the widespread adoption of the biopsychosocial model as the most comprehensive paradigm for the assessment and management of this condition (Ojala et al., 2016). Physiotherapy, when guided by this framework, utilizes psychological interventions, physical therapy techniques, and social support mechanisms to address the multiple facets of NSCLBP (Jurak et al., 2023). The efficacy of this integrated approach is substantiated by considerable research demonstrating improvements in pain, disability, and overall well-being (Jurak et al., 2023; Miki et al., 2023; Klem et al., 2024).

Central to the biopsychosocial approach are psychological interventions targeting the cognitive and emotional factors intertwined with chronic pain and these interventions include Cognitive Behavioural Therapy (CBT), Cognitive Functional Therapy (CFT), Motivational Interviewing (MI), pain education, and cognitive restructuring (Hrkać et al., 2022; Jurak et al., 2023; Klem et al., 2024). Complementing these, physical therapy techniques within the biopsychosocial framework address the biophysical aspects of pain while remaining sensitive to psychological and social influences. Common modalities include exercise therapy, graded activity, behavioural therapy, manual therapy, and movement re-education (Hrkać et al., 2022; Miki et al., 2023).

The biopsychosocial model also acknowledges the crucial role of social support by addressing pertinent environmental and relational factors. This is achieved through mechanisms such as fostering a strong therapeutic relationship, promoting patient-centred care, utilizing support groups and peer interaction, and implementing workplace and/or community interventions (Cowell et al., 2021; Ceulemans et al., 2024).

Physiotherapists' utilization of biopsychosocial interventions in the management of NSCLBP remains low particularly in rural and low-resource settings. Lack of sufficient training and knowledge on the biopsychosocial model appears to be a significant barrier to its adoption among physiotherapists in Nigeria (Godfrey et al., 2019; Godfrey et al., 2020; Ganiyu et al., 2025).

1.2 Statement of the Problem

Physiotherapists are central to the management of LBP and are uniquely positioned to address psychosocial factors due to the nature and frequency of their interactions with patients (Tracey, 2008; Lafferty et al., 2008). Research conducted primarily in high-income countries such as Australia, the United Kingdom, the United States, and Canada indicates that physiotherapists generally acknowledge the importance of the biopsychosocial model and the psychological dimensions of pain (Francis et al., 2000; Arvinen-Barrow et al., 2007; Hamson-Utley et al., 2008; Nielsen et al., 2014; Driver et al., 2019). These studies also show that physiotherapists report utilizing certain psychosocial strategies, particularly those related to education, goal setting, activity pacing, and positive reinforcement (Francis et al., 2000; Ninedek& Kolt, 2000; Lafferty et al., 2008; Beissner et al., 2009; Driver et al., 2019).

However, the application of more complex interventions like specific CBT techniques (e.g., cognitive restructuring), MI, or specific relaxation protocols appears less frequent (Francis et al., 2000; Beissner et al., 2009; Arvinen-Barrow et al., 2010; Driver et al., 2019). Barriers frequently cited by physiotherapists in these settings include insufficient knowledge and skills, lack of confidence, time constraints, reimbursement issues, and uncertainty regarding scope of practice (Jevon & Johnston, 2003; Arvinen-Barrow et al., 2007; Beissner et al., 2009; Nielsen et al., 2014; Driver et al., 2019). Nevertheless, many physiotherapists express a desire for further training in

psychosocial approaches (Jevon & Johnston, 2003; Arvinen-Barrow et al., 2007; Driver et al., 2019).

Despite the growing body of evidence on the efficacy of biopsychosocial interventions globally, a study by Danazumi et al. (2025) found that less than 2% of physiotherapists practicing in Nigeria utilized biopsychosocial interventions like CBT in routine patient treatment and most of them expressed the desire to learn from experts. However, to the best of this researcher's knowledge, there is a paucity of research assessing the knowledge, attitudes and beliefs of psychosocial interventions in the management of NSCLBP among physiotherapists in Nigeria.

1.3 Research Questions

This study sought to answer the following questions:

i. What is the knowledge on biopsychosocial interventions in the management of NSCLBP among physiotherapists practicing in South-South Nigeria?
ii. What are the attitudes of physiotherapists towards biopsychosocial interventions for the management of NSCLBP?
iii. What are the beliefs of physiotherapists towards biopsychosocial interventions in the management of NSCLBP?
iv. What is the association between physiotherapists' knowledge, attitudes and beliefs towards biopsychosocial interventions in the management of NSCLBP?
v. What is the association between sociodemographic characteristics (gender, rank, educational level, years of experience and area of specialty) and physiotherapists' knowledge, attitudes and beliefs towards biopsychosocial interventions in the management of NSCLBP?

1.4 Aim of the Study

The aim of this study was to determine the knowledge, attitudes and beliefs towards biopsychosocial interventions in the management of NSCLBP among physiotherapists practicing in South-South Nigeria.

1.4.1 Specific Objectives

The specific objectives of this study were:

i. To determine the knowledge on biopsychosocial interventions in the management of NSCLBP among physiotherapists practicing in South-South Nigeria.
ii. To determine the attitudes towards biopsychosocial interventions in the management of NSCLBP among physiotherapists practicing in South-South Nigeria.
iii. To determine the beliefs towards biopsychosocial interventions in the management of NSCLBP among physiotherapists practicing in South-South Nigeria.
iv. To determine the relationship between knowledge, attitudes and beliefs towards biopsychosocial interventions in the management of NSCLBP among physiotherapists practicing in South-South Nigeria.
v. To determine the influence of sociodemographic (gender, rank, educational level, years of experience and area of specialty) on physiotherapists' knowledge, attitudes and beliefs towards biopsychosocial interventions for the management of NSCLBP.

1.5 Hypothesis

1.5.1 Main Hypothesis

There would be no significant association between sociodemographic (gender, rank, educational level, years of experience and area of specialty) and each of physiotherapists' knowledge, attitudes and beliefs towards biopsychosocial interventions in the management of NSCLBP as

well as there would be no significant association between physiotherapists' knowledge, attitudes and beliefs towards biopsychosocial interventions in the management of NSCLBP.

1.5.2 Sub Hypotheses

i. There would be no significant association between gender and physiotherapists' knowledge on biopsychosocial interventions in the management of NSCLBP.

ii. There would be no significant association between gender and physiotherapists' attitudes towards biopsychosocial interventions in the management of NSCLBP.

iii. There would be no significant association between gender and physiotherapists' beliefs towards biopsychosocial interventions in the management of NSCLBP.

iv. There would be no significant association between rank and physiotherapists' knowledge on biopsychosocial interventions in the management of NSCLBP.

v. There would be no significant association between rank and physiotherapists' attitudes towards biopsychosocial interventions in the management of NSCLBP.

vi. There would be no significant association between rank and physiotherapists' beliefs towards biopsychosocial interventions in the management of NSCLBP.

vii. There would be no significant association between educational level and physiotherapists' knowledge on biopsychosocial interventions in the management of NSCLBP.

viii. There would be no significant association between educational level and physiotherapists' attitudes towards biopsychosocial interventions in the management of NSCLBP.

ix. There would be no significant association between educational level and physiotherapists' beliefs towards biopsychosocial interventions in the management of NSCLBP.

x. There would be no significant association between years of experience and physiotherapists' knowledge on biopsychosocial interventions in the management of NSCLBP.

xi. There would be no significant association between years of experience and physiotherapists' attitudes towards biopsychosocial interventions in the management of NSCLBP.

xii. There would be no significant association between years of experience and physiotherapists' beliefs towards biopsychosocial interventions in the management of NSCLBP.

xiii. There would be no significant association between area of specialty and physiotherapists' knowledge on biopsychosocial interventions in the management of NSCLBP.

xiv. There would be no significant association between area of specialty and physiotherapists' attitudes towards biopsychosocial interventions in the management of NSCLBP.

xv. There would be no significant association between area of specialty and physiotherapists' beliefs towards biopsychosocial interventions in the management of NSCLBP.

xvi. There would be no significant association between physiotherapists' knowledge and attitudes towards biopsychosocial interventions in the management of NSCLBP.

xvii. There would be no significant association between physiotherapists' knowledge and beliefs towards biopsychosocial interventions in the management of NSCLBP.

1.6 Significance/Justification of Study

For physiotherapy educators, the findings from this study may provide crucial data on the current state of biopsychosocial practice and perceived training needs among Nigerian physiotherapists. This information can then inform the review and development of both undergraduate and postgraduate physiotherapy curricula in Nigeria. It may highlight specific areas where training may be deficient (e.g., specific CBT techniques, MI, managing fear-avoidance beliefs) and may guide the integration of more comprehensive, culturally relevant, and practical training in biopsychosocial principles and psychosocial skills relevant to the physiotherapists and physiotherapy students in Nigeria. This can lead to graduates who would be better equipped and more confident in delivering holistic NSCLBP care.

For practicing physiotherapists, this study may provide valuable insights into the practices and perspectives of physiotherapists practicing in Nigeria regarding biopsychosocial model in the management of NSCLBP. This study may empower physiotherapists and professional bodies (like the Nigeria Society of Physiotherapy) to advocate for necessary changes, improved resources, relevant Continuing Professional Development (CPD) opportunities, and better support systems. Increased awareness and potentially enhanced competence can improve clinical decision-making and patient outcomes.

For researchers, this study may address a gap in the literature by adding to the evidence on the biopsychosocial approach to NSCLBP management among physiotherapists practicing in Nigeria. It may serve as a baseline for future research, such as evaluating the effectiveness of tailored educational interventions, exploring specific barriers in greater depth, developing culturally adapted assessment tools or interventions, or investigating patient perspectives on psychosocial care. Furthermore, it may enable valuable cross-cultural comparisons, contributing to a richer

global understanding of how the biopsychosocial model is implemented in diverse healthcare settings in the management of NSCLBP.

NSCLBP Patients in Nigeria may stand to benefit most from the findings of this study. By informing improvements in physiotherapy education and clinical practice, this research may ensure that patients receive more holistic, evidence-based, and patient-centred care. Enhanced physiotherapist skills in addressing psychosocial factors (such as pain beliefs, fear-avoidance, coping strategies, depression, and anxiety) may lead to improved pain management, reduced disability, better adherence to rehabilitation, increased self-efficacy, enhanced functional outcomes and an overall improvement in quality of life in NSCLBP patients. Patients may feel better understood and more empowered in managing their condition as a result of the practice changes informed by this study.

1.7 Scope and Delimitation

This study was delimited to licensed physiotherapists practicing within various hospitals and health facilities in South-South Nigeria. It may also be delimited to a self-developed knowledge questionnaire to assess physiotherapists' knowledge on biopsychosocial intervention in the management of NSCLBP and Pain Attitudes and Beliefs Scale for Physiotherapist questionnaire to assess physiotherapists' attitudes and beliefs towards biopsychosocial intervention in the management of NSCLBP.

1.8 Definition of Terms/Operational Definition of Terms

Biopsychosocial Model/Framework: An approach to understanding health and illness that considers the complex interplay of biological (physical), psychological (thoughts, emotions, behaviours), and social (environmental, cultural, economic) factors (Ojala et al., 2016).

Chronic Low Back Pain: Low back pain lasting for more than 12 weeks (WHO, 2023).

Non-Specific Chronic Low Back Pain: Low back pain whose cause cannot be attributed to a recognizable, known specific pathology (e.g., infection, tumour, osteoporosis, fracture, structural deformity, inflammatory disorder, radicular syndrome, or cauda equina syndrome). It is sometimes linked to ergonomics and lifestyle factors and lasting for more than 12 weeks (WHO, 2023).

1.9 List of Abbreviations

BPS: Biopsychosocial

CBT: Cognitive Behavioural Therapy

CPD: Continuing Professional Development

GBD: Global Burden of Disease

LBP: Low Back Pain

NSCLBP: Non-Specific Chronic Low Back Pain

MBSR: Mindfulness-Based Stress Reduction

MI: Motivational Interviewing

NSAIDs: Non-steroidal Anti-inflammatory Drugs

USA: United States of America

USD: United States Dollar

WHO: World Health Organization

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of Non-Specific Chronic Low Back Pain

NSLBP is defined as pain, muscle tension, or stiffness localized below the costal margin and above the inferior gluteal folds, which may or may not be accompanied by leg pain (sciatica), and for which no specific underlying pathological cause can be identified (Igwesi-Chidobe et al., 2017). This type of LBP accounts for the vast majority of cases, estimated to be around 90% (Kahere& Ginindza, 2022). The non-specific nature of this pain often leads to challenges in diagnosis and management, potentially resulting in unnecessary radiological and laboratory investigations, delayed diagnosis, and improper treatment, which can contribute to the progression of LBP to a chronic state (Kahere& Ginindza, 2020). When NSLBP persists for a duration of 12 weeks or more, it is classified as NSCLBP (Igwesi-Chidobe et al., 2017; Oghumu et al., 2025). This chronic form is responsible for the majority of the substantial costs and disability associated with LBP globally (Igwesi-Chidobe et al., 2017).

2.1.1 Epidemiology of Non-Specific Chronic Low Back Pain

Globally, LBP is a pervasive health issue and a leading cause of disability, affecting individuals across all age groups and imposing a significant socioeconomic burden (Kahere& Ginindza, 2020, 2022). The years lived with disability (YLDs) attributable to LBP saw a substantial increase of 17.2% between 2005 and 2015 (Kahere& Ginindza, 2020). In 2015, activity-limiting LBP had a global point prevalence of 7.3%, which translates to approximately 540 million people affected at any given time (Kahere& Ginindza, 2020). Musculoskeletal disorders, with LBP being a major contributor, account for a significant portion of disability-adjusted life years

(DALYs); specifically, LBP contributes to 37% of DALYs related to these conditions (Emorinken et al., 2023; Lind et al., 2025).

The prevalence of Chronic Low Back Pain (CLBP) globally is estimated to be around 19.1% (Kahere& Ginindza, 2022), and this figure is projected to rise, particularly in low- and middle-income countries (LMICs) (Kahere& Ginindza, 2022; Kahere et al., 2022). A systematic review by Meucci et al. reported CLBP prevalence rates of 4.2% among individuals aged 24 to 39 years and a significantly higher 19.6% among adults aged 20 to 59 years (Kahere& Ginindza, 2020). Another cross-sectional study found a prevalence rate for NSCLBP of 15.4% among adults (Iizuka et al., n.d.; Kahere& Ginindza, 2020). The economic impact is staggering, with annual direct costs estimated at US$100 billion in the United States and between €2 billion and €4 billion in Europe (Kahere& Ginindza, 2020). Critically, over 90% of this substantial socioeconomic burden is attributed to the relatively small percentage of LBP cases that transition to chronicity (Kahere& Ginindza, 2020). The wide range in reported prevalence rates may, in part, be due to variations in study methodologies, definitions of LBP, and the thoroughness of exclusion criteria for specific pathologies across different epidemiological studies (Emorinken et al., 2023).

In Africa, LBP is a significant and growing public health concern (Emorinken et al., 2023). A systematic review encompassing studies from the continent reported a lifetime prevalence of LBP of 47%, an annual prevalence of 57%, and a point prevalence of 39% (Kahere& Ginindza, 2020, 2022). While specific data for NSCLBP across the entire continent are less defined, studies in Sub-Saharan Africa (SSA) indicate that CLBP prevalence in the general population ranges from 18.1% to 28.2%, and among patients already experiencing LBP, the prevalence of chronicity is even higher, ranging from 22.2% to 59.1% (Kahere et al., 2022). The burden of

CLBP is anticipated to escalate in LMICs, including many African nations, due to factors such as aging populations and healthcare systems that are often primarily oriented towards managing communicable diseases, leaving fewer resources for non-communicable conditions like CLBP (Kahere& Ginindza, 2022; Kahere et al., 2022). This existing healthcare focus may lead to an under-recognition and under-resourcing of NSCLBP management, despite its substantial and growing impact. Specific prevalence data for West Africa as a distinct region are limited in the available literature, though data from Nigeria, a prominent West African nation, indicates a substantial LBP burden (Emorinken et al., 2023). Research in rural areas of SSA, where a large proportion of the population resides, remains particularly sparse (Emorinken et al., 2023).

Nigeria appears to carry one of the heaviest burdens of LBP globally (Igwesi-Chidobe et al., 2017). The 1-year prevalence of LBP in Nigeria is reported to range from 40% to 85%, a figure notably higher than the 14% to 51% reported in some other African countries (Igwesi-Chidobe et al., 2017). The point prevalence of LBP in Nigeria, estimated at 33% to 40%, also surpasses that of several high-income countries (Igwesi-Chidobe et al., 2017). A critical aspect of LBP epidemiology in Nigeria is the disproportionately greater burden observed in rural populations. The 1-year LBP prevalence in rural Nigeria ranges from 70% to 85%, significantly higher than the 39% found in urban areas (Igwesi-Chidobe et al., 2017). This marked rural-urban disparity likely reflects a confluence of factors beyond just occupational biomechanics, including socioeconomic determinants such as limited access to healthcare, lower health literacy, and differing cultural beliefs about pain and work, which are themselves risk factors for poor LBP outcomes (Igwesi-Chidobe et al., 2017). A study conducted in a rheumatology clinic in South-South Nigeria found an LBP frequency of 20.2% among attending patients; importantly, 79.9% of these LBP cases were chronic, defined as persisting for more than 12 weeks (Emorinken et al.,

2023). Another study in South-East Nigeria reported a similarly high chronic LBP rate of 73.1% (Emorinken et al., 2023). In Kano, Northern Nigeria, occupation-based LBP prevalence among those aged 19 to 64 years was estimated to be between 32.5% and 73.5% (Abdullahi et al., 2022). Given that NSLBP constitutes approximately 90% of all LBP cases, these high prevalence and chronicity rate for general LBP strongly suggest a substantial burden of NSCLBP in Nigeria.

The natural history of LBP indicates that while many acute episodes resolve relatively quickly, recurrence and progression to chronicity are common. Most episodes of acute LBP resolve within 2 to 6 weeks (Kahere& Ginindza, 2020). However, a significant proportion, estimated between 10% and 40% of individuals with LBP, will experience recurrent episodes and may develop CLBP (Kahere& Ginindza, 2022). Some sources suggest that only a small percentage progresses to persistent, disabling chronic pain (Kahere& Ginindza, 2020), yet other data indicate a less favourable prognosis. One year after the initial onset of LBP, 65% to 71% of patients still report experiencing pain, leading to the view that LBP is predominantly a chronic or recurrent condition for many (Igwesi-Chidobe et al., 2017). Recurrence rates are notably high; within a 12-month period, over 60% of LBP patients attending general practices experienced relapses of pain (Hides et al., 2001; Burdorf & Jansen, 2006). In an occupational cohort study, annual recurrence rates of LBP varied between 64% and 77% (Burdorf & Jansen, 2006).

Furthermore, Croft et al. (n.d.) reported that only 25% of patients presenting with a new episode of LBP had completely recovered from both pain and disability within 12 months of their initial consultation (Burdorf & Jansen, 2006). The prognosis after an acute LBP episode is often not entirely favourable, with estimates suggesting that 60% to 80% of patients will experience recurrence or persistence of their LBP complaints (Dunn & Croft, 2004; National Institute for Health and Care Excellence, 2016).

2.2 Biophysical, Psychological and Social Factors in Non-specific Chronic Low Back Pain

Biophysical factors encompass a range of individual characteristics, lifestyle habits, and physical exposures. Anthropometric variables such as age, sex, and Body Mass Index (BMI) have been shown to correlate significantly with components of NSLBP (Robinault et al., 2023). While LBP can affect any age group, peak incidence often occurs in middle to older age; for instance, one study in South-South Nigeria reported a peak age incidence of 51–60 years (Emorinken et al., 2023). Some Nigerian studies indicate a higher prevalence of LBP in females (61.4%) compared to males (38.6%) (Emorinken et al., 2023), potentially linked to factors such as pregnancy and childbirth, or engagement in physically demanding tasks due to socioeconomic pressures in rural settings (Emorinken et al., 2023).

Obesity or excess weight is a well-recognized risk factor, associated with an increased odds ratio (OR) of 1.4 for CLBP prevalence in a meta-analysis, and is linked to increased mechanical stress on the lower back (Robson et al., 2019; Emorinken et al., 2023; Kahere et al., 2022). Smoking is another significant lifestyle factor, consistently associated with CLBP incidence, severity, and persistence, exhibiting a dose-response relationship (Alshuaibi&Alsulaiman, 2025; Robson et al., 2019; Kahere et al., 2022). Proposed mechanisms include smoking-induced vascular changes, altered pain processing, and direct effects on intervertebral disc degeneration (Alshuaibi&Alsulaiman, 2025). Conversely, CLBP itself, with its associated stress and disability, might influence smoking behaviour, suggesting a potential bidirectional relationship that complicates management. Physical inactivity and sedentary behaviour also contribute to LBP (Robson et al., 2019; Emorinken et al., 2023; Kahere et al., 2022).

Occupational factors are frequently cited. Heavy lifting, prolonged sitting, and poor posture are common job-related contributors identified in studies, including in South-South Nigeria where work-related factors were the most prevalent (Emorinken et al., 2023). Specific activities like prolonged standing, bending, and long years of service have been implicated in various occupations in Sub-Saharan Africa (Kahere et al., 2022).

Furthermore, exposure to hard physical work, such as lifting, carrying, or other physically strenuous tasks, in early working life has been associated with a higher intensity of LBP later in life, even among those who subsequently transition to sedentary jobs (Bláfoss et al., 2020). However, the relationship between occupational biomechanical factors and CLBP disability is complex. A study in rural Nigeria found that while such occupational factors might initiate LBP, they did not predict the level of CLBP-related disability, suggesting that psychosocial factors may play a more dominant role in the progression to disabling chronic pain in such contexts (Igwesi-Chidobe et al., 2017). This apparent paradox underscores that even in populations with high physical work demands, addressing only ergonomic factors may be insufficient to tackle disability if psychosocial contributors are not also managed.

Other biophysical factors include a history of previous back injury or trauma (Emorinken et al., 2023) and degenerative conditions like spondylosis, which are common findings in LBP patients, though not always the primary driver of pain in NSCLBP (Casiano et al., 2019; Emorinken et al., 2023). Genetic predisposition also plays a role, with studies indicating a significant heritable component to LBP and a shared genetic influence with lumbar disc degeneration (Livshits et al., 2011). Comorbidities such as hypertension, diabetes mellitus, and peptic ulcer disease are frequently observed in individuals with CLBP in SSA (Kahere et al., 2022), with hypertension being a notable comorbidity in one Nigerian study (Emorinken et al., 2023).

Psychological factors are increasingly recognized as critical determinants in the experience of CLBP and its transition from acute to chronic states, as well as in the persistence of disability. Fear-avoidance beliefs (FAB), which involve the fear that activity or movement will cause pain or re-injury, leading to avoidance behaviour, are strongly associated with poor long-term prognosis and increased disability (Alhowimel et al., 2018; Igwesi-Chidobe et al., 2017; Rabiei et al., 2025). In rural Nigeria, FAB significantly predicted both self-reported disability (β=0.198) and performance-based disability (β=0.189) (Igwesi-Chidobe et al., 2017). Similarly, kinesiophobia (fear of movement) is higher in non-recovered LBP patients (Alhowimel et al., 2018).

Pain catastrophizing, characterized by rumination, magnification of pain, and feelings of helplessness, is another potent psychological factor linked to poor outcomes and disability (Alhowimel et al., 2018; Igwesi-Chidobe et al., 2017; Rabiei et al., 2025). It was a significant predictor of self-reported disability in rural Nigeria (β=0.210) (Igwesi-Chidobe et al., 2017). Anxiety and depression are commonly comorbid with CLBP and contribute to functional disability and a reduced quality of life (Alhowimel et al., 2018; Igwesi-Chidobe et al., 2017; Rabiei et al., 2025). Anxiety predicted self-reported disability in rural Nigerians (β=0.154) (Igwesi-Chidobe et al., 2017). Illness perceptions, which encompass an individual's beliefs and understanding of their condition, significantly predict disability in CLBP (Igwesi-Chidobe et al., 2017). In rural Nigeria, illness perceptions were strong predictors for both self-reported (β=0.289) and performance-based (β=0.366) disability, with "illness concern" emerging as a particularly salient dimension (Igwesi-Chidobe et al., 2017).

Low self-efficacy, or a lack of belief in one's ability to manage pain or perform activities, also predicts higher pain-related disability (Alhowimel et al., 2018). Coping strategies are crucial;

maladaptive coping, such as catastrophizing, is linked to increased disability (Igwesi-Chidobe et al., 2017), while less frequent use of adaptive strategies like diverting attention has been found to predict longer periods of sick leave (Pilut et al., 2022).

These psychosocial risk factors are often collectively referred to as yellow flags, signalling potential obstacles to recovery and an increased risk of chronicity (Knoop et al., 2021; Physiopedia, 2024; Leslie et al., 2025). More severe psychological issues, such as clinical depression, personality disorders, post-traumatic stress disorder, or substance abuse, are categorized as orange flags, indicating the need for specialist mental health input alongside LBP management (Knoop et al., 2021; Physiopedia, 2023; Leslie et al., 2025). While pain intensity is a primary symptom, high levels of pain also act as a psychological stressor and are predictive of disability (Igwesi-Chidobe et al., 2017). The flag systems provide a practical framework for clinicians to identify these varied psychosocial and contextual risk factors, translating complex concepts into more tangible indicators for assessment and stratified care (Physiopedia, 2024).

Social factors create the broader context in which biophysical and psychological elements operate, significantly influencing an individual's pain experience, coping mechanisms, and engagement with treatment. Social support plays a complex role; while lack of social support was significantly associated with CLBP and predicted performance-based disability in rural Nigeria (β=0.290) (Igwesi-Chidobe et al., 2017; Kahere et al., 2022). The same study noted that social support was negatively associated with self-reported disability as measured by the WHODAS, and hypothesized that increased support might sometimes be a consequence of mobility limitation or could even be detrimental if it fosters over-dependence (Igwesi-Chidobe et al., 2017).

Socioeconomic status (SES) and educational level are important social determinants. Low SES and lower educational attainment are associated with an increased prevalence of LBP/CLBP and can influence access to appropriate care and the types of treatment received (Dunn & Croft, 2004; Emorinken et al., 2023; Kahere et al., 2022; Mathieu et al., 2024). Individuals with lower SES may face greater risks of receiving non-guideline concordant care, such as premature MRI prescriptions or over-reliance on opioids before conservative treatments are trialled (Mathieu et al., 2024). Lack of formal education, leading to poor health literacy, was associated with CLBP in a Ghanaian study (Kahere et al., 2022). The work environment, beyond physical demands, encompasses psychosocial aspects.

Blue flags refer to an individual's perceptions about the relationship between their work and health, such as beliefs that work is harmful, low job satisfaction, poor support from supervisors or colleagues, or high perceived job stress (Knoop et al., 2021; Physiopedia, 2023, 2024; Leslie et al., 2025). Black flags denote broader systemic or contextual obstacles to recovery, including legislative issues, insurance claim processes, unhelpful beliefs propagated by family or media, or social isolation from the workforce (Knoop et al., 2021; Physiopedia, 2023, 2024; Leslie et al., 2025).

Perceived job stress was identified as a contributing factor for CLBP among truck drivers in Ethiopia (Kahere et al., 2022). However, a systematic review by Jahn et al. (2024) found no definitive association between several occupational psychosocial exposures (like job control, demand, support) and CLBP, though the authors cautioned that the quality of available evidence was very low. Cultural beliefs significantly shape illness perceptions and health behaviours. Maladaptive beliefs and certain health practices can reinforce CLBP, particularly in LMICs (Igwesi-Chidobe et al., 2017). For instance, attributing CLBP to spiritual causes was associated

with higher self-reported disability in rural Nigeria (Igwesi-Chidobe et al., 2017). Such culturally specific factors highlight the need for BPS interventions to be contextually sensitive and adapted to local illness narratives and beliefs about causation. Access to healthcare, a critical societal factor, is often limited in rural African contexts, which can exacerbate the consequences of LBP (Igwesi-Chidobe et al., 2017).

The interplay between these biophysical, psychological, and social factors is complex and central to the understanding of NSCLBP. It is increasingly evident that psychosocial factors are often more influential than purely biomechanical factors in explaining the persistence of CLBP and, particularly, the level of associated disability, especially in contexts such as rural Nigeria (Igwesi-Chidobe et al., 2017). This finding often contrasts with traditional biomedical models that prioritize the identification and treatment of physical pathology. The BPS model explicitly acknowledges this interaction, proposing that cognitive, emotional, psychological, behavioural, physical, and social factors dynamically interact to perpetuate the pain experience (Igwesi-Chidobe et al., 2017). Recognizing this multifactorial nature is fundamental to moving away from a reductionist view of pain towards a more holistic and ultimately more effective management strategy for NSCLBP.

2.3 Biopsychosocial Approach Utilized by Physiotherapists in Non-Specific Chronic Low Back Pain Management

Historically, LBP management was predominantly guided by a biomedical model, which emphasizes the identification and treatment of specific pathoanatomical causes, such as structural damage or identifiable lesions (Igwesi-Chidobe et al., 2017; Kahere et al., 2022; Mescouto, 2023). However, given that approximately 90% of LBP cases are non-specific, meaning no clear structural cause can be found, the utility of a strictly biomedical approach is inherently limited

for the majority of LBP sufferers (Igwesi-Chidobe et al., 2017; Kahere et al., 2022). This limitation paved the way for the development and increasing advocacy of the BPS model. The BPS model posits that pain, particularly chronic pain, is a complex experience arising from the dynamic interplay of biological (e.g., tissue pathology, neurophysiological processes), psychological (e.g., thoughts, emotions, behaviours, beliefs, coping strategies), and social (e.g., cultural factors, socioeconomic status, social support, work environment) factors (Igwesi-Chidobe et al., 2017). Current international clinical practice guidelines for LBP widely recommend the adoption of a BPS model of care (Parker, 2007; Adje et al., 2022).

In physiotherapy, the BPS approach translates into a holistic, patient-centred intervention strategy that acknowledges and addresses the biological, psychological, and social dimensions of an individual's health and well-being, and their interdependence in the context of NSCLBP (George, 2008; Gervais-Hupé et al., 2023). This approach moves beyond a purely structural diagnosis to consider the individual's unique experience of pain, including their beliefs about their condition, emotional responses, coping behaviours, and their broader social and environmental context (Igwesi-Chidobe et al., 2017; Mescouto, 2023; Mathieu et al., 2024). A core aim is to restore normal activity levels and, crucially, to empower patients with effective self-management strategies, thereby reducing reliance on passive treatments and fostering an internal locus of control (George, 2008; Adje et al., 2022).

The BPS framework in physiotherapy recognizes that while biological factors (e.g., sensitized tissues, movement dysfunctions) are relevant, their contribution to ongoing pain and disability is often maintained or amplified by psychosocial distress and maladaptive illness behaviours (George, 2008). Consequently, a strong therapeutic alliance, characterized by mutual decision-making and collaborative goal-setting between the physiotherapist and the patient, is a

cornerstone of this approach (George, 2008; Driver et al., 2020). It is important to note that the biomedical component of management is not discarded but rather incorporated within the broader BPS framework. Physiotherapists continue to use their biomechanical assessment and treatment skills, but these are integrated with psychological and social considerations to address the whole person.

Key components of BPS interventions delivered by physiotherapists for NSCLBP include:

Pain and Patient Education: This is aimed at helping patients understand the neurophysiology of their pain, especially the mechanisms of chronic pain and the nervous system's role in its persistence. The goal is to reframe the patient's interpretation of pain away from a simple indicator of tissue damage, thereby reducing fear and supporting desensitization (George, 2008; Adje et al., 2022; Danazumi et al., 2025). Effective education enhances understanding, addresses maladaptive beliefs, and empowers patients with information on healthy behaviours and self-management (De Smedt et al., 2024; Grande-Alonso et al., 2024; Hendrick et al., 2024).

Therapeutic Exercise and Physical Interventions: This involves structured physical activity designed to improve strength, flexibility, motor control, and overall function, which in turn helps reduce pain (George, 2008; De Smedt et al., 2024; Grande-Alonso et al., 2024). Interventions can include motor control exercises for deep spinal stabilizers, general aerobic conditioning, and manual therapy techniques (e.g., spinal mobilization) for symptom modulation (George, 2008; Grande-Alonso et al., 2024). These physical interventions are delivered within the broader BPS framework to improve function, reduce fear of movement, and promote desensitization to physical exertion (George, 2008).

Cognitive Behavioural Therapy (CBT): CBT when integrated with physiotherapy has been shown to lead to greater improvements in pain, disability, and psychological outcomes compared

to physiotherapy alone (Ferreira et al., 2022; Yang et al., 2022; Chandran et al., 2024). This dual approach effectively addresses both the psychological and physical aspects of pain, helping to reduce pain-related disability, fear-avoidance behaviours, catastrophizing, anxiety, and depression (Ogunbiyi et al., 2020; Ferreira et al., 2022; Yang et al., 2022). Techniques from CBT, as well as Acceptance and Commitment Therapy (ACT), are used to help patients develop healthier coping strategies (George, 2008; Ramm et al., 2022; Gervais-Hupé et al., 2023; De Smedt et al., 2024). A key behavioural strategy within this framework is graded exposure or graded activity, which involves systematically reintroducing feared or avoided activities to reduce fear, build confidence, and promote adaptive learning (George, 2008; Baldew et al., 2013). These strategies are employed to identify and modify unhelpful thoughts (e.g., catastrophizing), negative beliefs (e.g., fear-avoidance), and maladaptive behaviours (e.g., activity avoidance) that contribute to disability (George, 2008).

Self-Management and Empowerment: Physiotherapist also plays a role in empowering the patient to take an active role in managing their condition. This is achieved by enhancing their internal locus of control and self-efficacy through collaborative goal-setting, shared decision-making, and equipping them with practical self-management strategies for daily life (George, 2008; Driver et al., 2020; Adje et al., 2022). The focus is on reducing reliance on passive treatments and fostering long-term independence (De Smedt et al., 2024; Naidoo et al., 2024; Hendrick et al., 2024).

Social and Occupational Components: Physiotherapy within the BPS model acknowledges that a patient's social context significantly impacts their experience of pain and disability. Interventions are tailored to address work participation, involve family or peers to build a supportive environment, and set realistic, patient-centred goals related to social and occupational

function to aid recovery and reduce disability (Ramm et al., 2022; De Smedt et al., 2024; Hendrick et al., 2024).

Stratified Care Model: This is an approach to implementing BPS care that involves classifying patients into risk groups (e.g., low, medium, or high risk of poor outcome) based on key prognostic factors, including psychosocial indicators (Adje et al., 2022). A prominent example is the use of the STarT Back tool to match patients to a corresponding level of care. Low-risk patients may receive minimal intervention like advice and education, while medium-risk patients receive standard physiotherapy. High-risk patients, who present with significant psychosocial barriers, are directed towards psychologically informed physiotherapy that integrates cognitive and behavioural strategies with physical treatment (Adje et al., 2022). This stratified approach has demonstrated benefits in improving clinical outcomes and increasing health-related cost-effectiveness (Adje et al., 2022).

Evidence supports the effectiveness of BPS interventions delivered by physiotherapists for NSCLBP. A systematic review by George (2008) found strong to moderate evidence for the effectiveness of BPS interventions provided by individual physiotherapists. This finding is particularly relevant for resource-limited settings where intensive multidisciplinary programs may not be feasible. Further supporting this, psychological interventions delivered by physiotherapists, especially with structured exercise, have been shown to be more effective than standard physiotherapy alone (Rabiei et al., 2025). When compared to traditional biomedical approaches, BPS interventions are more holistic, patient-centred, and place a strong emphasis on active involvement and self-management, generally leading to better long-term outcomes in terms of reducing disability and promoting self-efficacy (George, 2008; Jurak et al., 2023; Rabiei et al., 2025).

2.4 Physiotherapists' Knowledge of Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain Management

In African contexts, including Nigeria, studies assessing physiotherapists' knowledge related to BPS principles and pain management reveal areas of concern. A study conducted at the University of the Witwatersrand in South Africa involving final year therapeutic sciences students, including physiotherapists, found an overall deficit in knowledge of pain neurophysiology, as measured by the Neurophysiology of Pain Questionnaire (NPQ) (Mukoka et al., 2019). While physiotherapy students in this study achieved higher mean NPQ scores (6.97 out of a possible 13) compared to students in nursing and occupational therapy, their knowledge was still considered deficient, indicating potential gaps in their understanding of modern pain science crucial for BPS -informed pain education (Mukoka et al., 2019). A study from Peshawar, Pakistan, which, while not African, provides insights from a similar LMIC context, found that clinical physiotherapists demonstrated a "relatively good degree of understanding" of CLBP, with a mean NPQ score of 7.80. However, this study also highlighted significant heterogeneity in knowledge scores, with scores ranging from 2.00 to 12.00, suggesting wide variations in understanding among practitioners (Khan et al., 2024).

A recent national survey of physiotherapists in Nigeria revealed practice patterns that strongly imply significant gaps in the knowledge or at least in the application of BPS principles (Danazumi et al., 2025). This survey found very limited use of contemporary assessment methods aligned with a BPS approach; for example, fewer than 8% of Nigerian physiotherapists reported assessing patients with LBP for psychological distress, and fewer than 4% assessed for risk stratification or prognostic factors (Danazumi et al., 2025).

Furthermore, the application of specific BPS treatment strategies was exceptionally low, with cognitive-behavioural strategies being used by less than 2% of respondents and individualized multimodal treatment programs by less than 1.5% (Danazumi et al., 2025). This starkly contrasts with the predominant use of passive, biomedical interventions. While this survey primarily focused on practice, such low adoption rates of evidence-based BPS techniques strongly suggest underlying deficiencies in knowledge, practical skills, or the confidence to apply such knowledge. Another study in Nigeria, focusing on physiotherapists' knowledge of community physiotherapy and community-based rehabilitation (CBR)—approaches that share some holistic underpinnings with BPS—found generally poor knowledge levels (22.7%) (Igwesi-Chidobe& Okafor, 2013). Although not directly assessing BPS for LBP, these findings may indicate broader systemic challenges in the dissemination and uptake of comprehensive, contemporary health approaches within the Nigerian physiotherapy profession. Qualitative research on Nigerian physiotherapists' perceptions of stratified care (a biopsychosocial-driven approach) suggests that while current literature and guidelines recommend the BPS model, unique contextual circumstances and prevailing practice traditions make it challenging for some practitioners to fully consider and implement guideline recommendations, often leading to the omission of psychosocial risk factor assessment and management (Adje et al., 2022). The discrepancy between possessing theoretical knowledge and its practical application in complex clinical environments, often termed the "knowing-doing gap," is a critical consideration. Even if physiotherapists are introduced to BPS concepts during their training, translating this into confident and effective clinical strategies represents a significant hurdle, particularly if not supported by ongoing professional development and conducive practice environments.

Specific knowledge areas critical for a BPS approach include a sound understanding of pain neurophysiology, the ability to identify and interpret psychosocial risk factors (often termed yellow flags), and familiarity with evidence-based BPS treatment strategies. Deficits in understanding modern pain neurophysiology, as assessed by tools like the NPQ (Mukoka et al., 2019; Khan et al., 2024), can severely hamper a physiotherapist's ability to deliver effective pain education that empowers patients and reduces fear. Knowledge of psychosocial risk factors such as unhelpful beliefs about pain, negative expectations of recovery, emotional distress, and fear-avoidance behaviours, is essential for accurate prognosis and the implementation of stratified care models that tailor interventions to patient risk profiles (Parker, 2007; Adje et al., 2022). A study by Parker (2007) involving physiotherapy students found that they often overestimated the risk of CLBP based on clinical vignettes and tended to base their evaluation on only a few yellow flags, failing to effectively interpret the strongest predictors of chronicity.

Furthermore, knowledge of specific evidence-based BPS treatment strategies, including cognitive-behavioural techniques, principles of effective pain education, graded exposure to activity, and motivational interviewing, is paramount. The Nigerian national survey starkly highlighted the extremely low utilization rates of these specific strategies, suggesting a significant knowledge or skills gap in these areas (Danazumi et al., 2025). It is also important to acknowledge that knowledge levels can be heterogeneous within the profession, potentially influenced by factors such as foundational education, years of clinical experience, engagement in postgraduate training, and individual interest in pain management. An often-overlooked aspect of comprehensive BPS knowledge is the ability to recognize red flags (indicators of serious underlying pathology) and "orange flags" (signs of severe mental health issues), which necessitate urgent medical referral or co-management with mental health specialists, respectively

(Physiopedia, 2023; Leslie et al., 2025). The Nigerian survey indicated that only about 30% of physiotherapists screened for red flags (Danazumi et al., 2025), highlighting another critical knowledge gap that could compromise patient safety if BPS approaches are applied indiscriminately without adequate screening.

Despite these identified gaps in knowledge and application, a positive finding from the Nigerian national survey was that over 99% of responding physiotherapists expressed a strong interest in learning evidence-based LBP assessment and treatment methods, including those aligned with a BPS approach, from international experts (Danazumi et al., 2025). This high level of interest suggests a potential receptiveness to further education and training, which is a crucial facilitator for improving the management of NSCLBP in Nigeria. Identifying these specific knowledge gaps through research, such as the current dissertation aims to do in South-South Nigeria, is a primary justification for developing targeted educational interventions and continuing professional development programs.

2.5 Physiotherapists' Attitude Towards Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain Management

Attitude, defined as a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object or concept, plays a crucial role in shaping professional behaviour and the adoption of new clinical approaches (Driver et Al., 2020). In the context of NSCLBP management, physiotherapists' attitudes towards the BPS model and its constituent interventions can significantly influence their willingness to integrate these strategies into their practice(Driver et al., 2020).

Globally, there appears to be a general trend towards physiotherapists holding positive attitudes regarding the principles of the BPS model (Driver et al., 2020). For instance, a study involving

Australian physiotherapists indicated a strong emphasis on BPS principles in their perceived approach to care (Driver et al., 2020). Similarly, many physiotherapists report positive attitudes and beliefs towards the concept of Psychologically Informed Physiotherapy (PIP), which is an application of BPS principles (Gervais-Hupé et al., 2023). However, while attitudes towards the BPS model may be favourable, attitudes towards the personal implementation of all its aspects, particularly those involving direct engagement with complex psychosocial factors, can be more mixed. This ambivalence is often linked to perceived barriers such as inadequate training, time constraints in clinical practice, and concerns about professional scope (Driver et al., 2020).

Studies from African contexts and similar LMICs provide more specific insights into physiotherapists' attitudes, often using tools like the Health Care Providers' Pain and Impairment Relationship Scale (HC-PAIRS), where lower scores generally reflect a more biopsychosocial - consistent attitude (i.e., less belief that pain directly dictates disability and activity restriction). In the South African study of final year therapeutic sciences students, the mean HC-PAIRS score for physiotherapy students was 61.97 (overall student mean was 63.1), suggesting attitudes that leaned somewhat towards a biomedical perspective where pain is seen as justifying impairment (Mukoka et al., 2019). The study in Peshawar, Pakistan, found that clinical physiotherapists exhibited what were described as "unfavourable attitudes and beliefs" towards CLBP, with a mean HC-PAIRS score of 67.76 (Khan et al., 2024). Higher scores on this scale indicate a stronger agreement that persistent LBP warrants disability and activity restriction, which is more aligned with a biomedical viewpoint (Khan et al., 2024). Conversely, a study in Ghana focusing on health promotion—an area with significant BPS underpinnings—found that physiotherapists demonstrated "very good" attitudes (84% favourable score) towards engaging in health promotion activities (Boakye et al., 2018).

Specific quantitative studies on Nigerian physiotherapists' attitudes directly towards BPS interventions for NSCLBP using validated attitudinal scales are sparse and not extensively detailed in the literature. However, qualitative findings from Nigeria regarding perceptions of stratified care suggest that attitudes are significantly shaped by perceived barriers, such as prevailing biomedical treatment traditions and strong patient expectations for passive, hands-on therapies (Adje et al., 2022; Danazumi et al., 2025). The previously noted high interest among Nigerian physiotherapists in learning new, evidence-based methods (Danazumi et al., 2025) could imply a potentially positive underlying attitude towards practice improvement, which might extend to BPS approaches if barriers are addressed and benefits are clearly demonstrated.

Several factors can influence physiotherapists' attitudes towards BPS interventions. Training and education are paramount; a lack of adequate training in BPS principles and techniques can lead to less favourable attitudes or a lack of confidence in applying them (Driver et al., 2020). Conversely, education, particularly in pain neurophysiology and BPS communication skills, has been shown to shift attitudes more positively (Mukoka et al., 2019). Clinical experience can be influential, either reinforcing existing (potentially biomedical) practice patterns or, through exposure to the limitations of such models, fostering an openness to BPS approaches. The workplace culture and environment also play a significant role; a setting that is predominantly biomedical in its orientation, or one that lacks resources and support for BPS implementation (e.g., insufficient time for comprehensive assessments, lack of private spaces for sensitive discussions), can discourage the BPS model adoption and negatively shape attitudes (Driver et al., 2020; Mescouto, 2023).

Patient expectations are often an important influencing factor. In many contexts, including Nigeria, patients often expect passive, hands-on treatments and may be resistant to more active,

self-management focused BPS strategies. This can pressure therapists to adhere to more traditional biomedical approaches, thereby influencing their attitude towards implementing potentially time-consuming or less familiar BPS interventions (Driver et al., 2020; Adje et al., 2022; Danazumi et al., 2025). Furthermore, physiotherapists' own beliefs about their capabilities to deliver BPS interventions and the anticipated consequences of doing so will invariably shape their attitudes. If therapists feel ill-equipped or doubt the effectiveness or acceptability of BPS, their attitude towards it will likely be less positive. The interplay between knowledge, attitudes, and beliefs is complex; for instance, while the Peshawar study found an insignificant direct statistical relationship between knowledge (NPQ scores) and attitudes/beliefs (HC-PAIRS scores) (Khan et al., 2024), the South African student study did find a low inverse correlation, suggesting that better knowledge of pain neurophysiology was associated with slightly less biomedical attitudes (Mukoka et al., 2019). This suggests that attitude might act as a distinct construct but can be influenced by knowledge and, in turn, influence practice.

Attitudes towards specifically incorporating psychological and social components into what has traditionally been a physically focused profession are particularly critical. Some physiotherapists may harbour hesitant or even negative attitudes towards directly addressing these components, perhaps feeling it falls outside their professional scope of practice or that they lack the requisite skills and training (Driver et al., 2020). They might feel overwhelmed when faced with patients presenting with complex mental health needs or significant social challenges. However, positive attitudes are often linked to perceiving tangible benefits from such an integrated approach, such as an improved therapeutic alliance, better patient understanding of their condition, and ultimately, enhanced treatment outcomes (Driver et al., 2020).

The professional identity of physiotherapists, often forged in training programs with a strong biomechanical emphasis, can significantly shape their attitudes towards embracing a broader BPS role. If practitioners primarily define their expertise through physical assessment and manual interventions, they might view addressing psychosocial issues as a dilution of their core identity or an encroachment into the domain of other professions like psychology (Driver et al., 2020; Gervais-Hupé et al., 2023). This can foster a less receptive attitude towards fully embracing the BPS model. Therefore, promoting BPS may require not only skills training but also a thoughtful engagement with and potential expansion of professional identity within physiotherapy, emphasizing the physiotherapist's role in comprehensively managing the whole person.

2.6 Physiotherapists' Beliefs Towards Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain Management

Globally, research indicates that many physiotherapists hold a combination of biomedical and BPS-oriented beliefs regarding LBP (Overmeer et al., 2004; Simmonds et al., 2012; Fullen et al., 2008; Gibbs et al., 2022). There is a clear link between these beliefs and clinical practice: physiotherapists with more BPS-oriented beliefs tend to recommend more active treatments, provide education emphasizing the resilience of the back, and focus less on purely structural explanations for pain. On the other hand, those with stronger biomedical beliefs are often associated with more restrictive activity recommendations, a greater focus on identifying pathoanatomical sources of pain, and a preference for passive treatment modalities (Bishop et al., 2016; Simmonds et al., 2012). Some studies have observed that within physiotherapy, there can be an oversimplified or reductionist understanding of the BPS model, or a tendency to overlook or feel ill-equipped to address complex cultural and social factors (Gervais-Hupé et al., 2023).

The persistence of biomedical beliefs, despite decades of evidence supporting BPS approaches, suggests these models are deeply ingrained, likely from foundational training and reinforced by certain patient expectations and healthcare system structures (Simmonds et al., 2012).

In African contexts and similar LMICs, available data suggest that biomedical beliefs may be quite prevalent. The HC-PAIRS scores from final year physiotherapy students in South Africa (mean 61.97) (Mukoka et al., 2019) and practicing physiotherapists in Peshawar, Pakistan (mean 67.76) (Khan et al., 2024) indicate beliefs that lean towards pain justifying impairment and activity restriction, which is characteristic of a more biomedical orientation. In Nigeria, the overwhelming preference for traditional biomedical treatment practices, such as the widespread use of electrophysical agents and massage, coupled with the very low utilization of specific BPS strategies like cognitive-behavioural techniques or pain neuroscience education (Danazumi et al., 2025), strongly suggests that prevailing belief systems among many practitioners are, at least in practice, more aligned with a biomedical model. Furthermore, perceptions reported by Nigerian physiotherapists that patient expectations for passive treatments and established, traditional treatment norms are major barriers to implementing stratified care (a BPS approach) also reflect underlying beliefs about the practice environment and what is considered feasible or acceptable within that context (Adje et al., 2022; Danazumi et al., 2025).

Key beliefs that influence the adoption of BPS interventions revolve around the physiotherapist's perceived role, their capabilities (self-efficacy), and the anticipated consequences or effectiveness of such interventions. Regarding their role, some physiotherapists may believe their primary responsibility is to address physical impairments and dysfunctions, viewing the assessment and management of psychosocial aspects as falling outside their professional domain or expertise (Driver et al., 2020; Gervais-Hupé et al., 2023). Beliefs about capabilities are crucial;

if physiotherapists do not feel confident or adequately skilled to effectively implement BPS strategies, particularly those addressing complex psychosocial issues, this low self-efficacy becomes a significant barrier to adoption (Driver et al., 2020; Gervais-Hupé et al., 2023). Interventions such as verbal persuasion about capability and targeted skills training are behaviour change techniques designed to address this (Gervais-Hupé et al., 2023). Beliefs about the consequences or effectiveness of BPS interventions also heavily influence practice. If therapists believe that BPS approaches are too time-consuming, will not be valued or accepted by patients (who may expect "hands-on" treatment), or are ultimately ineffective in their clinical setting, they are less likely to adopt them (Driver et al., 2020).

Conversely, positive beliefs about the consequences of BPS interventions such as leading to improved patient self-management, fostering a stronger therapeutic alliance, reducing therapist load, and achieving better long-term outcomes—act as powerful facilitators for adoption (Driver et al., 2020). Physiotherapists' beliefs about the "malleability" of patients' own unhelpful beliefs and attitudes will also determine their willingness to engage in BPS strategies like pain education and cognitive restructuring. If a therapist believes a patient's beliefs are too entrenched or culturally fixed, they may be less inclined to invest the effort required for these approaches (Driver et al., 2020; Gervais-Hupé et al., 2023).

Numerous barriers and facilitators to adopting BPS-oriented belief system have been identified. Barriers include the prevailing biomedical culture within healthcare systems and educational institutions; insufficient knowledge and practical skills in BPS approaches; negative beliefs about one's capabilities to deliver BPS or about its likely consequences; strong patient expectations for passive, biomedical treatments; systemic constraints such as limited consultation

times; and a lack of institutional support or resources for BPS-congruent practice (Driver et al., 2020; Mescouto, 2023; Adje et al., 2022; Danazumi et al., 2025; Gervais-Hupé et al., 2023). Facilitators include comprehensive education and practical training in BPS principles and techniques; positive personal or observed experiences with the effectiveness of BPS; a supportive professional environment with colleagues and mentors who champion BPS; clear evidence demonstrating the benefits of BPS interventions; patient trust and openness to a more holistic approach; and engagement in reflective practice (Mukoka et al., 2019; Driver et al., 2020; Adje et al., 2022; Danazumi et al., 2025; Gervais-Hupé et al., 2023). The interplay of beliefs with professional well-being is also a consideration; persistently applying biomedical approaches to NSCLBP, which often yield limited long-term success, could contribute to therapist frustration. Conversely, adopting a BPS approach, which offers a broader toolkit and can empower patients more effectively, might enhance job satisfaction if therapists believe it leads to better outcomes (Driver et al., 2020).

2.7 Outcome Measures

2.7.1 Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT)

This questionnaire was initially developed as a 36-item Dutch instrument to assess physiotherapists' treatment orientations towards low back pain (LBP), distinguishing between biomedical (BM) and BPS approaches using a 6-point Likert scale (Ostelo et al., 2003; Eland, 2013 and Eland et al., 2022). Subsequently, several adapted shorter versions emerged, including those with 19, 20, or 21 items (Mutsaers et al., 2012). A systematic review by Mutsaers et al. (2012) established that the PABS-PT generally demonstrates satisfactory internal consistency and good test-retest reliability. Furthermore, the review indicated that scores could predict treatment

management and were sensitive to educational interventions, although it highlighted a need for further investigation into content validity and interpretability.

Regarding internal consistency, the biomedical subscale consistently performs well, with Cronbach's alpha values generally ranging from 0.72 to 0.84 across various studies and versions. The biopsychosocial/behavioural subscale has exhibited more variability, with Cronbach's alphas from 0.54 in the original PABS-PT to 0.68 in a revised version, and between 0.57 and 0.66 in other language versions, sometimes falling below the acceptable 0.70 threshold (Mutsaers et al., 2012). Test-retest reliability for the subscales is considered good, with Intraclass Correlation Coefficients (ICCs) reported around 0.81-0.83 for the biomedical scale and 0.65-0.82 for the BPS scale. While factor analysis typically supports a two-factor structure (biomedical and biopsychosocial), the explained variance can occasionally be low, prompting questions about construct validity in some versions (Eland, 2013; Eland et al., 2017).

Nevertheless, reviews have rated construct validity positively, and the scale can differentiate between physiotherapists with differing orientations (Mutsaers et al., 2012; Eland, 2013). More recently, the 13-item Spanish version of the PABS-PT demonstrated good internal consistency (BM α=0.86, BPS α=0.77), moderate concurrent validity with the HC-PAIRS and R-NPQ, and good sensitivity to change (Díaz-Fernández et al., 2023).

2.7.2 Neurophysiology of Pain Questionnaire (NPQ)

The NPQ and its revised version (R-NPQ) were designed to assess knowledge of pain neurophysiology. The original NPQ, developed by Moseley, initially had 19 items, but subsequent Rasch analysis by Catley et al. (2013) led to a revised 12-item (R-NPQ) or 13-item version, which demonstrated better psychometric properties by removing redundant or poorly functioning items; this revised version is considered a useful and reliable tool for assessing pain

knowledge across different ability levels and identifying knowledge gaps (Catley et al., 2013). The R-NPQ typically uses true/false/undecided response options, with scores calculated by summing correct answers. The R-NPQ has generally shown acceptable internal consistency and test-retest reliability in various studies (Catley et al., 2013). A Rasch analysis of NPQ data from 300 spinal pain patients showed acceptable internal consistency and test-retest reliability (Catley et al., 2013). A Brazilian Portuguese version of the 12-item R-NPQ demonstrated a Cronbach's alpha of 0.63 and confirmed discriminative validity between physical therapists and patients (Nogueira et al., 2018).

However, reliability can vary across translations and populations; the Finnish RNPQ-FI showed low internal consistency (Cronbach's alpha = 0.44) but moderate test-retest reliability (ICC = 0.70) among Finnish physiotherapists and students (Ehrströmet al., 2024). Similarly, a Turkish version of the Revised NPQ (Revised-NPQ-Tr) showed moderate test-retest reliability (ICC = 0.629) but low internal consistency (Cronbach's α = 0.330) suggesting results should be interpreted carefully (Gül et al., 2023). A German version (NPQ-D) had an internal consistency (Cronbach's alpha) of 0.52 but high test-retest reliability (ICC = 0.88) and showed construct validity by differentiating between therapists with and without pain neurophysiology education (Demoulin et al., 2017). An Italian study of the NPQ-19 and a new 18-item Italian version (IT-NPQ-18) found that 10 items (IT-NPQ-10) and 18 items respectively fit the Rasch model, both showing good psychometric properties, and were able to show differences in scores based on post-graduate specialization and pain course attendance (Espostoet al., 2024). The NPQ and R-NPQ have been used to assess pain knowledge in various healthcare students and professionals, including physiotherapists (Houben et al., 2017; Mukoka et al., 2019; Díaz-Fernández et al., 2023; Khan et al., 2024).

2.7.3 Health Care Providers' Pain and Impairment Relationship Scale (HC-PAIRS)

This questionnaire is a widely used instrument, typically with 15 items (though a 13-item version has also been developed), scored on a 7-point Likert scale (0="totally disagree" to 6="totally agree"), to measure healthcare professionals' attitudes and beliefs about the relationship between chronic pain and disability (Houben et al., 2004; Magalhães et al., 2011; Schielke et al., 2024). Higher scores (total ranging from 0 to 90 for the 15-item version) indicate a stronger biomedical orientation, suggesting a belief that pain invariably links to impairment and activity restriction (Houben et al., 2004; Magalhães et al., 2011; Schielke et al., 2024).

A scoping review of 51 studies assessing the HC-PAIRS found that its psychometric properties were assessed in 10 studies, demonstrating acceptable reliability and validity (Muller et al., 2024). Specifically, internal consistency has been reported as good, with Cronbach's alpha values such as 0.84 (after removing 2 items from an original version) and ranging from 0.67 to 0.74 in a Brazilian physical therapist sample (Houben et al., 2004; Magalhães et al., 2011). Test-retest reliability has been shown to be moderate to substantial, with ICC values of 0.64 reported and 0.84. A Finnish version (HC-PAIRS-FI, 11 items) showed good internal consistency (Cronbach's alpha 0.79) and test-retest reliability (ICC = 0.82) (Muller et al., 2024). The HC-PAIRS has demonstrated adequate construct validity, with scores correlating as expected with measures of perceived harmfulness of physical activities and recommendations for work and physical activity. Correlations ranged from 0.25 to 0.62 in one study (Houben et al., 2004).

2.7.4 Back Pain Attitudes Questionnaire (Back-PAQ)

This questionnaire was developed from qualitative interviews to assess attitudes and beliefs about back pain among the general public, people with back pain, and healthcare professionals,

using a 5-point Likert scale (Darlow et al., 2014). It exists in a 34-item long form, a 20-item version, and a 10-item short form (Darlow et al., 2014).

The 34-item Back-PAQ has demonstrated acceptable internal consistency (Cronbach's alpha = 0.70). A Brazilian-Portuguese version of the 34-item Back-PAQ (Back-PAQ-Br) showed excellent internal consistency (Cronbach's alpha = 0.92) and excellent test-retest reproducibility (ICC = 0.94; SEM 5.14 points), with a smallest detectable change (90% CI) of 11.93 points. This version also showed strong convergent validity with the Tampa Scale of Kinesiophobia (TSK) (r = -0.72) and very weak correlation with the Hospital Anxiety and Depression Scale (HADS) (r = -0.23 for both domains), with no ceiling or floor effects observed (Pierobon & Darlow, 2023). The 20-item Back-PAQ is considered a psychometrically robust unidimensional instrument suitable for outcome measurement. Generally, the Back-PAQ has been found to have acceptable to excellent internal consistency, excellent test-retest reliability (ICC = 0.84 reported for healthcare practitioners), and adequate or moderate convergent validity (e.g., moderate correlation with TSK, r = -0.58, for healthcare practitioners) (Pierobon & Darlow, 2023).

2.8 Summary of Empirical Literature Reviewed

AUTHOR/YEAR/ COUNTRY	TITLE	SAMPLE SIZE	AIM OF STUDY	STUDY DESIGN	OUTCOME MEASURE	FINDINGS
Arvinen-Barrow et al. / 2010 / UK	UK chartered physiotherapists' personal experiences in using psychological interventions with injured athletes: An Interpretative Phenomenological Analysis	Seven chartered physiotherapists	To explore UK chartered physiotherapists' personal experiences in using psychological intervention techniques in sport injury rehabilitation.	Qualitative study using Interpretative Phenomenological Analysis (IPA) based on semi-structured interviews.	Semi-structured interviews analysed using IPA, exploring experiences with techniques (goal setting, social support, imagery, relaxation, self-talk).	PTs open about lack of formal psych training. Knowledgeable/comfortable with goal setting & social support. Less familiar with imagery, relaxation, self-talk. Stressed importance of 'gut-feeling'/experience. Further training recommended.
Beissner et al. / 2009 / USA	Physical Therapists' Use of Cognitive-Behavioural Therapy for Older Adults With Chronic Pain: A	152 physical therapists	To determine PTs' use of CBT techniques (relaxation, activity pacing) with older adults with chronic pain,	Cross-sectional telephone survey	Telephone survey assessing frequency of use of CBT and other PT interventions, interest in CBT, barriers to use,	Activity pacing/pleasurable activity scheduling commonly used (81%/30%). Cognitive restructuring, relaxation, imagery/distraction

	Nationwide Survey		ascertain interest/barriers to using CBT, and identify factors associated with interest.		and participant characteristics.	infrequently used. High interest in CBT, but barriers include lack of knowledge/skill, reimbursement, time.
Danazumi et al. / 2024 / Nigeria	Current Physiotherapy Assessment and Treatment Practices for Low Back Pain in Nigeria: A National Survey	267 physiotherapists	To evaluate the current assessment and treatment practices used by physiotherapists in Nigeria for people with recent onset, recurrent and chronic LBP.	A descriptive cross-sectional electronic national survey.	An online survey hosted on REDCap	Less than 2% of physiotherapists surveyed used psychosocial strategies such as CBT. Most Nigerian physiotherapists (> 99%) expressed interest in learning evidence-based LBP assessment and treatment methods from international experts.
Driver et al. / 2019 / Australia	Physiotherapists' views, perceived knowledge, and reported use of psychosocial	251 participants	To explore Australian physiotherapists' views concerning psychosocial	Cross-sectional survey	Online survey using Likert scales and tick-box questions measuring	PTs viewed psychosocial strategies as important/beneficial but lacked confidence and desired further training.

	strategies in practice		strategies, their perceived knowledge regarding these strategies, and which strategies they reportedly use in practice.		perceived importance, benefits, confidence, knowledge, and use of psychosocial strategies (GS, PR, imagery, relaxation, CBT, MI, etc.).	Goal Setting (GS) and Positive Reinforcement (PR) were most known/used. CBT and Motivational Interviewing (MI) were least known/used but still utilized by some.
Francis et al./ 2000 / Australia	Physiotherapists' and Male Professional Athletes' Views on Psychological Skills for Rehabilitation	57 physiotherapists; 28 male pro basketball players	To replicate Wiese et al. (1991) with Australian PTs and extend it to include views of professional basketball players on psychological skills in rehabilitation.	Survey study (replicating Wiese et al. survey)	Survey (adapted from Wiese et al. 1991) measuring views on characteristics of coping athletes and the role/value of psychological skills.	Importance attached to communication and motivation by both PTs and athletes. Psychological skills like relaxation or imagery were not considered particularly useful by either group.

Heaney / 2006 / UK	Physiotherapists' perceptions of sport psychology intervention in professional soccer	39 questionnaire respondents; 10 interviewed	To investigate attitudes and perceptions of physiotherapists in professional soccer toward sport psychology intervention in injury rehabilitation.	Mixed methods: Survey (PSPQ) followed by semi-structured interviews.	PSPQ and semi-structured interviews measuring attitudes, perceived psychological reactions, referral rates/barriers, use of techniques, and views on education/training needs.	PTs believed negative psychological reactions (esp. stress/anxiety) common. 51% reported referring to a sport psychologist; stigma was a barrier. More education on the role of sport psychology & referral networks suggested.
Hemmings & Povey / 2002 / United Kingdom	Views of chartered physiotherapists on the psychological content of their practice: a preliminary study in the United	90 participants	To investigate the perceptions of English chartered physiotherapists on the psychological content of their practice.	Survey study	Physiotherapist and Sport Psychology Questionnaire (PSPQ) measuring perceived psychological effects of injury,	PTs believed athletes often psychologically affected by injury and often used psychological techniques. Few reported access/referral to sport psychologists. Need for more education on psychological aspects

	Kingdom				use of psychological techniques, and access/referral to sport psychologists.	&referral networks identified.
Jevon & Johnston / 2003 / UK	The perceived knowledge and attitudes of governing body chartered physiotherapists towards the psychological aspects of rehabilitation	19 governing body chartered physiotherapists	To investigate governing body chartered PTs' knowledge and attitudes towards psychological aspects of rehab, perceived training needs, and access/referral to psychologists.	Qualitative study using a constructionist revision of Grounded Theory based on semi-structured interviews.	Semi-structured interviews analysed using Grounded Theory approach, exploring knowledge, attitudes, training needs, and referral.	PTs play an important role but report conflicts regarding depth/boundaries. Responsibility often assumed implicitly. Knowledge is largely experiential, lacking formal theory/training. Efficacy questions & need for training/reflection noted.
Lafferty et al. / 2008 / United Kingdom	Club-Based and Non-Club-Based Physiotherapists' Views on the	87 certified physiotherapists (42 non-club, 45 club-based)	To explore differences in the psychological content of	Survey study	Modified Athletic Training and Sport Psychology	Non-club PTs reported higher use of social support & higher-order skills (reducing

	Psychological Content of Their Practice When Treating Sports Injuries		practice between club-contracted and non-club-contracted physiotherapists treating sports injuries.		Questionnaire (ATSPQ) measuring psychological skills use and importance of skills knowledge.	depression/stress/anxiety) and rated knowledge of these more important. Club-based PTs reported higher use of short-term goals. Suggests different approaches based on setting.
Nielsen et al. / 2014 / Australia	Physical Therapist–Delivered Cognitive-Behavioural Therapy: A Qualitative Study of Physical Therapists' Perceptions and Experiences	Eight physical therapists	To investigate physical therapists' experiences and perspectives of a CBT-informed training and intervention process (Pain Coping Skills Training - PCST) as part of an RCT for knee OA.	Qualitative design using Framework Analysis based on semi-structured telephone interviews at 4 time points.	Semi-structured telephone interviews analysed using Framework Analysis, exploring experiences with PCST training/delivery, impact on practice, and perspectives.	PTs reported positive experiences with PCST and believed it enhanced their clinical practice. Delivering PCST was different from regular practice. Comprehensive training and psychologist mentoring were crucial for effective delivery & fidelity.
Ninedek& Kolt /	Sport	150	To assess sports	Questionnaire-	Sports	Communication skills,

2000 / Australia	Physiotherapists' Perceptions of Psychological Strategies in Sport Injury Rehabilitation	physiotherapists (sports PT postgraduates/enrolees)	physiotherapists' opinions on characteristics of athletes coping well/poorly with injury, the value of psychological strategies, and the importance of knowledge of psychological techniques.	based study	Physiotherapists' Views on Psychological Strategies questionnaire (adapted from Wiese et al.) measuring views on coping characteristics, strategy effectiveness, and knowledge importance.	positive attitude, intrinsic motivation, and realistic goal setting seen as important for effective rehabilitation. Discussed PTs' roles in addressing basic psychological aspects of injury.
Scott-Dempster et al. / 2014 / UK	Physiotherapists' experiences of activity pacing with people with chronic musculoskeletal pain: an interpretative	Six physiotherapists	To explore physiotherapists' experiences of using activity pacing with people with chronic musculoskeletal	Qualitative study using Interpretative Phenomenological Analysis (IPA) based on semi-structured interviews.	Semi-structured interviews analysed using IPA, exploring the meaning and experience of activity pacing.	Activity pacing seen as a process for patient realization; requires PT shift from "fix it" to "sit with" approach; used in combination with other therapies. Need for reflective listening skills

	phenomenological analysis		pain.			identified.
Tracey / 2008 / Canada	Inside the Clinic: Health Professionals' Role in Their Clients' Psychological Rehabilitation	18 participants (17 PTs, 1 AT)	To examine health professionals' (PTs, ATs) perceptions of the roles they play and their influence on the psychological recovery of their clients.	Qualitative design using semi-structured interviews analysed with interpretational analysis/thematic coding.	Semi-structured interviews exploring roles (rapport builder, educator, communicator) and perceived influence on psychological recovery.	HPs perceive they play important roles (rapport builder, educator, communicator) in psychological recovery despite lack of formal psych training. They strive to create caring/supportive environments.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Materials

3.1.1 Population

Male and female physiotherapists practicing in various healthcare settings in South-South Nigeria were invited to participate in this study.

3.1.2 Selection Criteria

3.1.2.1 Inclusion Criteria

i. Licensed and practicing physiotherapist within South-South Nigeria.

ii. Physiotherapists with at least 1 year of clinical experience in low back pain management.

3.1.2.2 Exclusion Criteria

i. Physiotherapists unwilling to participate in the online survey.

ii. Intern Physiotherapists

3.1.3 List of Instruments

i. A self-developed knowledge questionnaire (Appendix II).

ii. Pain Attitudes and Beliefs Scale for Physical Therapists questionnaire (Appendix III).

3.1.4 Description of Instruments

This study utilized an online survey created in Google Forms to assess physiotherapists' knowledge, attitude and beliefs of BPS interventions in NSCLBP. The survey included a

self-developed questionnaire to assess respondents' knowledge of BPS interventions in the management of NSCLBP while the PABS PT questionnaire was used to assess respondents' attitudes and beliefs towards BPS interventions in the management of NSCLBP. The survey was presented in two sections.

The first section of the survey contained a self-developed knowledge questionnaire. This questionnaire was divided into two parts. Part A which collected respondents' demographic information including age, gender, educational level, area of specialty and primary practice setting. Part B collected responses to a 20-item questionnaire to assess physiotherapists' knowledge on BPS interventions in the management of NSCLBP. Questions were rated on a 5-point scale from 1 - Strongly Disagree to 5 – Strongly Agree. A pilot study was carried out to determine the Cronbach's alpha of the knowledge questionnaire. The pilot study included 25 physiotherapists practicing within Edo State. The Cronbach's alpha was found to be 0.61 showing good internal consistency. The questionnaire was validated by 3 experts and showed good content validity with a Content Validity Index (CVI) of 0.87.

The second section contained the PABS PT questionnaire developed by Houben et al. in 2005 and validated on English speaking physiotherapists in the UK by bishop et al. in 2008 (Eland et al., 2020). The PABS PT questionnaire was used to assess physiotherapists' attitudes and beliefs towards BPS interventions in the management of NSCLBP. It is a 21–item questionnaire and it is rated on a Likert scale from 1 - Totally Disagree to 6 - Totally Agree. The minimum and maximum scores obtainable from the questionnaire are 31 and 186 respectively. Higher scores indicate more positive attitudes and beliefs. The PABS PT questionnaire has shown fair to good internal consistency with

Cronbach's alpha of 0.54 and 0.84 for the biomedical and BPS subscales respectively (Ostelo et al., 2003). Similar reliability scores for the biomedical (α= 0.79) and BPS subscales (α= 0.57) were found in a more recent study by Eland et al. in 2016.

3.2 Methods

3.2.1 Research Design

This is a cross-sectional analytical study.

3.2.2 Sampling Technique

Consecutive sampling technique was used to select physiotherapists practicing within various healthcare settings in South-South Nigeria. Physiotherapists practicing in each of five states (Akwa Ibom, Bayelsa, Cross River, Delta and Rivers) in South-South Nigeria were invited to respond to the study survey.

3.2.3 Sample Size

The sample size for this study was calculated using the Cochran formula:

The sample size for this study will be calculated using the Cochran formula:

e = desired level of precision, the margin of error

p = the fraction of the population (as percentage) that displays the attribute

z: the z-value, extracted from a z-table

z = 1.96, p = 0.5, e = 0.05

Correcting for a finite population

, $N = 100$ (estimated)

$n = 80$

The minimum sample size for this study will be 80 participants.

3.2.4 Ethical Consideration

Ethical approval for this study was obtained from Edo State Ministry of Health with APPROVAL NUMBER HA/737/25/D/09230946 and also from The Research Ethics Committee College Of Medical Sciences University Of Benin, Benin City, Nigeria with REC Approval No: CMS/REC/2024/797. Written informed consent was also sought from all participants in this study.

3.2.5 Procedure for Data Collection

The data collection process was conducted using an online survey hosted on Google Forms. Invitations to participate in this study were sent through email addresses obtained from established professional networks (Nigerian Society of Physiotherapy and Association of Clinical and Academic Physiotherapists of Nigeria), WhatsApp contacts and groups.

The survey was made available online for a 2-month period, allowing participants to respond at their convenience. Reminder emails and WhatsApp messages were sent every 3 days to encourage participation and ensure maximum response rates. All responses were stored securely and confidentiality was maintained by anonymizing the data during the analysis process.

3.2.6 Data Analysis

The data collected from responses was entered onto Microsoft Excel and was analysed using the Statistical Package for Social Sciences (SPSS version 26). Demographic data (gender, rank, educational level, years of experience and area of specialty) was summarized using descriptive statistics such as frequencies and percentages, and the scores from the questionnaire on knowledge of physiotherapists and PABS PT questionnaire were summarized using frequencies and percentages.

Inferential statistics of Chi-square was used to determine association: between participants' knowledge and attitude, between participants' knowledge and beliefs, between participants' sociodemographic and knowledge, between participants' sociodemographic and attitude and between participants' sociodemographic and beliefs. A p-value of less than 0.05 was considered statistically significant.

CHAPTER FOUR

RESULTS

4.1 Results

4.1.1 Respondents' Socio-demographic Characteristics

The gender distribution of the respondents in this study showed a majority of males, who constituted 57.5% (n=46) of the sample, while females accounted for the remaining 42.5% (n=34). Regarding the age of the respondents, the largest group were those aged 20–30 years, representing 45.0% (n=36) of the sample. This was followed by the 31–40 years age bracket at 35.0% (n=28). In terms of professional experience, respondents with 1–5 years of experience comprised the largest single group at 31.3% (n=25), closely followed by those with 6–10 years of experience at 28.8% (n=23). The vast majority of respondents, 67.5% (n=54), held a Bachelor of Physiotherapy degree as their highest educational qualification. The primary area of professional practice for most respondents was Musculoskeletal physiotherapy, with 67.5% (n=54) identifying this as their specialty. The workplace distribution shows that the most common setting was a Teaching Hospital, where 33.8% (n=27) of the participants were employed. Finally, a significant majority of respondents 62.5% (n=50) confirmed they had received additional training on LBP. In contrast, 30.0% (n=24) reported having no additional training, and 7.5% (n=6) were unsure. (Table 4.1)

Table 1: Descriptive Statistics of Respondents' Sociodemographic Characteristics

Variable	Category	Frequency	Percentage (%)
Gender	Male	46	57.5
	Female	34	42.5
Age	20–30 years	36	45.0
	31–40 years	28	35.0
	41–50 years	13	16.3
	>50 years	3	3.8
Years of experience	1–5 years	25	31.3
	6–10 years	23	28.8
	11–15 years	20	25.0
	>15 years	12	15.0
Highest Educational Level	Bachelor of Physiotherapy	54	67.5
	Doctor of Physiotherapy	10	12.5
	Master's Degree	11	13.8
	Doctorate Degree	5	6.3
Area of Professional Practice	Musculoskeletal	54	67.5
	Sports Injuries	8	10.0
	Gerontology	5	6.3
	Women's Health	3	3.8
	Others	10	12.5
Workplace	Teaching Hospital	27	33.8
	Private Hospital	13	16.3
	Public Hospital	14	17.5
	Private Physiotherapy Clinic	11	13.8
	University	8	10.0
	Others	7	8.8
Additional Training in LBP	Yes	50	62.5
	No	24	30.0
	Not Sure	6	7.5

4.1.2 Respondents' Knowledge of Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain

There was unanimous agreement (100.0%) for several key components as part of BPS interventions in NSCLBP. These included: an exercise component, psychological support, patient education, patient participation in return to work, standardization of assessment, treatment standardization, dietary counseling, negotiation with stakeholders, progressive goal setting, and stimulation of social interaction.

Follow-up after intervention, expertise intervention, and involvement in ADLs each received 97.5% agreement, with only 2.5% disagreeing. Similarly, personalization of care, social support, and goal-oriented therapy each had 96.3% of respondents in agreement, while 3.8% disagreed.

The use of evidence-based practice was agreed upon by 92.5% of respondents, with 7.5% disagreeing. Patient self-management saw agreement from 86.3% and disagreement from 13.8%. Goal setting was supported by 85.0%, with 15.0% disagreeing.

The component with the most disagreement was social support with a focus on pain, which still had agreement from 83.8% of participants, while 16.3% disagreed.

Notably, no respondents selected a "Neutral" option for any of the twenty components. (Table 4.2)

Table 2: Respondents' Knowledge of Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain

Variable	Agree n (%)	Neutral n (%)	Disagree n (%)	Total (%)
An exercise component	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Psychological support	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Patient education	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Personalization of care	77 (96.3)	0 (0.0)	3 (3.8)	100.0
Patient self-management	69 (86.3)	0(0.0)	11 (13.8)	100.0
Social support	77 (96.3)	0 (0.0)	3 (3.8)	100.0
Patient participation in return to work	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Follow-up after intervention	78 (97.5)	0 (0.0)	2 (2.5)	100.0
Standardization of assessment	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Expertise intervention	78 (97.5)	0 (0.0)	2 (2.5)	100.0
Use of evidence-based practice	74 (92.5)	0 (0.0)	6 (7.5)	100.0
Treatment standardization	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Goal setting	68 (85.0)	0 (0.0)	12 (15.0)	100.0
Dietary counseling	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Social support with focus on pain	67 (83.8)	0 (0.0)	13 (16.3)	100.0
Negotiation with stakeholders	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Progressive goal setting	80 (100.0)	0 (0.0)	0 (0.0)	100.0
Goal-oriented therapy	77 (96.3)	0 (0.0)	3 (3.8)	100.0
Involvement in ADLs	78 (97.5)	0 (0.0)	2 (2.5)	100.0
Stimulation of social interaction	80 (100.0)	0 (0.0)	0 (0.0)	100.0

4.1.3 Respondents' Attitudes and Beliefs towards BPS Interventions in Non-Specific Chronic Low Back Pain

Majority of respondents demonstrated agreement with statements aligned with a BPS perspective in the management of NSCLBP. The strongest agreement was seen for the statement "Learning to cope with stress promotes recovery from back pain," with 91.3% of respondents in agreement. Similarly, 85.0% agreed that "Mental stress can cause back pain even in the absence of tissue damage" and that "Therapy may have been successful even if pain remains." There was also strong support for the role of exercise, with 81.3% agreeing that "A patient suffering from severe back pain will benefit from physical exercise," and 78.8% agreeing that "Exercises that may be back straining should not be avoided during the treatment."

Furthermore, a majority agreed that "Functional limitations associated with back pain are the result of psychosocial factors" (66.3) and "Even if the pain has worsened, the intensity of the next treatment can be increased" (63.8%).

Conversely, respondents largely disagreed with statements reflecting a purely biomedical or structural model of pain. The highest level of disagreement was with the statement, "There is no effective treatment to eliminate back pain", which 83.8% of participants rejected. A substantial majority (70.0%) also disagreed that "Pain reduction is a precondition for the restoration of normal functioning", indicating a focus on function over mere pain relief. Similarly, 67.5% disagreed that "If therapy does not result in a reduction in back pain, there is a high risk of severe restrictions in the long term". (Table 4.3)

Table 3: Respondents' Attitudes and Beliefs towards BPS Interventions in NSCLBP

Variable	Agree n (%)	Neutral n (%)	Disagree n (%)	Total ()
Mental stress can cause back pain	68 (85.0)	12 (15.0)	0 (0.0)	100.0
The cause of back pain is unknown	36 (45.0)	14 (17.5)	30 (37.5)	100.0
Exercises that may be back straining should not be avoided	63 (78.8)	7 (8.8)	10 (12.5)	100.0
Pain is a nociceptive stimulus, indicating tissue damage	22 (27.5)	12 (15.0)	46 (57.5)	100.0
Severity of tissue damage determines level of pain	17 (21.3)	13 (16.3)	50 (62.5)	100.0
Severe back pain - benefit from exercise	65 (81.3)	7 (8.8)	8 (10.0)	100.0
Functional limitations: psychosocial factors	53 (66.3)	9 (11.3)	18 (22.5)	100.0
Prefer only pain free movements	38 (47.5)	11 (13.8)	31 (38.8)	100.0
Back pain - higher risk of spinal impairments	53 (66.3)	12 (15.0)	15 (18.8)	100.0
Coping with stress promotes recovery	73 (91.3)	7 (8.8)	0 (0.0)	100.0
Therapy successful even if pain remains	68 (85.0)	6 (7.5)	6 (7.5)	100.0
Intensity can increase even if pain is worse	51 (63.8)	14 (17.5)	15 (18.8)	100.0
Back pain indicates organic injury	20 (25.0)	10 (12.5)	50 (62.5)	100.0
Adjust intensity immediately if pain increases	24 (30.0)	11 (13.8)	45 (56.3)	100.0
Therapy not reducing pain: risk of long-term restriction	18 (22.5)	8 (10.0)	54 (67.5)	100.0
Pain reduction is precondition for restoration	17 (21.3)	7 (8.8)	56 (70.0)	100.0
Increased pain: new tissue damage	19 (23.8)	13 (16.3)	48 (60.0)	100.0
No effective treatment to eliminate back pai	6 (7.5)	7 (8.8)	67 (83.8)	100.0
If patients complain of pain during exercise, I worry	19 (23.8)	12 (15.0)	49 (61.3)	100.0

Many respondents rejected the direct link between pain and tissue damage. Over sixty percent disagreed that "The severity of tissue damage determines the level of pain" (62.5%), that "Back pain indicates the presence of organic injury" (62.5%), and that "Increased pain indicates new tissue damage or the spread of existing damage" (60.0). A majority also disagreed that "Pain is a nociceptive stimulus, indicating tissue damage" (57.5%).

Congruently, most respondents did not endorse pain-avoidant behaviors, with 61.3 disagreeing with the statement, "If patients complain of pain during exercise, I worry that damage is being caused," and 56.3 disagreeing that "If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly".

The belief that "The cause of back pain is unknown" showed relatively even agreement and disagreement, with 45.0% agreeing, 37.5 disagreeing, and 17.5% remaining neutral. A similar rating was observed for the statement "Patients with back pain should preferably practice only pain free movements," where 47.5% agreed and 38.8% disagreed. (Table 4.3)

4.1.4 Association Between Respondents' Gender and Knowledge of BPS Interventions in Non-Specific Chronic Low Back Pain

The Chi-square test results showed that there was a significant association between respondents' gender and their knowledge of patient self-management as part of BPS interventions in NSCLBP ($p=0.030$). 79.5% of male respondents agreed that 'Patient self-management' was a key component, while 25.0% of female respondents disagreed. The other knowledge components showed no significant association with gender ($p > 0.05$). (Table 4.4)

4.1.5 Association Between Respondents' Gender and Attitudes and Beliefs toward BPS Interventions in Non-Specific Chronic Low Back Pain

The Chi-square test results showed that there was a significant association between respondents' gender and their belief that **'The cause of back pain is unknown'** ($p=0.024$). 63.6% of male respondents disagreed with this statement, while 58.3% of female respondents were neutral. The other attitudes and beliefs components showed no significant association with gender ($p > 0.05$). (Table 4.5)

4.1.6 Association Between Respondents' Educational Level and Knowledge of BPS Interventions in NSCLBP

The Chi-square test results showed no significant association between respondents' educational level and their knowledge of BPS interventions in NSCLBP. The other knowledge components showed no significant association with educational level ($p > 0.05$). (Table 4.6)

Table 4 Association Between Respondents' Gender and Knowledge of BPS Interventions in Non-Specific Chronic Low Back Pain using Chi-square Test

Variable	Agree		Neutral		Disagree		$\chi 2$	p-value
	Female **n (%)**	Male **n (%)**	Female **n (%)**	Male **n (%)**	Female **n (%)**	Male **n (%)**		
K1	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K2	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K3	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K4	33 (45.2)	40 (54.8)	1 (33.3)	2 (66.7)	2 (50.0)	2 (50.0)	0.20	0.902
K5	23 (39.7)	35 (60.3)	4 (36.4)	7 (63.6)	9 (81.8)	2 (18.2)	7.02	0.030
K6	34 (44.2)	43 (55.8)	0 (0.0)	0 (0.0)	2 (66.7)	1 (33.3)	0.59	0.442
K7	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K8	36 (46.2)	42 (53.8)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)	1.67	0.195
K9	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K10	36 (46.2)	42 (53.8)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)	1.67	0.195
K11	33 (44.6)	41 (55.4)	3 (50.0)	3 (50.0)	0 (0.0)	0 (0.0)	0.06	0.798
K12	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K13	32 (48.5)	34 (51.5)	4 (33.3)	8 (66.7)	0 (0.0)	2 (100.0)	2.62	0.270
K14	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K15	27 (45.0)	33 (55.0)	6 (46.2)	7 (53.8)	3 (42.9)	4 (57.1)	0.02	0.990
K16	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K17	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K18	35 (45.5)	42 (54.5)	0 (0.0)	0 (0.0)	1 (33.3)	2 (66.7)	0.17	0.679
K19	35 (44.9)	43 (55.1)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0.02	0.886
K20	36 (45.0)	44 (55.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-

KEY: K1 - An exercise component, K2 - Psychological support, K3 - Patient education, K4 - Personalization of care, K5 - Patient self-management, K6 - Social support, K7 - Patient participation in return to work, K8 - Follow-up after intervention, K9 - Standardization of assessment, K10 - Expertise intervention, K11 - Use of evidence-based practice, K12 - Treatment standardization, K13 - Goal setting, K14 - Dietary counseling, K15 - Social support with focus on pain, K16 - Negotiation with stakeholders, K17 - Progressive goal setting, K18 - Goal-oriented therapy, K19 - Involvement in ADLs, K20 - Stimulation of social interaction

Table 5 Association Between Respondents' Gender and Attitudes and Beliefs toward BPS Interventions in Non-Specific Chronic Low Back Pain using Chi-square Test

Variable	Agree		Neutral		Disagree		$\chi 2$	p
	Female **n (%)**	Male **n (%)**	Female **n (%)**	Male **n (%)**	Female **n (%)**	Male **n (%)**		
AB1	23 (56.1)	18 (43.9)	13 (36.1)	23 (63.9)	0 (0.0)	3 (100.0)	5.64	0.059
AB2	2 (100.0)	0 (0.0)	21 (56.8)	16 (43.2)	13 (31.7)	28 (68.3)	7.43	0.024*
AB3	14 (45.2)	17 (54.8)	10 (43.5)	13 (56.5)	12 (46.2)	14 (53.8)	0.03	0.982
AB4	27 (50.9)	26 (49.1)	7 (36.8)	12 (63.2)	2 (25.0)	6 (75.0)	2.56	0.278
AB5	25 (48.1)	27 (51.9)	10 (50.0)	10 (50.0)	1 (12.5)	7 (87.5)	3.81	0.148
AB6	32 (47.8)	35 (52.2)	4 (36.4)	7 (63.6)	0 (0.0)	2 (100.0)	2.17	0.337
AB7	23 (52.3)	21 (47.7)	11 (37.9)	18 (62.1)	2 (28.6)	5 (71.4)	2.28	0.318
AB8	17 (47.2)	19 (52.8)	14 (37.8)	23 (62.2)	5 (71.4)	2 (28.6)	2.81	0.245
AB9	24 (46.2)	28 (53.8)	10 (50.0)	10 (50.0)	2 (25.0)	6 (75.0)	1.52	0.467
AB10	19 (47.5)	21 (52.5)	13 (48.1)	14 (51.9)	4 (30.8)	9 (69.2)	1.27	0.529
AB11	14 (39.0)	21 (61.0)	11 (42.3)	15 (57.7)	11 (57.9)	8 (42.1)	1.70	0.426
AB12	5 (45.5)	6 (54.5)	8 (36.4)	14 (63.6)	23 (48.9)	24 (51.1)	0.95	0.619
AB13	7 (33.3)	14 (66.7)	27 (54.0)	23 (46.0)	2 (22.2)	7 (77.8)	4.67	0.096
AB14	26 (47.3)	29 (52.7)	10 (40.0)	15 (60.0)	-	-	0.36	0.544
AB15	21 (42.0)	29 (58.0)	13 (54.2)	11 (45.8)	2 (33.3)	4 (66.7)	1.32	0.515
AB16	25 (42.4)	34 (57.6)	11 (52.4)	10 (47.6)	-	-	0.62	0.429
AB17	16 (45.7)	19 (54.3)	19 (51.4)	18 (48.6)	1 (12.5)	7 (87.5)	4.02	0.134
AB18	6 (50.0)	6 (50.0)	8 (38.1)	13 (61.9)	22 (46.8)	25 (53.2)	0.58	0.745
AB19	16 (45.7)	19 (54.3)	19 (51.4)	18 (48.6)	1 (12.5)	7 (87.5)	4.02	0.134

KEY: AB1 - Mental stress can cause back pain even in the absence of tissue damage., AB2 - The cause of back pain is unknown., AB3 - Exercises that may be back straining should not be avoided during the treatment., AB4 - Pain is a nociceptive stimulus, indicating tissue damage., AB5 - The severity of tissue damage determines the level of pain., AB6 - A patient suffering from severe back pain will benefit from physical exercise., AB7 - Functional limitations associated with back pain are the result of psychosocial factors., AB8 - Patients with back pain should preferably practice only pain free movements., AB9 - In the long run, patients with back pain have a higher risk of developing spinal impairments., AB10 - Learning to cope with stress promotes recovery from back pain., AB11 - Therapy may have been successful even if pain remains., AB12 - Even if the pain has worsened, the intensity of the next treatment can be increased., AB13 - Back pain indicates the presence of organic injury., AB14 - If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly., AB15 - If therapy does not result in a reduction in back pain, there is a high risk of severe restrictions in the long term., AB16 - Pain reduction is a precondition for the restoration of normal functioning., AB17 - Increased pain indicates new tissue damage or the spread of existing damage., AB18 - There is no effective treatment to eliminate back pain., AB19 - If patients complain of pain during exercise, I worry that damage is being caused.

Table 6 Association Between Respondents' Educational Level and Knowledge of BPS Interventions in NSCLBP using Chi-square Test

Var	Agree				Neutral				Disagree				$\chi 2$	p
	BSc n (%)	DPT n (%)	MSc n (%)	PhD n (%)	BSc n (%)	DPT n (%)	MSc n (%)	PhD n (%)	BSc n (%)	DPT n (%)	MSc n (%)	PhD n (%)		
K1	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K2	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K3	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K4	46 (63.0)	3 (4.1)	11 (15.1)	13 (17.8)	2 (66.7)	0 (0.0)	0 (0.0)	1 (33.3)	1 (25.0)	0 (0.0)	0 (0.0)	3 (75.0)	7.95	0.242
K5	34 (58.6)	2 (3.4)	8 (13.8)	14 (24.1)	7 (63.6)	0 (0.0)	3 (27.3)	1 (9.1)	8 (72.7)	1 (9.1)	0 (0.0)	2 (18.2)	3.25	0.777
K6	47 (61.0)	3 (3.9)	11 (14.3)	16 (20.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)	1 (33.3)	2.50	0.475
K7	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K8	47 (60.3)	3 (3.8)	11 (14.1)	17 (21.8)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.53	0.469
K9	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K10	48 (61.5)	3 (3.8)	10 (12.8)	17 (21.8)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3.99	0.262
K11	42 (56.8)	3 (4.1)	11 (14.9)	18 (24.3)	7 (87.5)	0 (0.0)	0 (0.0)	1 (12.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5.39	0.145
K12	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K13	41 (62.1)	2 (3.0)	8 (12.1)	15 (22.7)	8 (66.7)	1 (8.3)	2 (16.7)	2 (16.7)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	4.31	0.365
K14	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K15	34 (56.7)	3 (5.0)	8 (13.3)	15 (25.0)	10 (76.9)	0 (0.0)	3 (23.1)	0 (0.0)	5 (71.4)	0 (0.0)	0 (0.0)	2 (28.6)	4.25	0.642
K16	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K17	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K18	47 (61.0)	3 (3.9)	11 (14.3)	16 (20.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)	1 (33.3)	2.50	0.475
K19	47 (60.3)	3 (3.8)	11 (14.1)	17 (21.8)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.53	0.469
K20	49 (61.3)	3 (3.8)	11 (13.8)	17 (21.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-

KEY: BSc - Bachelor's degree, DPT - Doctor of physiotherapy, MSc - Master's degree, PhD - Doctorate degree, K1 - An exercise component, K2 - Psychological support, K3 - Patient education, K4 - Personalization of care, K5 - Patient self-management, K6 - Social support, K7 - Patient participation in return to work, K8 - Follow-up after intervention, K9 - Standardization of assessment, K10 - Expertise intervention, K11 - Use of evidence-based practice, K12 - Treatment standardization, K13 - Goal setting, K14 - Dietary counseling, K15 - Social support with focus on pain, K16 - Negotiation with stakeholders, K17 - Progressive goal setting, K18 - Goal-oriented therapy, K19 - Involvement in ADLs, K20 - Stimulation of social interaction

4.1.7 Association Between Respondents' Educational Level and Attitudes and Beliefs toward BPS Interventions in NSCLBP

The Chi-square test results showed that there was a significant association between respondents' educational level and their belief that **'A patient suffering from severe back pain will benefit from physical exercise' (AB6)** (p=0.016). 87.8% of respondents with a Bachelor's degree agreed with this statement, while 66.7% of those with a Doctor of physiotherapy degree were neutral. The other attitudes and beliefs components showed no significant association with educational level ($p > 0.05$). (Table 4.7)

4.1.8 Association Between Respondents' Years of Experience and Knowledge of Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain

The Chi-square test results showed that there was a significant association between respondents' years of experience and their knowledge of **'Treatment standardization' (K11)** as part of BPS interventions in NSCLBP (p=0.033). 96.5% of respondents who agreed that 'Treatment standardization' was a part of BPS interventions in NSCLBP had 1-5 years of experience. The other knowledge components showed no significant association with years of experience ($p > 0.05$). (Table 4.8)

Table 7 Association Between Respondents' Educational Level and Attitudes and Beliefs toward BPS Interventions in NSCLBP using Chi-square Test

Variable	Agree				Neutral				Disagree				$\chi 2$	p
	BSc n (%)	DPT n (%)	MSc n (%)	PhD n (%)	BSc n (%)	DPT n (%)	MSc n (%)	PhD n (%)	BSc n (%)	DPT n (%)	MSc n (%)	PhD n (%)		
AB1	25 (61.0)	2 (4.9)	5 (12.2)	9 (22.0)	21 (58.3)	1 (2.8)	6 (16.7)	8 (22.2)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.49	0.869
AB2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	24 (64.9)	3 (8.1)	6 (16.2)	4 (10.8)	23 (56.1)	0 (0.0)	5 (12.2)	13 (31.7)	9.17	0.164
AB3	17 (54.8)	2 (6.5)	3 (9.7)	9 (29.0)	16 (69.6)	0 (0.0)	2 (8.7)	5 (21.7)	16 (61.5)	1 (3.8)	6 (23.1)	3 (11.5)	6.42	0.378
AB4	34 (64.2)	3 (5.7)	8 (15.1)	8 (15.1)	11 (57.9)	0 (0.0)	3 (15.8)	5 (26.3)	4 (50.0)	0 (0.0)	0 (0.0)	4 (50.0)	7.31	0.293
AB5	33 (63.5)	2 (3.8)	8 (15.4)	9 (17.3)	10 (50.0)	1 (5.0)	3 (15.0)	6 (30.0)	6 (75.0)	0 (0.0)	0 (0.0)	2 (25.0)	3.46	0.749
AB6	43 (64.2)	1 (1.5)	9 (13.4)	14 (20.9)	6 (54.5)	2 (18.2)	2 (18.2)	1 (9.1)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	15.5	0.016
AB7	29 (65.9)	2 (4.5)	3 (6.8)	10 (22.7)	17 (58.6)	0 (0.0)	7 (24.1)	5 (17.2)	3 (42.9)	1 (14.3)	1 (14.3)	2 (28.6)	8.06	0.233
AB8	22 (59.5)	0 (0.0)	8 (21.6)	6 (16.2)	20 (54.1)	3 (8.1)	3 (8.1)	11 (29.7)	7 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	12.3	0.055
AB9	31 (60.8)	2 (3.9)	7 (13.7)	12 (23.5)	13 (65.0)	1 (5.0)	3 (15.0)	3 (15.0)	5 (62.5)	0 (0.0)	1 (12.5)	2 (25.0)	0.99	0.986
AB10	24 (60.0)	2 (5.0)	7 (17.5)	7 (17.5)	16 (59.3)	1 (3.7)	2 (7.4)	8 (29.6)	9 (69.2)	0 (0.0)	2 (15.4)	2 (15.4)	3.40	0.756
AB11	17 (48.6)	2 (5.7)	4 (11.4)	12 (34.3)	21 (80.8)	0 (0.0)	3 (11.5)	2 (7.7)	11 (57.9)	1 (5.3)	4 (21.1)	3 (15.8)	10.3	0.112
AB12	4 (36.4)	1 (9.1)	2 (18.2)	4 (36.4)	16 (72.7)	0 (0.0)	3 (13.6)	3 (13.6)	29 (61.7)	2 (4.3)	6 (12.8)	10 (21.3)	5.25	0.512
AB13	12 (57.1)	0 (0.0)	3 (14.3)	6 (28.6)	31 (62.0)	2 (4.0)	8 (16.0)	9 (18.0)	6 (66.7)	1 (11.1)	0 (0.0)	2 (22.2)	4.41	0.621
AB14	34 (61.8)	3 (5.5)	6 (10.9)	12 (21.8)	15 (60.0)	0 (0.0)	5 (20.0)	5 (20.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.43	0.488
AB15	31 (62.0)	3 (6.0)	5 (10.0)	11 (22.0)	14 (58.3)	0 (0.0)	5 (20.8)	5 (20.8)	4 (66.7)	0 (0.0)	1 (16.7)	1 (16.7)	3.36	0.762
AB16	36 (61.0)	3 (5.1)	10 (16.9)	10 (16.9)	13 (61.9)	0 (0.0)	1 (4.8)	7 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4.69	0.195
AB17	17 (48.6)	1 (2.9)	7 (20.0)	10 (28.6)	26 (68.4)	2 (5.3)	3 (7.9)	6 (15.8)	6 (75.0)	0 (0.0)	1 (12.5)	1 (12.5)	5.77	0.449
AB18	8 (66.7)	0 (0.0)	3 (25.0)	1 (8.3)	12 (57.1)	1 (4.8)	3 (14.3)	5 (23.8)	29 (61.7)	2 (4.3)	5 (10.6)	11 (23.4)	3.20	0.783
AB19	17 (48.6)	1 (2.9)	7 (20.0)	10 (28.6)	26 (68.4)	2 (5.3)	3 (7.9)	6 (15.8)	6 (75.0)	0 (0.0)	1 (12.5)	1 (12.5)	5.77	0.449

KEY: BSc - Bachelor's degree, DPT - Doctor of physiotherapy, MSc - Master's degree, PhD - Doctorate degree, AB1 - Mental stress can cause back pain even in the absence of tissue damage, AB2 - The cause of back pain is unknown, AB3 - Exercises that may be back straining should not be avoided during the treatment, AB4 - Pain is a nociceptive stimulus, indicating tissue damage, AB5 - The severity of tissue damage determines the level of pain, AB6 - A patient suffering from severe back pain will benefit from physical exercise, AB7 - Functional limitations associated with back pain are the result of psychosocial factors, AB8 - Patients with back pain should preferably practice only pain free movements, AB9 - In the long run, patients with back pain have a higher risk of developing spinal impairments, AB10 - Learning to cope with stress promotes recovery from back pain, AB11 - Therapy may have been successful even if pain remains, AB12 - Even if the pain has worsened, the intensity of the next treatment can be increased, AB13 - Back pain indicates the presence of organic injury, AB14 - If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly, AB15 - If therapy does not result in a reduction in back

pain, there is a high risk of severe restrictions in the long term, AB16 - Pain reduction is a precondition for the restoration of normal functioning, AB17 - Increased pain indicates new tissue damage or the spread of existing damage, AB18 - There is no effective treatment to eliminate back pain, AB19 - If patients complain of pain during exercise, I worry that damage is being caused

Table 8 Association Between Respondents' Years of Experience and Knowledge of Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain using Chi-square Test

Variable	Agree				Neutral				Disagree				$\chi 2$	p
	1–5 **n (%)**	6–10 **n (%)**	11–15 **n (%)**	>15 **n (%)**	1–5 **n (%)**	6–10 **n (%)**	11–15 **n (%)**	>15 **n (%)**	1–5 **n (%)**	6–10 **n (%)**	11–15 **n (%)**	>15 **n (%)**		
K1	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K2	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K3	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K4	53 (72.6)	6 (8.2)	5 (6.8)	9 (12.3)	1 (33.3)	0 (0.0)	1 (33.3)	1 (33.3)	3 (75.0)	0 (0.0)	0 (0.0)	1 (25.0)	5.53	0.478
K5	41 (70.7)	5 (8.6)	5 (8.6)	7 (12.1)	7 (63.6)	0 (0.0)	1 (9.1)	3 (27.3)	9 (81.8)	1 (9.1)	0 (0.0)	1 (9.1)	3.93	0.685
K6	54 (70.1)	6 (7.8)	6 (7.8)	11 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.25	0.739
K7	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K8	55 (70.5)	6 (7.7)	6 (7.7)	11 (14.1)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0.82	0.843
K9	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K10	56 (71.8)	6 (7.7)	6 (7.7)	10 (12.8)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.39	0.494
K11	55 (74.3)	5 (6.8)	6 (8.1)	8 (10.8)	2 (33.3)	1 (16.7)	0 (0.0)	3 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	8.72	0.033
K12	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K13	46 (69.7)	6 (9.1)	4 (6.1)	10 (15.2)	10 (83.3)	0 (0.0)	2 (16.7)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	7.00	0.321
K14	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K15	40 (66.7)	6 (10.0)	6 (10.0)	8 (13.3)	10 (76.9)	0 (0.0)	0 (0.0)	3 (23.1)	7 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	6.84	0.336
K16	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K17	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K18	54 (70.1)	6 (7.8)	6 (7.8)	11 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.25	0.739
K19	56 (71.8)	5 (6.4)	6 (7.7)	11 (14.1)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5.50	0.138
K20	57 (71.3)	6 (7.5)	6 (7.5)	11 (13.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-

KEY: SA – Strongly Agree, N – Neutral, SD – Strongly Disagree, K1 - An exercise component, K2 - Psychological support, K3 - Patient education, K4 - Personalization of care, K5 - Patient self-management, K6 - Social support, K7 - Patient participation in return to work, K8 - Follow-up after intervention, K9 - Standardization of assessment, K10 - Expertise intervention, K11 - Use of evidence-based practice, K12 - Treatment standardization, K13 - Goal setting, K14 - Dietary counseling, K15 - Social support with focus on pain, K16 - Negotiation with stakeholders, K17 - Progressive goal setting, K18 - Goal-oriented therapy, K19 - Involvement in ADLs, K20 - Stimulation of social interaction

4.1.9 Association Between Respondents' Years of Experience and Attitudes and Beliefs toward Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain

The Chi-square test results showed that there was no significant association between respondents' years of experience and their attitudes and beliefs regarding NSCLBP. The other attitudes and beliefs components showed no significant association with years of experience ($p > 0.05$). (Table 4.9)

4.1.10 Association Between Respondents' Area of Specialization and Knowledge of Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain

The Chi-square test results showed that there was a significant association between respondents' area of specialty and their knowledge of **'Stimulation of social interaction'** as part of BPS interventions in NSCLBP ($p=0.014$). 98.0% of respondents in musculoskeletal practice agreed that 'Stimulation of social interaction' was a key component, while 66.7% of those in women's health were neutral on this item. The other knowledge components showed no significant association with area of specialization ($p > 0.05$). (Table 4.10)

Table 9 Association Between Respondents' Years of Experience and Attitudes and Beliefs toward Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain using Chi-square Test

Variable	Agree				Neutral				Disagree				$\chi 2$	p
	1–5 **n (%)**	6–10 **n (%)**	11–15 **n (%)**	>15 **n (%)**	1–5 **n (%)**	6–10 **n (%)**	11–15 **n (%)**	>15 **n (%)**	1–5 **n (%)**	6–10 **n (%)**	11–15 **n (%)**	>15 **n (%)**		
AB1	31 (75.6)	2 (4.9)	2 (4.9)	6 (14.6)	23 (63.9)	4 (11.1)	4 (11.1)	5 (13.9)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	10.15	0.118
AB2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	24 (64.9)	3 (8.1)	4 (10.8)	6 (16.2)	31 (75.6)	3 (7.3)	2 (4.9)	5 (12.2)	6.89	0.331
AB3	20 (64.5)	2 (6.5)	4 (12.9)	5 (16.1)	19 (82.6)	1 (4.3)	0 (0.0)	3 (13.0)	18 (69.2)	3 (11.5)	2 (7.7)	3 (11.5)	5.84	0.441
AB4	37 (69.8)	5 (9.4)	4 (7.5)	7 (13.2)	13 (68.4)	1 (5.3)	2 (10.5)	3 (15.8)	7 (87.5)	0 (0.0)	0 (0.0)	1 (12.5)	1.70	0.945
AB5	36 (69.2)	5 (9.6)	5 (9.6)	6 (11.5)	13 (65.0)	1 (5.0)	1 (5.0)	5 (25.0)	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	3.87	0.694
AB6	46 (68.7)	6 (9.0)	5 (7.5)	10 (14.9)	9 (81.8)	0 (0.0)	1 (9.1)	1 (9.1)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	8.08	0.232
AB7	31 (70.5)	3 (6.8)	4 (9.1)	6 (13.6)	20 (69.0)	3 (10.3)	2 (6.9)	4 (13.8)	6 (85.7)	0 (0.0)	0 (0.0)	1 (14.3)	3.80	0.703
AB8	25 (67.6)	4 (10.8)	1 (2.7)	6 (16.2)	28 (75.7)	2 (5.4)	3 (8.1)	4 (10.8)	4 (57.1)	0 (0.0)	2 (28.6)	1 (14.3)	6.94	0.326
AB9	38 (73.1)	4 (7.7)	4 (7.7)	6 (11.5)	12 (60.0)	2 (10.0)	2 (10.0)	4 (20.0)	7 (87.5)	0 (0.0)	0 (0.0)	1 (12.5)	2.27	0.893
AB10	26 (65.0)	3 (7.5)	4 (10.0)	7 (17.5)	21 (77.8)	2 (7.4)	2 (7.4)	2 (7.4)	10 (76.9)	1 (7.7)	0 (0.0)	2 (15.4)	7.39	0.286
AB11	25 (71.4)	2 (5.7)	3 (8.6)	5 (14.3)	15 (60.0)	3 (12.0)	3 (12.0)	3 (12.0)	17 (89.5)	1 (5.3)	0 (0.0)	3 (15.8)	3.58	0.733
AB12	9 (81.8)	0 (0.0)	1 (9.1)	1 (9.1)	14 (63.6)	3 (13.6)	0 (0.0)	5 (22.7)	34 (72.3)	3 (6.4)	5 (10.6)	5 (10.6)	10.99	0.139
AB13	15 (71.4)	1 (4.8)	2 (9.5)	3 (14.3)	35 (70.0)	4 (8.0)	4 (8.0)	7 (14.0)	7 (77.8)	1 (11.1)	0 (0.0)	1 (11.1)	3.46	0.749
AB14	42 (76.4)	4 (7.3)	4 (7.3)	5 (9.1)	15 (60.0)	2 (8.0)	2 (8.0)	6 (24.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3.86	0.276
AB15	36 (72.0)	6 (12.0)	2 (4.0)	6 (12.0)	16 (64.0)	0 (0.0)	4 (16.0)	3 (12.0)	5 (83.3)	0 (0.0)	0 (0.0)	2 (33.3)	12.23	0.057
AB16	41 (69.5)	3 (5.1)	5 (8.5)	10 (16.9)	16 (76.2)	3 (14.3)	1 (4.8)	1 (4.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.83	0.418
AB17	24 (68.6)	3 (8.6)	3 (8.6)	5 (14.3)	25 (67.6)	3 (8.1)	3 (8.1)	6 (16.2)	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.30	0.889
AB18	10 (83.3)	0 (0.0)	1 (8.3)	1 (8.3)	14 (66.7)	1 (4.8)	2 (9.5)	4 (19.0)	33 (70.2)	5 (10.6)	3 (6.4)	6 (12.8)	8.40	0.210
AB19	24 (68.6)	3 (8.6)	3 (8.6)	5 (14.3)	25 (67.6)	3 (8.1)	3 (8.1)	6 (16.2)	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.30	0.889

KEY: CA – Completely Agree, N – Neutral, CD – Completely Disagree, AB1 - Mental stress can cause back pain even in the absence of tissue damage., AB2 - The cause of back pain is unknown., AB3 - Exercises that may be back straining should not be avoided during the treatment., AB4 - Pain is a nociceptive stimulus, indicating tissue damage., AB5 - The severity of tissue damage determines the level of pain., AB6 - A patient suffering from severe back pain will benefit from physical exercise., AB7 - Functional limitations associated with back pain are the result of psychosocial factors., AB8 - Patients with back pain should preferably practice only pain free movements., AB9 - In the long run, patients with back pain have a higher risk of developing spinal impairments., AB10 - Learning to cope with stress promotes recovery from back pain., AB11 - Therapy may have been successful even if pain remains., AB12 - Even if the pain has worsened, the intensity of the next treatment can be increased., AB13 - Back pain indicates the presence of organic injury., AB14 - If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly., AB15 - If therapy does not result in a reduction in back pain, there is a high risk

of severe restrictions in the long term., AB16 - Pain reduction is a precondition for the restoration of normal functioning., AB17 - Increased pain indicates new tissue damage or the spread of existing damage., AB18 - There is no effective treatment to eliminate back pain., AB19 - If patients complain of pain during exercise, I worry that damage is being caused.

Table 10 Association Between Respondents' Area of Specialization and Knowledge of BPS Interventions in NSCLBP using Chi-square Test

Variable	Agree					Neutral					Disagree					$\chi 2$	p
	MS n (%)	SP n (%)	GER n (%)	WH n (%)	OTH n (%)	MS n (%)	SP n (%)	GER n (%)	WH n (%)	OTH n (%)	MS n (%)	SP n (%)	GER n (%)	WH n (%)	OTH n (%)		
K1	49 (61.3)	13 (16.3)	9 (11.3)	3(3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K2	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K3	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K4	46 (63.0)	11 (15.1)	7 (9.6)	3 (4.1)	6 (8.2)	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	1 (25.0)	2 (50.0)	0 (0.0)	0 (0.0)	8.41	0.39
K5	37 (63.8)	10 (17.2)	6 (10.3)	0 (0.0)	5 (8.6)	8 (72.7)	1 (9.1)	1 (9.1)	1 (9.1)	0 (0.0)	4 (36.4)	2 (18.2)	2 (18.2)	2 (18.2)	1 (9.1)	12.4	0.13
K6	47 (61.0)	12 (15.6)	9 (11.7)	3 (3.9)	6 (7.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	1.27	0.86
K7	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K8	47 (60.3)	13 (16.7)	9 (11.5)	3 (3.8)	6 (7.7)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.29	0.86
K9	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K10	49 (62.8)	13 (16.7)	8 (10.3)	3 (3.8)	5 (6.4)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	9.34	0.05
K11	46 (62.2)	12 (16.2)	9 (12.2)	3 (4.1)	4 (5.4)	3 (50.0)	1 (16.7)	0 (0.0)	0 (0.0)	2 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6.87	0.14
K12	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K13	42 (63.6)	11 (16.7)	6 (9.1)	3 (4.5)	4 (6.1)	7 (58.3)	1 (8.3)	3 (25.0)	0 (0.0)	1 (8.3)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	11.3	0.18
K14	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K15	34 (56.7)	9 (15.0)	8 (13.3)	3 (5.0)	6 (10.0)	8 (61.5)	4 (30.8)	1 (7.7)	0 (0.0)	0 (0.0)	7 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	8.96	0.34
K16	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K17	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-
K18	47 (61.0)	12 (15.6)	9 (11.7)	3 (3.9)	6 (7.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	1.27	0.86
K19	48 (61.5)	13 (16.7)	9 (11.5)	2 (2.6)	6 (7.7)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	12.4	0.01
K20	49 (61.3)	13 (16.3)	9 (11.3)	3 (3.8)	6 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	-

KEY: MS – Musculoskeletal, SP – Sport Injuries, GER – Gerontology, WH – Women's Health, OTH – Others, K1- An exercise component, K2 - Psychological support, K3 - Patient education, K4 - Personalization of care, K5 - Patient self-management, K6 - Social support, K7 - Patient participation in return to work, K8 - Follow-up after intervention, K9 - Standardization of assessment, K10 - Expertise intervention, K11 - Use of evidence-based practice, K12 - Treatment standardization, K13 - Goal setting, K14 - Dietary counseling, K15 - Social support with focus on pain, K16 - Negotiation with stakeholders, K17 - Progressive goal setting, K18 - Goal-oriented therapy, K19 - Involvement in ADLs, K20 - Stimulation of social interaction

4.1.11 Association Between Respondents' Area of Specialization and Attitudes and Beliefs toward Biopsychosocial Interventions in Non-Specific Chronic Low Back Pain

The Chi-square test results showed that there was no significant association between respondents' area of specialty and their attitudes and beliefs regarding NSCLBP. The other attitudes and beliefs components showed no significant association with area of specialization ($p > 0.05$). (Table 4.11)

Table 11 Association Between Respondents' Area of Specialization and Attitudes and Beliefs toward BPS Interventions in NSCLBP using Chi-square Test

Var	Agree					Neutral					Disagree					$\chi 2$	p
	MS **n (%)**	SP **n (%)**	GER **n (%)**	WH **n (%)**	OTH **n (%)**	MS **n (%)**	SP **n (%)**	GER **n (%)**	WH **n (%)**	OTH **n (%)**	MS **n (%)**	SP **n (%)**	GER **n (%)**	WH **n (%)**	OTH **n (%)**		
AB1	25 (61.0)	8 (19.5)	3 (7.3)	1 (2.4)	4 (9.8)	22 (61.1)	4 (11.1)	6 (16.7)	2 (5.6)	2 (5.6)	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	4.54	0.80
AB2	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	20 (54.1)	7 (18.9)	5 (13.5)	2 (5.4)	3 (8.1)	27 (65.9)	6 (14.6)	4 (9.8)	1 (2.4)	3 (7.3)	2.67	0.95
AB3	17 (54.8)	3 (9.7)	7 (22.6)	2 (6.5)	2 (6.5)	14 (60.9)	6 (26.1)	2 (8.7)	0 (0.0)	1 (4.3)	18 (69.2)	4 (15.4)	0 (0.0)	1 (3.8)	3 (11.5)	11.6	0.16
AB4	32 (60.4)	9 (17.0)	6 (11.3)	2 (3.8)	4 (7.5)	12 (63.2)	3 (15.8)	2 (10.5)	0 (0.0)	2 (10.5)	5 (62.5)	1 (12.5)	1 (12.5)	1(12.5)	0 (0.0)	3.30	0.91
AB5	31 (59.6)	8 (15.4)	7 (13.5)	2 (3.8)	4 (7.7)	11 (55.0)	4 (20.0)	2 (10.0)	1 (5.0)	2 (10.0)	7 (87.5)	1 (12.5)	0 (0.0)	0 (0.0)	0 (0.0)	3.62	0.88
AB6	40 (59.7)	11 (16.4)	7 (10.4)	3 (4.5)	6 (9.0)	8 (72.7)	1 (9.1)	2 (18.2)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	4.53	0.80
AB7	26 (59.1)	7 (15.9)	7 (15.9)	3 (6.8)	1 (2.3)	18 (62.1)	5 (17.2)	2 (6.9)	0 (0.0)	4 (13.8)	5 (71.4)	1 (14.3)	0 (0.0)	0 (0.0)	1 (14.3)	8.33	0.40
AB8	21 (58.3)	8 (22.2)	1 (2.8)	1 (2.8)	5(13.9)	25 (67.6)	4 (10.8)	6 (16.2)	1 (2.7)	1 (2.7)	3 (42.9)	1 (14.3)	2 (28.6)	1(14.3)	0 (0.0)	13.0	0.11
AB9	34 (65.4)	7 (13.5)	5 (9.6)	1 (1.9)	5 (9.6)	10 (50.0)	5 (25.0)	3 (15.0)	2 (10.0)	0 (0.0)	5 (62.5)	1 (12.5)	1 (12.5)	0 (0.0)	1 (12.5)	7.12	0.52
AB10	22 (55.0)	8 (20.0)	6 (15.0)	1 (2.5)	3 (7.5)	19 (67.9)	4 (14.3)	1 (3.6)	2 (7.1)	1 (3.6)	8 (61.5)	1 (7.7)	2 (15.4)	0 (0.0)	2 (15.4)	6.86	0.55
AB11	22 (62.9)	6 (17.1)	5 (14.3)	1 (2.9)	1 (2.9)	12 (46.2)	6 (23.1)	3 (11.5)	2 (7.7)	3 (11.5)	15 (78.9)	1 (5.3)	1 (5.3)	0 (0.0)	2 (10.5)	8.69	0.36
AB12	7 (63.6)	2 (18.2)	1 (9.1)	0 (0.0)	1 (9.1)	11 (47.8)	4 (17.4)	4 (17.4)	3 (13.0)	0 (0.0)	31 (66.0)	7 (14.9)	4 (8.5)	0 (0.0)	5 (10.6)	12.2	0.13
AB13	13 (61.9)	3 (14.3)	3 (14.3)	1 (4.8)	1 (4.8)	30 (60.0)	8 (16.0)	5 (10.0)	2 (4.0)	5 (10.0)	6 (66.7)	2 (22.2)	1 (11.1)	0 (0.0)	0 (0.0)	2.25	0.97
AB14	34 (61.8)	8 (14.5)	7 (12.7)	3 (5.5)	3 (5.5)	15 (60.0)	5 (20.0)	2 (8.0)	0 (0.0)	3 (12.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3.01	0.55
AB15	31 (62.0)	7 (14.0)	8 (16.0)	1 (2.0)	3 (6.0)	15 (62.5)	5 (20.8)	1 (4.2)	2 (8.3)	1 (4.2)	3 (50.0)	1 (16.7)	0 (0.0)	0 (0.0)	2 (33.3)	11.1	0.19
AB16	35 (59.3)	9 (15.3)	8 (13.6)	2 (3.4)	5 (8.5)	14 (66.7)	4 (19.0)	1 (4.8)	1 (4.8)	1 (4.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.70	0.79
AB17	20 (57.1)	6 (17.1)	2 (5.7)	2 (5.7)	5(14.3)	22 (59.5)	6 (16.2)	7 (18.9)	1 (2.7)	1 (2.7)	7 (87.5)	1 (12.5)	0 (0.0)	0 (0.0)	0 (0.0)	9.54	0.29
AB18	8 (66.7)	2 (16.7)	0 (0.0)	0 (0.0)	2(16.7)	12 (57.1)	4 (19.0)	3 (14.3)	1 (4.8)	1 (4.8)	29 (61.7)	7 (14.9)	6 (12.8)	2 (4.3)	3 (6.4)	4.06	0.85
AB19	20 (57.1)	6 (17.1)	2 (5.7)	2 (5.7)	5(14.3)	22 (59.5)	6 (16.2)	7 (18.9)	1 (2.7)	1 (2.7)	7 (87.5)	1 (12.5)	0 (0.0)	0 (0.0)	0 (0.0)	9.54	0.29

KEY: MS – Musculoskeletal, SP – Sport Injuries, GER – Gerontology, WH – Women's Health, OTH – Others, AB1 - Mental stress can cause back pain even in the absence of tissue damage., AB2 - The cause of back pain is unknown., AB3 - Exercises that may be back straining should not be avoided during the treatment., AB4 - Pain is a nociceptive stimulus, indicating tissue damage., AB5 - The severity of tissue damage determines the level of pain., AB6 - A patient suffering from severe back pain will benefit from physical exercise., AB7 - Functional limitations associated with back pain are the result of psychosocial factors., AB8 - Patients with back pain should preferably practice only pain free movements., AB9 - In the long run, patients with back pain have a higher risk of developing spinal impairments., AB10 - Learning to cope with stress promotes recovery from back pain., AB11 - Therapy may have been successful even if pain remains., AB12 - Even if the pain has worsened, the intensity of the next treatment can be increased., AB13 - Back pain indicates the presence of organic injury., AB14 - If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly., AB15 - If therapy

does not result in a reduction in back pain, there is a high risk of severe restrictions in the long term., AB16 - Pain reduction is a precondition for the restoration of normal functioning., AB17 - Increased pain indicates new tissue damage or the spread of existing damage., AB18 - There is no effective treatment to eliminate back pain., AB19 - If patients complain of pain during exercise, I worry that damage is being caused.

4.1.12 Association Between Respondents' Knowledge and Attitudes and Beliefs toward BPS Interventions in NSCLBP

There was a significant association between knowledge of 'Personalization of care' and the belief that 'Back pain indicates the presence of organic injury' (p=0.028). There was a significant association between knowledge of 'Social support' and the belief that 'Back pain indicates the presence of organic injury' (p=0.013). There was a significant association between knowledge of 'Follow up after intervention' and the belief that 'A patient suffering from severe back pain will benefit from physical exercise' (p=0.002).

Table 12: Association Between Respondents' Knowledge and Attitudes and Beliefs toward BPS Interventions in NSCLBP(K1-K10)

Var	K1 (χ^2, p)	K2 (χ^2, p)	K3 (χ^2, p)	K4 (χ^2, p)	K5 (χ^2, p)	K6 (χ^2, p)	K7 (χ^2, p)	K8 (χ^2, p)	K9 (χ^2, p)	K10 (χ^2, p)
AB1	-	-	-	0.55, 0.969	3.71, 0.446	0.36, 0.837	-	2.51, 0.285	-	2.51, 0.285
AB2	-	-	-	0.69, 0.953	8.60, 0.072	0.34, 0.846	-	1.95, 0.377	-	0.06, 0.971
AB3	-	-	-	3.37, 0.498	2.86, 0.581	1.66, 0.435	-	1.31, 0.519	-	0.85, 0.654
AB4	-	-	-	3.33, 0.505	2.90, 0.575	0.43, 0.806	-	0.88, 0.643	-	0.88, 0.643
AB5	-	-	-	2.39, 0.664	2.21, 0.698	1.68, 0.432	-	0.79, 0.674	-	1.11, 0.576
AB6	-	-	-	1.49, 0.829	2.97, 0.564	0.61, 0.739	-	12.87, 0.002*	-	0.40, 0.820
AB7	-	-	-	4.99, 0.288	1.44, 0.837	2.43, 0.297	-	3.61, 0.165	-	4.74, 0.093
AB8	-	-	-	2.28, 0.685	4.05, 0.399	0.71, 0.701	-	0.20, 0.906	-	0.20, 0.906
AB9	-	-	-	3.23, 0.520	2.11, 0.715	0.40, 0.819	-	1.11, 0.576	-	0.79, 0.674
AB10	-	-	-	5.44, 0.245	0.70, 0.951	1.68, 0.432	-	2.13, 0.345	-	2.13, 0.345
AB11	-	-	-	4.18, 0.383	0.37, 0.985	3.51, 0.173	-	4.26, 0.119	-	0.70, 0.705
AB12	-	-	-	3.56, 0.469	4.95, 0.293	1.25, 0.535	-	1.44, 0.487	-	0.69, 0.709
AB13	-	-	-	10.83, 0.028*	1.97, 0.741	8.76, 0.013*	-	0.72, 0.697	-	0.72, 0.697
AB14	-	-	-	1.53, 0.466	1.24, 0.539	1.42, 0.234	-	0.34, 0.562	-	0.93, 0.334
AB15	-	-	-	0.74, 0.947	1.87, 0.760	0.25, 0.881	-	1.23, 0.540	-	0.48, 0.787
AB16	-	-	-	1.12, 0.571	4.78, 0.092	0.08, 0.776	-	0.73, 0.393	-	0.73, 0.393
AB17	-	-	-	1.31, 0.859	4.13, 0.389	3.51, 0.173	-	0.23, 0.892	-	0.23, 0.892
AB18	-	-	-	5.39, 0.250	0.84, 0.933	1.55, 0.461	-	0.78, 0.679	-	0.78, 0.679
AB19	-	-	-	0.93, 0.859	0.34, 0.389	1.42, 0.173	-	1.24, 0.892	-	1.53, 0.892

There was a significant association between knowledge of 'Use of evidence based practice' and the belief that 'The severity of tissue damage determines the level of pain' ($p=0.046$). There was a significant association between knowledge of 'Use of evidence based practice' and the belief that 'Increased pain indicates new tissue damage or the spread of existing damage' ($p=0.015$). There was a significant association between knowledge of 'Goal setting' and the belief that 'Mental stress can cause back pain even in the absence of tissue damage' ($p=0.004$). There was a significant association between knowledge of 'Utilization of goal oriented therapy' and the belief that 'Exercises that may be back straining should not be avoided during the treatment' ($p=0.021$). Table 4.13

There was a significant association between knowledge of 'Utilization of goal oriented therapy' and the belief that 'In the long run, patients with back pain have a higher risk of developing spinal impairments' ($p=0.009$). There was a significant association between knowledge of 'Utilization of goal oriented therapy' and the belief that 'Increased pain indicates new tissue damage or the spread of existing damage' ($p=0.003$). There was a significant association between knowledge of 'Involvement of activities of daily living' and the belief that 'Patients with back pain should preferably practice only pain free movements' ($p<0.001$). The other knowledge components showed no significant association with the attitudes and beliefs components ($p > 0.05$). Table 4.13

Table 13: Association Between Respondents' Knowledge and Attitudes and Beliefs toward BPS Interventions in NSCLBP(K11-K20)

Var	K11 (χ^2, p)	K12 (χ^2, p)	K13 (χ^2, p)	K14 (χ^2, p)	K15 (χ^2, p)	K16 (χ^2, p)	K17 (χ^2, p)	K18 (χ^2, p)	K19 (χ^2, p)	K20 (χ^2, p)
AB1	0.28, 0.869	-	15.62, 0.004*	-	3.13, 0.536	-	-	2.97, 0.227	2.51, 0.285	-
AB2	0.18, 0.912	-	5.15, 0.272	-	5.13, 0.274	-	-	0.34, 0.846	0.06, 0.971	-
AB3	3.48, 0.176	-	4.40, 0.354	-	4.40, 0.354	-	-	7.72, 0.021*	0.85, 0.654	-
AB4	1.07, 0.585	-	1.71, 0.789	-	5.31, 0.257	-	-	3.24, 0.198	1.05, 0.593	-
AB5	6.15, 0.046*	-	2.86, 0.582	-	3.58, 0.466	-	-	1.68, 0.432	1.11, 0.576	-
AB6	0.20, 0.904	-	2.11, 0.715	-	7.90, 0.095	-	-	1.06, 0.590	0.40, 0.820	-
AB7	3.85, 0.146	-	4.83, 0.305	-	0.42, 0.981	-	-	2.43, 0.297	0.30, 0.863	-
AB8	3.91, 0.141	-	3.21, 0.523	-	1.07, 0.898	-	-	3.81, 0.149	21.39, <0.001*	-
AB9	0.69, 0.707	-	1.17, 0.882	-	3.30, 0.510	-	-	9.35, 0.009*	0.79, 0.674	-
AB10	1.73, 0.422	-	5.99, 0.200	-	5.38, 0.250	-	-	1.68, 0.432	0.49, 0.781	-
AB11	2.97, 0.226	-	9.21, 0.056	-	3.04, 0.551	-	-	3.78, 0.151	1.69, 0.430	-
AB12	2.17, 0.338	-	4.53, 0.340	-	2.76, 0.599	-	-	0.50, 0.779	3.54, 0.170	-
AB13	1.41, 0.495	-	3.84, 0.428	-	3.09, 0.543	-	-	0.42, 0.811	0.72, 0.697	-
AB14	0.01, 0.909	-	1.54, 0.462	-	1.61, 0.448	-	-	0.01, 0.937	0.34, 0.562	-
AB15	2.47, 0.290	-	5.60, 0.231	-	2.87, 0.579	-	-	2.06, 0.358	0.48, 0.787	-
AB16	0.31, 0.579	-	0.76, 0.685	-	1.11, 0.573	-	-	2.63, 0.105	0.73, 0.393	-
AB17	8.34, 0.015*	-	3.35, 0.501	-	4.37, 0.358	-	-	11.49, 0.003*	0.23, 0.892	-
AB18	0.22, 0.896	-	6.60, 0.159	-	2.58, 0.631	-	-	0.56, 0.756	1.44, 0.487	-
AB19	0.93, 0.055	-	0.34, 0.501	-	1.42, 0.358	-	-	1.24, 0.083	1.24, 0.892	-

KEY: K1 - An exercise component, K2 - Psychological support, K3 - Patient education, K4 - Personalization of care, K5 - Patient self-management, K6 - Social support, K7 - Patient participation in return to work, K8 - Follow-up after intervention, K9 - Standardization of assessment, K10 - Expertise intervention, K11 - Use of evidence-based practice, K12 - Treatment standardization, K13 - Goal setting, K14 - Dietary counseling, K15 - Social support with focus on pain, K16 - Negotiation with stakeholders, K17 - Progressive goal setting, K18 - Goal-oriented therapy, K19 - Involvement in ADLs, K20 - Stimulation of social interaction., AB1 - Mental stress can cause back pain even in the absence of tissue damage., AB2 - The cause of back pain is unknown., AB3 - Exercises that may be back straining should not be avoided during the treatment., AB4 - Pain is a nociceptive stimulus, indicating tissue damage., AB5 - The severity of tissue damage determines the level of pain., AB6 - A patient suffering from severe back pain will benefit from physical exercise., AB7 - Functional limitations associated with back pain are the result of psychosocial factors., AB8 - Patients with back pain should preferably practice only pain free movements., AB9 - In the long run, patients with back pain have a higher risk of developing spinal impairments., AB10 - Learning to cope with stress promotes recovery from back pain., AB11 - Therapy may have been successful even if pain remains., AB12 - Even if the pain has worsened, the intensity of the next treatment can be increased., AB13 - Back pain indicates the presence of organic injury., AB14 - If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly., AB15 - If therapy does not result in a reduction in back pain, there is a high risk of severe restrictions in the long term., AB16 - Pain reduction is a precondition for the restoration of normal functioning., AB17 - Increased pain indicates new tissue damage or the spread of existing damage., AB18 - There is no effective treatment to eliminate back pain., AB19 - If patients complain of pain during exercise, I worry that damage is being caused.

4.2 Hypothesis Testing

Hypothesis 1: There will be no significant association between gender and physiotherapists' knowledge on BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: 0.030

DECISION: The observed p-value is less than 0.05; the null hypothesis is therefore REJECTED.

Hypothesis 2: There will be no significant association between gender and physiotherapists' attitudes and beliefs towards BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: 0.024

DECISION: The observed p-value is less than 0.05; the null hypothesis is therefore REJECTED.

Hypothesis 3: There will be no significant association between educational level and physiotherapists' knowledge on BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: >0.05

DECISION: The observed p-value is greater than 0.05; the null hypothesis is therefore NOT REJECTED.

Hypothesis 4: There will be no significant association between educational level and physiotherapists' attitudes and beliefs towards BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: 0.016

DECISION: The observed p-value is less than 0.05; the null hypothesis is therefore REJECTED.

Hypothesis 5: There will be no significant association between years of experience and physiotherapists' knowledge on BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: 0.033

DECISION: The observed p-value is less than 0.05; the null hypothesis is therefore REJECTED.

Hypothesis 6: There will be no significant association between years of experience and physiotherapists' attitudes and beliefs towards BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: >0.05

DECISION: The observed p-value is greater than 0.05; the null hypothesis is therefore NOT REJECTED.

Hypothesis 7: There will be no significant association between area of specialty and physiotherapists' knowledge on BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: 0.014

DECISION: The observed p-value is less than 0.05; the null hypothesis is therefore REJECTED.

Hypothesis 8: There will be no significant association between area of specialty and physiotherapists' attitudes and beliefs towards BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: >0.05

DECISION: The observed p-value is greater than 0.05; the null hypothesis is therefore NOT REJECTED.

Hypothesis 9: There will be no significant association between physiotherapists' knowledge and

attitudes and beliefs towards BPS interventions in the management of NSCLBP.

Test: Chi-square Test

p-value: 0.05

Observed p-value: <0.05

DECISION: The observed p-values for several associations were less than 0.05; the null hypothesis is therefore REJECTED.

CHAPTER FIVE

5.1 DISCUSSION

5.1.1 Sociodemographic Characteristics of Respondents

The finding that there were more male than female physiotherapists in the present study suggests a male predominance in the physiotherapy profession in South-South Nigeria. This finding in tandem with a report by World Physiotherapy (2023) which reported that only 40% of physiotherapists in Nigeria are female. This finding is also corroborated by a recent national survey of Nigerian physiotherapists by Mbada et al. (2023), which found a similar male preponderance with a male-to-female ratio of 1.48:1. However, the present study's result is contrary to findings from countries like Australia, where Driver, Lovell, and Oprescu (2019) found a higher prevalence of female physiotherapists (67.0%). The present study's finding also stands in contrast to global data from World Physiotherapy (WPT) which indicates that females constitute the majority of the profession globally (62%) and in the African region (60%). Mbada et al. (2023) attribute the male dominance in Nigeria to historical factors in the profession's development within the country as more men than women have graduated from physiotherapy programs in Nigerian universities and the professional practice is dominated by them.

The present study's results showed that the majority of respondents were young professionals. This suggests a youthful physiotherapy workforce in the region. This agrees with a study by Cowell et al. (2018) in the UK, which also reported a young cohort of physiotherapists, and is further supported by the national data from Mbada et al. (2023), who reported a mean age of 33.5 years for Nigerian physiotherapists. The high proportion of young practitioners may imply that the profession is growing in Nigeria, attracting a new generation of healthcare professionals.

In terms of professional experience, the results indicated that a significant portion of the respondents had 1–10 years of experience. This is consistent with the age distribution and further supports the notion of a relatively young physiotherapy workforce. This finding is broadly consistent with national trends identified by Mbada et al. (2023) and similar international findings, such as a study in Brazil by França et al. (2019), where the interviewed physiotherapists were also in their early careers. This demographic characteristic may influence the overall approach to patient management, as less experienced therapists might adhere more closely to their foundational training.

The finding that the majority of respondents held a Bachelor of Physiotherapy degree as their highest qualification is in line with the educational standards for entry-level physiotherapy practice in Nigeria, as confirmed by Mbada et al. (2023). However, the rate of postgraduate qualification in this study appears lower than that reported in the national survey by Mbada et al. (2023), where 39.4% of respondents held a Master's degree and 11.5% held a Doctorate. This discrepancy may be explained by the different sampling methods. The national study surveyed practitioners at professional conferences, who may be more academically inclined, whereas the present study's regional sample from South-South Nigeria may be more representative of the general clinical workforce in that specific area. Nonetheless, the rate of postgraduate education in Nigeria appears lower when contrasted with findings from France, where Petit et al. (2019) reported a higher proportion of physiotherapists with postgraduate qualifications. This could be due to a greater availability of advanced training programs or different professional requirements in other countries compared to the region under study.

5.1.2 Knowledge of Biopsychosocial Interventions

The present study revealed that physiotherapists in South-South Nigeria demonstrated a high level of knowledge regarding the components of BPS interventions for NSCLBP. There was unanimous agreement on the importance of an exercise component, psychological support, and patient education. This finding is corroborated by Synnott et al. (2016), who reported that physiotherapists who underwent specific training in BPS approach (Cognitive Functional Therapy) showed an improved understanding of the multidimensional nature of pain. The high level of awareness in the current study could be attributed to the fact that most of the respondents reported having received additional training on LBP, which may have included modern, evidence-based approaches.

While the respondents in the present study demonstrated strong theoretical knowledge by agreeing with the components of a BPS intervention, other research suggests this may not equate to a deep, practical understanding. Studies from Ghana and Nigeria indicate that the practical application of BPS principles often remains superficial, with a predominant reliance on biomedical approaches in clinical decision-making (Ampiah et al., 2024; Ibrahim et al., 2025). This suggests a potential "knowing-doing gap", where physiotherapists can identify the correct theoretical components of BPS care but struggle to integrate them meaningfully into practice. The unanimous agreement on psychological support in this study is positive, but it may reflect a theoretical appreciation rather than a practical competency, a contrast noted by Zangoni and Thomson (2017) among Italian physiotherapists.

5.1.3 Attitudes and Beliefs towards BPS Interventions

The results of the present study showed that the majority of physiotherapists held positive

attitudes and beliefs that align with the BPS model. Most of the respondents agreed that "Mental stress can cause back pain even in the absence of tissue damage." This agrees with the findings from a study by Bishop et al. (2008) in the UK, which found that a significant number of general practitioners and physiotherapists were moving towards a more behavioral (BPS) orientation. This positive orientation is likely influenced by the high level of theoretical knowledge demonstrated by the participants. Similarly, the finding that most of the respondents disagreed that "Pain reduction is a precondition for the restoration of normal functioning" suggests a progressive, function-oriented mindset, which aligns with the principles of the BPS model and is supported by findings from Ostelo et al. (2003).

Despite these positive attitudes, the broader literature suggests that translating these attitudes into practice is challenging. In contexts like South-South Nigeria, physiotherapists may express positive attitudes toward the BPS model but revert to traditional, passive treatments due to a lack of confidence and prevailing biomedical beliefs (Cowell et al., 2018; Ampiah et al., 2024). These challenges are often compounded by sociocultural factors, such as strong patient expectations for passive, hands-on therapies and a professional culture of paternalism, as observed in studies from West Africa (Ampiah et al., 2024; Ibrahim et al., 2025). Therefore, while the physiotherapists in this study hold BPS-congruent beliefs, these may coexist with entrenched biomedical practices that are reinforced by the clinical environment. The uncertainty observed in responses to the statement "The cause of back pain is unknown" reflects a global lack of consensus on the subject (Ferreira et al., 2023) but may also indicate an area where biomedical beliefs about finding a specific "cause" still hold influence.

5.1.4 Association Between Sociodemographic Factors and Knowledge, Attitudes, and Beliefs

The results of the present study showed a significant association between gender and knowledge of patient self-management, with a higher percentage of male respondents agreeing with its importance of various BPS components. This discrepancy may be due to variations in communication styles or patient-practitioner dynamics between male and female physiotherapists.

A significant association was also found between educational level and the belief that "A patient suffering from severe back pain will benefit from physical exercise". This suggests that higher levels of education may lead to a more nuanced understanding of the complexities of pain and exercise prescription, including the importance of pacing and individualization. This is in line with the findings of Ferreira et al. (2023), who found that Brazilian physiotherapists with higher education levels had beliefs that were more aligned with a BPS approach. The importance of training in shifting attitudes is a recurring theme in the literature, which acts as a key facilitator for BPS adoption (Holopainen et al., 2020; Van Dijk et al., 2023).

The present study also found a significant association between years of experience and knowledge of 'Treatment standardization'. This suggests that physiotherapists with more experience may have a better understanding of the importance of standardized treatment protocols. This could be due to their exposure to a wider range of clinical scenarios and their ability to see the long-term benefits of a consistent approach (Lemmers et al., 2022).

Finally, a significant association was found between the area of specialty and knowledge of 'Stimulation of social interaction'. This is an interesting finding that may suggest that

physiotherapists in different specialty areas have varying levels of awareness of the importance of social factors in pain management (Mbada et al., 2019).

5.2 Conclusion

Physiotherapists practicing in South-South Nigeria have good knowledge of biopsychosocial interventions in the management of Non-Specific Chronic Low Back Pain. They have a high level of knowledge regarding its key components, including the importance of exercise, patient education, and psychological support. They also hold positive attitudes and beliefs towards BPS interventions in the management of Non-Specific Chronic Low Back Pain. They generally reject a purely biomedical view of pain, acknowledging the influence of psychosocial factors on NSCLBP and prioritizing functional restoration over complete pain elimination. Sociodemographic factors (gender, educational level, and years of experience) influence specific aspects of physiotherapists' knowledge, attitudes and beliefs towards BPS interventions in the management of NSCLBP

5.3 Recommendations

Based on the findings of this study, the following recommendations are proposed:

Physiotherapy Education Programs: While this study indicates strong foundational knowledge, physiotherapy curricula in Nigeria should be reviewed and enhanced to bridge the gap between theoretical understanding and practical application. Educational institutions should integrate more robust, practical, and skills-based training in BPS assessment and management. This should include communication skills, motivational interviewing, and strategies for addressing patient beliefs and fear-avoidance behaviors, as a lack of confidence in these areas is a commonly cited barrier internationally (Driver et al., 2019; Cowell et al., 2018).

For Professional Bodies (Nigeria Society of Physiotherapy): Professional associations should develop and promote targeted Continuing Professional Development (CPD) programs focused on the practical implementation of the BPS model. Given that 62.5% of respondents had received some additional LBP training, yet international literature suggests a "knowing-doing" gap, these workshops should be case-based, interactive, and aim to build practical skills and confidence, aligning with evidence that specialized training improves BPS orientation (Synnott et al., 2016).

For Clinical Practitioners: Physiotherapists are encouraged to engage in reflective practice to identify their own potential biases and areas for growth in applying the BPS model. Seeking mentorship and participating in peer-support groups can help in navigating the challenges of integrating psychosocial aspects into routine care.

For Healthcare Administrators and Policymakers: To facilitate the implementation of BPS care, it is recommended that healthcare settings create a supportive environment. This includes reviewing consultation time allocations to allow for the comprehensive assessments that a BPS approach requires, particularly for complex cases, and fostering a culture of interdisciplinary collaboration with other healthcare professionals, such as psychologists.

5.4 Implications for Further Study

Nationwide Survey: To improve the generalizability of these findings, a similar study should be conducted on a larger, nationwide scale, encompassing all geopolitical zones of Nigeria to capture a more comprehensive picture of the profession.

Qualitative Research: Future research should employ qualitative methods, such as semi-structured interviews or focus groups, to explore the nuances behind the quantitative findings. This would help in understanding why certain beliefs are held, the context behind the observed

associations with sociodemographic factors, and the specific barriers and facilitators physiotherapists face when trying to implement BPS interventions in the Nigerian context.

Assessing Clinical Practice: The current study measured knowledge and self-reported beliefs. Future studies should aim to investigate actual clinical practice through methods such as clinical audits, case-vignettes, or direct observation to determine the extent to which BPS-oriented knowledge and beliefs translate into clinical behavior.

Interventional Studies: There is a need for research that designs, implements, and evaluates the effectiveness of targeted educational interventions (both in undergraduate curricula and CPD) aimed at improving the practical application of BPS principles among Nigerian physiotherapists.

Patient-Centered Research: Research exploring the perspectives, beliefs, and expectations of Nigerian patients with NSCLBP is crucial. Understanding the patient's viewpoint will provide essential context and help in developing patient-centered interventions that are more likely to be accepted and effective.

REFERENCES

Abdullahi, A., Aliyu, K., Hassan, A. B., Sokunbi, G. O., Bello, B., Saeys, W., &Truijen, S. (2022). Prevalence of chronic non-specific low back pain among caregivers of stroke survivors in Kano, Nigeria and factors associated with it: A cross-sectional study. *Frontiers in neurology*, *13*, 900308. https://doi.org/10.3389/fneur.2022.900308

Adegoke, B., Odole, A., & Adeyinka, A. (2015). Adolescent low back pain among secondary school students in Ibadan, Nigeria. *African health sciences*, 15 2, 429-37. https://doi.org/10.4314/ahs.v15i2.16

Adje, M., Steinhäuser, J., Stevenson, K., Mbada, C. E., & Karstens, S. (2022). Patients' and physiotherapists' perspectives on implementing a tailored stratified treatment approach for low back pain in Nigeria: a qualitative study. *BMJ open*, *12*(6), e059736. https://doi.org/10.1136/bmjopen-2021-059736

Albazli, K., Alotaibi, M., Almoallim, H. (2021). Low-Back Pain. In: Almoallim, H., Cheikh, M. (eds) Skills in Rheumatology. Springer, Singapore. https://doi.org/10.1007/978-981-15-8323-0_6

Alhowimel, A., AlOtaibi, M., Radford, K., & Coulson, N. (2018). Psychosocial factors associated with change in pain and disability outcomes in chronic low back pain patients treated by physiotherapist: A systematic review. *SAGE open medicine*, *6*, 2050312118757387. https://doi.org/10.1177/2050312118757387

Alshuaibi, M. A., &Alsulaiman, L. K. (2025). Interconnections Between Chronic Lower Back Pain and Smoking: A Systematic Review. *Journal of Pioneering Medical Sciences*, *14*.

Awosan, K., Yikawe, S., Oche, O., &Oboirien, M. (2017). Prevalence, perception and correlates of low back pain among healthcare workers in tertiary health institutions in Sokoto, Nigeria. *Ghana medical journal*, 51 4, 164-174. https://doi.org/10.4314/GMJ.V51I4.4

Bello, B., & Adebayo, H. (2017). A Systematic Review on the Prevalence of Low Back Pain in Nigeria. *Middle East Journal of Rehabilitation and Health*, 4. https://doi.org/10.5812/MEJRH.45262

Beneciuk, J. M., Bishop, M. D., Fritz, J. M., Robinson, M. E., Asal, N. R., Nisenzon, A. N., & George, S. Z. (2013). The STarT back screening tool and individual psychological measures: evaluation of prognostic capabilities for low back pain clinical outcomes in outpatient physical therapy settings. *Physical therapy*, *93*(3), 321-333.

Birabi, B.N., Oke, K.I., Dienye, P.O., Okafor, U.A.C. (2014). Cost burden of low back pain among adults in Southen Nigeria. *International Journal of Medical and Applied Sciences*. 3. 24-29.

Bláfoss, R., Skovlund, S. V., López-Bueno, R., Calatayud, J., Sundstrup, E., & Andersen, L. L. (2020). Is hard physical work in the early working life associated with back pain later in life? A cross-sectional study among 5700 older workers. *BMJ open*, *10*(12), e040158. https://doi.org/10.1136/bmjopen-2020-040158

Boakye, H., Quartey, J., Baidoo, N. A., &Ahenkorah, J. (2018). Knowledge, attitude and practice of physiotherapists towards health promotion in Ghana. *South African journal of physiotherapy*, *74*(1), 1-7.

Bodrozic, M., &Filipec, M. (2023). The pain attitudes and beliefs scale for physiotherapists: psychometric properties of the Croatian version. *Physical Therapy Reviews*, *28*(4-6), 253-260.

Burdorf, A., & Jansen, J. P. (2006). Predicting the long term course of low back pain and its consequences for sickness absence and associated work disability. *Occupational and environmental medicine*, *63*(8), 522–529. https://doi.org/10.1136/oem.2005.019745

Casiano, V. E., Sarwan, G., Dydyk, A. M., &Varacallo, M. (2019). Back pain.

Catley, M. J., O'Connell, N. E., & Moseley, G. L. (2013). How good is the neurophysiology of pain questionnaire? A Rasch analysis of psychometric properties. *The journal of pain*, *14*(8), 818-827.

Ceulemans, D., Moens, M., Reneman, M. F., Callens, J., De Smedt, A., Godderis, L., Goudman, L., Lavreysen, O., Putman, K., & Van de Velde, D. (2024). Biopsychosocial rehabilitation in the working population with chronic low back pain: a concept analysis. *Journal of Rehabilitation Medicine*, *56*, jrm13454. https://doi.org/10.2340/jrm.v56.13454

Chen, S., Chen, M., Wu, X., Lin, S., Tao, C., Cao, H., Shao, Z., & Xiao, G. (2021). Global, regional and national burden of low back pain 1990–2019: A systematic analysis of the Global Burden of Disease study 2019. *Journal of Orthopaedic Translation*, 32, 49 – 58. https://doi.org/10.1016/j.jot.2021.07.005

Cherkin, D. C., Sherman, K. J., Balderson, B. H., Cook, A. J., Anderson, M. L., Hawkes, R. J., Hansen, K. E., & Turner, J. A. (2016). Effect of Mindfulness Based Stress Reduction vs Cognitive Behavioral Therapy or Usual Care on Back Pain and Functional Limitations in Adults With Chronic Low Back Pain: A Randomized Clinical Trial. *JAMA*, *315*(12), 1240-1249. https://doi.org/10.1001/jama.2016.2323

Cowell, I., McGregor, A. H., O'Sullivan, P., O'Sullivan, K., O'Sullivan, K., Poyton, R., Schoeb, V., & Murtagh, G. (2021). Physiotherapists' Approaches to Patients' Concerns in Back Pain Consultations Following a Psychologically Informed Training Program. *Qualitative Health Research*, *31*(13), 2486–2501. https://doi.org/10.1177/10497323211037651

Dalkilinc, M., Cirak, Y., Yilmaz, G. D., & Parlak Demir, Y. (2015). Validity and reliability of Turkish version of the Pain Attitudes and Beliefs Scale for Physiotherapists. *Physiotherapy theory and practice*, *31*(3), 186-193.

Danazumi, M. S., Ford, J. J., Kaka, B., & Hahne, A. J. (2025). Current Physiotherapy Assessment and Treatment Practices for Low Back Pain in Nigeria: A National Survey. *Physiotherapy Research International*, *30*(1), e70011.

Darlow, B., Perry, M., Mathieson, F., Stanley, J., Melloh, M., Marsh, R., Baxter, G.D. & Dowell, A. (2014). The development and exploratory analysis of the Back Pain Attitudes Questionnaire (Back-PAQ). *BMJ open*, *4*(5), e005251.

Darlow, B., Perry, M., Mathieson, F., Stanley, J., Melloh, M., Marsh, R., ... & Dowell, A. (2014). The development and exploratory analysis of the Back Pain Attitudes Questionnaire (Back-PAQ). *BMJ open*, *4*(5), e005251.

de Campos, T. F. (2017). Low back pain and sciatica in over 16s: assessment and management NICE Guideline [NG59]. *Journal of Physiotherapy*, *63*(2), 120.

Demoulin, C., Brasseur, P., Roussel, N., Brereton, C., Humblet, F., Flynn, D., ... & Bruyère, O. (2017). Cross-cultural translation, validity, and reliability of the French version of the Neurophysiology of Pain Questionnaire. *Physiotherapy Theory and Practice*, *33*(11), 880-887.

Díaz-Fernández, Á., Ortega-Martínez, A. R., Cortés-Pérez, I., Ibáñez-Vera, A. J., Obrero-Gaitán, E., & Lomas-Vega, R. (2023). Transcultural Adaptation and Psychometric Validation of the Spanish Version of the Pain Attitudes and Beliefs Scale for Physiotherapists. *Journal of clinical medicine*, *12*(18), 6045. https://doi.org/10.3390/jcm12186045

Dixit, R.K. (2021) Low back pain. In: Firestein GS, Budd RC, Gabriel SE, et al., editors. Firestein & Kelley's textbook of rheumatology. 11th ed. Philadelphia. Elsevier. Chapter 50.

Driver, C., Oprescu, F., & Lovell, G. P. (2020). An exploration of physiotherapists' perceived benefits and barriers towards using psychosocial strategies in their practice. *Musculoskeletal care*, *18*(2), 111-121.

Dunn, K. M., & Croft, P. R. (2004). Epidemiology and natural history of low back pain. *European Journal of Physical and Rehabilitation Medicine*, *40*(1), 9.

Ehrström, J., Pöyhiä, R., Kettunen, J., & Pyörälä, E. (2024). What do Finnish physiotherapists and physiotherapy students know about the neurophysiology of pain? The Finnish version of the revised Neurophysiology of Pain Questionnaire. *Physiotherapy theory and practice*, *40*(4), 828–842. https://doi.org/10.1080/09593985.2022.2154626

Eland, N. D. (2013). Physiotherapists' attitudes and beliefs towards common low back pain: Factor structure and internal consistency of the Norwegian version of the PABS-PT (Master's thesis, The University of Bergen).

Eland, N. D., Kvåle, A., Ostelo, R. W. J. G., & Strand, L. I. (2017). The Pain Attitudes and Beliefs Scale for Physiotherapists: Dimensionality and Internal Consistency of the Norwegian Version. *Physiotherapy research international: the journal for researchers and clinicians in physical therapy*, *22*(4), 10.1002/pri.1670. https://doi.org/10.1002/pri.1670

Eland, N. D., Kvåle, A., Ostelo, R. W., De Vet, H. C., & Strand, L. I. (2019). Discriminative validity of the pain attitudes and beliefs scale for physical therapists. *Physical therapy*, *99*(3), 339-353.

Eland, N. D., Strand, L. I., Ostelo, R. W., Kvåle, A., & Magnussen, L. H. (2020). How do physiotherapists understand and interpret the "Pain Attitudes and Beliefs Scale"? A cognitive interview study. *Physiotherapy Theory and Practice*, *38*(4), 513–527.

Eland, N. D., Strand, L. I., Ostelo, R. W., Kvåle, A., & Magnussen, L. H. (2022). How do physiotherapists understand and interpret the “Pain Attitudes and Beliefs Scale”? A cognitive interview study. *Physiotherapy Theory and Practice*, *38*(4), 513-527.

Eland, ND., Kvåle, A., Ostelo, R., Inger Strand, LI. (2016). Rasch analysis resulted in an improved Norwegian version of the Pain Attitudes and Beliefs Scale (PABS). *Scand J Pain*, 13: 98-108. https://doi.org/10.1016/j.sjpain.2016.06.009

Emorinken, A., Erameh, C., Akpasubi, B., Dic-Ijiewere, M., &Ugheoke, A. (2023). Epidemiology of low back pain: frequency, risk factors, and patterns in South-South Nigeria. *Reumatologia*, 61, 360 – 367. https://doi.org/10.5114/reum/173377

Esposto, M., Pellicciari, L., Cecchetto, S., Chiarotto, A., Testa, M., Turolla, A., & Polli, A. (2024). Italian versions of the Neurophysiology of Pain Questionnaire (NPQ): psychometric properties and an investigation on the understanding of pain neurophysiology in physical therapists. *Musculoskeletal science & practice*, *72*, 102957. https://doi.org/10.1016/j.msksp.2024.102957

Felício, D., Filho, J., De Oliveira, T., Pereira, D., Rocha, V., Barbosa, J., Assis, M., Malaguti, C., & Pereira, L. (2021). Risk factors for non-specific low back pain in older people: a systematic review with meta-analysis. *Archives of Orthopaedic and Trauma Surgery*, 142, 3633–3642. https://doi.org/10.1007/s00402-021-03959-0

Ferreira, M., De Luca, K., Haile, L., Steinmetz, J., Culbreth, G., Cross, M., Kopec, J., Ferreira, P., Blyth, F., Buchbinder, R., Hartvigsen, J., Wu, A., Safiri, S., Woolf, A., Collins, G., Ong, K., Vollset, S., Smith, A., Cruz, J., Fukutaki, K., Abate, S., Abbasifard, M., Abbasi-Kangevari, M., Abbasi-Kangevari, Z., Abdelalim, A., Abedi, A., Abidi, H., Adnani, Q., Ahmadi, A., Akinyemi, R., Alamer, A., Alem, A., Alimohamadi, Y., Alshehri, M., Alshehri, M., Alzahrani, H., Amini, S., Amiri, S., Amu, H., Andrei, C., Andrei, T., Antony, B., Arabloo, J., Arulappan, J., Arumugam, A., Ashraf, T., Athari, S., Awoke, N., Azadnajafabad, S., Bärnighausen, T., Barrero, L., Barrow, A., Barzegar, A., Bearne, L., Benseñor, I., Berhie, A., Bhandari, B., Bhojaraja, V., Bijani, A., Bodicha, B., Bolla, S., Brazo-Sayavera, J., Briggs, A., Cao, C., Charalampous, P., Chattu, V., Cicuttini, F., Clarsen, B., Cuschieri, S., Dadras, O., Dai, X., Dandona, L., Dandona, R., Dehghan, A., Demie, T., Denova-Gutiérrez, E., Dewan, S., Dharmaratne, S., Dhimal, M., Dhimal, M., Diaz, D., Didehdar, M., Digesa, L., Diress, M., , H., Doan, L., Ekholuenetale, M., Elhadi, M., Eskandarieh, S., Faghani, S., Fares, J., Fatehizadeh, A., Fetensa, G., Filip, I., Fischer, F., Franklin, R., Ganesan, B., Gemeda, B., Getachew, M., Ghashghaee, A., Gill, T., Golechha, M., Goleij, P., Gupta, B., Hafezi-Nejad, N., Haj-Mirzaian, A., Hamal, P., Hanif, A., Harlianto, N., Hasani, H., Hay, S., Hébert, J., Heidari, G., Heidari, M., Heidari-Soureshjani, R., Hlongwa, M., Hosseini, M., Hsiao, A., Iavicoli, I., Ibitoye, S., Ilic, I., Ilic, M., Islam, S., Janodia, M., Jha, R., Jindal, H., Jonas, J., Kabito, G., Kandel, H., Kaur, R., Keshri, V., Khader, Y., Khan, E., Khan, M., Khan, M., Kashani, H., Khubchandani, J., Kim, Y., Kisa, A., Klugarová, J., Kolahi, A., Koohestani, H., Koyanagi, A., Kumar, G., Kumar, N., Lallukka, T., Lasrado, S., Lee, W., Lee, Y., Mahmoodpoor, A., Malagón-Rojas, J., Malekpour, M., Malekzadeh, R., Malih, N., Mehndiratta, M., Nasab, M., Menezes, R.,

Mentis, A., Mesregah, M., Miller, T., Mirza-Aghazadeh-Attari, M., Mobarakabadi, M., Mohammad, Y., Mohammadi, E., Mohammed, S., Mokdad, A., Momtazmanesh, S., Monasta, L., Moni, M., Mostafavi, E., Murray, C., Nair, T., Nazari, J., Nejadghaderi, S., Neupane, S., Kandel, S., Nguyen, C., Nowroozi, A., Okati-Aliabad, H., Omer, E., Oulhaj, A., Owolabi, M., Panda-Jonas, S., Pandey, A., Park, E., Pawar, S., Pedersini, P., Pereira, J., Peres, M., Petcu, I., Pourahmadi, M., Radfar, A., Rahimi-Dehgolan, S., Rahimi-Movaghar, V., Rahman, M., Rahmani, A., Rajai, N., Rao, C., Rashedi, V., Rashidi, M., Ratan, Z., Rawaf, D., Rawaf, S., Renzaho, A., Rezaei, N., Rezaei, Z., Roever, L., De Andrade Ruela, G., Saddik, B., Sahebkar, A., , S., Sanmarchi, F., Sepanlou, S., Shahabi, S., Shahrokhi, S., Shaker, E., Shamsi, M., Shannawaz, M., Sharma, S., Shaygan, M., Sheikhi, R., Shetty, J., Shiri, R., Shivalli, S., Shobeiri, P., Sibhat, M., Singh, A., Singh, J., Slater, H., Solmi, M., Somayaji, R., Tan, K., Thapar, R., Tohidast, S., Tahbaz, S., Valizadeh, R., Vasankari, T., Venketasubramanian, N., Vlassov, V., Vo, B., Wang, Y., Wiangkham, T., Yadav, L., Yadollahpour, A., Jabbari, S., Yang, L., Yazdanpanah, F., Yonemoto, N., Younis, M., Zare, I., Zarrintan, A., Zoladl, M., Vos, T., & March, L. (2023). Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. The Lancet. *Rheumatology*, 5, e316 – e329. https://doi.org/10.1016/S2665-9913(23)00098-X

Foster, N. E., Anema, J. R., Cherkin, D., Chou, R., Cohen, S. P., Gross, D. P., Ferreira, P. H., Fritz, J. M., Koes, B. W., Peul, W., Turner, J. A., & Maher, C. G. (2018). Prevention and treatment of low back pain: evidence, challenges, and promising directions. *The Lancet*, 391(10137), 2368-2383. https://doi.org/10.1016/S0140-6736(18)30489-6

Foster, N. E., Anema, J. R., Cherkin, D., Chou, R., Cohen, S. P., Gross, D. P., Ferreira, P. H., Fritz, J. M., Koes, B. W., Peul, W., Turner, J. A., & Maher, C. G. (2018). Prevention and treatment of low back pain: evidence, challenges, and promising directions. *The Lancet*, *391*(10137), 2368-2383. https://doi.org/10.1016/S0140-6736(18)30489-6

Frymoyer, J., Pope, M., Clements, J., Wilder, D., MacPherson, B., & Ashikaga, T. (1983). Risk factors in low-back pain: An epidemiological survey. *The Journal of Bone and Joint Surgery*, 65(2), 213–218. https://doi.org/10.2106/00004623-198365020-00010

George, S. I. (2008). What is the effectiveness of a biopsychosocial approach to individual physiotherapy care for chronic low back pain?. *Internet Journal of Allied Health Sciences and Practice*, *6*(1), 4.

Gervais-Hupé, J., Filleul, A., Perreault, K., & Hudon, A. (2023). Implementation of a biopsychosocial approach into physiotherapists' practice: a review of systematic reviews to map barriers and facilitators and identify specific behavior change techniques. *Disability and Rehabilitation*, *45*(14), 2263-2272.

Gibbs, M. T., Morrison, N. M., & Marshall, P. W. (2022). Education improves decision-making of exercise physiologists regarding low back pain. *Journal of Clinical Exercise Physiology*, *11*(1), 12-18.

Gül, H., Erel, S., Demir, P., &Çubukçu Fırat, S. (2023). Cross-cultural adaptation of the Revised Neurophysiology of Pain Questionnaire into the Turkish language based on Rasch analysis. *Physiotherapy theory and practice*, *39*(8), 1753–1761. https://doi.org/10.1080/09593985.2022.2048425

Guler, E., & Ozer, F. (2023). Effects of age, gender and modifiable risk factors on low back pain. *Medicine Science*, 12(4), 1100–1104. https://doi.org/10.5455/medscience.2022.11.244

Hartvigsen, J., Hancock, M. J., Kongsted, A., Louw, Q., Ferreira, M. L., Genevay, S., Hoy, D., Karppinen, J., Pransky, G., Sieper, J., Smeets, R. J., & Underwood, M. (2018). What low back pain is and why we need to pay attention. *The Lancet*, 391(10137), 2356–2367. https://doi.org/10.1016/S0140-6736(18)30480-X

Hartvigsen, J., Hancock, M. J., Kongsted, A., Louw, Q., Ferreira, M. L., Genevay, S., Hoy, D., Karppinen, J., Pransky, G., Sieper, J., Smeets, R. J., & Underwood, M. (2018). What low back pain is and why we need to pay attention. *The Lancet*, 391(10137), 2356-2367. https://doi.org/10.1016/S0140-6736(18)30480-X

Hartvigsen, J., Hancock, M. J., Kongsted, A., Louw, Q., Ferreira, M. L., Genevay, S., Hoy, D., Karppinen, J., Pransky, G., Sieper, J., Smeets, R. J., & Underwood, M. (2018). What low back pain is and why we need to pay attention. *The Lancet*, *391*(10137), 2356-2367. https://doi.org/10.1016/S0140-6736(18)30480-X

Heliövaara, M. (1989). Risk factors for low back pain and sciatica. Annals of Medicine, 21(4), 257–264. https://doi.org/10.3109/07853898909149202

Hill, J. C., Dunn, K. M., Lewis, M., Mullis, R., Main, C. J., Foster, N. E., & Hay, E. M. (2008). A primary care back pain screening tool: identifying patient subgroups for initial treatment. *Arthritis Care & Research: Official Journal of the American College of Rheumatology*, *59*(5), 632-641.

Hill, J. C., Dunn, K. M., Main, C. J., & Hay, E. M. (2010). Subgrouping low back pain: a comparison of the STarT Back Tool with the Örebro Musculoskeletal Pain Screening Questionnaire. *European journal of pain*, *14*(1), 83-89.

Houben, R. M., Vlaeyen, J. W., Peters, M., Ostelo, R. W., Wolters, P. M., & Stomp-van den Berg, S. G. (2004). Health care providers' attitudes and beliefs towards common low back pain: factor structure and psychometric properties of the HC-PAIRS. *The Clinical journal of pain*, *20*(1), 37–44. https://doi.org/10.1097/00002508-200401000-00008

Hoy, D., Bain, C., Williams, G., March, L., Brooks, P., Blyth, F., Woolf, A., Vos, T., & Buchbinder, R. (2012). A systematic review of the global prevalence of low back pain. *Arthritis and rheumatism*, 64 6, 2028-37. https://doi.org/10.1002/art.34347

Hoy, D., March, L., Brooks, P., Blyth, F., Woolf, A., Bain, C., Williams, G., Smith, E., Vos, T., Barendregt, J., Murray, C., Burstein, R., & Buchbinder, R. (2014). The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. *Annals of the Rheumatic Diseases*, 73, 968 – 974. https://doi.org/10.1136/annrheumdis-2013-204428

Hrkać, A., Bilić, D., Černy-Obrdalj, E., Baketarić, I., &Puljak, L. (2022). Comparison of supervised exercise therapy with or without biopsychosocial approach for chronic

nonspecific low back pain: a randomized controlled trial. *BMC Musculoskeletal Disorders*, *23*(1). https://doi.org/10.1186/s12891-022-05908-3

Hughes, L. S., Clark, J., Colclough, J. A., Dale, E., & McMillan, D. (2017). Acceptance and Commitment Therapy (ACT) for Chronic Pain: A Systematic Review and Meta-Analyses. *Clinical Journal of Pain*, *33*(6), 552-568. https://doi.org/10.1097/AJP.0000000000000425

Igwesi-Chidobe, C. N., & Okafor UAC. (2013). Community physiotherapy and rehabilitation outcomes in Nigeria: knowledge, attitude and practice of physiotherapists in Enugu state. *IJHSR*, *3*, 37-44.

Igwesi-Chidobe, C. N., Coker, B., Onwasigwe, C. N., Sorinola, I. O., & Godfrey, E. L. (2017). Biopsychosocial factors associated with chronic low back pain disability in rural Nigeria: a population-based cross-sectional study. *BMJ global health*, *2*(3), e000284. https://doi.org/10.1136/bmjgh-2017-000284

Ijabadeniyi, O., & Fasae, J. (2023). Prevalence Of Low Back Pain Among Nurses AndThe Effects On Job Performance In Tertiary Health Institutions In Ondo State, Nigeria. *International Journal of Africa Nursing Sciences*. https://doi.org/10.1016/j.ijans.2023.100560

Jahn, A., Andersen, J. H., Seidler, A., Christiansen, D. H., & Dalbøge, A. (2024). Occupational psychosocial exposures and chronic low-back pain: a systematic review and meta-analysis. *Scandinavian journal of work, environment & health*, *50*(5), 329–340. https://doi.org/10.5271/sjweh.4165

Jurak, I., Delaš, K., Erjavec, L., Stare, J., & Locatelli, I. (2023). Effects of Multidisciplinary Biopsychosocial Rehabilitation on Short-Term Pain and Disability in Chronic Low Back Pain: A Systematic Review with Network Meta-Analysis. *Journal of Clinical Medicine*, *12*. https://doi.org/10.3390/jcm12237489

Jurak, I., Delaš, K., Erjavec, L., Stare, J., & Locatelli, I. (2023). Effects of Multidisciplinary Biopsychosocial Rehabilitation on Short-Term Pain and Disability in Chronic Low Back Pain: A Systematic Review with Network Meta-Analysis. *Journal of clinical medicine*, *12*(23), 7489. https://doi.org/10.3390/jcm12237489

Kahere, M., &Ginindza, T. (2020). The burden of non-specific chronic low back pain among adults in KwaZulu-Natal, South Africa: a protocol for a mixed-methods study. *BMJ open*, *10*(9), e039554. https://doi.org/10.1136/bmjopen-2020-039554

Kahere, M., &Ginindza, T. (2022). The prevalence and psychosocial risk factors of chronic low back pain in KwaZulu-Natal. *African Journal of Primary Health Care & Family Medicine*, *14*(1), 3134.

Kahere, M., Hlongwa, M., &Ginindza, T. G. (2022). A Scoping Review on the Epidemiology of Chronic Low Back Pain among Adults in Sub-Saharan Africa. *International journal of environmental research and public health*, *19*(5), 2964. https://doi.org/10.3390/ijerph19052964

Kahere, M., Hlongwana, K., &Ginindza, T. (2022). Exploring patients' lived experience on the barriers to accessing low back pain health services. *African Journal of Primary Health Care & Family Medicine*, *14*(1), 3523.

Kamper, S. J., Apeldoorn, A. T., Chiarotto, A., Smeets, R. J., Ostelo, R. W., Guzman, J., & van Tulder, M. W. (2014). Multidisciplinary biopsychosocial rehabilitation for chronic low back pain. *Cochrane Database of Systematic Reviews*, (9), CD000963. https://doi.org/10.1002/14651858.CD000963.pub3*(Note: The IASP sheet cites the 2014 version, which is updated from the 2015 version cited previously, keeping this citation)*

Kaye, J. A., Spence, D., & Alexanders, J. (2022). Using a biopsychosocial approach within acl rehabilitation: an exploration of student physiotherapistsperceptions and experiences. *Physiotherapy Theory and Practice*, *38*(11), 1718-1730.

Keefe F, France C. (1999). Pain: Biopsychosocial mechanism and management. *Current Directions in Psychological Science*, 8: 137-141.

Khan, H. Y., Khan, S. H., Gillani, A., Gillani, A., Yousaf, M., Qandeel, H. S., & Daud, M. (2024). Knowledge, Attitudes and Beliefs of Clinical Physiotherapists Towards Chronic Back Pain. *National Journal of Life and Health Sciences*, *3*(1), 20-24.

Klem, N.-R., O'Sullivan, P., Smith, A., & Schütze, R. (2024). A Prospective Qualitative Inquiry of Patient Experiences of Cognitive Functional Therapy for Chronic Low Back Pain During the RESTORE Trial. *Qualitative Health Research*. https://doi.org/10.1177/10497323241268777

Knoop, J., Rutten, G., Lever, C., Leemeijer, J., de Jong, L. J., Verhagen, A. P., ... & Staal, J. B. (2021). Lack of consensus across clinical guidelines regarding the role of psychosocial factors within low back pain care: a systematic review. *The Journal of Pain*, *22*(12), 1545-1559.

Leslie, R., Johnson, E., Thomas, G., & Harrington, P. (Eds.). (2025). Pain. In *Dr Podcast Scripts for the Final FRCA* (pp. 616–641). chapter, Cambridge: Cambridge University Press.

Lind, C. M., Rhen, I. M., & Forsman, M. (2025). Reliability and Accuracy of Standard Reference Procedures for Measurements of Trunk and Arm Postures in Ergonomics. *Bioengineering*, *12*(1), 50.

Livshits, G., Popham, M., Malkin, I., Sambrook, P. N., MacGregor, A. J., Spector, T., & Williams, F. M. (2011). Lumbar disc degeneration and genetic factors are the main risk factors for low back pain in women: the UK Twin Spine Study. *Annals of the rheumatic diseases*, *70*(10), 1740-1745.

Low Back Pain. (2024, September 20). *Physiopedia,.* Retrieved 09:11, June 4, 2025 from https://www.physio-pedia.com/index.php?title=Low_Back_Pain&oldid=359832.

Magalhães, M. O., Costa, L. O., Ferreira, M. L., & Machado, L. A. (2011). Clinimetric testing of two instruments that measure attitudes and beliefs of health care providers about chronic low back pain. *Brazilian Journal of Physical Therapy*, *15*, 249-256.

Manchikanti, L., Singh, V., Falco, F., Benyamin, R., & Hirsch, J. (2014). Epidemiology of Low Back Pain in Adults. Neuromodulation: *Technology at the Neural Interface*, 17. https://doi.org/10.1111/ner.12018

Mathieu, J., Roy, K., Robert, M. È., Akeblersane, M., Descarreaux, M., & Marchand, A. A. (2024). Sociodemographic determinants of health inequities in low back pain: a narrative review. *Frontiers in public health*, *12*, 1392074. https://doi.org/10.3389/fpubh.2024.1392074

Mescouto, K. A. (2023). Enhancing low back pain care: Thinking and practising critically beyond the biopsychosocial model.

Mescouto, K., Olson, R. E., Hodges, P. W., & Setchell, J. (2022). A critical review of the biopsychosocial model of low back pain care: time for a new approach?. *Disability and Rehabilitation*, *44*(13), 3270-3284.

Miki, T., Kondo, Y., Kurakata, H., Takebayashi, T., &Samukawa, M. (2023). Physical therapist-led interventions based on the Biopsychosocial Model provide improvement in disability and pain for spinal disorders: A systematic review and meta-analysis. *Pm&r*. https://doi.org/10.1002/pmrj.13002

Mukoka, G., Olivier, B., & Ravat, S. (2019). Level of knowledge, attitudes and beliefs towards patients with chronic low back pain among final year School of Therapeutic Sciences students at the University of the Witwatersrand - A cross-sectional study. *The South African journal of physiotherapy*, *75*(1), 683. https://doi.org/10.4102/sajp.v75i1.683

Muller, R. D., Schielke, A., Gliedt, J. A., Cooper, J., Martinez, S., Eklund, A., & Pohlman, K. A. (2024). A scoping review to explore the use of the Health Care Providers' Pain and Impairment Relationship Scale. *PM&R*, *16*(11), 1250-1265.

Mutsaers, J. H., Peters, R., Pool-Goudzwaard, A. L., Koes, B. W., & Verhagen, A. P. (2012). Psychometric properties of the Pain Attitudes and Beliefs Scale for Physiotherapists: a systematic review. *Manual therapy*, *17*(3), 213-218.

Nogueira, L. A. C., Chaves, A. D. O., Oliveira, N., Almeida, R. S. D., Reis, F. J. J., Andrade, F. G. D., & Catley, M. J. (2018). Cross-cultural adaptation of the Revised Neurophysiology of Pain Questionnaire into Brazilian Portuguese language. *Jornal Brasileiro de Psiquiatria*, *67*(4), 273-277.

Oghumu S. N., Eric A. C., Nicholas R.O., Oke K.I. (2025). Pain Sensitivity and Reliability of the Posterior Anterior central Vertebral Pressure as a Provocative Test in Lumbar Pain. *The Nigerian Health Journal.* 25(2), xxx-xxx.

Ogunsanya, G. (2020). Prevalence and associated factors of low back pain in an urban Nigerian community. *Revista Pesquisa emFisioterapia*. https://doi.org/10.17267/2238-2704rpf.v10i4.3206

Ojala, T., Häkkinen, A., & Piirainen, A. (2016). The essence of the experience of chronic pain–a phenomenological study. Physiotherapy, 102(1), E96.

Omokhodion, F., & Sanya, A. (2003). Risk factors for low back pain among office workers in Ibadan, Southwest Nigeria. *Occupational medicine*, 53 4, 287-9. https://doi.org/10.1093/OCCMED/KQG063

Ostelo, R. W., Stomp-van den Berg, S. G., Vlaeyen, J. W., Wolters, P. M., & de Vet, H. C. (2003). Health care provider's attitudes and beliefs towards chronic low back pain: the development of a questionnaire. *Manual therapy*, *8*(4), 214–222. https://doi.org/10.1016/s1356-689x(03)00013-4

Pagé, G., McCracken, L. M., Linton, S., & Shaw, W. (2021, July 9). *Psychology of back pain*. IASP Fact Sheets. International Association for the Study of Pain. https://www.iasp-pain.org/resources/fact-sheets/psychology-of-back-pain/*(Note: Constructed citation based on authors listed at end, date, title, and source. Adjust if official IASP citation format differs)*

Parker, R. (2007). Physiotherapy students' assessment of psychological yellow flags in low back pain. *South African Journal of Physiotherapy*, *63*(1), 3.

Physiopedia. (2013). Optimal Screening for Prediction of Referral and Outcome Yellow Flag. Retrieved from https://www.physio-pedia.com/index.php?title=Optimal_Screening_for_Prediction_of_Referral_and_Outcome_Yellow_Flag&oldid=342540. Accessed on June 4, 2025.

Physiopedia. (2023). The Flag System. Retrieved from https://www.physio-pedia.com/index.php?title=The_Flag_System&oldid=344671. Accessed on June 4, 2025.

Pierobon, A., & Darlow, B. (2023). Back Pain Attitudes Questionnaire (Back-PAQ). In *International Handbook of Behavioral Health Assessment* (pp. 1-14). Cham: Springer International Publishing.

Pilut, C. N., Citu, C., Gorun, F., Bratosin, F., Gorun, O. M., Burlea, B., ... &Gluhovschi, A. (2022). The utility of laboratory parameters for cardiac inflammation in heart failure patients hospitalized with SARS-CoV-2 infection. *Diagnostics*, *12*(4), 824.

Pincus, T., Burton, A. K., Vogel, S., & Field, A. P. (2002). A systematic review of psychological factors as predictors of chronicity/disability in prospective cohorts of low back pain. *Spine*, 27(5), E109-E120. https://doi.org/10.1097/00007632-200203010-00019

Pincus, T., Burton, A. K., Vogel, S., & Field, A. P. (2002). A systematic review of psychological factors as predictors of chronicity/disability in prospective cohorts of low back pain. *Spine*, *27*(5), E109-E120. https://doi.org/10.1097/00007632-200203010-00019

Poolman, E. Y., Vorstermans, L., Donker, M., Bijker, L., Coppieters, M. W., Cuijpers, P., Scholten-Peeters, G., & de Wit, L. M. (2024). How people with persistent pain experience in-person physiotherapy blended with biopsychosocial digital health - A qualitative study on participants' experiences with Back2Action. *Internet Interventions*, *36*. https://doi.org/10.1016/j.invent.2024.100731

Rabiei, P., Keough, C., Patricio, P., Côté-Picard, C., Desgagnés, A., & Massé-Alarie, H. (2025). Are Tailored Interventions to Modifiable Psychosocial Risk Factors Effective in Reducing Pain Intensity and Disability in Low Back Pain? A Systematic Review with

Meta-Analysis of Randomized Trials. *Journal of Orthopaedic & Sports Physical Therapy*, *55*(2), 89-108.

Ramond, A., Bouton, C., Richard, I., Roquelaure, Y., Baufreton, C., Legrand, E., & Huez, J. (2011). Psychosocial risk factors for chronic low back pain in primary care—a systematic review. *Family Practice*, 28(1), 12–21. https://doi.org/10.1093/fampra/cmq072

Richmond, H., Hall, A. M., Copsey, B., Hansen, Z., Williamson, E., Hoxey-Thomas, N., Cooper, Z., & Lamb, S. E. (2015). The Effectiveness of Cognitive Behavioural Treatment for Non-Specific Low Back Pain: A Systematic Review and Meta-Analysis. *PLoS ONE*, *10*(8), e0134192. https://doi.org/10.1371/journal.pone.0134192

Robinault, L., Niazi, I. K., Kumari, N., Amjad, I., Menard, V., & Haavik, H. (2023). Non-specific low back pain: an inductive exploratory analysis through factor analysis and deep learning for better clustering. *Brain Sciences*, *13*(6), 946.

Robinson, H. S., &Dagfinrud, H. (2017). Reliability and screening ability of the StarT Back screening tool in patients with low back pain in physiotherapy practice, a cohort study. *BMC musculoskeletal disorders*, *18*, 1-7.

Robson, E. K., Kamper, S. J., Davidson, S., da Silva, P. V., Williams, A., Hodder, R. K., ... & Williams, C. M. (2019). Healthy Lifestyle Program (HeLP) for low back pain: protocol for a randomised controlled trial. *BMJ open*, *9*(9), e029290.

Schielke, A. L., Daniels, C. J., Gliedt, J. A., & Pohlman, K. A. (2024). Assessment of back pain behaviors, attitudes, and beliefs of chiropractic research conference attendees after a biopsychosocial educational workshop. *Journal of Chiropractic Education*, *38*(1), 42-49.

Simmonds, M. J., Derghazarian, T., &Vlaeyen, J. W. (2012). Physiotherapists' knowledge, attitudes, and intolerance of uncertainty influence decision making in low back pain. *The Clinical journal of pain*, *28*(6), 467-474.

Vleeming, A., Schuenke, M. D., Masi, A. T., Carreiro, J. E., Danneels, L., & Willard, F. H. (2012). The sacroiliac joint: an overview of its anatomy, function and potential clinical implications. *Journal of anatomy*, *221*(6), 537–567. https://doi.org/10.1111/j.1469-7580.2012.01564.x

Waddell G. The Back Pain Revolution. Second edition. Printed in China; Churchill Livingstone, 2004.

Walker, B. (2000). The prevalence of low back pain: a systematic review of the literature from 1966 to 1998. *Journal of spinal disorders*, 13 3, 205-17. https://doi.org/10.1097/00002517-200006000-00003

World Health Organization (2023). Low back pain. *Available on*: https://www.who.int/news-room/fact-sheets/detail/low-back-pain.

Wu, A., March, L., Zheng, X., Huang, J., Wang, X., Zhao, J., Blyth, F., Smith, E., Buchbinder, R., & Hoy, D. (2020). Global low back pain prevalence and years lived with disability from 1990 to 2017: estimates from the Global Burden of Disease Study 2017. *Annals of Translational Medicine*, 8. https://doi.org/10.21037/atm.2020.02.175

Xing, W., Zhang, Y., Yang, Q., & Wang, X. (2024). Prevalence and risk factors of low back pain in military personnel: a systematic review. *EFFORT Open Reviews*, 9, 1002–1012. https://doi.org/10.1530/EOR-22-0113

Yang, H., Haldeman, S., Lu, M., & Baker, D. (2016). Low Back Pain Prevalence and Related Workplace Psychosocial Risk Factors: A Study Using Data From the 2010 National Health Interview Survey. *Journal of Manipulative and Physiological Therapeutics*, 39(7), 459–472. https://doi.org/10.1016/j.jmpt.2016.07.004

Zhang, T., Liu, Z., Liu, Y., Zhao, J., Liu, D., & Tian, Q. (2018). Obesity as a Risk Factor for Low Back Pain: A Meta-Analysis. *Clinical Spine Surgery*, 31, 22–27. https://doi.org/10.1097/BSD.0000000000000468

APPENDIX I

INFORMED CONSENT

My name is ODIMBU Chiamaka Jane, a final year student of the Department of Physiotherapy, College of Basic Medical Sciences, University of Benin, Benin City, Edo State. I am carrying out a research titled: **PHYSIOTHERAPISTS' KNOWLEDGE, ATTITUDE AND BELIEFS OF BIOPSYCHOSOCIAL INTERVENTIONS IN NON-SPECIFIC CHRONIC LOW BACK PAIN – A CROSS-SECTIONAL SURVEY OF SOUTH-SOUTH NIGERIA.** Thisresearch study will be conducted as part of the requirement for the award of Bachelor of Physiotherapy (B.PT). Your participant is voluntary and you are free to ask questions about the study and you are also free to withdraw at any time you desire. Your response will be strictly confidential and will be used solely for the purpose of this research. Please kindly include your signature and date if you are willing to participate.

Participant's signature **Researcher's signature**

…….. …….

APPENDIX II

KNOWLEDGE OF PHYSIOTHERAPISTS ON BIOPSYCHOSOCIAL INTERVENTIONS IN CHRONIC LOW BACK PAIN MANAGEMENT QUESTIONNAIRE

This questionnaire seeks to assess the knowledge of physiotherapists on biopsychosocial interventions in chronic low back pain management. Your participation in this study will be very much appreciated. All responses will be handled with utmost confidentiality. Thank you for your time.

SECTION A: SOCIO-DEMOGRAPHIC DATA

1. Age

   ____ 25 – 35 years

   36 – 45 years

   46 – 55 years

   > 55 years

2. Gender

   ____ Male

   Female

3. Highest educational level?

____ Bachelor of Physiotherapy

Doctor of Physiotherapy

Master degree

Doctoral degree (PhD)

4. Years of experience practicing as a fully licensed physiotherapist?

1 - 5

6 - 10

11 - 15

More than 15

5. What is your primary area of professional practice?

Sports injuries

Musculoskeletal

Gerontology

Women's health

Others (specify):

6. What is your primary workplace?

Teaching hospitals

Non-teaching hospitals (secondary healthcare)

Primary healthcare

Private practice

Rehabilitation center

Sports center

University

. Have you had any additional training in Low Back Pain (LBP) management?

Yes

No

Not sure

SECTION B

A biopsychosocial rehabilitation intervention for chronic low back pain includes:

1. An exercise component
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
2. Psychological support which involves all the actions taken to aid the patients overall mental well being
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
3. Education which involves action taken to increase the knowledge of the patient or aimed to do so
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
4. Personalization which implies actions taken to adapt the individual to the programme
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
5. Self-management which refers to the actions taken to aid the patient take control of their own life and problems
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
6. Participation which refers to the actions that aid in return to work and meaningful activities of daily living
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
7. Follow up which refers to actions before and after the intervention
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
8. Practice standard which involves the addition of expertise intervention
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
9. Practice standard which involves the application of evidence-based practice
   ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
10. Practice standard which involves standardization of assessment
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
11. Practice standard which involves standardization of treatment
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
12. Goal setting which implies setting individualized or meaningful goals of intervention
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
13. Dietary counseling or involvement of a nutritionist
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree
14. Social support which implies involving family members
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree

In biopsychosocial rehabilitation intervention:

15. Setting of goals should be negotiated with stakeholders
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree

16. Setting of goals should be progressive
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree

17. Setting of goals should utilize goal oriented therapy
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree

18. Setting of goals should involve activities of daily living
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree

19. Social support involves stimulating social interaction
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree

20. Social support focuses on the relationship between pain and social competence
    ( ) Strongly Disagree ( ) Disagree ( ) Neutral ( ) Agree ( ) Strongly agree

APPENDIX III

SECTION C: Pain Attitudes and Beliefs Scale for Physiotherapist

(PABS-PT)

The purpose of this list is to help us analyse how you, the therapist, approach the most common forms of back pain. We do not mean back pain resulting from a radicular syndrome, cauda equina syndrome, fractures, infections, inflammation, a tumour or metastasis. It is not our intention to test your knowledge of back pain. We would simply like to know how you approach the treatment of back pain. We are looking for your opinion; the opinions of others are not relevant.

		Completelydisagree	LargelyDisagree	Disagree to someextent	Agree to someextent	LargelyAgree	Compltetely agree
1	Mental stress can cause back pain even in the absence of tissue damage.						
2	The cause of back pain is unknown.						
3	Exercises that may be back straining should not be avoided during the treatment.						
4	Pain is a nociceptive stimulus, indicating tissue damage.						
5	The severity of tissue damage determines the level of pain.						
6	A patient suffering from severe back pain will benefit from physical exercise.						
7	Functional limitations associated with back pain are the result of psychosocial factors.						
8	Patients with back pain should preferably practice only pain free movements.						

		Completelydisagree	LargelyDisagree	Disagree to someextent	Agree to someextent	LargelyAgree	Completelyagree
9	In the long run, patients with back pain have a higher risk of developing spinal impairments.						
10	Learning to cope with stress promotes recovery from back pain.						
11	Therapy may have been successful even if pain remains.						
12	Even if the pain has worsened, the intensity of the next treatment can be increased.						
13	Back pain indicates the presence of organic injury.						
14	If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly.						
15	If therapy does not result in a reduction in back pain, there is a high risk of severe restrictions in the long term.						
16	Pain reduction is a precondition for the restoration of normal functioning.						
17	Increased pain indicates new tissue damage or the spread of existing damage.						
18	There is no effective treatment to eliminate back pain.						
19	If patients complain of pain during exercise, I worry that damage is being caused.						

APPENDIX IV

ETHICAL APPROVAL

EDO STATE MINISTRY OF HEALTH
HEALTH RESEARCH ETHICS COMMITTEE

PROTOCOL NUMBER	**HA/737/25/D/09110946 (PLEASE QUOTE IN ALL ENQUIRIES)**
APPROVAL NUMBER	**HA/737/25/D/09230946**
TITLE OF RESEARCH PROPOSAL	**PHYSIOTHERAPISTS' KNOWLEDGE, ATTITUDE AND BELIEFS OF BIOPSYCHOSOCIAL INTERVENTIONS IN NON-SPECIFIC CHRONIC LOW BACK PAIN-A CROSS-SECTIONAL SURVEY OF SOUTH-SOUTH NIGERIA**
PRINCIPAL INVESTIGATOR (S)	**ODIMBU CHIAMAKA JANE**
DATE CONSIDERED	**23RD SEPTEMBER, 2025.**
DECISION OF THE COMMITTEE	**APPROVED**

THIS APPROVAL DATES 23/09/2025 TO 23/09/2026. IF THERE IS A DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC EDO SMoH SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY

REMARK: Please kindly note that the HREC Edo SMoH seal authenticates this approval

DR (MRS) Omonyemen B. BELLO
(MBBS, MPH, FPHCM) *(CHAIRMAN)* **SIGNATURE & DATE**..... 29/9/2025

SUPERVISOR(S) ..DR. SATURDAY NICHOLAS OGHUMU.....

.....

ATTESTATION BY INVESTIGATOR(S)

No participant accrual or activity related to this research may be conducted outside of the approval dates. All informed consent forms used in this study must carry the Edo SMoH HREC-assigned number and duration of your research. No changes are permitted in the research without prior approval of the Edo SMoH HREC except in circumstances outlined in the Code. The Edo SMoH HREC reserves the right to conduct compliance visits to your research site without previous notification.

Signature & Date.....

EDO STATE MINISTRY OF HEALTH SECRETARIAT DATE 23/9/25 SIGN DATE 23/9/25 RESEARCH & ETHICS COMMITTEE

edohrec@edostate.gov.ng

Room 16, Block D, 2nd floor, State secetariat building.

RESEARCH ETHICS COMMITTEE

COLLEGE OF MEDICAL SCIENCES
UNIVERSITY OF BENIN, BENIN CITY, NIGERIA.

Chairman: Prof. F. A Imarhiagbe
MBChb, FMCP
Cert Clin Res and ethics (NIH), MD.
0803449092

P.M.B 1154, BENIN CITY
Email: researchethics.cms@gmail.com

Our Ref: CMS/REC/01/VOL.2/797 **Date:** 13th July, 2025

Re: PHYSITHERAPISTS' KNOWLEDGE, ATTITUDE AND BELIEFS OF BIOPSYCHOSOCIAL INTERVENTIONS IN NON-SPECIFIC CHRONIC LOW BACK-PAIN – A CROSS-SECTIONAL SURVEY OF SOUTH-SOUTH NIGERIA

Name of Principal Investigator: **ODIMBU CHIAMAKA JANE**
Department Of Physiotherapy,
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University of Benin

REC Approval No: CMS/REC/2024/797

This is to inform you that the research described in the submitted proposal, the Informed Consent Forms and other participant information materials have been reviewed and approved by the College Research Ethics Committee, University of Benin.

This approval dates from **13th July, 2025 to 12th July, 2026.** In multi-year research, Endeavour to submit your annual report to the REC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code of Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the code including ensuring that all adverse events are reported promptly to the REC. No, changes are permitted in the research without prior approval by REC except in circumstances outlined in the code. REC reserves the right to conduct compliance visit to your research site without prior notice. Thank you.

PROF. F.A IMARHIAGBE
Chairman, REC