



UNIVERSITÄT ZU LÜBECK

Aus INSTITUT FÜR ALLGEMEINMEDIZIN
der Universität zu Lübeck
Direktor: Prof. Dr. med. Jost Steinhäuser

Stratified Care for Patients with Low Back Pain in Nigeria: A Tailored Intervention

Inauguraldissertation

zur Erlangung der Doktorwürde
der Universität zu Lübeck
- **Aus der Sektion Medizin** -

Vorgelegt von
MICHAEL EWETOTORE, ADJE
aus DELTA STATE, NIGERIA

Lübeck 2023

1. Berichterstatter: **Prof. Dr. med. Jost Steinhäuser**
Ko-Betreuer: **Prof. Dr. Sven Karstens**

2. Berichterstatter: **PD Dr. med. Jan Philipp Benthien**

Tag der mündlichen Prüfung: 10.01.2024

Zum Druck genehmigt. Lübeck, den 16.01.2024

-Promotionskommission der Sektion Medizin-

Contents	
List of Abbreviations.....	v
List of Tables.....	vi
List of Figures.....	vii
Acknowledgement.....	viii
Chapter 1: Introduction.....	1
1.1 Research Background.....	1
1.1.1 Low Back Pain.....	1
1.1.2 The STarT-Back Approach.....	2
1.1.3 Evidence Supporting the Implementation of the STarT-Back Approach.....	4
1.2 Rationale for the Project.....	4
1.3 Aim of the Project.....	5
Chapter 2: Conceptual Framework.....	6
Chapter 3: Participants and Methods.....	8
3.1 Qualitative Study: Identifying Barriers and Enablers Affecting the Implementation of Stratified Care.....	8
3.2 Delphi Study: Developing Approaches and Adaptations to Overcome Barriers and Promote Enablers to Implementation of Stratified Care.....	10
3.3 Introductory Materials.....	13
3.4 Ethical Consideration.....	15
Chapter 4: Results.....	16
4.1 Qualitative Study: Identifying Barriers and Enablers Affecting the Implementation of Stratified Care.....	16
4.2 Delphi Study: Developing Approaches and Adaptations to Overcome Barriers and Promote Enablers to the Implementation of Stratified Care in Nigeria.....	31
Chapter 5: Discussion.....	37
5.1 Barriers and Enablers to the Implementation of Stratified Care in Nigeria.....	37
5.2 Strategies for Implementation of Stratified Care in Nigeria.....	38
5.2.1 Overcoming Patient Expectations Using Education.....	39
5.2.2 Quality Improvement Meetings.....	39
5.2.3 Undergraduate Training.....	40
5.2.4 Sufficient Time for Patient-Clinician Communication.....	40
5.3 Critical Integration of the Studies for Implementation.....	41
5.4 Tailored Implementation Model.....	44
5.5 Study Limitations and Strengths.....	46
Chapter 6: Outlook of Implementation in Nigeria.....	48

6.1	Plans for Dissemination.....	48
6.2	Tailored Training on Stratified Care for Physiotherapists	48
	Chapter 7: Summary	51
	Zusammenfassung	53
	Literature Cited	58
	Appendix	66
	Appendix I: Interview Guide for Patients.....	66
	Appendix II: Interview Guide for Physiotherapists.....	67
	Appendix III: Coding Agenda and Category Description.....	68
	Appendix IV: Qualitative Data Informing Delphi Questionnaire Development.....	75
	Appendix V: Delphi Questionnaire.....	77
	Appendix VI: Qualitative Data for Rounds 1 and 2. Common Themes and Quotes.	79
	Curriculum Vitae	80
	List of Publications	81

List of Abbreviations

Abbreviation	Description
BCW	Behaviour Change Wheel
LBP	Low Back Pain
MSK	Musculoskeletal
NSLBP	Non-Specific Low Back Pain
OpenOLAT	Open Online Learning and Training
RQDA	R-Qualitative Data Analysis
SBT	STarT Back Tool
SC	Stratified Care
STarT	Subgrouping for Targeted Treatment
TBS	Traditional Bone Setters
TSK-PT	The Tampa Scale for Kinesiophobia for Physiotherapists

List of Tables

Table 1: Content of the Introductory Presentation

Table 2: Sample Description of Participants in the Qualitative Study

Table 3: Categories and Themes of Variations

Table 4: Sample Description of Participants in the Delphi Study

Table 5: Results from Round 1 and Round 2 Delphi Processes

List of Figures

Figure 1: Project Conceptual Framework

Figure 2: Project Overview

Figure 3: Delphi Study Flowchart

Figure 4: Tailored Implementation Model for Stratified Care in Nigeria

Acknowledgement

First, I would like to express my sincere appreciation to my supervisors, Prof. Sven Karstens and Prof. Jost Steinhaeuser, for their guidance in my research and development in this field of study. I could not have asked for better mentors. Besides my supervisors, I would like to thank Prof. Jonathan Hill, Prof. Kay Stevenson, and Dr. Chidozie Mbada for substantially contributing to my research experience.

I would also like to genuinely thank the German Academic Exchange Service (DAAD) and Petroleum Technology Development Fund (PTDF) for providing the funding needed to carry out my doctoral training. I thank the staff members of the Trier University of Applied Sciences, Informatics Department, and the University of Lubeck, Center for Doctoral Studies, for providing the enabling environment, training, and assistance.

My gratitude also goes to my extended family and friends, who have encouraged me on this journey.

I extend my most profound appreciation to my wife, Uchechi, and my son, William, for their support and understanding. This work is dedicated to them.

Chapter 1: Introduction

1.1 Research Background

1.1.1 Low Back Pain

Low back pain (LBP) is a condition with a high prevalence and heavy burden globally [1]. In recent years, this has been associated with substantially increased years lived with disability and infirmities in ageing [2, 3]. Reports show that the lifetime prevalence of LBP is as high as 84% [4].

The developing level of countries is one of the important contributing factors to the LBP burden [1]. This is evident from recent studies, which estimate a high point prevalence in developing regions like Nigeria with immense cost implications [5]. In comparison, the prevalence of LBP in low- to middle-income countries is fairly similar to that in high-income countries, perhaps even lower with younger populations in these countries [3]. However, due to underreporting, the presence of alternatives to medical practices, and the unavailability of resources, it still poses a major challenge [6].

LBP can be defined as pain in the lower back, between the costal margins and gluteal folds, with or without referred leg pain. It is described as non-specific regardless of intensity and severity when it occurs without recognisable or known specific pathology [7, 8]. Current evidence points to a multifactorial aetiology making up approximately 85% of all cases of LBP [9].

Studies show the pathway to recovery from an acute episode of non-specific LBP is often rapid and complete [10]. About 50% of patients with non-specific LBP who seek help recover within three months. Although some might still experience low levels of pain, disability, and relapses, they are able to return to work within one month. However, in 10% of the cases, regardless of the course of therapy, the patients go through a process referred to as 'chronification'. This leads to the development of a long-term condition with an increased disability and a decreased likelihood of returning to work [10, 11]. The process of chronification can be facilitated by psychosocial factors- factors of psychological and social emergence with implications such as depression, fear-avoidance beliefs, and catastrophizing which are sometimes referred to as 'prognostic indicators' [12, 13]. Some studies go further to classify these psychosocial factors as moderate risk factors for the occurrence and persistence of LBP, standing alongside low-risk factors like; obesity, female gender, and unhealthy lifestyles, minor risk factors like stress, prolonged standing, and heavy lifting, and severe risk factors like previous back pain [14, 15].

The LBP cases resulting from moderate risk factors account for a significantly larger part of the total burden of this condition, making them a critical group [16]. Evidence from studies in Nigeria suggests that these psychosocial factors are predominant among patients with chronic non-specific LBP. By estimate, psychosocial factors account for more than two-thirds of self-reported disabilities and half of performance-based disabilities [17, 18].

1.1.2 The STarT-Back Approach

In recent decades, there has been remodelling in the management of LBP, including the development of prognostic tools for LBP. This was warranted by literature which implies that the existing biomedical model for LBP management is too simplistic and insufficient [19–21]. Thus, guidelines recommend a systematic screening followed by a clinical stratification pathway where cases are sub-categorised and component features targeted for more effective treatment [22–24].

Research suggests that such stratification might be possible due to the presence of inherent subgroups within a given population of patients with LBP [25]. These patient subgroups are categories of patients who might possess similar characteristics, such as their prognostic profile, and likely response to a specific treatment [26, 27]. Utilizing these attributes, researchers could potentially develop interventions aimed at combating the challenge of constrained resources for health care services posed by this condition while optimising patient treatment outcomes. This was the treatment goal over the years, as seen in a 1957 quote from Cronbach: “we should design treatments not to fit the average person but to fit groups with particular aptitude patterns” [28].

The Subgroups for Targeted Treatment (STarT-Back) approach was thus developed based on the principle of stratification [29, 26]. Its goal is to deliver individualised and best-suited care, such that patients who might require advanced multi-modal care could be addressed separately from those whose conditions are likely to resolve with little or no treatment [26]. It integrates physical and psychological treatment approaches into its management strategy against the backdrop of a prognostic screening.

The STarT-Back prognostic screening tool (SBT) was thus developed, validated, and tested in the UK [30–32]. It was originally developed for applications in primary care settings, incorporating physiotherapists, general practitioners, and patients. It aimed to provide the clinician with an effective and consistent indication of the patients’ prognostic complexity and fast-track care. With more studies, the tool advanced to offering valid subgroup

categorisation in LBP, reducing disagreement in primary care referrals to physiotherapy [33].

The SBT is a simple instrument consisting of 9 items. The first four items address aspects of the patient's physical characteristics, while the next five items comprise the psychosocial subscale relating to patients' psychological characteristics [32]. It was designed for risk prediction using treatment-modifiable risk factors only, such as recurring debilitating pain, disability, and psychosocial factors. Non-modifiable factors such as employment status, previous surgery, duration of symptoms, comorbidities, and previous pain episodes were not included [34].

The effectiveness of the STarT-Back approach was compared with current best practises for LBP in a large-scale study by Hill and his colleagues, carried out in the UK. Experienced physiotherapists trained in the SB approach recruited about 1573 patients from 10 physiotherapy clinics. The patients self-reported with non-specific LBP of any duration and intensity, with or without radicular pain. Patients who had spinal surgery in the past 6 months with red flags indicating a more serious condition, and who were pregnant or receiving back treatments except in the primary care setting were excluded from the study.

Patients with non-specific LBP were thereafter categorised into three subgroups; low, medium, and high-risk categories using their score from the STarT-Back tool (SBT), and matched treatments were allocated to participants in each category [31, 32].

Patients were allocated to the low-risk subgroup if they scored between 0 and 3 in total on the SBT. This was interpreted to mean that they stood a chance of improving with little or no intervention, hence, they received advice and pain medication. Patients were allocated to the medium-risk subgroup if they scored between 4 and 9 on the grouping tool but had 3 or fewer of the five items making up the sub-scale. This suggested that they had a moderate likelihood of poor treatment outcomes, hence, they received physiotherapy treatment comprising evidence-based modalities and self-management [35]. In the third group, the patients in the high-risk category were those who scored 4 of 5 on the psychological subscale. It indicated to the clinician that they possessed complex prognostic factors impeding recovery, hence, they were given psychologically informed physiotherapy [6, 31]. All target treatments were promising in their aim to reduce disability, reduce pain where possible, improve psychological functioning and enable the patient to manage ongoing and/or future episodes of back pain [35].

1.1.3 Evidence Supporting the Implementation of the STarT-Back Approach

Studies suggest there might be inconsistencies in implementation outcomes, time constraints and the potential of stratified care to undermine practice experience [36]. Studies by Cherkin et al. and Delitto et al. reported insufficient evidence supporting the benefits of a stratified approach to care [37, 38]. Other studies report issues relating to difficulties in finding courses to upskill clinicians to manage high-risk patients, time constraints within the consultation, and implementation difficulties. In some countries, there are controversial financial implications, and concerns that it reduces diagnostic skills and reduces clinician autonomy. Others complain that it limits treatment options, leading to less personalised care and concerns about poor health literacy in low-risk patients [36].

Notwithstanding, the SB approach has been described as best practice in the UK international guideline for the management of LBP and has been recommended to be efficacious and have a positive impact on LBP outcomes [39, 23]. It helps to involve patients in treatment decision-making, improves system-level efficiencies in managing back pain, increases clinician confidence around complex cases, helps interprofessional working, and helps to fast-track treatment [30, 35, 31, 40].

There is evidence from recent studies from the UK and New Zealand [31, 26, 41] revealing that the STarT-Back approach to LBP has the potential to reduce disability, save costs, improve patient satisfaction, reduce the number of patient visits and increase the clinician's competence. Further evidence is seen from a recent systematic review showing improved clinical outcomes and health-related cost savings in patients who received treatment using this approach [42]. Studies from the USA and Ireland, conclude that a stratified care model like the STarT-Back approach can not only improve overall back pain but can also be effectively implemented in clinical practice [43, 44].

1.2 Rationale for the Project

Implementation efforts have been initiated in the USA [43, 37, 45], UK [31, 30, 46], Ireland [44], Netherlands [47], Germany [48–50], and Denmark [51]. These studies in high-income countries indicate that physiotherapists' have not sufficiently implemented this approach in clinical practice due to several factors, and based on these factors, recommendations were made.

It is unknown, however, if these factors are similar to what is experienced in low- to middle-income environments and how to overcome them [21]. Thus, the contextual factors affecting

a low- to middle-income country like Nigeria needed to be identified, and the strategies suggested have to be further tailored to suit these contexts.

1.3 Aim of the Project

This research project aims to prepare the implementation of stratified care for LBP in Nigeria based on two concurrent studies. The first study explores the perspectives of physiotherapists and patients with LBP in Nigeria with the purpose of identifying the potential barriers and enablers influencing implementation. The second study aims to develop strategies, approaches, and adaptations to overcome barriers and promote enablers for the implementation of stratified care in Nigeria.

Chapter 2: Conceptual Framework

In the health services research field, many interventions, though effective, might have difficulty being replicated in other settings. This might be because no single strategy is likely to work across various contexts due to differences in the availability of resources, patient population needs and overall healthcare services [52]. Since this is the case, it was recommended that stratified care for patients with LBP will first need adaptation in terms of setting before wider implementation is considered. The recommendations specify that the first step should be to obtain the perception of stakeholders regarding the implementation of a stratified model of care as a baseline. In some cases, this might include other professionals such as doctors and nurses if the aim is for a wider implementation [52].

In the case of this project, Nigerian physiotherapists and patients are identified as key stakeholders since they are in the most relevant positions to influence the success of implementation and will be directly affected by the implications [6]. This project is conceptualised in three main sessions, drawn from two studies. It should reveal the contextual barriers specific to Nigeria that might need to be overcome before implementation takes place. Facilitators also referred to as 'enablers' need to be identified since they can be utilised and have the potential to enhance implementation [6].

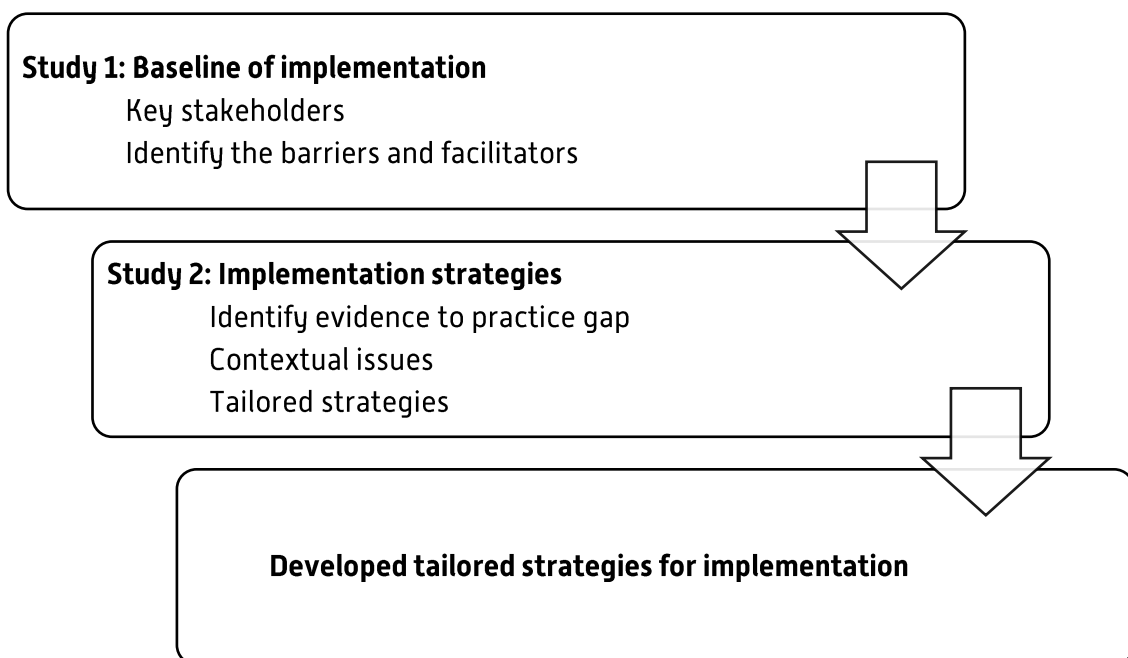


Figure 1: Project Conceptual Framework.

(Adapted from studies by Sowden et al. and Damscroder et al.) [6, 52]

In the next steps, tailored strategies to combat the barriers and utilise enablers will be identified and used to engage stakeholders [6, 52]. This project focuses on the first two studies, culminating in a consensus on implementation strategies in preparation for full implementation, as shown in Figure 1 above. The entire project occurs in a stepwise manner, one stage of this study synchronously leads to the next.

Chapter 3: Participants and Methods

3.1 Qualitative Study: Identifying Barriers and Enablers Affecting the Implementation of Stratified Care

This study adopts a qualitative design. Semi-structured individual telephone interviews were analysed following the Grounded Theory methodology and reported using the Consolidated Criteria for Reporting Qualitative Studies (COREQ) [53, 54].

Participants were theoretically sampled in phases for interviews [55]. The physiotherapists had to be registered and practice in Nigeria. They had to be from diverse specialties and work settings, with varying work experience and levels of training. The patients had to be diagnosed as having non-specific LBP and have visited a health care institution or currently receiving physiotherapy care. They were required to be able to speak and understand the English language fluently and have the comprehension needed to fill out the STarT-Back Tool. Participants who were under 18 years or did not work on the STarT-Back information on the introductory video were excluded from participation.

Physiotherapists and patients were recruited in several rounds until saturation was attained following the recommendations for qualitative research [56, 55]. Physiotherapy participants were contacted via email following the inclusion criteria. They provided details on age, sex, previous training, working experience (overall or with LBP patients), qualification and work setting. Then, in turn invited patients who provided details comprising age, sex and work status. The patients completed the STarT-Back Tool and provided the scores.

The interview guides for patients and physiotherapists were developed using standardised procedures allowing for open semi-structured interviews in four phases; brainstorming, collection, sorting, examining questions, and consultations as described in research [57].

For patients, the initial drawn guideline questions were sorted repeatedly based on categories, allowing for open but thematically structured interview questions [58, 59]. They were then reviewed by a patient with low back pain. After this process, the old questions were modified and re-sorted based on input from the patient. Questions that were considered too complex were then simplified to reveal the patient's perspective and new questions were added. Thus, a detailed patient guideline was developed with four key questions, additional maintenance and follow-up questions for patients with low back pain as shown in Appendix I. A guideline for physiotherapists was developed similar to the patients' guideline. The initially gathered and sorted questions were subjected to review by two male physiotherapists experienced in the area of low back pain and in qualitative

interviewing respectively. Based on their inputs, the former questions were modified and re-sorted and the terminologies were upgraded. Four key questions resulted from this process along with additional maintenance and follow-up questions for participants (Appendix II). Both guidelines were developed with considerations on implementation [52].

The entire process was then piloted with 5 participants; 3 physiotherapists and 2 patients with LBP. The pilot process utilised a 'Think Aloud' method, where verbal feedback was received and informed the modification of the process as described by Pepper et al. [60].

After a pilot phase, the interviews commenced following the pattern of a problem-centered interview [58]. The interviews were conducted by the same researcher over the phone at a date and time convenient for each participant. The interviewer had no direct relationship with participants prior to the commencement of the study. Each participant provided verbal consent before the interview commenced. The interviews began with warm-up friendly conversations to create context and a relaxing warm-up atmosphere. The dialogue then flowed flexibly through the questions. Noticeable events like interruptions and pauses were noted in the memos after each interview. Data collected via recordings and handwritten notes were summarised back to the participants at the end of each interview with contributions from memos. This process was repeated for the various rounds and the focus of the main interviews was modified simultaneously until saturation, where no new categories emerged [56].

A simple transcription method was used to create transcripts from the recordings [61]. To ensure data privacy compliance, pseudonyms were used to represent participants during the transcription process. The pseudonyms contained a representation of the participant (physiotherapist or patient), gender and the iterative interview round number. For the analysis, the transcripts were then proofread separately by a second researcher with experience in qualitative analysis. A line-by-line open iterative coding process was carried out resulting in a detailed coding agenda [62]. This contained descriptions of the codes, categories and variations cross-checked by two coders. Code labels were lifted directly from participants' quotes and linked to descriptive categories [63]. Higher-level abstract categories were systematically identified separately by the two researchers as coding progressed, tested against the data and consolidated repeatedly. Variations among categories were derived as recommended by Sbaraini et al. [64]. The data was broken down, intrinsically compared to reveal variations and re-combined in an abstract manner to describe the relationships (Appendix III). This Grounded Theory methodology and iterative coding were done with the help of the RQDA package of the R software [63, 62].

3.2 Delphi Study: Developing Approaches and Adaptations to Overcome Barriers and Promote Enablers to Implementation of Stratified Care

A web-based Delphi procedure was employed in this study [65]. This method is ideal because it utilises qualitative and quantitative procedures to draw out the opinions of panellists in several iterative rounds. With the web-based version, distance or the physical absence of panellists is not considered a barrier [66]. This stage initially aimed for a panel size of 60 to 120 participants considering the study method and its objectives [67].

Potential participants were initially contacted via email through the regulatory board of physiotherapists database using baseline inclusion criteria: having completed a recognised training programme, being registered with the regulatory board of Nigerian physiotherapists, and working in Nigeria.

A one-hour web presentation followed by a question and answer session was carried out to inform potential Delphi participants about the study. It was embedded in a continuous professional development series of workshops organised by the physiotherapy national association in Nigeria. This nationwide webinar discussion answered questions regarding the study and invited Nigerian physiotherapists to participate. Thereafter, participants who met the criteria and indicated interest were invited to participate. They received a link to a specially designed recruitment webpage providing an information sheet and consent form. They were further requested to re-confirm their qualification on each of the inclusion criteria, consent to the study and supply their email addresses. For this stage, participants had to confirm that they meet the criteria for panellists, following the description by Hora [68] and Trevelyan [69]. They were required to be over 18 years, have a minimum of three years of clinical experience (having managed patients with LBP), have postgraduate degrees or Continuous Professional Development (CPD) courses in physiotherapy and be available and willing to participate in the study. The initial questionnaire was sent to individuals who confirmed meeting all criteria for participation. Participants were provided with individualised access to the questionnaire and access to the introductory videos. To reduce the attrition rate for each round and encourage participation, a token was provided as an incentive at the end of each study phase [70]. They were given a total of four weeks to respond and were reminded twice: one week and two days before the deadline as shown in Figure 2.

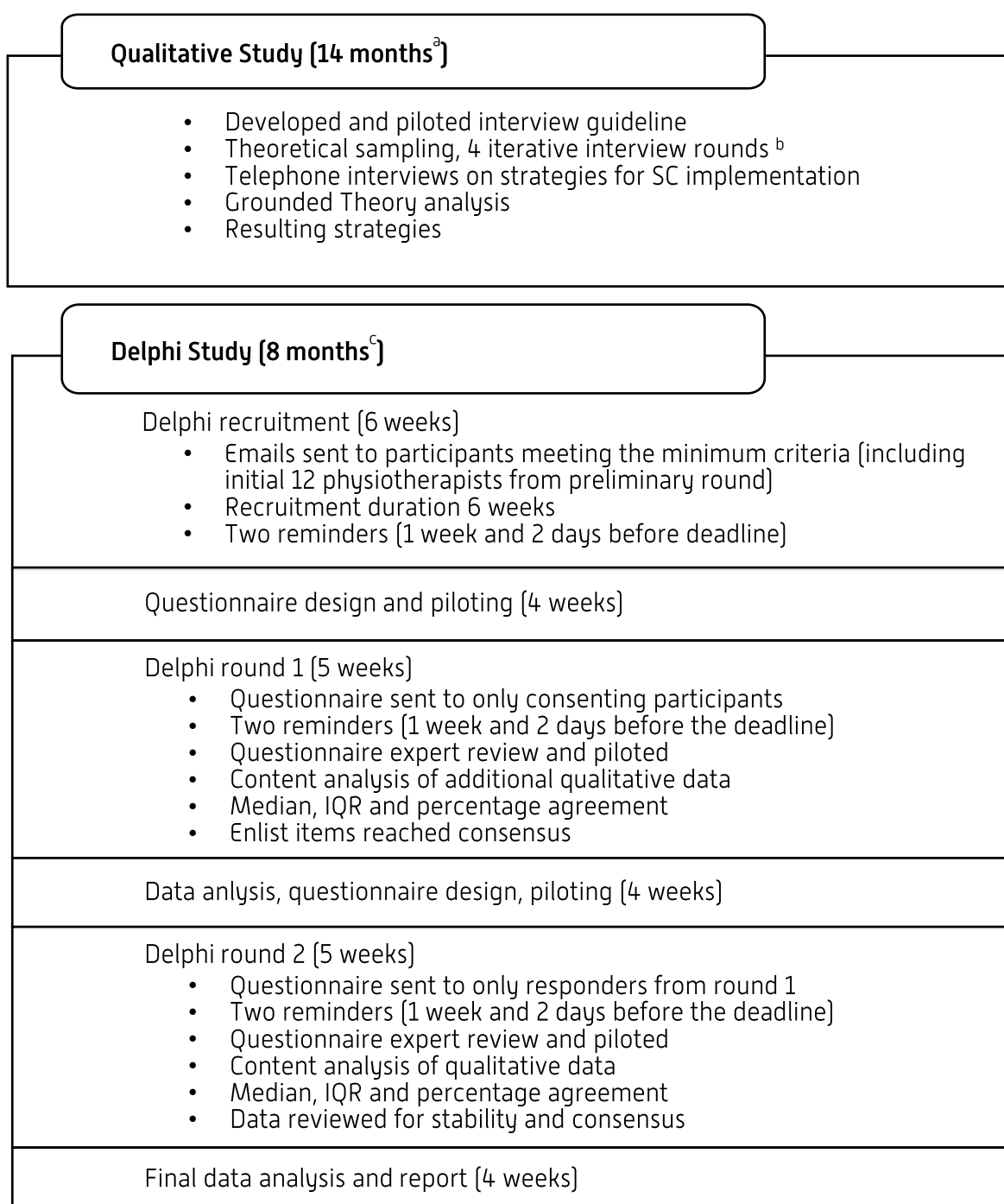
Data from the first study was incorporated following recommendations from studies by Hasson et al. and Duffield. They suggest that when sufficient content is available from previous studies or from the previous stage of the same study, it can form the basis for a

Delphi procedure [71, 72]. In this Delphi study, the data was obtained by means of a questionnaire hosted on an online survey platform (soscisurvey.de) [73]. The questionnaire consisted of two sections: The first section contained sociodemographic details including age, gender, qualification, areas of interest, years of experience and work setting. The second section consisted of 30 statements derived from the stage one study (Appendix IV). These statements were presented using a 5-point Likert scale arranged in ascending order from 'strongly disagree' to 'strongly agree'. The options were fully labelled and consisted of a neutral midpoint option. There was a provision to suggest additional strategies and comment on the listed strategies in open-ended questions (Appendix V).

To develop the questionnaire, the resulting statements from the qualitative study were maintained as closely as possible to the wording used by participants. Studies by Linstone et al. and Grabbe et al. give recommendations for word count, complexity and comprehensibility of statements to ensure optimal and valid responses from participants during several rounds of a Delphi study. Due to the possibility of misinterpretations and to maximise the response rate, they recommend avoiding too concise questions, leading questions and imprecise questions using the Flesch Kincade grade level to improve readability. For length, they recommend limiting statement lengths to between 20 and 25 words per statement [74–76]. These recommendations were adopted in structuring and arranging the statements. For comprehensibility, groups of statements with similar connotations in the questionnaire were categorised resulting in three groups: the first group contains strategies to best modify stratified care, the second group contains views on how training and education can best be done to help the implementation of stratified care and the third group contains ideas on conditions necessary to enhance the implementation of stratified care in Nigeria.

The questionnaires were reviewed for language, content, wording and sequencing by a research team consisting of physiotherapists with experience in stratified care and Delphi methodology, pilot tested and further modified for final dissemination [77].

Figure 2: Project Overview



^a From recruitment (July 2020) to final analysis (September 2021)
^b First, second, third and fourth iterative interview rounds.
^c From recruitment (February 2020) to final analysis (September 2022)
 IQR: Inter-quartile range
 SC: Stratified Care
 Consensus: $\geq 75\%$ agreement, Median ≥ 4 and Inter-Quartile-Range (IQR) ≤ 1 .
 Agreement: Selection of response options 4 - agree or 5 - strongly agree.
 Stability: Wilcoxon matched-pairs signed-rank statistically significant ($p < 0.05$)

Participants completed the first round in five weeks. For the second round, quantitative ratings from round 1 were analysed in addition to qualitative data. A further structured questionnaire was developed with the provision for additional comments and a quantitative feedback summary of responses in the previous round. Participants were urged to reconsider their original responses in light of the results provided from the first round and grade on a Likert scale [67]. The questionnaire was sent to only participants who completed round 1. Participants completed round 2 within a period of five weeks.

In rounds 1 and 2, measures of central tendency (mean, median, mode and percentages) and measures of dispersion (Interquartile range) were employed. To calculate the median and IQR, the response options were assigned numerical values of 1 to 6 in ascending order, the numerical values were; 'strongly disagree' (1), 'disagree' (2), 'neutral' (3), 'agree' (4), 'strongly agree' (5), 'no opinion' (0).

A Wilcoxon matched-pairs signed rank test was used to determine the degree of stability for each round [78]. The statistical results of each phase were fed back to the participants. Qualitative data from the additional opinions in the first round was analysed using qualitative content analysis [79].

Two termination criteria were pre-set. The criteria for stability were based on Dajani et al. where the median and IQR remained stable between rounds [80, 81] and the Wilcoxon matched-pairs signed-ranks showed values as not statistically significant ($p < 0.05$) between stages. For the consensus criteria, this was determined when the IQR was less than or equal to one and the median was four or more [82–84]. The percentage agreement was decided when 75% or more of the panellists responded "agree or strongly agree" to a statement as recommended by Keeney [85].

3.3 Introductory Materials

Before participating in the qualitative study, all participants were informed about what was involved in their participation and what was expected of them. They were invited to view introductory interactive videos, co-produced following standardised procedures for instructional videos by Norman et al. [86] shown in Table 1. These videos were prepared using content from published research by Main et al., Hill et al., and Sowden et al. [87, 31, 35]. Further content on the STarT-Back approach was added after collaborative discussions with the STarT-Back Tool development and impact acceleration group in the UK.

The content was adapted for two specialised videos for the participating physiotherapists and one video for the patients. The videos were designed with voice and music layovers,

interactive summary points and embedded questions. These were done to highlight vital aspects, keep the video interesting and ensure the participant followed.

For the patients' language and content were adapted after feedback from pilot patients, medical jargon was replaced with understandable 'lay' terminologies and the entire video was shortened for efficiency. Based on feedback from pilot physiotherapy participants, the physiotherapists' video was broken down into two parts; the first part discussed the rationale and background of the StarT-Back approach while the second part highlighted research evidence and the disadvantages of the STarT-Back approach. More sophisticated evidence was included, and previous studies and practical applications were emphasized.

Table 1: Content of the Introductory Presentation

(Adapted from studies by Main et al., Hill et al., and Sowden et al.) (87, 31, 35).

For patients:	For physiotherapists:
Implementation of stratified care model for low back pain in Nigeria-patients' video. [https://video.hochschule-trier.de/Panopto/Pages/Viewer.aspx?id=2e42dcd1-ba1b-4102-bd3d-afb600abe7f6]	Implementation of stratified care model for low back pain in Nigeria-physiotherapists video part 1. [https://video.hochschule-trier.de/Panopto/Pages/Viewer.aspx?id=579adabd-5e7e-45ab-8c29-afb600abe7f6]
	Implementation of stratified care model for low back pain in Nigeria-physiotherapists video part 2. [https://video.hochschule-trier.de/Panopto/Pages/Viewer.aspx?id=b424ce3f-4f73-40ec-a800-afb600abe7f6]
The rationale for the SB approach Psychosocial components of LBP Description of the SB approach - Content and purpose - Definition of subgroups - Matched treatments Treatment outcome using the approach	The rationale for the SB approach Psychosocial barriers to progress Subgrouping using SBT - Content and purpose - Definition of subgroups Supporting evidence from research Clinical and economic benefits

SB: STarT-Back, SBT: STarT-Back Tool, LBP: Low Back Pain

3.4 Ethical Consideration

Ethical approval was obtained from the Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria and the Trier University of Applied Sciences in Germany (registration ID: IRB/IEC/0004553). Before participating in the qualitative study, all patients and physiotherapists provided informed consent in writing and orally. Participants in the Delphi study provided written consent before commencing the study. This research project was registered with OSF registries (Registration DOI 10.17605/OSF.IO/8CNPV <https://osf.io/8cnpv>. Internet archive link <https://archive.org/details/osf-registrations-8cnpv-v1>).

Chapter 4: Results

4.1 Qualitative Study: Identifying Barriers and Enablers Affecting the Implementation of Stratified Care

Participants (n=25) were made up of physiotherapists and patients interviewed in four sets. Physiotherapists (n=12) were 6 (50%) males and 6 (50%) females. The mean age for physiotherapy participants was 35 years (SD 3.9). The patients (n=13) were 5 (39%) females and 8 (61%) males with a mean age of 50 years (SD 11.9).

For the physiotherapists, a total of 9 (75%) participants had up to ten years of clinical experience treating LBP patients. There were no participants with more than 20 years of clinical experience treating LBP. Regarding educational qualification, about 8 (67%) had a bachelor's degree as their highest educational level. There were no participants with a diploma in physiotherapy or a doctor of physiotherapy or equivalent.

All speciality areas of interest presented to physiotherapists were selected by at least one participant. However, about 6 (50%) participants chose musculoskeletal physiotherapy as their singular area of interest or as a combination with other areas. Regarding work setting, physiotherapists who worked in the teaching hospital and federal medical centers were 5 (42%) and made up the highest number. No participants were working in a sports center.

While for the patient's work settings, a majority were engaged in paid work 6 (46%). There were patient participants attributed to the three subgroups of the SBT; low, medium and high-risk categories. Of the total patients interviewed, 2 (15%) scored 0 to 3 on the SBT and were allocated to the low-risk subgroup, 4(31%) of patients scored 4 to 9 but 3 or fewer of the five sub-scale and were assigned to the medium risk subgroup and the highest being in the high-risk category in which 7 (54%) scored 4 of 5 the psychological subscale. Table 2 below provides further details on the physiotherapist and patient characteristics in this study.

The interviews averaged 50 minutes per individual. The initial coding resulted in 5 major categories, 38 sub-categories and 119 codes. The perspectives of physiotherapists and patients on the implementation of a tailored stratified care approach in Nigeria were captured in the final stage of selective coding. This higher level of abstraction resulted in 7 main hierarchical categories: resistance to change, acceptance of innovation, adapting practice, patients' learning journey, trusting the therapist, needing conviction and recognising the need for change. Table 3 below shows the seven major categories, themes and sub-themes in which variations occur.

Table 2: Sample Description of Participants in the Qualitative Study

Characteristics	Physiotherapists (n=12) n (%)	Patients (n=13) n (%)
Sex		
Male	6(50)	8(61)
Female	6(50)	5(39)
Total	12(100)	13(100)
Age (in years) Mean (SD)	35(3.9)	50(11.9)
Years of experience with LBP		
Up to 10 years	9(75)	
>10 years to 20 years	3(25)	
Qualification		
BSc/BMR(PT)	8(67)	
M.Sc	3(25)	
Ph.D	1 (8)	
Areas of Interest		
Cardiopulmonary	2(17)	
Community physiotherapy	2(17)	
Ergonomics and Occupational	1(8)	
Geriatrics	1(8)	
Neurology	1(8)	
Oncology/Palliative care	1(8)	
Musculoskeletal	6(50)	
Paediatrics	3(25)	
Sports	1(8)	
Women's health	1(8)	
Physiotherapists' Work setting		
Primary health care	1(8)	
Teaching hospital and federal medical centres	5(42)	
General/state hospital	1(8)	
Specialist hospital	1(8)	
Home and community physiotherapy	1(8)	
Physiotherapy training institute (university)	3(25)	
Patients' Work Setting		
Paid work		6(46)
Self-employed		5(39)
Retired		2(15)
Patients' SBT Risk Category		
Low risk		2(15)
Medium risk		4(31)
High risk		7(54)

BSc, Bachelor of Science; MSc, Master of Science; PhD, Doctor of Philosophy; PT, Physiotherapist, LBP: Low Back Pain; SBT, STarT-Back Tool.

Table 3: Categories and Themes of Variations (*Adapted from Adje et al.*) [88]

Themes of variation	Categories	1) Resistance to change	2) Acceptance of innovation	3) Adapting practice	4) Patients' learning journey	5) Trusting the physiotherapist	6) Needing conviction	7) Recognising the need for change
<i>A) Tradition of treatment</i>		Incentives attached to the usual practice	Ease of transition	Need of standard for regulating the practice	Needing a complement to usual care	Getting some help	Reliance on investigations	Lack of training to give psychologically informed therapy
		Overcoming patients' expectations	Open to new knowledge	Cultural adaptations	Recognising unhelpful treatments	Learning with practice	Patient education	Embracing a different approach
<i>C) Experiences</i>		Organisational culture	Steps towards optimising practice	Use of communication	Learning to live with pain	Therapists doing their best	Self-discovery	No complete relief
		Targeting attitudinal change	Work settings	Awareness for patients and physiotherapists	Taking charge	Co-operating with the therapists	Struggle against false information	The role of funding
<i>D) Strategies for implementation</i>								

The seven main hierarchical categories varied based on four themes of variations: the tradition of treatment, evolution to a new system, experiences and strategies for implementation. Each quote describes the category and sub-category of variation. While some categories were relevant to only physiotherapists others were relevant to only patients and still others to both physiotherapists and patients.

Resistance to Change

This category describes the opinions of physiotherapists and patients regarding potential resistances they perceive could affect implementation and their related experiences. Participants describe the work culture in Nigeria, patient expectations and attitudes as resistances concerning the implementation of stratified care. For some, the tradition of physiotherapy treatment was a major challenge sustained by *incentives attached to the usual practice* like physiotherapists' ego and financial benefits. These incentives further propagate the use of non-evidence-based methods of care making them synonymous with routine practice.

**PTm3: You need more patients to have more income, the more patients the more income, that is it in this case.*

Targeting the attitude of physiotherapists and patients is seen by participants as a major strategy to improve the chances of successful implementation. While the patients blamed the physiotherapists for not being fully attentive to their complaints, the physiotherapists blamed the patient's attitude as a deterrent for being unable to improve their condition. Both physiotherapists and patients agreed that their attitudes are co-dependent and should be changed by both parties.

PatM3: I know patient attitude matters but at least play your role. If your recommendations are practicable you will get a good attitude from them.

Some physiotherapists felt that the *patient's expectations* were the major obstacles to the evolution of practice in the sense of patient stratification for treatment. They believe that the patients usually expect a 'strong touch', some form of massage or physical contact from

*Format: Participant (PT-Physiotherapist or Pat-Patient), Gender (m-male, f-female), Participant number, Quote.

the physiotherapist during treatment sessions. Thus, all contrary suggestions and efforts to optimise practice by the therapist will amount to nothing because the patients come with such expectations.

PTf4: Then the patient might not be satisfied because they are expecting more from you. They feel they need some form of 'hard touch, strong touch'.

Other physiotherapists see the limitations they experience in the preponderant *organisational culture* in Nigeria. They are restricted in terms of how much they can change in terms of time for patient treatment, the number of patients to ideally manage within a given period, acceptance level and use of technology. This is noticed by the patients and from the experiences of some physiotherapists and patients, this situation affects the possibilities of fully using a stratified model of care.

PTm6: We made a move to implement an electronic documentation system, it never saw the light of day and the attitude towards it was terrible from the management.

Acceptance of Innovation

With an emphasis on physiotherapists, this category explains the optimism perceived regarding this approach, potential settings and enabling conditions suitable for the implementation of stratified care in clinical practice in Nigeria.

Some physiotherapists highlight acceptance of the stratified model of care based on existing enabling conditions like similarity with current practice and *ease of getting the approach into practice*. They explained that they have some background knowledge of basic elementary psychology taught to them in their first year at the university although without clinically relevant applications. Additionally, the theoretical concept of a biopsychosocial approach to patient care has become popular in recent decades and physiotherapists in Nigeria cannot be oblivious to this.

PTm5: I won't say knowledge of psychosocial problems is low among physiotherapists any longer. It's going to be easier for them to incorporate into routine practice.

However, others acknowledged that the complete package of prognostic stratification for treatment was entirely new. Most physiotherapists are not conversant with using prognosis as the basis for treatment, yet they were *open to the new knowledge*. From the introduction

of stratified care to them, they recognised the sound scientific background and believed in its potential to improve their clinical practice.

PTf4: It is very different from what we do here. The treatment here is based on diagnosis and this approach is based on prognosis. So yes, it is different.

From their *experiences*, introducing innovative ideas and approaches into their various work settings is not a novel process. Some have tried it successfully, *taking steps towards optimising practice* and subjecting it to clinical discussions with the higher professional cadre before adoption by their institutions. Based on this, they think a stratified model of care being introduced in a similar systematic manner might stand a better chance of being successfully implemented.

PTf11: Many interventions have been introduced to us by different people. It is not a big deal if you have a proper literature backup. Once it is adopted everyone used it.

Participants recognised that the possibilities differed between private and government-owned medical institutions like clinics, federal medical centers, and government specialist hospitals. Hence, their perspectives differed in relation to what *work setting* they thought would be most suitable to initiate implementation efforts. Several participants felt it would be more applicable if targeted at government hospitals. This, they reasoned, is because the therapists who work in these settings are paid a fixed wage by the government regardless of the number of cases they attend to as opposed to the private settings where reduced cases lead to lesser pay.

PTf10: Then physiotherapists working in government hospitals might be encouraged to use the approach, but not therapists in the private sector. This approach will reduce their revenue and will not be welcomed.

Adapting Practice

In this category patients and physiotherapists describe suggestions to modify and adapt the stratified care model to suit the Nigerian context. Participants gave suggestions on adaptations in terms of implementation through professional cadre and *socio-cultural adaptations* incorporating aspects relating to respect for older professionals and professional cadre. They suggested the idea of hierarchical implementation which involves reaching out to the senior therapists first, and then, from the seniors, the junior therapists can be motivated to use it.

PTm9: Our environment is peculiar, things have to go through certain paths. So we need to convince the seniors then it can be implemented on a departmental level.

Participants mentioned that the *use of communication* was very important and repeated it often in several conversations. To the patients and physiotherapists, it was a tool to ensure cooperation between them. Participants believe that with communication their relationship can be cemented and it will ensure the success of stratified care implementation. The patients however feel that they should be aware of the rationale for every approach targeted at them and then decide on acceptance or rejection with the help of the clinicians.

PatF7: In a way, some part of my treatment helped me psychologically, there are days he would talk to me so I can help myself.

Physiotherapists argued that the absence of a standard of practice is a major challenge that any approach seeking adoption should address. Without proper regulation, every therapist would practice as they see fitting and patients might receive conflicting information. *Adherence to a standard of practice* by clinicians was believed to result in optimised care and might enhance the adaptation of a stratified model of care for implementation.

PTf7: In Nigeria, we do not have a standard way of doing things. What hospital A is doing is different from hospital B. Everyone is just doing what they want.

To participants, a first strategy for adapting practice would be to create awareness about the approach and gather feedback on its applicability. It will ensure stakeholders including physiotherapists, patients, physicians, nurses and others involved have a baseline knowledge suitable to apply to the Nigerian setting. Such *awareness for patients and physiotherapists* about the approach could be done at undergraduate and postgraduate levels for physiotherapists, and through outreaches for patients.

PTf4: Patients should know that physiotherapy involves advice too and they will feel better. It would also help physiotherapists a lot if they are aware of the approach.

Patients Learning Journey

This category focuses on patients. It describes their experiences and learning journey with their LBP condition and how their outlook changed. Their perspectives were corroborated by physiotherapists.

Patients relate how their debilitating condition has resulted in physical and psychological difficulties. They have experienced care on various fronts, and some have resolved to change their outlook. Instead of depending solely on the therapists, they have resolved to learn to manage themselves, *learn to live with pain* and accept the condition.

PatM3: It affected me psychologically, I was worrying but I have learned to live with it, I think I am better at managing myself.

Other patients believe there are areas of deficiency in orthodox clinical practice and that *some form of compliment is needed*. They speak about physiotherapy facilities and equipment being old and overused. They also complain about the heavy patient load for the clinicians, which was corroborated by physiotherapists. In their opinion, Traditional Bone Setters (TBS)-a type of folk medicine practiced in Nigeria, could fill the perceived deficiencies left by conventional physiotherapy by adding more numbers to the profession and a manual approach to care that augments the use of equipment.

PatF11: Some hospitals do not have machines, these strong [traditional] hands can be used instead. Some things the hospital cannot handle, these [bone setters] know where and where to touch.

Other patients say that due to their experiences, they now *recognise unhelpful treatment* routines and can now avoid wasting time, effort and money. Similarly, some physiotherapists agree that some patients have formed opinions about whether what they have experienced over the years has been helpful to their condition or not and believe this could be a major stride towards adopting a stratified model of care. Especially in the aspect of TBS and routine non-evidence-based care which gradually reduce patronage as reported by physiotherapists.

PTf8: Most patients who visit these [TBS], come back with complications. Recently the percentage is coming down now. It should be about 30 percent but back then some years ago it was about 70 percent.

The outcome of their learning journey, some patients say, is the realisation that what they need cannot be completely offered in the clinics with routine physiotherapy care and also not with TBS. They have experienced the outcome of self-treatment which includes modulation in their exercise routine, remaining active and dieting. They thus resorted to *taking charge* of their condition by employing self-care strategies and increasing physical activity since this works in their opinion.

PatM5: My advice is that people should exercise and remain active. I know the positive side of exercise, it is extremely good. That is why I don't miss it at all.

Trusting the Therapist

This category focuses on the opinions of patients regarding their therapists as the instruments for instituting this approach. It highlights the confidence the patients put in their therapists and the rationale for this.

Patients admitted that in some cases, physiotherapists gave advice that focused on exercise and encouraged engagement in activity which has provided some relief for them. In their opinion, since these treatments and advice by the therapists fundamentally improved their situation and outlook, more can be expected. *Getting some help* from their physiotherapists was seen as a basis for trusting them.

PatM3: I started getting relief because my clinicians were trained and even the advice that I received worked to some extent. So, I believe in the clinicians.

Some patients recognised that a few therapists are already on the right track since these ones are *learning to change their approach with practice*. From their experience, these therapists though few in number have a more current perspective and ideology similar to that encouraged by the stratified care model. They believe that with little time and more effort, these physiotherapists can synergize and optimise their practice and set an example for others.

PatM5: This can be the case sometimes, in a bid to solve a problem they solve others. That's how they learn, they learn by practice.

Other patients noticed and appreciated the efforts put forth by the therapists to improve their patient's condition. They see that some *physiotherapists are doing their best* in numerous ways despite the challenges in the Nigerian healthcare system. Patients notice that these clinicians regularly change their outlook based on recent findings and that many

do more to help their condition. This encourages them to focus more on their efforts, than the lapses they notice.

PatM4: Yes, for me, they did the best they could I would say. They give us hope, and the possibility to get better. They have human sympathy.

Patients describe their view of the physiotherapist as a dynamic expert to whom they need to give their trust and cooperation. They see the role of physiotherapists as an important one with numerous challenging responsibilities. They believe that physiotherapists are tasked with not only making their patients better but also providing support when needed. As the patient, they believe they shouldn't interfere with the treatment process or make things more difficult for the clinicians but their role is to *cooperate with the physiotherapist* to their benefit.

PatF1: When you know this is what your clinician wants to achieve, anything he tells you would do it. So that you can get a good result. When you do not follow up well you might think it did not work because didn't follow instructions well.

Needing Conviction

In this category, patients described their need for conviction. They report having many conflicting information sources for instance the internet, TBS, other practitioners, acquaintances with similar conditions, religious leaders etc. They need physiotherapists to be advocates for the correct information.

Patients describe their need for physiotherapists to provide conviction to get their full cooperation. They believe that since they have multiple sources of information, to be able to accept change, they need to be properly informed to a level of conviction. They believe that if *patients can be educated* and the procedures explained properly, it will help them become more receptive to a change in mentality that serves to sustain the implementation of stratified care.

PatM2: The patient needs such conviction, he should not leave with the feeling that 'this clinician does not have my interest and doesn't want to treat me'.

Some patients have become used to a specific style of treatment explained to them by other therapists such as *reliance on investigations*; use of diagnosis for treatment, use of radiographs and passive treatment they have been used to. Hence, they need some form of

conviction to accept a new perspective. Some patients explain a conflict between their previous knowledge and experiences and this new perspective.

PatM3: The only decision you make that will make sense to me is based on evidence from X-rays, tests and others, not just based on your opinion.

Patients explained their willingness to change their perspective if they have proof that this change will help them experience better outcomes. Based on their experiences, some relate how despite the efforts of the therapists, they needed to be convinced from within through some form of *self-discovery*. This means taking an inner look at their condition and trying several approaches until eventually the right approach was discovered. This realisation matched the earlier advice by the therapist creating substantial evidence and furthering trust.

PatM5: They told me to check my body mass index, but I told them [physiotherapists] it might not be right. Then I went to hospitals several times until I discovered truly that my weight was the cause. I can manage myself now.

Several patients say that they have *struggled against wrong information* which the therapists need to drive against to optimise care. They relate that incorrect information abounds not only from online sources but also from fellow patients who might have good intentions but due to having a different LBP category, their recommendations on what worked for them might not be applicable to other cases. In addition, some physiotherapists might intend on earning more by having more sessions or using sophisticated equipment to impress patients which might slow down recovery. To combat this, information pools and research banks were suggested.

PatM5: The general internet sometimes gives false information. A research bank is needed for publications available to all clinicians.

Recognising the Need for Change

In this category physiotherapists and patients recognise the inadequacies of the health care system in Nigeria and relate the need for a change in the current system of managing LBP. Participants talk about deficiencies in knowledge and practice that affect the optimisation of care for LBP. Physiotherapists spoke about the *lapses in training* they received, not sufficiently dealing with aspects of communication in clinical practice, psychologically informed physiotherapy or prognostic approaches. This issue was threatening the level of

competency available in the profession in Nigeria, affecting their perception of other healthcare workers about physiotherapy and potentially reducing their capacity to advance.

PTf10: Physiotherapists in Nigeria do not have the training to give psychologically informed therapy, our training does not cover that'.

This was further corroborated by the patient's dissatisfaction with the current treatment outcomes. Some patients have frustration stemming from stagnated conditions despite many treatments. They feel this way because there has been *no complete relief* from their complaints. A few more exposed patients have learned about or experienced care in other parts of the world. They feel that things need to change in the way physiotherapists treat patients in Nigeria if patients are to continue to receive care from these professionals.

PatM3: I had received treatment for some years until 2016. There was no relief after physiotherapy and I was contemplating traveling abroad for treatment.

Participants especially in government hospitals relate that one hindering factor working against optimising treatment was the unavailability of proper funding to the health sector. The staff were underpaid as well as the equipment was due for maintenance and replacement. Improved *funding* for the health sector will ease their complaints relating to issues of infrastructure, and patient load and improve services.

PatM5: There is a proverb in my place 'good soup cost good money'. So, money plays a bigger role in this. It needs to be available for any of these to work.

Physiotherapists and patients agreed that the implementation of stratified care especially for high-risk cases is an opportunity to improve care for LBP. They recognised the potential advantages it brings in terms of cost-savings and effectiveness. They consider themselves *open to accepting a different approach* and see this initiative as an opportunity to create a positive appeal, recruit the support of physiotherapists and patients. They believe it will not only affect treatment for LBP but other conditions as well.

PatM3: You can know the kind of treatment and the extent to which you should offer treatment. I believe that this approach goes a long way toward what results.

Themes of Variation

The critical differences between the major categories were elicited as 'Themes of variation'. These themes highlight common areas where each category differs within itself and across other categories. It also shows the width of the categories and the content when viewed from the perspective of variation between patients and physiotherapists.

Tradition of Treatment

This describes variation across major categories regarding aspects of conventional physiotherapy practice common in physiotherapy clinics and hospitals in Nigeria. This theme also highlights gaps in practice and aspects that can be modified to implement stratified care in Nigeria.

Here, physiotherapists speak about their assessment and treatment practices which vary widely. Some use assessment based on diagnosis and radiological examinations while others base their treatments on physical assessment or use forms of stratification. However, in their opinion, it is more common to base their treatments on radiological investigations with little input from the patient's clinical presentation to reach a diagnosis or derive a prognosis based on intuition.

PTm6: I request radiographs for about 90% of my patients with LBP but about 10% manage without it. Typically what I match are radiological imaging and presentation to predict recovery.

Some physiotherapists interviewed carry out treatment using electrotherapy which involves electrical stimulation of various kinds, massage therapy which is commonly categorised as 'soft tissue mobilization', exercise therapy and some form of patient education. Most physiotherapists relate that they use a combination of modalities due to necessity, availability, convenience and intuition.

PTm3: I think most especially we dwell more on manual therapy, which involves manipulation and then electrotherapy and exercises where it is necessary.

Patients relate their conventional ideas to receiving physiotherapy in form of massage, 'strong touch' and equipment in one form or another. They believe this constitutes proper care. Some are used to receiving short advice and reassurance from their clinicians while others say they do not. Regardless, they are not used to having extended communication sessions with their clinicians. In the patient's opinion, some prefer visiting x-ray departments by themselves even when the clinicians do not recommend it. They are

generally used to seeking alternative care, perhaps visiting the TBS when or if the clinicians are unavailable. They also consider going to other clinicians more willing to investigate and make sure the clinician takes decisions based on 'evidence' meaning diagnostic interpretation and tests that highlight a disease state to be managed.

PatF9: When it started I was taken to a hospital, but at that time in 2015 the doctors were on strike so I had to go to the traditional bonesetters.

Evolution to a New System

This discusses the key factors that enhance implementation such as existing contextual facilitators. These factors are found across major categories and are needed to adapt interventions aimed at optimising care.

Here physiotherapists describe the various ways they are willing to evolve in terms of practice. They suggested that making use of the stratified care model or an adapted variant would be a step in the right direction. They mention the applicability and adequate research base of the approach, existing specialty groups, their basic knowledge of psychology, and targeted practice settings as factors that can be used to enhance implementation.

PTm5: I think using this approach helps. It is an opportunity for PTs who also get knowledge regarding cognitive behavioural therapy and all other stuff.

For the patients, evolution to a new system comprises the patient's open-mindedness, and willingness of the patients to trust in the physiotherapist even when he brings in seemingly new ideas. Sometimes therapists change their mindset and treatment due to new evidence or an upgrade in practice. The patients know this and expect it based on the confidence they have in their therapist. Acceptance of the approach based on evidence, even though it might cost them more time. They believe it is helpful if the approach encourages them to get involved in a more active lifestyle and educates them.

PatM2: I think it is an approach that I resonate with. As I worked from home, the methods of activity and self-care discussed in the video applied to me.

Experiences

This theme describes the differences in the experiences of physiotherapists and patients across the major categories. Physiotherapy participants describe in this theme, the differences in their experiences with the impact of patient education in their practice. Some relate their encounters with patients who have been exposed to TBS and have visited other

healthcare professionals. They also relate their experiences with colleagues and other professionals, some of whom are more open-minded to innovations than others. Some instances where they have made attempts to install change in practice patterns and the effects on their colleagues of the same profession or interprofessional colleagues within their clinical institutions.

PTm9: In cases of innovation in my clinical setting, we discuss it at seminars and everyone brings their opinions and decides to use it and see the result.

Different lessons from the patient's experiences were highlighted. The patients relate how they engaged in self-management of their condition, and self-diagnosis in cases where they opted not to visit the hospitals or after several treatment sessions. The patients also relate their experiences with conventional physiotherapy treatment, the advice they received from clinicians and the treatments they received from various clinicians, specialists and TBS. They relate the impact it had on them and how it shaped their perception.

PatM8: The physiotherapist talked about some exercises, and advised me majorly about my sleeping, which has helped so much. Now the pain isn't much anymore.

Strategies for Implementation

In this theme, all major categories vary in aspects of physiotherapists' and patients' suggestions on strategies to implement stratified care for LBP among physiotherapists in Nigeria. Physiotherapy participants' ideas on key strategies for the implementation of stratified care include targeting a change in attitudes of patients, the working environment to best initiate implementation, training and education, information, modification of the approach and tools to suit the Nigerian context and routine procedures best suited for smooth implementation.

PTf10: On the day of the assessment, physiotherapists can allocate individual time for patient communication or squeeze it in when doing treatment or activity with the patients.

For the patients, they suggested a range of items. In their opinion, they hope that being more cooperative can help change the attitude of physiotherapists, creating more time for communication. Some also suggested that there should be interventions aimed at the government and organisational changes to increase funding for the physiotherapy departments, employ more staff and renew the dilapidated equipment in most hospitals.

There were additional suggestions on how to reach more people through medical outreaches and advocacy programmes which were seen to be helpful, especially in giving a preventive perspective to those who are not yet patients.

PatF9: Awareness is helpful. When I went for the free medical seminar I was able to meet the physiotherapist that came for outreach, which encouraged me.

4.2 Delphi Study: Developing Approaches and Adaptations to Overcome Barriers and Promote Enablers to the Implementation of Stratified Care in Nigeria

A total of 1,097 participants meeting the minimum recruitment criteria were invited via email. Physiotherapists meeting the inclusion criteria for this Delphi study were 197. Of those, 139 completed the first round and 125 (90%) completed the second round as seen in Figure 3.

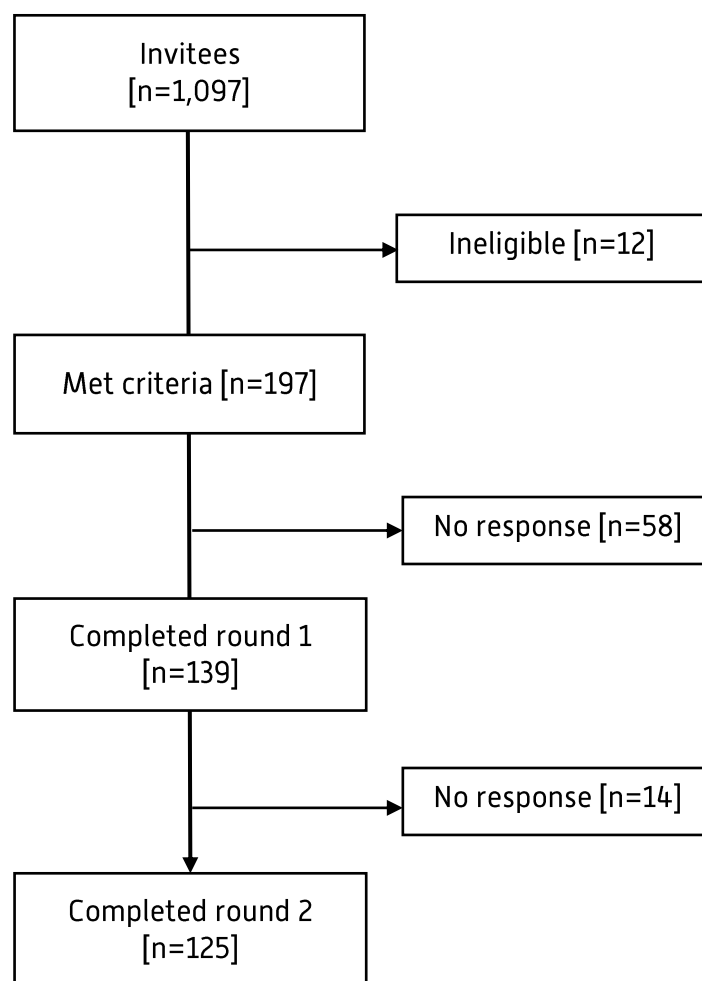


Figure 3: Delphi Study Flowchart (Adapted from Adje et al.) (89)

Table 4: Sample Description of Participants in the Delphi Study *(Adapted from Adje et al.)* [89]

Characteristics	Physiotherapists (n=139) n (%)
Sex	
Male	83(59.7)
Female	55(39.6)
Diverse	1(0.7)
Total	139(100)
Age (in years) Mean (SD)	35.2 (6.6)
Years of experience with LBP	
Up to 10 years	71(51.1)
>10 years to 20 years	54(38.8)
>20 years to 30 years	5(3.6)
>30 years	1(0.7)
Qualification	
BSc/BMR(PT)	76(54.7)
M.Sc	47(33.8)
Ph.D	11(7.9)
Other	2(1.4)
DPT	1(0.7)
Diploma	2(1.4)
Areas of Interest	
Cardiopulmonary	19(13.7)
Community physiotherapy	32(23.0)
Ergonomics and Occupational	21(15.1)
Geriatrics	21(14.4)
Neurology	42(30.2)
Oncology/Palliative care	10(7.2)
Musculoskeletal	80(57.6)
Paediatrics	24(17.3)
Sports	36(25.9)
Women's health	25(18.0)
Work setting	
Primary health care	5(3.6)
Teaching hospital and federal medical centres	54(38.8)
General/state hospital	21(15.1)
Specialist hospital	19(13.7)
Home and community physiotherapy	26(18.7)
Physiotherapy training institute (University)	15(10.8)
Sports centre	8(5.8)

BSc, Bachelor of Science; MSc, Master of Science; PhD, Doctor of Philosophy; DPT, Doctor of Physiotherapy; PT, Physiotherapist.

Participants in this Delphi study were physiotherapists (n=139) who had a mean age of 35.2 (SD 6.6) years. They were 55 (39.6%) females, 83 (59.7) males and 1 (0.7) was diverse.

Regarding years of experience, the majority of participants 71 (51.1%) had up to 10 years of clinical experience treating LBP. On the aspect of educational qualification, about 76 (54.7%) had a bachelor's degree as their highest educational level, while a few participants 2 (1.4) still had a diploma and 1 (0.7) had a DPT degree or equivalent. A large number of physiotherapists, about 80 (57.6%) chose musculoskeletal physiotherapy as their singular area of interest or as a combination with other areas. Regarding work settings, physiotherapists who worked in the teaching hospital and federal medical centers made up the highest number 54 (38.8%). Further details on physiotherapy participants' demographics are shown in Table 4 below.

In this first round, participants completed the rating of 30 statements and responded to the open-ended questions put forward. Of these 30 statements, 25 met the criteria for consensus as seen in Table 5.

Table 5: Results from Round 1 and Round 2 Delphi Processes (*adapted from Adje et al.*) (89)

Statements: To implement stratified care,	Round	C1	C2	Stability
		Agreement	Median	IQR Wilcoxon
19) Modify patients' expectations by educating them on expected outcomes.	1	96%	5	1
2) Hold quality improvement meetings to review the success of the approach and adherence.	1	96%	5	1
11) Include training on PIP for undergraduate PTs.	1	96%	5	1
25) Allocate sufficient time for PT-patient communication.	1	95%	5	1
16) Training workshops on PIP for licenced physiotherapists.	1	94%	5	1
3) Educate the patients while treating them to save time.	1	94%	5	1
13) Adopt standardised LBP treatment guidelines in Nigeria.	1	93%	5	1
20) Use public media sources to dispel false information on LBP.	1	93%	5	1
24) Use research results to convince PTs colleagues on SC.	1	93%	5	1
27) Print the SBT for routine use in waiting rooms.	1	92%	5	1
21) Encourage patients to learn about their own condition.	1	91%	5	1
22) Monitor patients' self-care routine.	1	91%	5	1
18) Inform other health professionals about SC.	1	91%	5	1
6) Government should set up an affordable health insurance.	1	90%	5	1

23) PTs self-examination to remove wrong LBP beliefs.	1	90%	5	1	
29) Provide an electronic version of the STB and fill online.	1	89%	4	1	
1) Start with senior PTs and let them supervise their juniors	1	88%	4	1	
10) Patients should visit clinics with time and training on PIP.	1	87%	4	1	
17) PT specialty groups should be responsible for SC advocacy.	1	85%	4	1	
7) Salary increments for PTs who train and practice PIP.	1	84%	4	1	
14) Group monitoring of colleagues is needed.	1	82%	4	1	
30) Patients should fill the SBT at home.	1	80%	4	1	
8) Seek the cooperation of the hospital administration.	1	79%	4	1	
12) Train PTs on pain-relieving medications.	1	77%	4	1	
4) Schedule assessment and treatment on separate days.	1	76%	4	1	
26) Patients should get a second opinion on the clinician's advice.	1	73%	4	2	0.239
	2	63%	4	2	
5) Translate the SBT into Nigerian pidgin.	1	72%	4	2	0.767
	2	71%	4	2	
28) Physiotherapy consultations should be carried out online.	1	70%	4	2	0.406
	2	65.3%	4	2	
9) Implementation efforts should begin with government hospitals.	1	61%	4	2	0.109
	2	63.7%	4	2	
15) TBS should share knowledge and ideas with PTs.	1	35%	3	3	0.676
	2	35.4%	2	3	

^a C1 [Consensus criteria 1]: $\geq 75\%$ agreement. C2 [Consensus criteria 2]: Median ≥ 4 and Inter-Quartile-Range (IQR) ≤ 1 .

^b Agreement: selection of response options 4 - *agree* or 5 - *strongly agree*.

^c Stability criteria: Wilcoxon matched-pairs signed-rank test was calculated for items that did not reach consensus in the first round.

^d Significance level is set at $p \leq 0.05$.

^e Light grey: Items not reaching consensus in round 1 and progressing to round 2.

^f Deep grey: Items not reaching consensus in round 2 and tested for stability.

TBS: Traditional bone setters; PIP: Psychologically informed practice; LBP: Low back pain; SC: Stratified care; SBT: STarT-Back Tool; PT: Physiotherapist

*Embodened: Items reaching consensus and selected as the most important (top 5%) for implementation of stratified care.

There were 5 statements that failed to reach consensus: statement 26 (73%), statement 5 (72%), statement 28 (70%), statement 9 (61%) and statement 15 (35%) with the IQR ≥ 2 for each of the 5 statements. For the second round, the same 5 statements as in round 1 failed to reach consensus and the IQR for these statements remained at ≥ 2 . Wilcoxon's matched-pairs signed-rank test shows no significant difference in the 5 statements between round 1 and round 2 with the alpha level set at $p < 0.05$.

When arranged in order of importance, the top 5% were 4 items, these items had the highest levels of agreement (>95%). These items were: modify patients' expectations by education (96% agreement), holding quality improvement meetings to review successes and adherence to the approach (96% agreement), psychosocial care training for physiotherapists at undergraduate levels (96% agreement) and allocating time for patient communication (95% agreement) as shown on Table 5.

Qualitative Responses

Rounds 1 and 2 provided fitting qualitative responses as previously classified under the three major existing categories of the questionnaire with accompanying definitions arising from participants' responses (Appendix VI).

Describing strategies to best modify stratified care management to fit the national context, panellists suggested a pilot implementation through senior colleagues and heads of departments in a systematic hierarchical way. They also mentioned intermittent meetings for quality improvement monitoring. This should be done to track how the approach progresses after instituting it to ensure sustainability.

**Periodic review of the approach should be done per time and encourage physiotherapists in using the strategy. (M/BSc/5-10/GenHosp).*

On training and education to aid the implementation of stratified care some participants felt that undergraduate training should be carried out on psychologically informed practice to equip them to handle patients' expectations. Internships were also mentioned as key periods to expose the physiotherapy students to the stratified model of care.

*Format: Quote [Gender/Qualification/Years of experience/Work]

Having this knowledge, they could help educate patients through community outreaches and sensitisation usually done in student-community programmes.

Physiotherapy undergraduates should be allowed to experience SC during their internship when practised by licensed colleagues. (F/BSc/<5/TeachHosp).

Panellists confirm that in order to ensure smooth implementation, sufficient time for patient communication relevant to all prognostic risk groups in the STarT-Back classification system is needed. This time could be created by employing more physiotherapists in hospitals and clinics to reduce the workload. With this, the treatment tradition and attitude of physiotherapists will change gradually with good results stemming from the use of SC in practice.

More physiotherapists should be employed in hospitals to reduce the burden of work and thus enable them to have more time for assessment and treatment. (M/PhD/10-15/TrainInst).

Chapter 5: Discussion

This project prepares the implementation of stratified care in Nigeria with two studies. The first study explores the perspectives of physiotherapists and patients with LBP, identifying their perceived barriers and enablers. The second study develops approaches and adaptations to overcome barriers and promote enablers for the implementation of stratified care.

The implications of these findings suggest that despite the presence of identifiable barriers to implementation, a stratified model of care has a good chance of being implemented in Nigeria. This might be possible if strategies for implementation could be applied in a tailored manner. Such strategic interventions developed in this project were: educating patients with co-developed resources, creating time for patient/clinician communication, instituting undergraduate training on psychologically informed physiotherapy and holding quality improvement meetings along with mentorship. These were described by some patients and physiotherapists in Nigeria as advanced strategies with the highest potential to enhance the implementation of stratified care for LBP [89]. They aim not only at high-risk categories but also focus on low and medium-risk approaches as classified in research [35].

5.1 Barriers and Enablers to the Implementation of Stratified Care in Nigeria

The perspectives of physiotherapists and patients with LBP produced insights into the varied enabling factors that promote the implementation of stratified care. It also revealed factors serving as barriers that might obstruct the implementation process backed up with suggestions and experiences.

Some physiotherapists interviewed described stratified care as a familiar and relatable approach. This might be owing to previous knowledge from the training on basic psychology that they received early during entry-level training and some form of intuitive stratification practised by physiotherapists [40, 90, 88]. Regarding implementation, the physiotherapists described more challenges than the patients. There might be different reasons for this; perhaps a negative attitude towards change [91–93] or a better understanding of the intricacies involved in practice and implementation [6]. Physiotherapists especially expressed concerns about internal and external resistance they might face when attempting implementation. The concerns include patient expectations, patient attitude, patient-load-to-physiotherapist-ratio and socio-economic constraints. These are consistent with findings on the implementation of stratified care in other countries [48, 94, 95].

Furthermore, it was the physiotherapists' opinion that attachment to their current practice tradition is fostered by their perception of the patient's expectations. On the other hand, from the patient's perspective, their expectations are hinged on the physiotherapist's attitude and practice and would automatically change if they received sufficient conviction [88].

Some patients struggle with misinformation and are unsatisfied with the amount of attention, communication and conviction given to them by their therapists in relation to a stratified care model. Other patients relate that they trust their therapists and have discovered from experience that the self-care advocated by some physiotherapists is beneficial. This leaves an intensified role for Nigerian physiotherapists, providing enablement for their patients instead of dependency [94, 96]. Physiotherapists express concerns about perceived deficiencies in training as seen in previous research [97]. Training is needed for physiotherapists to deliver a broader biopsychosocial model of care especially through early undergraduate training [98]. Some physiotherapists additionally suggested that for a start, government hospital centers could be targeted since they provide the enabling environment suitable for the smooth inception of stratified care in Nigeria. They also suggest that senior physiotherapists and specialty groups relevant to musculoskeletal physiotherapy could provide the needed impetus and advocacy [99, 100].

5.2 Strategies for Implementation of Stratified Care in Nigeria

The Delphi study gave content on physiotherapists' and patients' perspectives in relation to barriers, facilitators and further suggestions on possible strategies for the implementation of stratified care in Nigeria [89].

After two rounds of the Delphi survey, strategies for the implementation of stratified care in Nigeria were developed. These were based on consensus among physiotherapists on key areas outlined in the qualitative study. Of the strategies outlined, four items were considered contextually most relevant and feasible for implementation with above Ninety-five percent agreement. They are: overcoming patient expectations using education, quality improvement meetings, sufficient time for patient-clinician communication and undergraduate competency training.

5.2.1 Overcoming Patient Expectations Using Education

The finding suggests that panellists in this study realised that when patients draw expectations from an inaccurate understanding of pain, this could misdirect their judgment and potentially worsen outcomes. They feel the patients need to understand the reason behind the SB classifications and its interventions. Especially recommendations of a one-off treatment session, extended consultation with psychologically informed physiotherapy and advice components with which patients are not familiar with. They believe a conviction would be especially important for the patients who are classified into low- and high-risk sub-categories since their management remarkably differs from usual care in Nigeria [93]. Research suggests that patients should be equipped to unlearn the conventional biomedical process of care which is in contrast to the evidence supporting the SB approach to treatment. They need to re-learn for instance why a one-off session for a low-risk subgroup is sufficient and that staying active despite pain is the right approach [101, 102]. A thorough education should also provide research evidence that could enhance trust, establish reasonable expectations and refocus the patients' attention on the treatment goals [103, 104].

Panellists in this study suggested that to implement a stratified model of care, physiotherapists should deliver this education to patients in Nigeria. This can be done through community outreach and health talks, especially for residents in rural areas. For urban dwellers, broadcasts on social media platforms available to the public could be effective. The aim is to reach individuals early before they develop LBP and become patients [6, 105].

5.2.2 Quality Improvement Meetings

The panellists possibly suggested this having in mind the challenges associated with the sustainability of implemented approaches. Their suggestion for ongoing quality improvement meetings to review the approach for adherence and success at intervals. This agrees with the guidelines on implementation featured in the Consolidated Framework for Implementation Research (CFIR) which points to engaging users, through evaluation and re-evaluation of the process [52].

For the implementation of stratified care in Nigeria, panellists suggested that ways to do this were to establish routines, mentorship and support systems in clinical practice [106]. This means that when initiated, the senior physiotherapists as mentors could instigate quality appraisal meetings aimed at reviewing the stratified care model practised in their

institution and systematically monitor the progress. The junior physiotherapists will be responsible for providing logged feedback on the process for auditing leading to discussions on quality improvement. This was exemplified in the IMPaCT Back study protocol which recruited highly experienced physiotherapists as 'educationally influential practitioners' to drive the implementation and other physiotherapists to provide feedback on the implementation progress [107].

5.2.3 Undergraduate Training

Nearly one-fifth of the panellists were early career physiotherapists who contributed to the consensus to include training in psychosocial care at the undergraduate level. The evident deficiencies in their training reveal the need for improvement. Recent studies carried out among Nigerian undergraduate and entry-level physiotherapists indicate deficiencies in areas related to communication strategies and aspects of cognitive behavioral treatment [99, 108]. This can be traced to their training curriculum which shows limitations in early patient contact and skill development in these areas [99, 97]. This is in contrast to other countries like Germany, which emphasises early clinical exposure fostered by paramount vocational training [109].

These existing conditions give strength to the suggestions among panellists to target young physiotherapists early and provide adequate and early patient contact. This training and exposure in addition to close mentorship have good potential to ensure effective and sustained use of stratified care in practice and in this way to facilitate implementation [52, 110].

5.2.4 Sufficient Time for Patient-Clinician Communication

Communication between physiotherapists and patients can serve to improve the patient's condition and foster therapeutic alliances [111]. The panellists in this study reached a consensus on the importance of regular individualised open dialogue between physiotherapists and patients. In this aspect, the inclination of physiotherapists in Nigeria supports the SB approach. It recommends, an extended 30-minute consultation session comprising advice and reassurance for patients in the low- and medium-risk groups. While patients in the high-risk sub-group receive 45 minutes of discussion on treatment goals, building rapport, self-efficacy and motivation.

Research suggests that for implementation to be successful, a common ground could be used to initiate some form of 'buy-in' to attract and involve clinicians and overcome

indifference or resistance. This concept has been described in the literature as a 'congruency with the role and personal interests' suggesting aligning the interests and goals of the stakeholders to the intervention they aim to implement (6). Since physiotherapists easily see the importance of quality time for communication, this can be a starting point and highlight for introducing the SB approach for implementation and advocacy among physiotherapists in Nigeria (6, 52).

5.3 Critical Integration of the Studies for Implementation

The studies making up this project, when consolidated, give an overall picture and a better understanding of the interrelationship of factors affecting the successful implementation of SC in Nigeria. They reveal the priorities of stakeholders and peculiarities in Nigeria, ultimately providing a basis for contextual comparisons and learning lessons from implementation attempts in similar climes (36).

Findings from these studies reveal vital dimensions to be integrated when considering the implementation of SC in Nigeria. Among these are considerations relevant to physiotherapists' perception and use of the SBT. For physiotherapists, although using the SBT frequently enhanced practice, there was the issue of its potential to undermine the clinical experience. Karstens et al. described a feeling of 'pigeon-holing' experienced by physiotherapists and the desire to freely handle patients as deemed fit. Nigerian physiotherapists feel a similar way, they cherish the freedom to make independent decisions regarding patients and would rather modify the tool using their experience and fit it best into their system. In their opinion, they would readily include the SB subgrouping recommendations independently as a suggestion rather than a rigid rule. This was the original idea of the developers since the tool should 'supplement and not replace clinical judgment' (33). However, since the SBT is not just predicting risk but also targeting treatment differently, it is recommended that it be used as it was designed. This means that care needs to be taken when using it in new ways as attempts to greatly modify the approach have produced varying results (37, 38, 112).

For delivering the SB tool, it also deserves consideration that online hosting of the tool in physiotherapists' practice settings received a very low consensus level in both rounds of the Delphi study. This might not be evidence against interest in e-questionnaires, but it might be indicative of perceived poor feasibility considering the challenges with network reachability and the cost of data. This can be inferred from the contrasting responses in the qualitative study where one key recurring suggestion was the 'online hosting of

questionnaires'. It might thus be interpreted that though physiotherapists in Nigeria are oriented positively towards hosting the SBT online, they are constrained by issues of feasibility. Despite recent evidence that indicates telerehabilitation is feasible and cost-effective, studies show that there are still some challenges like rural areas that lack internet connectivity, lack of funding and poorly equipped facilities [113]. Since available resources necessary for operations reveal a readiness for implementation, this could be a critical consideration for the implementation of the SB tool warranting further research in low- and middle-income countries [52, 6].

Ideas to standardise practice and introduce systemic managerial changes such as revamping the health insurance system although considered vital were not seen as critical to implementation. Perhaps they were considered too large-scale and not within their immediate control. For implementation, the behavior change wheel classified these strategies as a 'policy category', needing large-scale intervention. Notwithstanding, identifying them as potential interventions could prevent policymakers and intervention designers from neglecting them. Research shows that the healthcare systems in low- to middle-income countries possess unique complexities and the possibilities are few due to poor funding and dire workforce shortages.

Nigeria, as Africa's most populous country has a complex healthcare system riddled with challenges. There is the issue of affordability and choice of health care options for patients as inequalities exist between traditional, public and private sections [74]. There are challenges due to the unavailability and ineffective use of available resources, and insufficient financing for health and health care resulting in large population inequities [114]. To combat these challenges, there have been calls for cost-effective strategies to optimise healthcare services and these policy strategies could thus be included in national intervention design, selection and policies [115, 114].

When integrating aspects relevant to the implementation of SC in low- and medium-risk patients, reports indicate a tendency for physiotherapists to struggle with financial disincentives within the healthcare system. This could be attributed to the early discharge of low-risk patients when using the stratified care model as opposed to usual care [36]. In contrast, this was not an issue for Nigerian physiotherapists. Since remuneration is not necessarily tied to the number of patients treated or insurance bureaucracies, strategies to incur cost savings described in the Delphi study were not considered top priorities for most Nigerian physiotherapists. This can be attributed to the unique work settings prevalent in federal hospitals in Nigeria. The majority of physiotherapists rely on a structured statutory cadre-based payment system run by the federal government right from internship to full

working status [116–118]. Hence, the reduced income from one-off consultations for patients in the low-risk subgroup might be less of a challenge compared to other settings since most physiotherapists are not paid per patient. This is similar to the UK health care system not only in terms of remuneration but also structurally with co-located physiotherapy and physician practices and a cadre system. One advantage could be that physicians and other professionals might easily be incorporated into the implementation due to their proximity. Lessons from implementation efforts for low- and medium-risk patients in the UK reveal that other healthcare professionals can be instrumental in patient screening using the SBT and can contribute to the success of this intervention [31, 30].

When integrating aspects relevant to the implementation of SC in high-risk patients, a practical consideration reported by clinicians was time constraints. This is often seen in literature as a key barrier across different contexts [36]. For German physiotherapists, for instance, the issue of lack of time for carrying out psychologically informed physiotherapy was a major topic since their treatments are mostly time-dependent. There is also the closely related issue of limitations with health insurance remuneration for extended treatments for high-risk patients. This reduced the possibility of providing complex bio-psychosocially oriented treatment given the current statutory practice conditions [48].

Another practical consideration is the skill needed for handling high-risk patients using a stratified care model. From the standpoint of Nigerian physiotherapists, acquiring such skills and experience is necessary at an early stage of their professional development. This might be similar in Germany, even though German physiotherapists are mostly trained at a vocational level, both physiotherapists in Nigeria and Germany reported the need for skill upgrades when it comes to carrying out high-risk treatments despite the comparative difference in training structures [48].

Alternative care is a peculiarity in Nigeria that warrants consideration, due to the options available and favored by some patients. The topic of TBS in Nigeria was seen by physiotherapists as an important factor regarding implementation. TBS are unconventional alternative medical practices in Nigeria, 'learned by oral tradition with no regulation or review'. The quality and safety of care delivered are therefore not externally or internally regulated and complications are high [119]. They enjoy high patronage for many reasons; in some cases, the long wait times at the hospitals, proximity to rural areas, personalised advert, and affordable services. Although some patients consider TBS a viable alternative or in many cases even better than mainstream medical practice, physiotherapists are generally reluctant [88]. The reason for this could be that physiotherapists generally associate these practices with a high level of uncertainty and worsened conditions. Research has shown

complications such as gangrene, non-union of fractures, limb shortening, osteomyelitis, and muscle contractures occur after treatment by TBS [120, 121]. Nonetheless, as described in the literature, the integration of bone-setters into the mainstream of healthcare delivery system with the view of refining and regulating their practice might have the potential to bring many benefits to practice and reduce complications [122].

5.4 Tailored Implementation Model

As the field of implementation science grows and the literature expands, researchers have developed several frameworks guiding implementation and recent guidelines for using these frameworks [59, 123]. These frameworks can provide information on the intricacies involved in their development and can support healthcare implementation efforts. They can also help researchers who are planning implementation understand the relationships and roles played by interacting factors [115, 123]. Since findings from this research reveal that a fundamental aspect of implementation in Nigeria is hinged on behaviour change, the Behavior Change Wheel (BCW) for instance might be a suitable framework to highlight these findings. It is fitting because it is based on already developed frameworks that have been successful in designing and modifying behavior change interventions [124].

Within this BCW lies the 'inner circle' referring to the 'sources of behaviors', underpinned by the notion that opportunity, capability and motivation have the most influence on behavior. The outer circle of 'Intervention functions' represents strategies with which behaviors can be changed and the outermost circle which is the third component deals with policy categories to support the implementation of the intervention [124]. Therefore, the major categories receiving consensus in this project have been adapted to the BCW revealing another way to understand the implementation of SC in Nigeria. This tailored model focuses on the two inner circles of the BCW, 'sources of behavior' and 'intervention functions'. It fits these broad categories and subcategories into consensus opinions for the effective and sustained implementation of SC in Nigeria (Figure 4).

In the BCW, the social and physical opportunity in the inner circle was defined as an opportunity afforded by the environment allowing for the successful implementation of an intervention. It included time, resources, locations, cues and physical affordances. It also connotes modeling to provide examples for people to aspire to or imitate, or to change the physical or social context [115, 124].

In the tailored model, this physical and social opportunity corresponds to factors such as treatment tradition, physiotherapist attitudes, hierarchal implementation and guideline

adherence aspects. They stand a chance of being influenced by training, mentorship and quality improvement meetings.

Reflective and automatic motivation in the inner circle of the BCW is defined as reflective or impulsive processes involving plans and evaluations for implementation. In this case, the tailored model corresponds to this reflective process in terms of patients' confidence in the therapist, socio-cultural adaptations, experiences and knowledge of self-care. They can thus be worked with using co-produced patient education and therapeutic communication. This is in line with suggestions for training to develop self-management skills, enablement to increase means, and capacity to reduce barriers to implementation [115, 124].

Physical and psychological capability shown in the inner circle of the BCW refers to physical or psychological knowledge, skills, strength or stamina to engage in the necessary behavior change processes [124]. They fit the categories described in the tailored model as management solutions, approach modifications, attitude re-adjustment, and overcoming beliefs, concerns and expectations. These might be influenced by quality improvement meetings and therapeutic communication fitting the terms 'persuasion' and 'education' used in the BCW. Michie et al. explain that persuasion means using communication to induce positive feelings or stimulate action and education means increasing understanding [115].

This model goes further to show the overlap in the relationship between the key factors affecting implementation specifically for physiotherapists and then for patients. For example, on the part of the physiotherapist, such factors as the tradition of treatment, attitudes of physiotherapists, and challenges with adherence to guidelines are interrelated and displayed as such in the tailored model. They could be influenced by undergraduate training and quality improvement meetings. Trained physiotherapists with good skills in PIP and communication could learn from their patients and effectively educate and influence their beliefs as indicated in literature [125, 126].

For the patients, their concerns, expectations and beliefs including a capacity for self-management are likewise displayed as interrelated in the tailored model. They have the potential to be influenced by education and patient-centered communication as corroborated in research [104].

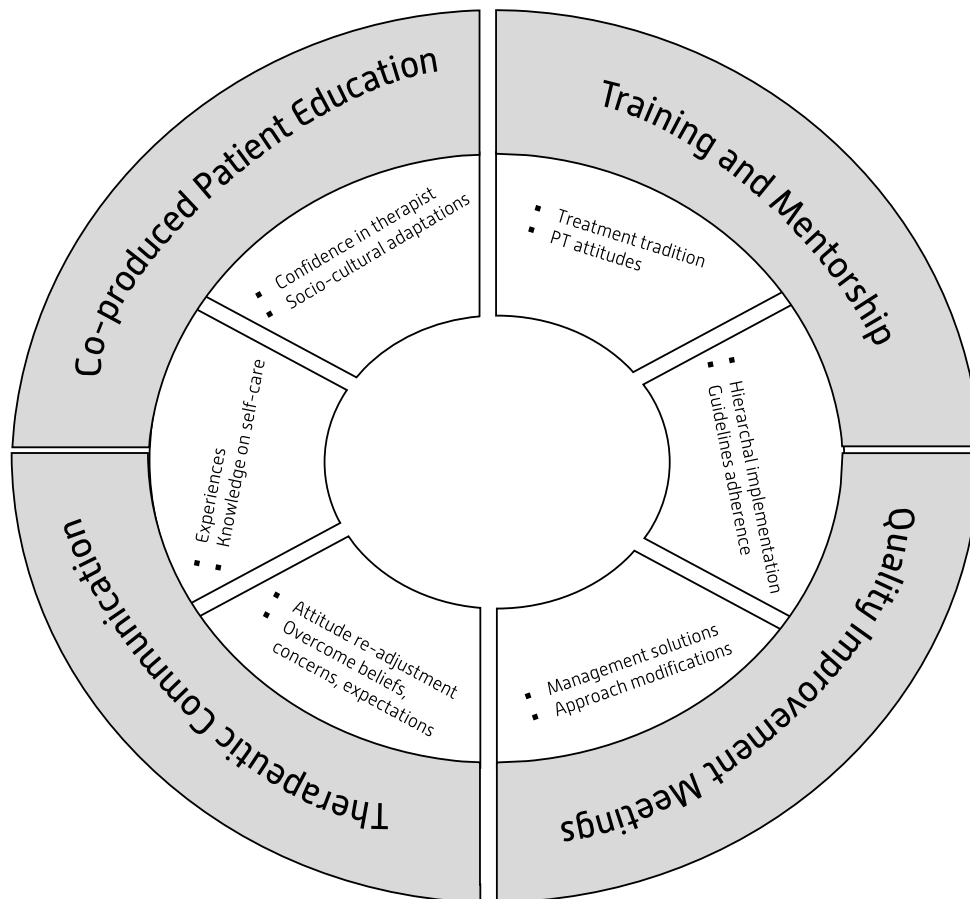


Figure 4: Tailored Implementation Model for Stratified Care in Nigeria (Adapted from Michie et al.) [115]

5.5 Study Limitations and Strengths

A strength of this project is the design of its two constituent studies. The qualitative study adhered to a rigorous Grounded Theory methodology to systematically draw out comparisons and variations in themes and categories until saturation was reached. This formed a strong foundation for the subsequent Delphi study, leading to shorter survey rounds [127, 128].

Despite the possibility of selection bias in both studies, precautions were taken to guarantee a representative sample. The sampling strategy employed in the qualitative stage ensured that physiotherapists and patients in both urban and rural settings were contacted and given equal opportunities for referral and response. The resulting sample thus included participants of varied sex, and age, physiotherapists from different work settings, patients

in all risk groups of the STarT-Back risk classifications, patients who visited the physiotherapist and other healthcare institutions.

A representative sample was achieved in the Delphi rounds in terms of demographics congruent with World Physiotherapy [129]. The gender distribution in this recent report by World Physiotherapy indicates a predominance of male physiotherapists which agrees with the demographics of this study [130, 129]. About three-quarters of the young participants were less than 40 years old. A majority of participants had a bachelor's degree as their highest level of qualification due to the recent rapid growth that has been noticed in the quantity and size of Nigerian physiotherapy training programmes [129].

The demographic distribution in this study further shows that a majority of participants reported tertiary institutions such as teaching hospitals and federal medical centers as their work setting. This is corroborated by the other nationwide studies that suggest these institutions are the highest employers of physiotherapists [130–132].

A challenge that was overcome during this project was getting the participants motivated to engage and provide feedback. This was achieved in the interview stage of the qualitative study by emphasizing the relevance of the study early in the recruitment process. Research indicates that stakeholders might be interested in knowledge co-creation and mobilisation when the relevance is made succinct [133].

In the Delphi stage, incentives were employed in each round. Although some researchers warn that incentives could create a transactional perception and 'social exchange' leading to bias if used improperly [134]. Care was taken in this respect by ensuring that the small token size and fair method of incentive delivery were ethically appropriate [135]. The use of small incentives as tokens, combined with reasonable deadlines and personalised reminders, has been shown in studies to enhance feedback [128, 136].

Chapter 6: Outlook of Implementation in Nigeria

6.1 Plans for Dissemination

There have been recommendations for the contextual implementation of a stratified model of care to optimise treatment for patients with LBP worldwide [6]. Literature suggest that after contextual obstacles, solutions and strategic plans were identified, the preferred next step would be to engage the workforce [6]. The Generic Implementation Framework (GIF) describes this important next step as 'dissemination'. It is an active approach using planned strategies via determined channels to persuade the target audience to adopt innovations. The aim is to increase knowledge, awareness and perception around innovation for smooth implementation [59].

These determined channels could be physiotherapists who can serve as 'champions', using and driving implementation [52, 59]. A recent study suggests that it might be more effective for these champions to function without already developing an unhelpful practice culture [137]. Thus, this might be a criterion for the selection of the first champions and cohort physiotherapists for implementation.

In addition, participants in both qualitative and Delphi studies reiterated that training physiotherapists using content from this research has the potential to influence undergraduate or entry-level physiotherapists. They might be trained in stratified care while monitoring their skills, competency, beliefs and practice patterns helping them to effectively implement and sustain it in their clinical practice in Nigeria [88, 108].

6.2 Tailored Training on Stratified Care for Physiotherapists

A tailored training programme on the stratified model of care will be developed in line with recommendations for guiding early physiotherapists as they advance into clinical practice [108]. The design and structure of this training will follow a reference e-learning package for stratified care training. This reference training was developed, delivered and evaluated to students of physiotherapy for two consecutive years. Its objectives were to monitor the development of entry-level physiotherapy students and aid in the implementation of the key aspects of stratified care in clinical practice.

In delivering this training, instructors' specific aims were to help participants become familiar with:

- the general overview, benefits and aims of stratified care

- the theoretical background of stratified care
- the biopsychosocial approach to LBP
- the development, prognosis and progress of acute, subacute and chronic LBP
- treatment for patients with LBP who are classified into high, medium and low-risk subgroups using a stratified model of care
- contextual experiences and perceptions about using stratified care in patients with LBP

The training was evaluated using the mixed-methods approach. Participation statistics, kinesiophobia levels and participants' perceptions were objectively evaluated. The results indicate that participants were interested in the training and self-learning. Their kinesiophobia decreased substantially, and they developed competencies that met current, scientifically supported requirements. There were indications that they could transfer these competencies into clinical practice in a targeted manner.

However, it was unknown if these results could be replicated in other contexts, hence, an ongoing version of this model training is currently being expanded with entry-level physiotherapists from 4 countries: Nigeria, Germany, Denmark and South Korea. This created an opportunity to compare possibilities, share experiences, discuss developed implementation strategies and consider ideas for contextual implementation. It also allowed for competencies in stratified care to be tested with the aim of translation into clinical practice.

The lessons from this training reveal vital aspects that could aid implementation in Nigeria. The results indicate that this reference training might be suitable for adoption in preparation for the implementation of stratified care in Nigeria if properly tailored. Additional tailored components fitting Nigerian physiotherapists will include; current evidence on the STarT-Back approach and tool in Nigeria, additional hands-on skill-development component of psychologically informed therapy and communication in patient-centered care.

In Nigeria, since there might be challenges with continuous professional education and international collaborative opportunities for practising physiotherapists after graduation it might be helpful to introduce such a current care model before graduation [6]. It is thus recommended that this tailored training be prepared and delivered in Nigeria, starting with a physiotherapy undergraduate university cohort with plans for evaluation and monitoring. The training will target undergraduate students in the entry-level phase of practice.

After the training, participants will be evaluated for relevant parameters like fear-avoidance beliefs, attitudes and skills developed. There will also be the possibility of evaluating the effect of their training on their patients' outcomes. The outcome of this training could serve as a precursor for the inclusion of these relevant aspects and preferential methods in the curriculum development of other training institutions in Nigeria [138]. This could provide additional stimulus to improve the care of LBP and assess the feasibility of stratified care for LBP in other low- and middle-income countries in Africa.

Chapter 7: Summary

Recent evidence shows that the management of non-specific low back pain can be optimised using a stratified model of care. In the UK, this model of care was successfully implemented, but not in low- to middle-income countries. Hence, the barriers, facilitators, or strategies for implementation in Nigeria have not yet been recorded in a structured manner. This two-study project aimed to prepare implementation by exploring the perceptions of physiotherapists and patients with low back pain and developing strategies for implementation. The first study, which was a qualitative study, recorded semi-structured telephone interviews with twelve physiotherapists and thirteen patients. A theoretical sampling procedure was adopted for patients with low back pain, and licensed physiotherapists from Nigeria. The data was transcribed and analysed using grounded theory methodology. For the second study, a web-based Delphi study, 30 statements were extracted from the qualitative findings. They were then presented to 139 physiotherapists for rating based on the feasibility and relevance for stratified care implementation in Nigeria. Consensus and stability criteria were pre-determined using percentage agreement ($\geq 75\%$), median value (≥ 4), inter-quartile range (≤ 1), and Wilcoxon matched-pairs test. In the qualitative study, 11 participants were female and 14 were male, with mean age of 43 (SD \pm 11.5) years. Four themes of variation and seven key categories were derived: 'recognising the need for change', 'acceptance of innovation', 'resistance to change', 'adapting practice', 'patient's learning journey', 'trusting the therapist' and 'needing conviction'. In the Delphi study, 55 participants were female, 83 male, and 1 diverse, with mean age of 35.2 (SD \pm 6.6) years. Stability was reached after the second Delphi round. Five statements failed to reach consensus in both Delphi rounds. Four statements: 'modify patients' expectations by educating them', 'hold quality improvement meetings to review successes and adherence', 'include training on psychologically informed physiotherapy for undergraduate physiotherapists' and 'allocate sufficient time for patient-clinician communication', met all consensus criteria and achieved the highest in percentage agreement ($\geq 95\%$).

Physiotherapists and patients with low back pain in this project believe that a stratified model of care for low back pain might be implemented and sustained with the use of tailored strategies such as co-produced patient education, therapeutic communication, and training. The patient's expectations and incentivized attachment to the usual practice were seen as significant barriers facing stakeholders. These barriers could be overcome using context-specific benefits such as patient trust, the hierarchy of clinicians, and specialty groups. This project's findings provide the platform to initiate and support stratified care in

Nigerian clinical practice. Future initiatives to deploy stratified care in middle-income countries should monitor and quantify the effects of these outlined strategies after implementation.

Zusammenfassung

Hintergrund

Aktuelle Erkenntnisse zeigen, dass die Behandlung von Patienten mit nicht spezifischen Kreuzschmerzen durch die Anwendung eines stratifizierten Versorgungsmodells verbessert werden kann. Ein solches Vorgehen zielt auf eine individuelle Betreuung ab, die physische und psychosoziale Vorgehensweisen miteinander kombiniert. Im Vereinigten Königreich würde hierzu der STarT-Back Ansatz (STarT: Subgroups for Targeted Treatment) entwickelt und unter Beteiligung von Physiotherapeut*innen, Allgemeinmediziner*innen und Patienten*innen auf seine Effektivität hin untersucht. Die Stratifizierung basiert dabei auf dem neun Items umfassenden STarT-Back Fragebogen, mit dem Patienten*innen in Risikostufen – niedrig, mittel oder hoch – für eine ungünstige Prognose zu Ihren Beschwerden eingestuft werden können. Diesen drei Gruppen sind Behandlungsempfehlungen zugeordnet: Patienten*innen mit niedrigem Risiko erhalten eine einmalige Untersuchung und Beratung, Patienten*innen mit mittlerem Risiko erhalten zusätzlich eine evidenzbasierte physiotherapeutische Behandlung und Patienten*innen mit hohem Risiko erhalten psychologisch orientierte Physiotherapie. Forschungsarbeiten zum STarT-Back Ansatz zeigen, dass dieser Potenzial hat, Beeinträchtigungen im Alltag zu verringern, Kosten einzusparen und die Patientenzufriedenheit zu steigern. Dementsprechend wird seine Anwendung in der britischen Leitlinie zu nicht spezifischen Kreuzschmerzen empfohlen.

In anderen westlichen Ländern als dem Vereinigten Königreich wie den USA, Dänemark und Irland zeigte sich der Ansatz unterschiedlich effektiv. Diese variierenden Ergebnisse könnten auf die jeweils spezifischen Faktoren zurückzuführen sein, die dessen Umsetzung beeinflussen. Für Länder mit niedrigem und mittlerem Einkommen liegen keine strukturiert erfassten Informationen zu Barrieren, Förderfaktoren oder Strategien für eine erfolgreiche Implementierung vor. Dies gilt auch für Nigeria. Arbeiten aus der Implementierungsforschung weisen darauf hin, dass Versorgungsmodelle zunächst schrittweise und strukturiert an die Rahmenbedingungen in neuen Einsatzgebieten angepasst werden müssen, bevor ein breitflächiger Einsatz in Betracht gezogen werden kann.

Im Rahmen des durchgeführten Projekts wurde die Einführung des STarT-Back Ansatzes in Nigeria für Patienten*innen mit nicht spezifischen Kreuzschmerzen vorbereitet. Das in zwei Phasen umgesetzte Projekt zielte darauf ab, zunächst die Perspektiven von Physiotherapeuten*innen und Patienten*innen mit nicht spezifischen Kreuzschmerzen

gegenüber dem Ansatz zu untersuchen und darauffolgend Strategien für dessen Einführung zu entwickeln.

Methoden

In der ersten Phase des Projektes wurden im Rahmen einer qualitativen Studie semistrukturierte Telefoninterviews mit Physiotherapeut*innen und Patienten*innen mit nicht spezifischen Kreuzschmerzen geführt und aufgezeichnet. Diese erfolgten unter Verwendung eines spezifisch entwickelten, semistrukturierten Interviewleitfadens. Die teilnehmenden Physiotherapeut*innen wurden über die Datenbank des Physiotherapieverbandes „Medical Rehabilitation Therapist Board of Nigeria“ rekrutiert. Um teilnehmen zu können, mussten die Therapeuten*innen ein Physiotherapiestudium absolviert haben, staatlich anerkannt sein und über mindestens drei Jahre klinische Erfahrung verfügen (einschließlich der Behandlung von Patienten mit nicht spezifischen Kreuzschmerzen). Die teilnehmenden Physiotherapeut*innen luden ihrerseits ihre Patienten*innen zur Teilnahme ein. Die Teilnehmer*innen wurden mit gezielt entwickelten Videos und Webinaren über das stratifizierte Versorgungsmodell informiert. Einer „Theoretical Sampling“-Strategie folgend wurden Patienten*innen mit nicht spezifischen Kreuzschmerzen und nigerianische Physiotherapeut*innen in mehreren Runden rekrutiert bis eine Datensättigung erreicht worden ist. Die aufgezeichneten Interviews wurden nach vordefinierten Regeln transkribiert und der Methodik der Grounded Theory folgend analysiert. Dabei wurde das RQDA-Package in R-Statistics genutzt. In der zweiten Phase wurde eine webbasierte Delphi-Studie durchgeführt. Anhand den Ergebnissen aus der qualitativen Untersuchung wurden hierzu 30 Aussagen zur Umsetzbarkeit und Relevanz des STarT-Back Ansatzes in Nigeria extrahiert und in Fragen überführt. Die Antwortoptionen variierten auf einer 5-Punkte Likert-Skala von 'stimme überhaupt nicht zu' bis 'stimme voll und ganz zu'. Zudem konnten die Teilnehmer*innen Kommentare in Freitext hinterlegen. Für das Delphi-Verfahren wurden Stabilitäts- und Konsenskriterien festgelegt. Die Stabilität wurde anhand der Ergebnisse von Wilcoxon Matched-Pairs Signed-Ranks-Tests bewertet. Die Antworten der Teilnehmenden sollten sich, bei einem Signifikanzniveau von $p < 0,05$, in zwei aufeinanderfolgenden Runden statistisch nicht signifikant voneinander unterscheiden. Bei den Konsenskriterien wurden der vorgegebene Interquartilabstands (≤ 1), der Median (≥ 4) und die prozentuale Zustimmung ($\geq 75\%$) für jede Aussage ermittelt. Ein Konsens ist für die jeweilige Aussage gegeben, wenn alle drei Bedingungen erfüllt sind.

Für die Studien wurden vor Durchführung in Nigeria und in Deutschland Ethikvoten eingeholt und sie wurden vor Beginn in einer Forschungsdatenbank (OSF-Registry) registriert. Alle Teilnehmer*innen gaben vor Einschluss ihr schriftliches Einverständnis.

Ergebnisse

An der qualitativen Studie nahmen 12 Physiotherapeut*innen und 13 Patienten*innen teil. Sie wurden in vier iterativen Runden rekrutiert. Elf Teilnehmer*innen waren weiblich und vierzehn männlich. Das mittlere Alter lag bei 43 [SD±11,5] Jahren. Von den Physiotherapeut*innen hatten 9 (75 %) bis zu zehn Jahre klinische Erfahrung in der Behandlung von Patienten*innen mit nicht spezifischen Kreuzschmerzen, 8 (67 %) hatten einen Bachelor-Abschluss, 6 (50 %) gaben muskuloskelettale Physiotherapie als ihre Spezialisierung an und 5 (42 %) arbeiteten in Lehrkrankenhäusern. Für 2 der teilnehmenden Patienten*innen (15 %) ergab sich nach dem STarT-Back Tool ein geringes Risiko, für 4 (31 %) ein mittleres und für 7 (54 %) ein hohes Risiko. Die Sichtweisen von Physiotherapeut*innen und Patienten*innen zur Umsetzung eines angepassten stratifizierten Versorgungsmodell wurden in sieben Schlüsselkategorien zusammengeführt: „Erkennen der Notwendigkeit von Veränderungen“, „Akzeptanz von Innovationen“, „Widerstand gegen Veränderungen“, „Anpassung der Praxis“, „Lernprozess des Patienten“, „Vertrauen in den Therapeuten“ und „Bedarf überzeugt zu werden“. Zu jeder Schlüsselkategorie wurden vier Themen ausdifferenziert: „Behandlungstradition“, „Entwicklung zu einem neuen System“, „Erfahrungen“ und „Umsetzungsstrategien“.

An der Delphi-Befragung nahmen 139 Physiotherapeut*innen teil. Von diesen schlossen 125 (90 %) auch die zweite Runde ab. 55 Teilnehmer*innen waren weiblich, 83 männlich und 1 divers. Das mittlere Alter betrug 35,2 (SD±6,6) Jahre. Einundsiebzig (51,1 %) hatten bis zu 10 Jahre klinische Erfahrung in der Behandlung von Kreuzschmerzen, 76 (54,7 %) hatten einen Bachelor-Abschluss, 80 (57,6 %) gaben die muskuloskelettale Physiotherapie als ihre Spezialisierung an und 54 (38,8 %) arbeiteten in Lehrkrankenhäusern oder staatlichen Gesundheitszentren. Stabilität wurde nach der zweiten Delphi-Runde erreicht. Bei 25 von 30 Aussagen gab es einen Konsens. Vier Strategien erfüllten alle Kriterien und erzielten eine Zustimmung von mehr als 95%: „Erwartungen der Patienten durch Aufklärung ändern“ (96%), „Treffen zur Qualitätsverbesserung, um Erfolge und Umsetzung von Vorgaben zur Therapie zu verfolgen“ (96%), „Ausbildung in psychologisch orientierter Physiotherapie für Physiotherapeut*innen in der Ausbildung vorsehen“ (96%) und „Ausreichend Zeit für die Kommunikation zwischen Patienten*innen und Therapeut*innen einplanen“ (95%). Fünf Aussagen erreichten in beiden Delphi-Runden keinen Konsens.

Diskussion

In dem beschriebenen Projekt wurden Strategien für die Implementierung des STarT-Back Ansatzes zur Behandlung von Kreuzschmerzen in Nigeria entwickelt. Diesbezüglich wurden die Sichtweisen von Physiotherapeut*innen und Patienten*innen erhoben. Die Teilnehmer*innen konnten sich mit dem Konzept des STarT-Back Ansatzes identifizieren, da Patient*innen Ähnlichkeiten mit früheren Behandlungserfahrungen feststellen und Physiotherapeut*innen Verknüpfungen zu Wissen auf dem Gebiet der Psychologie herstellen konnten. Ihre Einschätzungen unterscheiden sich jedoch, wenn es um die Übernahme des Ansatzes und die für die Umsetzung erforderlichen Anstrengungen ging. Therapeut*innen sahen mehr Herausforderungen als Patienten*innen. Dies könnte sich aus umfassenderen Kenntnissen zu den Kontextfaktoren ergeben. Die Therapeut*innen beschrieben die Erwartungshaltung der Patienten*innen und deren gedankliches Festhalten an dem üblichen diagnosebasierten Ansatz als besondere Herausforderung. Zudem erschweren die unzureichende Finanzierung und der Personalmangel im nigerianischen Gesundheitssystem ihrer Meinung nach die Umsetzung. Darüber hinaus identifizierten die Therapeut*innen Faktoren, die die Umsetzung fördern könnten: das inhärente Vertrauen der Patienten*innen in ihre Therapeut*innen, die hierarchischen Strukturen in den Kliniken und das Engagement von Spezialist*innen aus dem Feld der muskuloskelettalen Physiotherapie den Ansatz einzuführen. Patienten*innen sahen den Widerstand der Therapeut*innen, ihre gewohnte Praxis zu ändern, als vornehmliches Hindernis. Dennoch waren sie optimistisch, dass der STarT-Back Ansatz umgesetzt werden kann, wenn sie ihre Denkweise ändern und eng mit ihren Patient*innen zusammenarbeiten.

Auf der Grundlage der in der ersten Phase erarbeiteten Faktoren wurden in der Delphi-Studie vier primäre Strategien zur Überwindung von Hindernissen oder Nutzung von Förderfaktoren herausgearbeitet. Es sollte (1.) eine gezielte Patienteninformation auf Gemeindeebene durchgeführt werden. Patient*innen mit nicht-spezifischen Kreuzschmerzen könnten so unterstützt werden, angemessene Erwartungen hinsichtlich der Entwicklung ihrer Gesundheit aufzubauen. Mit leitenden Physiotherapeut*innen sollten (2.) Treffen zur Qualitätsverbesserung stattfinden, damit diese den Einführungsprozess strukturieren können. Es sollte (3.) ein regelmäßiger, individueller und offener Dialog zwischen Patienten*innen und Therapeut*innen zur gemeinsamen Erarbeitung von Behandlungszielen stattfinden, wie er nach dem STarT-Back Ansatz empfohlen wird. Und es sollten (4.) Schulungen zu psychologisch orientierter Physiotherapie in die Ausbildung von Physiotherapeut*innen aufgenommen werden. Auf diese Weise würden angehende Physiotherapeut*innen mit den erforderlichen Fähigkeiten ausgestattet werden, die sie benötigen, um Patient*innen mit hohem Risiko angemessen zu therapieren.

Die Ergebnisse dieser Arbeit bieten eine umfassende Grundlage für die Einführung der stratifizierten Versorgung in Nigeria. In zukünftigen Projekten bezüglich der Umsetzung eines solchen Ansatzes in Ländern mit mittlerem Einkommen sollten die Auswirkungen der erarbeiteten Umsetzungsstrategien auf die Patientenergebnisse untersucht werden.

Literature Cited

1. Chen S, Chen M, Wu X, Lin S, Tao C, Cao H et al. 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* 2022; 32:49–58.
2. Maher C, Underwood M, Buchbinder R. Non-specific low back pain. *The Lancet*; 2017. [vol 389].
3. James SL, Abate D, Abate KH, Abay SM, Abbafati C, Abbasi N et al. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet* 2018; 392[10159]:1789–858.
4. Balagué F, Mannion AF, Pellisé F, Cedraschi C. Non-specific low back pain. *The Lancet* 2012; 379[9814]:482–91.
5. Odole A, Akinpelu A, Adekanla A, Obisanya B. Economic Burden of Low Back Pain on Patients Seen at the Outpatient Physiotherapy Clinics of Secondary and Tertiary Health Institutions in Ibadan 2011; 18[18]:43–8.
6. Sowden G, Hill JC, Morso L, Louw Q, Foster NE. Advancing practice for back pain through stratified care (STarT Back). *Brazilian Journal of Physical Therapy* 2018; 22(4):255–64.
7. Amundsen PA, Evans DW, Rajendran D, Bright P, Bjørkli T, Eldridge S et al. Inclusion and exclusion criteria used in non-specific low back pain trials: a review of randomised controlled trials published between 2006 and 2012. *BMC Musculoskelet Disord* 2018; 19(1):113.
8. Knezevic NN, Cohen SP. The evidence gap in low back pain management strategies – Authors' reply. *The Lancet* 2021; 398[10306]:1131–2.
9. Deyo RA, Phillips WR. Low back pain. A primary care challenge. *Spine* 1996; 21(24):2826–32.
10. Pengel LH, Herbert RD, Maher CG, Refshauge KM. Acute low back pain: systematic review of its prognosis. *BMJ*. 2003 9;327(7410):323.
11. Gurung T, Ellard DR, Mistry D, Patel S, Underwood M. Identifying potential moderators for response to treatment in low back pain: A systematic review. *Physiotherapy* 2015; 101(3):243–51.
12. Cruz EB, Canhão H, Fernandes R, Caeiro C, Branco JC, Rodrigues AM et al. Prognostic indicators for poor outcomes in low back pain patients consulted in primary care. *PLoS ONE* 2020; 15(3):e0229265.
13. Bath B, Lovo Grona S. Biopsychosocial predictors of short-term success among people with low back pain referred to a physiotherapy spinal triage service. *J Pain Res* 2015; 8:189–202.
14. Wenig CM, Schmidt CO, Kohlmann T, Schweikert B. Costs of back pain in Germany. *European Journal of Pain* 2009; 13(3):280–6.
15. Vlaeyen JWS, Maher CG, Wiech K, van Zundert J, Meloto CB, Diatchenko L et al. Low back pain. *Nat Rev Dis Primers* 2018; 4(1):52.
16. Wand BM, O'Connell NE. Chronic non-specific low back pain – sub-groups or a single mechanism? *BMC Musculoskelet Disord* 2008; 9(1):11.
17. Igwesi-Chidobe CN, Coker B, Onwasigwe CN, Sorinola IO, Godfrey EL. Biopsychosocial factors associated with chronic low back pain disability in rural Nigeria: a population-based cross-sectional study. *BMJ Glob Health* 2017; 2(3):e000284.

18. Igwesi-Chidobe CN, Kitchen S, Sorinola IO, Godfrey EL. "A life of living death": the experiences of people living with chronic low back pain in rural Nigeria. *Disabil Rehabil* 2017; 39(8):779–90.
19. Buchbinder R, van Tulder M, Öberg B, Costa LM, Woolf A, Schoene M et al. Low back pain: a call for action. *The Lancet* 2018; 391(10137):2384–8.
20. Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S et al. What low back pain is and why we need to pay attention. *The Lancet* 2018; 391(10137):2356–67.
21. Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. *The Lancet* 2018; 391(10137):2368–83.
22. German Medical Association. National Health Care Guideline Non-specific low back pain long version; 2017. Available from: www.kreuzschmerz.versorgungsleitlinien.de. Cited 10 Jan 2020.
23. Trauma Programme of Care National Low Back and Radicular Pain Pathway 2017. UK; 2017. Available from: <https://www.versusarthritis.org>. Cited 30 Oct 2019.
24. Airaksinen O, Brox JI, Cedraschi C, Hildebrandt J, Klüber-Moffett J, Kovacs F et al. Chapter 4. European guidelines for the management of chronic nonspecific low back pain. *Eur Spine J* 2006; 15 Suppl 2(Suppl 2):S192–300.
25. Joanne Protheroe, Benjamin Saunders, Bernadette Bartlam, Kate M. Dunn, Vince Cooper, Paul Campbell et al. Matching treatment options for risk sub-groups in musculoskeletal pain: a consensus groups study. *BMC Musculoskelet Disord* 2019; 20(1):1–10.
26. Foster NE, Hill JC, O'Sullivan P, Hancock M. Stratified models of care. *Best Practice & Research Clinical Rheumatology* 2013; 27(5):649–61.
27. Shekelle PG, Delitto AM. Treating low back pain. *The Lancet* 2005; 365(9476):1987–9.
28. Cronbach LJ. The two disciplines of scientific psychology. *American Psychologist* 1957; 12(11):671–84.
29. O'Sullivan K, O'Sullivan P, Vibe Fersum K, Kent P. Better targeting care for individuals with low back pain: opportunities and obstacles. *Br J Sports Med* 2017; 51(6):489–90.
30. Foster NE, Mullis R, Hill JC, Lewis M, Whitehurst DG, Doyle C et al. Effect of stratified care for low back pain in family practice (IMPACT back): A prospective population-based sequential comparison. *Annals of Family Medicine* 2014; 12(2):102–11.
31. Hill JC, Whitehurst DG, Lewis M, Bryan S, Dunn KM, Foster NE et al. Comparison of stratified primary care management for low back pain with current best practice (STarT Back): A randomised controlled trial. *The Lancet* 2011; 378(9802):1560–71.
32. Hill JC, Dunn KM, Lewis M, Mullis R, Main CJ, Foster NE et al. A primary care back pain screening tool: Identifying patient subgroups for initial treatment. *Arthritis Care and Research* 2008; 59(5):632–41.
33. Traeger A, McAuley JH. STarT Back Screening Tool. *J Physiother*. 2013 Jun;59(2):131.
34. Shemory ST, Pfefferle KJ, Gradisar IM. Modifiable Risk Factors in Patients With Low Back Pain. *Orthopedics* 2016; 39(3):e413–6.
35. Sowden G, Hill JC, Konstantinou K, Khanna M, Main CJ, Salmon P et al. Targeted treatment in primary care for low back pain: The treatment system and clinical training programmes used in the impact back study. *Family Practice* 2012; 29(1):50–62.
36. Hill J, Try F, Agnew G, Saywell N. Perspectives and experiences of physiotherapists and general practitioners in the use of the STarT Back Tool: a review and meta-synthesis. *J Prim Health Care* 2022; 14(2):164–72.

37. Cherkin D, Balderson B, Wellman R, Hsu C, Sherman KJ, Evers SC et al. Effect of Low Back Pain Risk-Stratification Strategy on Patient Outcomes and Care Processes: the MATCH Randomized Trial in Primary Care. *J Gen Intern Med* 2018; 33(8):1324–36.
38. Delitto A, Patterson CG, Stevans JM, Freburger JK, Khoja SS, Schneider MJ et al. Stratified care to prevent chronic low back pain in high-risk patients: The TARGET trial. A multi-site pragmatic cluster randomized trial. *EClinical Medicine* 2021; 34:100795.
39. Bernstein IA, Malik Q, Carville S, Ward S. Low back pain and sciatica: Summary of NICE guidance. *BMJ* [Online] 2017; 356.
40. Sanders T, Ong BN, Sowden G, Foster N. Implementing change in physiotherapy: professions, contexts and interventions. *Journal of Health Organization and Management* 2014; 28(1):96–114.
41. Baxter GD, Chapple C, Ellis R, Hill J, Liu L, Mani R et al. Six things you need to know about low back pain. *J Prim Health Care* 2020; 12(3):195–8.
42. Ogebeivor C., & Elsabbagh L. Management approach combining prognostic screening and targeted treatment for patients with low back pain compared with standard physiotherapy: A systematic review & meta-analysis. *Musculoskeletal Care* 2021; 19(4), 436– 456
43. Beneciuk JM, George SZ. Pragmatic Implementation of a Stratified Primary Care Model for Low Back Pain Management in Outpatient Physical Therapy Settings: Two-Phase, Sequential Preliminary Study. *Physical Therapy* 2015; 95(8):1120–34.
44. Murphy SE, Blake C, Power CK, Fullen BM. Comparison of a Stratified Group Intervention [STarT Back] With Usual Group Care in Patients With Low Back Pain: A Nonrandomized Controlled Trial. *Spine* 2016; 41(8):645–52.
45. Hsu C, Evers S, Balderson BH, Sherman KJ, Foster NE, Estlin K et al. Adaptation and Implementation of the STarT Back Risk Stratification Strategy in a US Health Care Organization: A Process Evaluation. *Pain Medicine* 2019; 20(6):1105–19.
46. Konstantinou K, Lewis M, Dunn KM, Ogollah R, Artus M, Hill JC et al. Stratified care versus usual care for management of patients presenting with sciatica in primary care (SCOPiC): a randomised controlled trial. *Lancet Rheumatol* 2020; 2(7):e401-e411.
47. Kongsted A, Ris I, Kjaer P, Vach W, Morsø L, Hartvigsen J. GLA:D® Back: implementation of group-based patient education integrated with exercises to support self-management of back pain – protocol for a hybrid effectiveness-implementation study. *BMC Musculoskelet Disord* 2019; 20(1):85.
48. Karstens S, Kuithan P, Joos S, Hill JC, Wensing M, Steinhäuser J et al. Physiotherapists' views of implementing a stratified treatment approach for patients with low back pain in Germany: a qualitative study. *BMC Health Serv Res* 2018; 18(1):1–12.
49. Karstens S, Lang S, Saunders B. Patients' Views on the Implementation Potential of a Stratified Treatment Approach for Low Back Pain in Germany: A Qualitative Study. *Health Serv Insights* 2020; 13:1178632920977894.
50. Karstens S, Joos S, Hill JC, Krug K, Szecsenyi J, Steinhäuser J. General Practitioners Views of Implementing a Stratified Treatment Approach for Low Back Pain in Germany: A Qualitative Study. *PLOS ONE* 2015; 10(8):e0136119.
51. Morso L, Schiøttz-Christensen B, Søndergaard J, Andersen N-BdV, Pedersen F, Olsen KR et al. The effectiveness of a stratified care model for non-specific low back pain in Danish primary care compared to current practice: study protocol of a randomised controlled trial. *Trials* 2018; 19(1):315.

52. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science* 2009; 4(1):50.
53. Charmaz K. Qualitative interviewing and grounded theory analysis. in: Holstein, J. and Gubrium, J. (eds) *Inside Interviewing: New lenses, New concerns*. Thousand Oaks: Sage; 2003, pp. 311–330.
54. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care* 2007; 19(6):349–57.
55. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Adm Policy Ment Health* 2015; 42(5):533–44.
56. Mason M. Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative social research* 2010; 11(3):1–13.
57. Heisteringer A. Qualitative Interviews – A guide to preparation and implementation including some theoretical notes. Available from: URL: <https://www.uibk.ac.at>. Cited 25 Oct 2020.
58. Döringer S. 'The problem-centred expert interview'. Combining qualitative interviewing approaches for investigating implicit expert knowledge. *International Journal of Social Research Methodology* 2020:1–14.
59. Moullin JC, Sabater-Hernández D, Fernandez-Llimos F, Benrimoj SI. A systematic review of implementation frameworks of innovations in healthcare and resulting generic implementation framework. *Health Res Policy Sys* 2015; 13(1):1–11.
60. Pepper D, Hodgen J, Lamesoo K, Kõiv P, Tolboom J. Think aloud: using cognitive interviewing to validate the PISA assessment of student self-efficacy in mathematics. *International Journal of Research & Method in Education* 2018; 41(1):3–16.
61. Dresing, T, Pehl T, editor. *Practice book inview and transcription*; 2012. Available from: URL: <https://www.audiotranskription.de/Praxisbuch>. Cited 9 Jan 2020.
62. R Development Core Team. *R: A tool for statistical computing*. Vienna, Austria: R foundation for statistical Computing; 2014. Available from: <http://www.R-project.org>. Cited 8 Nov 2019.
63. Corbin JM, Strauss A. Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology* 1990; 13(1):3–21.
64. Sbaraini A, Carter SM, Evans RW, Blinkhorn A. How to do a grounded theory study: a worked example of a study of dental practices. *BMC Med Res Methodol* 2011; 11(1):128.
65. Fletcher AJ, Marchildon GP. Using the Delphi Method for Qualitative, Participatory Action Research in Health Leadership. *International Journal of Qualitative Methods* 2014; 13(1):1–18.
66. Cole ZD, Donohoe HM, Stelfson ML. Internet-Based Delphi Research: Case Based Discussion. *Environmental Management* 2013; 51(3):511–23.
67. Keeney, S., Hasson, F. & McKenna, H. *The Delphi Technique*. Nursing and Health Research. Oxford: Wiley-Blackwell; 2010.
68. Hora SC. Expert Judgment. In: Balakrishnan N, editor. *Wiley StatsRef: Statistics Reference Online*. New York: Wiley; 2014. p. 323.
69. Delphi methodology in health research: how to do it? *European Journal of Integrative Medicine* 2015; 7(4):423–8.

70. The Delphi technique: a comparison of results obtained using two expert panels. *International Journal of Nursing Studies* 1993; 30(3):227–37.
71. Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. *J Adv Nurs* 2000; 32(4):1008–15.
72. Duffield C. The Delphi technique: a comparison of results obtained using two expert panels. *International Journal of Nursing Studies* 1993; 30(3):227–37.
73. SoSci Survey-the Professional Solution for Your Online Survey. Available from: URL: <https://www.socisurvey.de/>. Cited 13 Jan 2020.
74. Linstone HA, Turoff M. *The Delphi method*. Boston. S.I.: Addison-Wesley; 1975.
75. Grabbe EM and Pyke DL. An evaluation of the forecasting of information processing technology and applications, *Technological Forecasting and Social Change*. 1972; 4(2): 143–150.
76. Fleisch R. A new readability yardstick. *J Appl Psychol* 1948; 32(3):221–33.
77. Dalkey N. An experimental study of group opinion. *Futures* 1969; 1(5):408–26.
78. Gracht HA von der. Consensus measurement in Delphi studies. *Technological Forecasting and Social Change* 2012; 79(8):1525–36.
79. Mayring P. *Qualitative Content Analysis* 2000. Available from: <http://www.qualitative-research.net/index.php/fqs/article/view/1089/2385>. Cited 20 Dec 2014.
80. Holey EA, Feeley JL, Dixon J, Whittaker VJ. An exploration of the use of simple statistics to measure consensus and stability in Delphi studies. *BMC Med Res Methodol* 2007; 7:52.
81. Dajani J, Michael Z, Sincoff, Wayne Kenneth Talley. Stability and agreement criteria for the termination of Delphi studies. *Technological Forecasting and Social Change* 1979; 13:83–90.
82. Keeney S. Primary care nursing, a study exploring key issues for future development 2001. Available from: <https://pure.ulster.ac.uk>. Cited 27 Jan 2020.
83. Loe RC de. Exploring complex policy questions using the policy Delphi. *Applied Geography* 1995; 15(1):53–68.
84. Courtenay M, Deslandes R, Harries-Huntley G, Hodson K, Morris G. Classic e-Delphi survey to provide national consensus and establish priorities with regards to the factors that promote the implementation and continued development of non-medical prescribing within health services in Wales. *BMJ Open* 2018; 8(9):e024161.
85. Keeney S, Hasson F, McKenna H. Consulting the oracle: ten lessons from using the Delphi technique in nursing research. *J Adv Nurs* 2006; 53(2):205–12.
86. Norman MK. Twelve tips for reducing production time and increasing long-term usability of instructional video. *Med Teach* 2017; 39(8):808–12.
87. Main CJ, Sowden G, Hill JC, Watson PJ, Hay EM. Integrating physical and psychological approaches to treatment in low back pain: The development and content of the STarT Back trial's 'high-risk' intervention [StarT Back; ISRCTN 37113406]. *Physiotherapy* 2012; 98(2):110–6.
88. Adje M, Steinhäuser J, Stevenson K, Mbada CE, Karstens S. Patients' and physiotherapists' perspectives on implementing a tailored stratified treatment approach for low back pain in Nigeria: a qualitative study. *BMJ Open* 2022; 12(6):e059736.
89. Adje M, Steinhäuser J, Stevenson K, Mbada C, Alonge V, Karstens S. Developing tailored intervention strategies for implementation of stratified care to low back pain with physiotherapists in Nigeria: a Delphi study. *BMC Health Serv Res* 2023; 23(1):134.

90. Odole AC, Afolabi KO, Ushie BA, Odunaiya NA. Views of physiotherapists from a low resource setting about physiotherapy at a distance: a qualitative study. *European Journal of Physiotherapy* 2020; 22(1):14–9.
91. Odole AC, Oyewole OO, Akinpelu AO. A comparative survey of Nigerian physiotherapists' familiarity with, knowledge of and utilisation of standard outcome measures: 10 years after initial survey. *S Afr J Physiother* 2018; 74(1):435.
92. Akindele M, Rabiou M, Useh E. Assessment of the awareness, adherence, and barriers to low back pain clinical practice guidelines by practicing physiotherapists in a low-resourced country. *Physiotherapy research international : the journal for researchers and clinicians in physical therapy* 2019; 25(1):e1811.
93. Akodu AK, Kareem RO, Faniyi OR. Management of low back pain: knowledge and adherence to clinical practice guidelines amongst physiotherapists in selected hospitals in lagos state. *Research Journal of Health Sciences* 2016; 4(3):203.
94. Holopainen R, Piirainen A, Karppinen J, Linton SJ, O'Sullivan P. An adventurous learning journey. Physiotherapists' conceptions of learning and integrating cognitive functional therapy into clinical practice. *Physiother Theory Pract* 2020:1–18.
95. Holopainen R, Piirainen A, Heinonen A, Karppinen J, O'Sullivan P. From "Non-encounters" to autonomic agency. Conceptions of patients with low back pain about their encounters in the health care system. *Musculoskeletal Care* 2018; 16(2):269–77.
96. Nijs J, Roussel N, van Paul Wilgen C, Köke A, Smeets R. Thinking beyond muscles and joints: therapists' and patients' attitudes and beliefs regarding chronic musculoskeletal pain are key to applying effective treatment. *Manual Therapy* 2013; 18(2):96–102.
97. Abaraogu UO, Onah U, Abaraogu OD, Fawole HO, Kalu ME, Seenan CA. Knowledge, Attitudes, and the Practice of Health Promotion among Physiotherapists in Nigeria. *Physiotherapy Canada* 2019; 71(1):92–100.
98. Cowell I, O'Sullivan P, O'Sullivan K, Poyton R, McGregor A, Murtagh G. Perceptions of physiotherapists towards the management of non-specific chronic low back pain from a biopsychosocial perspective: A qualitative study. *Musculoskeletal Science and Practice* 2018; 38:113–9.
99. Ezenwankwo EF, Ezeukwu AO, Abaraogu UO, Manu GP, Mogbolu GA, Ezelioha RN et al. Physiotherapy clinical education in the eastern Nigeria: students' and interns' views on clinical educator characteristics, opportunities and learning conditions. *European Journal of Physiotherapy* 2019; 21(3):153–63.
100. Onigbinde A. The Impact Of Internship Programme And Its Effects On The Physiotherapy Practice In Nigeria 2007. Available from: <https://www.semanticscholar.org>. Cited 9 Sep 2019.
101. Allan GM, Spooner GR, Ivers N. X-ray scans for nonspecific low back pain: a nonspecific pain? *Can Fam Physician*. 2012 Mar;58(3):275
102. Slater D, Korakakis V, O'Sullivan P, Nolan D, O'Sullivan K. "Sit Up Straight": Time to Re-evaluate. *J Orthop Sports Phys Ther* 2019; 49(8):562–4.
103. Odumodu IJ, Olufunlayo TF, Ogunnowo BE, Kalu ME. Satisfaction With Services Among Attendees of Physiotherapy Outpatient Clinics in Tertiary Hospitals in Lagos State. *Journal of Patient Experience* 2020; 7(4):468–78.
104. Lim YZ, Chou L, Au RT, Seneviwickrama KMD, Cicuttini FM, Briggs AM, Sullivan K, Urquhart DM, Wluka AE. People with low back pain want clear, consistent and personalised information on prognosis, treatment options and self-management strategies: a systematic review. *J Physiother*. 2019 Jul;65(3):124–135.

105. Traeger AC, Lee H, Hübscher M, Skinner IW, Moseley GL, Nicholas MK et al. Effect of Intensive Patient Education vs Placebo Patient Education on Outcomes in Patients With Acute Low Back Pain: A Randomized Clinical Trial. *JAMA Neurol* 2019; 76(2):161–9.
106. Meerhoff GA, van Dulmen SA, Maas MJM, Heijblom K, Nijhuis-Van der Sanden MWG, van der Wees PJ. Development and Evaluation of an Implementation Strategy for Collecting Data in a National Registry and the Use of Patient-Reported Outcome Measures in Physical Therapist Practices: Quality Improvement Study. *Physical Therapy* 2017; 97(8):837–51.
107. Foster NE, Mullis R, Young J, Doyle C, Lewis M, Whitehurst D et al. IMPaCT Back study protocol. Implementation of subgrouping for targeted treatment systems for low back pain patients in primary care: a prospective population-based sequential comparison. *BMC Musculoskelet Disord* 2010; 11(1):186.
108. Abaraogu UO, Aguji KR, Duru DO, Okafor UC, Ezeukwu AO, Igwe SE. Physiotherapist-patient communication in entry-level physiotherapy education: A national survey in Nigeria. *Hong Kong Physiother. J.* 2019; 39(1):77–87.
109. Europe Region WorldPhysiotherapy. Expected Minimum Competencies for Entry Level 2022. Available from: <https://www.erwcpt.eu>. Cited 23 Nov 2022.
110. Parry RH, Brown K. Teaching and learning communication skills in physiotherapy: what is done and how should it be done? *Physiotherapy* 2009; 95(4):294–301.
111. Oliveira VC, Refshauge KM, Ferreira ML, Pinto RZ, Beckenkamp PR, Negrao Filho RF et al. Communication that values patient autonomy is associated with satisfaction with care: a systematic review. *J Physiother* 2012; 58(4):215–29.
112. Jasper D, Bier, Raymond W.J.G. Ostelo, Bart W. Koes, Arianne P. Verhagen. Validity and reproducibility of the modified STarT Back Tool [Dutch version] for patients with neck pain in primary care. *Musculoskeletal Science and Practice* 2017; 31:22–9.
113. Fatoye F, Gebrye T, Fatoye C, Mbada CE, Olaoye MI, Odole AC, Dada O. The Clinical and Cost-Effectiveness of Telerehabilitation for People With Nonspecific Chronic Low Back Pain: Randomized Controlled Trial. *JMIR Mhealth Uhealth*. 2020 Jun 24;8(6):e15375
114. Abubakar I, DalGLISH SL, Angell B, Sanuade O, Abimbola S, Adamu AL et al. The Lancet Nigeria Commission: investing in health and the future of the nation. *The Lancet* 2022; 399(10330):1155–200.
115. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science* 2011; 6(1):42.
116. Akinpelu AO, Oyewole OO, Okunade O, Odunaiya N, Odole AC, Bamgboye EA. Nigerian physiotherapists' perception of physiotherapy internship: perceived expectations, experience, and outcomes. *Bull Fac Phys Ther* 2022; 27(1).
117. Onigbinde AT. The Impact Of Internship Programme And Its Effects On The Physiotherapy Practice In Nigeria. *Nig J Med Rehab* 2007.
118. Oyeyemi AY. Job satisfaction traits of Nigerian physical therapists. *Physiother Theory Pract* 2001; 17(4):257–68.
119. Dada AA, Yinusa W, Giwa SO. Review of the practice of traditional bone setting in Nigeria. *Afr Health Sci* 2011; 11(2):262–5.
120. Omololu B, Ogunlade SO, Alonge TO. The complications seen from the treatment by traditional bonesetters. *West Afr J Med* 2002; 21(4):335–7.
121. Nottidge TE, Nottidge BA, Ekrikpo UE. Prevalence and predictors of low back pain in a Southern Nigerian hospital. *Ann Afr Med* 2019; 18(3):167–72.122.

122. Alonge TO, Dongo AE, Nottidge TE, Omololu AB, Ogunlade SO. Traditional bonesetters in south western Nigeria--friends or foes? *West Afr J Med* 2004; 23(1):81–4.
123. Moullin JC, Dickson KS, Stadnick NA, Albers B, Nilsen P, Broder-Fingert S et al. Ten recommendations for using implementation frameworks in research and practice. *Implement Sci Commun* 2020; 1:42.
124. Michie S, Atkins L, West R. *The Behaviour Change Wheel Book - A Guide To Designing Interventions*. Silverback 2014. Available from: <http://www.behaviourchangewheel.com>. Cited 8 Dec 2022.
125. Gardner T, Refshauge K, Smith L, Mcauley J, Goodall S, Hübscher M. Physiotherapists' beliefs and attitudes in influence clinical practice in chronic low back pain : a systematic review of quantitative and qualitative studies. *Journal of Physiotherapy* 2017; 63(3):132–43.
126. Ballengee LA, Covington JK, George SZ. Introduction of a psychologically informed educational intervention for pre-licensure physical therapists in a classroom setting. *BMC Med Educ* 2020; 20(1):382.
127. Schmalz U, Spinler S, Ringbeck J. Lessons Learned from a Two-Round Delphi-based Scenario Study. *MethodsX* 2021; 8:101179.
128. Gargon E, Crew R, Burnside G, Williamson PR. Higher number of items associated with significantly lower response rates in COS Delphi surveys. *J Clin Epidemiol* 2019; 108:110–20.
129. World Physiotherapy. Nigeria: A profile of the profession in 2022. Available from: <https://world.physio/membership/nigeria>. Cited 11 Jul 2022.
130. Kalu ME, Vlachantoni A, Norman KE. Knowledge about risk factors for falls and practice about fall prevention in older adults among physiotherapists in Nigeria. *Physiotherapy research international: the journal for researchers and clinicians in physical therapy* 2019; 24(1):e1742.
131. Oyeyemi AY, Oyeyemi AL. Professional practice pattern and outlook of physiotherapists in Nigeria. *Advances in Physiotherapy* 2011; 13(4):162–9.
132. Bello B, Hartley SE, Yeowell G. Nigerian physiotherapists' knowledge, current practice and perceptions of their role for promoting physical activity: A cross-sectional survey. *PLoS ONE* 2022; 17(5):e0266765.
133. Holmström I, Röing M. The relation between patient-centeredness and patient empowerment: a discussion on concepts. *Patient Education and Counseling* 2010; 79(2):167–72.
134. Cobanoglu C, Cobanoglu N. The Effect of Incentives in Web Surveys: Application and Ethical Considerations. *International Journal of Market Research* 2003; 45(4):1–13.
135. Coopersmith J, Vogel LK, Bruursema T, Feeney K. Effects of Incentive Amount and Type of Web Survey Response Rates. *Surv Pract* 2016; 9(1):1–10.
136. Cunningham CT, Quan H, Hemmelgarn B, Noseworthy T, Beck CA, Dixon E et al. Exploring physician specialist response rates to web-based surveys. *BMC Med Res Methodol* 2015; 15:32.
137. Christe G, Nzamba J, Desarzens L, Leuba A, Darlow B, Pichonnaz C. Physiotherapists' attitudes and beliefs about low back pain influence their clinical decisions and advice. *Musculoskeletal Science and Practice* 2021; 53:102382.
138. Oyeyemi AY, Imam I, Oyeyemi AL, Adeniji T. Learning Styles of Physiotherapy and Medical Students in a Nigerian University. *West Afr J Med* 2019; 36(2):176–82.

Appendix

Appendix I: Interview Guide for Patients

Key question	Maintenance question	Potential follow-up questions
1. Experiences (Warm-up): Tell me something about the LBP treatment you received so far.	<ul style="list-style-type: none"> - What else? - And so on? - Is there anything else 	<p>What is your expectation of a successful treatment for your LBP?</p> <p>What are your concerns regarding the treatment of LBP?</p>
2. Exploration: What is your opinion on the STarT-Back approach?	<ul style="list-style-type: none"> - What else? - And so on? - Is there anything else? 	<p>How would you feel being classified into a subgroup based on the STarT-Back tool?</p> <p>What would be your reaction if you were offered to be treated with this approach?</p> <p>What can you say about the questions in the STarT-Back tool?</p>
3. Factors: How does this approach compare with the current treatment you receive?	<ul style="list-style-type: none"> - What else? - And so on? - Is there anything else? 	<p>Mention any specific aspect of the STarT-Back approach which interests you?</p> <p>What are your opinions regarding the questionnaire process?</p> <p>What do you think about communication with the therapist in this approach?</p> <p>In the video, patients with a low likelihood of poor outcome receive one treatment session with examination and advice, how do you feel about this?</p> <p>In the video, patients with a high likelihood of poor outcomes receive physical and psychological treatment, how do you feel about this?</p> <p>In your opinion, what do you expect from physiotherapists who use this approach e.g. attitude, training, expertise?</p> <p>What is your opinion on a patient's responsibility regarding this approach?</p> <p>In your opinion, tell me what is required to use this approach in Nigeria?</p> <p>Tell me if other enablers or barriers come to your mind when you think of this approach?</p>
4. Related influences: What do you think might happen when this approach is used?	<ul style="list-style-type: none"> - What else? - And so on? - Is there anything else 	<p>How do you think this approach affects you as a patient with LBP?</p> <p>How does this approach affect how you view treatment for LBP in Nigeria?</p>

LBP: Low back pain

Appendix II: Interview Guide for Physiotherapists

Key question	Maintenance question	Potential follow-up questions
1. Exploration: What is your perception of the STarT-Back approach?	<ul style="list-style-type: none"> • What else? • And so on? • Is there anything else? 	<p>Tell me something about your current approach to treatment for non-specific LBP.</p> <p>How do you consider the idea of classifying patients into subgroups based on the STarT-Back tool?</p> <p>How would you feel about allocating treatments in this treatment approach?</p>
2. Factors: How does this approach compare with the current treatment for non-specific LBP in Nigeria?	<ul style="list-style-type: none"> • What else? • And so on? • Is there anything else? 	<p>Mention any specific attributes of the STarT-Back approach that might interest you.</p> <p>What can you say about the STarT-Back tool?</p> <p>What is your opinion about the patient-centeredness of this approach?</p>
3. Strategies: Tell me any possible requirements for implementing this approach in Nigeria?	<ul style="list-style-type: none"> • What else? • And so on? • Is there anything else? 	<p>What are your ideas on the handling of the tool?</p> <p>In your opinion, what is required for the implementation of the high-risk approach?</p> <p>In your opinion, what is required for the implementation of the low-risk approach?</p> <p>What are your ideas about incentives for using this approach?</p> <p>Tell me your ideas about training on this approach.</p> <p>What comes to your mind when you think about the distribution of this approach in Nigeria?</p> <p>Tell me if other enablers and barriers come to your mind when you think of this approach?</p>
4. Related influences: What effects do you think might result from its use?	<ul style="list-style-type: none"> • What else? • And so on? • Is there anything else? 	<p>.. How might this approach affect patients receiving physiotherapy in Nigeria?</p> <p>. How might it affect interprofessional relations in Nigeria?</p>

Appendix III: Coding Agenda and Category Description

<p>Category Description: A mixed category because it describes views from patients and physiotherapists. It describes the resistance perceived and experienced by physiotherapists and patients concerning introducing a stratified care approach. It describes the physiotherapists and patients perceptions of challenges to the paradigm shift and strategies to overcome resistance.</p>			
<p>Category 1: Resistance to change.</p>	<p>Resistance to change</p>	<p>Explanation</p>	<p>Quotes</p>
<p>Themes of variation</p>			
<p>Tradition of treatment This describes components of the usual care, highlighting gaps in practice and aspects that can be modified to optimise care.</p>	<p>Incentives attached to the usual practice</p>	<p>Physiotherapists tradition of treatment was a major challenge, it seemed to be an overwhelming issue sustained by Incentives attached to the usual practice. Key aspects are ego, self-confidence in their current practice experience and finance. There is a long-held tradition of treatment with non-evidence-based methods, diagnosis and radiographs that the patient has gotten used to and this tradition remains deeply entrenched in practice.</p>	<p><i>PTf7: I would say it has a lot to do with ego, they won't want you to tell them what to do... If I go for training and come back with a new trend, I would start using it immediately, but your colleagues,... now avoiding it because it comes from your colleague.</i></p> <p><i>PTf7: Physiotherapists usually shy away when there is a new protocol, implementing it will just be for record purposes, they think it will stress them and is time-wasting.</i></p>
<p>Evolution to a new system This discusses the key enablers needed to introduce a new practice aimed at optimising care.</p>	<p>Overcoming patients expectations</p>	<p>Therapists see patient expectation as a primary deterrent to the implementation of stratified care that needs to be addressed. It feels to them that all their suggestions and efforts to optimising practice will not work because the patients come with a certain expectation. They expect a strong touch, massage or something physical that would bring the pain down to zero. There is, however, an enabling situation seen by therapists and patients, that these expectations can be adjusted and overcome.</p>	<p><i>PatF1: I wish it can go, I wish my pain can go... I think it will need some kind of strong force for it to go, maybe I should like a fall or something to put it in position.</i></p> <p><i>PTm5: I think it's just marrying the expectations of the patient with what the physiotherapist thinks is realistic, and with that, there could be some kind of trade-off.</i></p>
<p>Experiences This describes instances where attempts to install change have been made and the effects</p>	<p>Organisational culture</p>	<p>From the experiences of physiotherapists and patients, the organisational culture preponderant in Nigeria makes treatment less efficient and less effective. They have limitations in their ability to ease the changes beyond a certain point like organising situations, follow-ups or influence patient's working conditions.</p>	<p><i>PatM2: If you tell me to modify my workstation and I know that I cannot do it you are wasting your time. but if you tell me the office seat needs to be changed and in one week someone brings the right one I will have the right attitude.</i></p> <p><i>PTm9: There might be challenges, the kind of environment and mentality here in Nigeria is different.</i></p>
<p>Strategies for implementation This highlights the participants' key ideas on strategies for the implementation of the stratified care approach.</p>	<p>Targeting attitudinal change</p>	<p>A change in the attitude of physiotherapists and patients is seen as a major strategy to improve the chances of successful implementation. The physiotherapist and patients see themselves as mostly complacent. The patients blamed the physiotherapists for not being attentive to their needs and the physiotherapists blamed the patient's attitude as a deterrent for being unable to improve their condition.</p>	<p><i>PatM8: The period I was there i don't think there was a lot of Patient load, we were not more than ten patients attending physiotherapy so i think it is their attitude that needs to change.</i></p> <p><i>PTf8: Well, I have tried to push it, and it didn't work...some patients have an attitude like you are trying to test their knowledge...so somehow this attitude has affected the use by physiotherapists.</i></p>

Category 2: Acceptance of innovation Category description: This is a category most relevant to physiotherapists. It describes a positive reaction from physiotherapists to the idea of implementation of stratified care in Nigeria, highlighting their perspectives on the best settings and enabling conditions for implementation with inputs from patients.

Themes of variation

	Acceptance of innovation	Explanation	Quotes
<p>Tradition of treatment</p> <p>This describes components of the usual care, highlighting gaps in practice and aspects that can be modified to optimise care.</p>	Ease of transition	Some physiotherapists reported similarity of stratified care to what they already know (tradition of treatment) and practice in their management of low back pain, they have background knowledge of the biopsychosocial approach and vary treatment for patients. These are individual aspects of stratified care and participants reported that this makes it easy to fully adopt the stratified care in its entirety.	<p><i>PTf7: You are just giving it a name, it is comparable to what we do already here.... well, now all patients are treated more individually, we do not use the same intervention for every low back pain patient anymore we have improved.</i></p> <p><i>PTf11: Yes, just as I said it's not really different from what we do here, ...we do not have a name for it but it is essentially the same as what this approach is about, but I can speak for my centre only. because I will say my centre is about the best in Nigeria in terms of the content of practice so far.</i></p>
<p>Evolution to a new system</p> <p>This discusses the key enablers needed to introduce a new practice aimed at optimising care.</p>	Open to new knowledge	Physiotherapists realising this approach is fundamentally new, uncommon and not used in its entirety in practice, yet they were open to new knowledge describing stratified care as an improvement to current care and welcome development.	<p><i>PTm1: So far, I think it is a welcome development because the approach is nice because it tends to categorise individuals with low back pain in two categories people that have low risk moderate and high categorising individuals into groups will give it a definition into the line of management or better outcome.</i></p> <p><i>PTf4: My perception in summary about the approach is that it is a good one and that it would help physiotherapist a lot.</i></p>
<p>Experiences</p> <p>This describes instances where attempts to install change have been made and the effects</p>	Steps towards optimising practice	From their experiences, participants came across situations where they made steps towards optimising practice, instances where innovations, ideas or approaches have been introduced in their various work settings, the process that helped and the positive responses from colleagues. Key aspects were the use of clinical discussions, through physiotherapists cadre and time-saving measures for the patient. They think the stratified care being introduced in a similar stepwise manner will be successful.	<p><i>PTf7: Since everyone is on board, especially our head of department, he likes such things, if he sees the evidence he would say 'from today we are using this approach and it must be used and expedite the use.</i></p> <p><i>PTm9: (In cases of innovation in my clinical setting) the same strategy, we discuss it at seminars and everyone brings their opinions and decides to use it and see the result. only then can it become a norm.</i></p>
<p>Strategies for implementation</p> <p>This highlights the participants' key ideas on strategies for the implementation of the stratified care approach.</p>	Work Settings	There were differing perspectives on the most viable work setting for targeting the implementation of stratified care since there exist different situations and ideologies at the private and government establishments in Nigeria. Participants felt it would be more applicable if targeted at the government hospitals since the therapists are paid by the government a fixed amount and more treatments do not lead to more money.	<p><i>PTf12: To be honest the government hospitals make it easier to use these approaches and questionnaires. Because most of the private settings didn't have these things available, so most times I have to source for them to use, but in the government hospitals they were printed and ready for use.</i></p> <p><i>PTm3: Especially in the private practice where you need more patients to have more income, so the more the patients the more the income, so that is the case, it means the physiotherapist might not want to use that approach but, in the government-owned hospitals where that might not be the case, they may be more willing to go in that direction.</i></p>

Category 3: Adapting practice		Category Description: This category is relevant to patients and physiotherapists. Here participants highlight their opinions and experiences on ways to adopt the stratified care approach. This category describes the suggestions on adaptations in terms of creating awareness and modification of the approach to suit the Nigerian context and enhance its use.		
Themes of variation		Adapting practice	Explanation	Quotes
<p>Tradition of treatment</p> <p>This describes components of the usual care, highlighting gaps in practice and aspects that can be modified to optimise care.</p>	Need of standard for regulating the practice	Participants highlighted the absence of a standard of practice tailored to the needs of Nigerians. This situation led to a clamouring for standards to guide practice and regulation. Adherence to such a standard of practice would enhance adaptation for implementation.	<p><i>PTf7: In Nigeria, we do not have a standard way of doing things. what hospital A is doing is different from what Hospital B is doing... everyone is just doing what they want.</i></p> <p><i>PatM8: With proper supervision, if the hospital management focuses on what happens in the hospital I am sure there will be room for improvement, for both the staff and the facility.</i></p>	
<p>Evolution to a new system</p> <p>This discusses the key enablers needed to introduce a new practice aimed at optimising care.</p>	Cultural adaptations	Socio-cultural adaptations relating to language, the culture of respect and hierarchical implementation from the seniors to juniors was highlighted as a viable means of adapting practice at the introductory phases.	<p><i>PatF5: The clinician speaks our language...reads to her...or when she comes home the children do.</i></p> <p><i>PTm2: When the chiefs and assistant directors in each unit champion this, then junior physiotherapists will use it.</i></p>	
<p>Experiences</p> <p>This describes instances where attempts to install change have been made and the effects</p>	Use of communication	Communication was seen as a major way to inform adaptation and improve the patient-therapist relationship. When communication between patient and physiotherapist was used it was seen to produce positive effects.	<p><i>PTf8: It is feasible, I always use conversations to help my Patients see the benefits.</i></p> <p><i>PatM2: Well it is communication; a patient needs to know why they are allocated to a particular group.</i></p>	
<p>Strategies for implementation</p> <p>This highlights the participants' key ideas on strategies for the implementation of the stratified care approach.</p>	Awareness for patients and physiotherapists	Participants saw creating awareness about the approach as a major strategy for implementation. While some opined this can be done at undergraduate and postgraduate levels for physiotherapists, patient's awareness was achievable through outreaches.	<p><i>PatF9: And awareness...when I went for their free medical seminar I was able to meet the physiotherapist guy that came for outreach, ... which encouraged me.</i></p> <p><i>PTF9: Also, there should be health promotion done to create awareness about it.</i></p>	

Category 4: Patient's Learning Journey		Category Description: This category is relevant to patients and physiotherapists. Here, patients have experienced care from various fronts and have formed their opinions about what they have experienced to be helpful to their condition. This was corroborated by the physiotherapist opinions about the patients learning experiences from their perspective.		
Themes of variation		Patient's Learning Journey	Explanation	Quotes
Tradition of treatment	Needing a complement to usual care	For patients, the usual care was seen to be insufficient and there are aspects that patients feel would need some form of compliment, they feel this can be achieved by treatment from traditional bone setters care which is seen as a compliment or an alternative.	<p><i>PTm5: Most people prefer to go to bonesetters and the likes because the people around them would have told them that this is what someone used and the person got better so.</i></p> <p><i>PatM2: There is a lot in it (traditional bone setters care) that complements orthodox medicine'...I can manage my pain better.</i></p>	
Evolution to a new system	Recognising unhelpful treatments	Participants report that over the past recent years, patients have gradually become mentally equipped to recognise unhelpful treatments by themselves and developing the ability to differentiate between what is beneficial and what isn't. This realisation is seen as a viable enabler to the implementation of stratified care.	<p><i>PatM2: The former treatment was more like going thru a particular regimen and going back to the same condition that brought the pain but the approach ...suggests lifestyle changes which if sustained gives permanent relief.</i></p> <p><i>PatM3: Well, to me I tried it and it made matters worse, so I wouldn't advise anyone to do that, to me that is a no-go area because they are working blindly.</i></p>	
Experiences	Learning to live with pain	Participants explain how the debilitating condition of the patients experiences have resulted in personal difficulties. They resolved in their minds to change their outlook and accept the condition and this has improved their outlook.	<p><i>PatF9: I feel depressed most times, it affects me so much,... I think it is what I would work on now, psychologically I know it is affecting me because I am thinking so much about it and it is giving me so much concern.</i></p> <p><i>PatM3: It affected me psychologically, I was worried a bit. I have learned to live with it, I think I am better at managing myself ...so also I have learned, I have concluded that no kind of intrusive treatment can work for this my case, that I just need to be careful with how I live my life.</i></p>	
Strategies for implementation	Taking charge	Patients have gathered knowledge of self from various treatment exposures, from self-care, traditional bone setters treatments. They have now decided that taking charge of their treatment is a vital strategy to help themselves.	<p><i>PatF7: Yes, what I can generally say is it helped me to know how to better manage the back by myself.</i></p> <p><i>PatF9: I would love to do it (treatment) myself...rather than going to the hospital.</i></p>	

Category 5: Trusting the physiotherapist		Category Description: This category is most relevant to patients. It describes the patient's views of the physiotherapist as a dynamic expert with who they need to give their trust and co-operation based on the efforts of the physiotherapist to help their situation and their experiences with treatments.	
Themes of variation			
	Trusting the physiotherapist	Explanation	Quotes
<p>Tradition of treatment</p> <p>This describes components of the usual care, highlighting gaps in practice and aspects that can be modified to optimise care.</p>	Getting some help	The aspects of the usual care focused on exercise and advice was seen to provide some relief to patients, even though not permanent they relate some improvement in their condition and trust that based on this result more can be expected.	<p>PatF7: <i>The therapy I underwent helped though because before I started the treatment I could not even lift myself from the bed ...but the first week of the therapy I would say I experienced relief.</i></p> <p>PatM3: <i>I started getting relief because my clinicians were trained, even the advice I received worked to some extent. So, I believe the clinicians.</i></p>
<p>Evolution to a new system</p> <p>This discusses the key enablers needed to introduce a new practice aimed at optimising care.</p>	Learning with practice	The patients feel that the physiotherapists will gradually evolve in their practice and that some therapists are already on the right track, learning to change their approach with practice. They feel exploring ideas like this through research is needed to evolve more.	<p>PatM3: <i>What you are doing is good, research is the main factor so just keep it up. there is no way around it, to give patients the best available treatment there is only one way to make sure of it and that is research. continue to make research that's the future of the medical practice.</i></p> <p>PatM4: <i>It is possible they know these things already, because you know they are experts and they have been dealing with people having the same issues with me for a long time, so they can juxtapose and see if that is the problem or a factor.</i></p>
<p>Experiences</p> <p>This describes instances where attempts to install change have been made and the effects</p>	Therapists doing their best	The patients acknowledge that the physiotherapists are putting in efforts to optimise care in ways they can and they appreciate the efforts, they notice when some more is done to help their condition and that encourages them to focus more on the efforts.	<p>PatF9: <i>That therapist tried, he did a lot, I told him I appreciated his work very well.... they tried a lot, I am satisfied with their level of experience.</i></p> <p>PatM8: <i>He talked about some exercise but he advised me majorly about my sleeping position, which has helped so much.</i></p>
<p>Strategies for implementation</p> <p>This highlights the participants' key ideas on strategies for the implementation of the stratified care approach.</p>	Co-operating with the therapists	The patients consider the physiotherapist's role as providing care and support for the patient when needed and their role as patients is not to interfere with the process. They feel they need to co-operate with the physiotherapist but largely leaving the aspect of care for the therapists.	<p>PatM5: <i>For me, I believe that their field and they are the specialists. I can't say, I try as much as possible not to go into areas where I have low competence.</i></p> <p>PatM3: <i>You know when the pain becomes unbearable, you need to consult a specialist, at least to know what is happening and have their support.</i></p>

Category Description: This category is most relevant to patients. It describes patients exposure to false information sources, hence the need for physiotherapists to provide trustworthy education to get their full co-operation. This equips patients on their road to self-discovery and guides them to conviction.			
Category 6: Needing conviction	Needing conviction	Explanation	Quotes
Themes of variation			
<p>Tradition of treatment</p> <p>This describes components of the usual care, highlighting gaps in practice and aspects that can be modified to optimise care.</p>	Reliance on investigations	Physiotherapists are already used to a diagnosis-based approach, using radiographs and passive treatments. Since the patients have become used to that, they need some form of conviction to accept the change. Some patients enjoy passive treatments and would not only prefer that but insist it is the right thing to do.	<p>PTf10: <i>There is the likelihood that patients will not accept this, they will go after the treatment to another therapist...some tell you how much they enjoy the sessions...they keep coming back to enjoy the sessions.</i></p> <p>PatM8: <i>Investigations are not done. I had to muscle my way to do an MRI by myself, nobody told me about that I just knew it was necessary and I decided to do that.</i></p>
<p>Evolution to a new system</p> <p>This discusses the key enablers needed to introduce a new practice aimed at optimising care.</p>	Patient education	For patients to be able to accept change, they need to be informed properly to a level of conviction. Patients have multiple sources of information and this needs to be presented clearly and reasonably to influence attitudes and lifestyle. If patients can be educated and the procedures explained properly, it will go a long way to influence their expectations and help them become more receptive to a change in approach.	<p>PTm9:<i>It is possible they might also accept the treatment if it costs less but they need to be educated, in such a situation one has to spend more than that ten minutes to convince them.</i></p> <p>PatM2: <i>You see, the patient attitude is determined by the amount of information that he has, so if you can clearly explain the approach and how it works you are likely to get a positive attitude from the patient.</i></p>
<p>Experiences</p> <p>This describes instances where attempts to install change have been made and the effects</p>	Self-discovery	Patients relate situations when they needed to be convinced from within, even though their therapist tried by advising them they still needed to see for themselves to be successfully convinced to overcome the initial resistance. Based on their experiences, they relate that their outlook changed and they experience better outcomes.	<p>PatF7: <i>The clinician asked me the kind of bed I used... I told him it cannot be my bed, and all that but you know after the whole thing I was querying things, then I travelled for two weeks and I used another bed then I was able to conclude it was the bed.</i></p> <p>PatF9: <i>I do exercise often but I stopped, I fear that what I am doing is even increasing the pain. I don't want to worsen the condition, and my husband told me to stop... but when I went to the clinic they did something similar and it subsided.</i></p>
<p>Strategies for implementation</p> <p>This highlights the participants' key ideas on strategies for the implementation of the stratified care approach.</p>	Struggle against false information	Patients relate that there is a variety of information sources and many of which are misleading. These can come from other patients, from the internet or clinicians with certain motives. There is a constant <i>struggle against wrong information</i> by the patients which the therapists need to drive against to optimise care.	<p>PatM3: <i>Yes, they do mislead patients sometimes for financial implications, they may end up telling you to do something that is not necessary they can advise the patient to go for that treatment even though they know it might not help, so it requires a medical practitioner with integrity to be able to come out truthfully.</i></p> <p>PatM2: <i>Yes, so be careful of the advice you get from clinicians because you might be getting it from quacks, make sure you get the advice from the right source.</i></p>

Category 7: Recognising the need for change		Category Description: This category is relevant for physiotherapists and patients. It describes participants attention to deficiencies and deterrents in physiotherapists knowledge and practice, further corroborated by the patient's dissatisfaction with the current treatment outcomes which can be enabled by acceptance of the stratified care approach and proper funding.	
Themes of variation	Recognising the need for change	Explanation	Quotes
<p>Tradition of treatment</p> <p>This describes components of the usual care, highlighting gaps in practice and aspects that can be modified to optimise care.</p>	Lack of training to give psychologically informed therapy	Physiotherapists admitted having gaps in knowledge and lapses in training that might affect their ability to deliver optimal biopsychosocial care, this has resulted in sticking to the more familiar tradition of treatment. This issue of competency was a major setback. Physiotherapists felt incompetent to handle such an approach especially the prognostic approach and psychologically informed therapy.	<p>PTf4: <i>Most therapists do know about the prognosis of low back pain condition, they need to be educated better on prognosis because you can't classify patients using this approach if you do not know'</i></p> <p>PTf8: <i>Although general psychology was taught in school, this one relating to health care isn't taught. they do not know what exactly to do and how to do it. we just use the common-sense approach.</i></p>
<p>Evolution to a new system</p> <p>This discusses the key enablers needed to introduce a new practice aimed at optimising care.</p>	Embracing a different approach	Physiotherapists and patients need to recognise the potential to optimise care to be open to accepting a different approach. The potential advantages need to be clear to participants creating an undeniable appeal of a different approach.	<p>PTm6: <i>A model like this ... I feel if we embrace it one way or the other it would make a difference.</i></p> <p>PTf4: <i>I think it will make life easier for patient and Physiotherapist if they can adopt it will go a long way to help,</i></p>
<p>Experiences</p> <p>This describes instances where attempts to install change have been made and the effects</p>	No complete relief	Patients have undergone a series of treatments to change their condition but with no complete relief some now seek solutions elsewhere. They express disappointment with their situation and frustration with the care they receive. They all feel that things need to change in the way physiotherapists treat patients.	<p>PatM4: <i>Drugs, physiotherapy, I am not completely relieved, I just got tired of going to the hospital. because I have been going for physiotherapy for the past 2-3 years</i></p> <p>PatM8: <i>I thought by now I should have been fine...I feel the physiotherapy and medication wasn't doing anything to help my situation...I just felt I wasted my money and time,</i></p>
<p>Strategies for implementation</p> <p>This highlights the participants' key ideas on strategies for the implementation of the stratified care approach.</p>	The role of funding	Participants complain of general issues relating to infrastructure, equipment and patient load. These issues are systemic constraints that are neither the fault of the patients nor the therapists. Participants jointly suggest improved funding to the health sector will improve services and aid implementation.	<p>PTm6: <i>Facility and equipment are some of the main issues. No physiotherapist would be willing to use his funds to go print questionnaires for patients, most of our offices do not have computers, and printers available.</i></p> <p>PatM8: <i>Very poor, the infrared light they use on me everyone else has to wait until they are done with me, they have two and one is bad. So, if I needed it for ten mins it might be cut down to two or three minutes so that others can also use it.</i></p>

Appendix IV: Qualitative Data Informing Delphi Questionnaire Development.

Categories	Sub-categories	Codes
Outlook	Impression on approach	SC approach would be difficult to apply in Nigeria SC is applicable in government hospitals SC is not applicable in private hospital settings SC will not work well in government hospitals Treatment timing in the new approach might be a problem
	Impression on tool	The questions are very useful Questions in the SBT are straightforward
	Acceptability	Patients would like the idea SC treatment is a welcome development
	Applicability	SC is a feasible approach SC does not cover many areas
Barriers	Financial challenges	High cost of treatment Faulty health insurance system Physiotherapists go for SC training at their own cost
	Patient attitude	Patients absconding Patients enjoy passive treatments Patients initial resistance
	Interprofessional challenges	Most patients are not referred early for physiotherapy Other clinicians think physiotherapists are not on the right track Sensitizing other health professionals
	Organisational roadblocks	The patient load is overwhelming uncooperative management Hospitals lack a blend of old and new physiotherapists Unavailability of technology
	Physiotherapist beliefs	Physiotherapists believe that more treatments work best Routine is faster than using a tool Physios believe that patients should reduce activity due to pain
	Patient belief system	Clinicians are the patients' last hope Clinicians did the best they could Clinicians learn by practice
	Patient expectation	Patients expect pain should leave completely Patients expecting more
	Socio-cultural factors	Patients only feel you have done something when you touch them Language dialects as a barrier to communication Preference for TBS
	Physiotherapist attitudes	Physiotherapists have a system they know and already use Physiotherapists unwilling to shift the paradigm Convincing physiotherapists to use the approach
	Patient concern	Self-reliance makes physios victims of the un-wholistic practice Patients debilitating pain Repeated treatments from the hospital give no sufficient result Patients are unhappy with the current treatment Patients' fears and desperation
	Treatment tradition	Physiotherapists want to treat every patient for the financial benefit Previous treatment based on diagnosis Previous treatment using electrotherapy Previous treatment with massage Previous treatments using radiological examinations
	Patients knowledge	Patients are not aware of physiotherapy Patients do not understand back pain Patients want you to do what they already know
	Strategies	Physiotherapy practice standardisation
Process modification		Reschedule patients if the load is too much The personnel should be available to carry out SC Assessment and treatment on different days Patients should visit smaller clinics where the clinicians have time SBT can be filled at home SBT can be sent over the internet A short form with all questionnaires for patient assessment Apportion sufficient time for each patient Combine education with treatment Blending TBS and orthodox practice
Financial solutions		If patients can get health insurance it can help Institutions should train physiotherapists Upgrade hospital with funding Funds to print SBT
Knowledge mobilisation		Carry out research and present papers about SC Training workshops can help to propagate SC in Nigeria

	Management solutions	Awareness by hospital policymakers eases the use of SC Provide the right working environment Supervision of therapists by hospital management
	Specialisations for physiotherapists	Have more physiotherapists specialised Implement through speciality groups
	Hierarchical implementation	Implement through senior PTs Physiotherapist supervision by senior colleagues
	Approach modification	Making SC attractive to use Modify the approach to include activities patients enjoy
	Tool modification	Language translations of SBT will make it easy for patients Create a short version of the SBT A special questionnaire for physical limitation
	Readjusting patient expectation	Clinicians need to take time to understand patients Going beyond the surface to help patients Modify patients' expectations using education Make-shift treatment for patient psychology
	Re-adjusting patients' attitude	Patients have to be convinced Co-operation with clinicians
	Educating patients	Educating the non-patient population Ensure that patients are educated Patients need to educate themselves about their condition Regulate information source
	Physiotherapist training	Physiotherapists lack the necessary training in SC Physiotherapists lack knowledge about psychosocial intervention Train physiotherapists together Training is needed for physiotherapists to use the psychosocial approach Include psychosocial training in the undergraduate physiotherapy curriculum
	Communication with patients	In SC the manner of presentation to patients is very important Physiotherapists should communicate with the patient PTs can apply this approach by being more attentive to yellow flags
Enablers	Use of evidence-based practice	Previous treatment using physical assessment before treatment Previous treatment using SC Previous treatment using exercise therapy Previous treatment using manual therapy Previous treatment using patient education Previous treatment using stratified care modifications
	Familiarity with approach	Physiotherapists have background knowledge of psychosocial conditions Physiotherapists in orthopaedic speciality might be familiar with a similar approach
	Confidence in the clinician	Patients prefer to listen to physicians Trust in the physiotherapist
	Patient willingness to accept change	Patients open-mindedness Slight improvement in treatment
	Self-care	Self-management Self-diagnosis by patient
	Experiences	Lessons from TBS Role of religion
Outcome	Practice benefits	Reduces overtreatment of patients Saves cost
	Knowledge benefits	Opportunity for PTs to get knowledge Physiotherapist will learn to use SC with experience Understanding the approach

TBS: Traditional Bone Setters, SC: Stratified Care, PT: Physiotherapists, SBT: STarT-Back Tool

Appendix V: Delphi Questionnaire

Please rate the following statements and include any further comments.							
Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	No Opinion	Comments
Group A: This group of items deals with strategies to best modify stratified care management to fit the Nigerian context. This category describes the unique challenges facing the national health care context, advantages which can be harnessed for the implementation of SC and peculiar ways of modifying the approach and tool to enhance suitability.							
To implement SC, start with senior physiotherapists and let them supervise their junior colleagues.							
To implement SC, physiotherapists should hold quality improvement meetings among themselves to review successes and adherence.							
To implement SC, physiotherapists should educate the patients while treating them to save time.							
To implement SC, physiotherapists should schedule the assessment and treatment of patients if necessary on two separate days.							
To implement SC, create a Nigerian Pidgin Language translation of the STarT-Back Questionnaire.							
To implement SC, the government needs to set up an effective health insurance system for all patients to afford optimal care.							
To implement SC, there should be salary increments for practising physiotherapists after obtaining advanced training on psychologically informed therapy.							
To implement SC, physiotherapists should seek the cooperation of the hospital administration.							
To implement SC, implementation efforts should begin with government hospitals.							
To implement SC, patients should be encouraged to visit clinics where the clinicians have time and training in psychosocial care.							
Group B: This group of items is concerned with participants' views on how training and education can best be done to help the implementation of stratified care in Nigeria. It relates to how education and training can be best carried out for stakeholders to aid the implementation of SC in clinical practice.							
To implement SC, universities need to include training on psychosocial care for physiotherapists at the undergraduate level.							
To implement SC, physiotherapists need to be further trained to administer pain-relieving medications.							
To implement SC, a standard guideline for low back pain treatment should be adopted across physiotherapy practice settings in Nigeria.							
To implement SC, group monitoring of colleagues is needed among physiotherapists in Nigeria.							
To implement SC, where possible physiotherapists and traditional bone-setters should share knowledge and ideas to help patients with low back pain.							
To implement SC, regular training workshops should be provided for licenced physiotherapists on psychologically informed practice.							

To implement SC, orthopaedics and musculoskeletal physiotherapy speciality groups should take the responsibility of spreading it to others.							
To implement SC, Physiotherapists should inform other health professionals about Stratified Care practice to get their cooperation.							
To implement SC, physiotherapists need to modify patients' expectations by educating them on expected outcomes.							
To implement SC, physiotherapists should use TV, radio and other public media sources to dispel false information on low back pain.							
To implement SC, patients with low back pain need to be encouraged to learn about their condition.							
To implement SC, patient's self-care routine should be closely monitored by their physiotherapist.							
Group C: This group of items deal with ideas on conditions necessary to enhance the implementation of SC in Nigeria. This category deals with criteria therapists feel are necessary to be in place for a smooth and sustained delivery and utilisation of SC. Ongoing conditions with implementation to prepare stakeholders to accept this approach.							
To implement SC, physiotherapists should examine themselves for any wrong beliefs and attitudes respecting low back pain.							
To implement SC, use research results to convince physiotherapy colleagues to use it for low back pain management.							
To implement SC, sufficient time should be allocated for open communication between physiotherapists and patients to discuss treatment goals.							
To implement SC, where possible patients should get a second opinion on the advice they receive from their clinicians.							
To implement SC, hospitals should provide printed STarT-Back Questionnaires for routine use in waiting rooms.							
To implement SC, where possible physiotherapy consultations should be carried out online.							
To implement SC, if possible an electronic version of the STarT-Back Questionnaire should be provided that can be filled online.							
To implement SC, physiotherapists should send the STarT-Back Questionnaire to patients to be filled at home if this is possible.							

SC: Stratified Care

Appendix VI: Qualitative Data for Rounds 1 and 2. Common Themes and Quotes.

Category	Sub-category	*Quotes
Round 1		
A) Strategies to best modify stratified care management to fit the Nigerian context.	Hierarchical implementation	<ul style="list-style-type: none"> Implementation should be tested by a group of PTs on a group of patients first (F/BSc/<5/SpecialHosp). Pilot the study and think of encouraging in-buy by giving instructions that implement incentives (M/PhD/20-25/SpecialHosp). Collaboration with NDP and HODs is very important (M/PhD/20-25/SpecialHosp)
	Approach modification	<ul style="list-style-type: none"> PT should adopt the use of Telemedicine in treating their patients (M/MSc/<5/HomePhys). PT consultation should be carried out online sometimes if the patient is far away (F/MSc/25-30/HomePhys).
	Tool modification	<ul style="list-style-type: none"> Online administration of the SB tool (F/BSc/<5/TeachHosp). Translated in different core ethnic languages, if possible (F/MSc/5-10/GenHosp). A special questionnaire should be developed for the benefit of patients with visual and hearing impairments (M/BSc/5-10/HomPhys).
B) Views on how training and education can best be done to help the implementation of stratified care in Nigeria.	PT training	<ul style="list-style-type: none"> Making SC a course for undergraduate students (F/BSc/<5/GenHosp). PT should be given equal opportunity to enhance their knowledge, skills and practice by engaging in MSc and PhD programmes. (M/PhD/5-10/TrainInst). PT should be trained on SC and increase sensitization (M/MSc/5-10/TeachHosp). Adequate training for PTs in pain care medication. Sensitization of the patient about this matching treatment plan (F/BSc/<5/HomePhysio). SC should be included in undergraduate and postgraduate student training (M/PhD/5-10/TrainInst).
	Educating patients	<ul style="list-style-type: none"> By properly educating the patients and other professionals on the implementation of SC (M/MSc/<5/SpecialHosp). Organisation of workshops and or seminars for PTs to educate them on the approach and benefits (M/BSc/<5/HomePhys). Use of social media platforms (F/PhD/20-25/TrainInst).
	Patient Communication	<ul style="list-style-type: none"> Adequate follow-up of patients in the course of the treatment (M/BSc/<5/HomePhys). Involve patients with LBP on their condition and treatment plan and should be carried along (F/BSc/5-10/SpecialHosp).
	PT practice standardisation/r egulation	<ul style="list-style-type: none"> The licensing body should ensure more PTs are employed. This would improve Therapist to patients ratio significantly (M/MSc/5-10/TeachHosp) To collaborate with the MRTB governing council to effect its implementation (M/BSc/10-15/SpecialHosp).
	Re-adjusting patients' expectations	<ul style="list-style-type: none"> Cordial relationship with PT and their patient in order for them to open up (M/Bsc/5-10/SpecialHosp) There should be shared decision-making between the PT and the patient (M/BSc/<5/TeachHosp).
C) Ideas on conditions necessary to enhance the implementation of stratified care in Nigeria.	PT attitude re-adjustment	<ul style="list-style-type: none"> I believe strongly that it begins with the PT. If he knows why it's important, he will use it (F/15-20/BSc/CommPhys)
	Treatment tradition	<ul style="list-style-type: none"> PTs should adopt the use of outcome measures while treating their patients (F/BSc/5-10/TeachHosp). Extended-scope practice should be encouraged among all specialists managing back pain, especially the chronic low back (M/MSc/10-15/SpecialHosp). PTs should have diagnostic authority such as basic laboratory and imaging tests (M/<5/MSc/SpecialHosp).
	Process modification	<ul style="list-style-type: none"> Implement SC in rehabilitation centres and homes (M/BSc/<5/GenHosp). PT should allocate more time to the assessment and treatment of patients with LBP (M/Msc/<5/SpecialHosp).
	Management solutions	<ul style="list-style-type: none"> More PTs should be employed where this is being practised (M/PhD/5-10/HomePhys). Patients' load per PT should not be high (M/BSc/5-10/SpecialHosp). Increase in PT workforce in our hospitals (M/BSc/5-10/TeachHosp) Government policies and sensitization down to the grassroots (M/Bsc/5-20/CommPhys, HomePhys).
	Interprofessional collaborations	<ul style="list-style-type: none"> PTs to communicate with orthopaedic and musculoskeletal surgeons to understand the effect of SC on patient recovery, especially on first contact (M/Msc/10-15/SpeciHosp) The cooperation of HMOs and other health insurance companies should be sought to increase coverage and ensure the provision of optimal health care to patients (M/Bsc/<5/TeachHosp).
Round 2		
Familiarity with approach	No changes in opinions	<ul style="list-style-type: none"> My answers did not change because I am well familiar with SB tool (M/PhD/5-10/TrainInst). I had no change in my choice (M/BSc/<5/GenHosp). There are true representations of my options. These are the factors favourable for implementation (M/Bsc/10-15/GenHosp).

* Format: Quote [Gender/Qualification/Years of experience/Work], LBP: Low back pain; * SC: Stratified care; SB-STarT-Back; PT: Physiotherapist, * TrainInst: Training Institute, SpecialHosp: Specialist Hospital, TeachHosp: Teaching Hospital, CommPhys: Community Physiotherapy, HomePhys: Home Physiotherapy, GenHosp: General Hospital, SportCentr: Sports Center, PriHC: Primary Health care.

Curriculum Vitae

Personal data

Name: Mishael Adje

Education

November 2017: Masters Degree in Physiotherapy (MPT), University of Lagos, Nigeria.

September 2010: Bachelor of Physiotherapy (BMR.PT), University of Nigeria.

Professional activity

August 2018-2019: Physiotherapy Lecturer, University of Benin, Nigeria.

November 2017-2019: Clinical Physiotherapist-RNZ Occupational Hospital.

January 2014-2017: Physiotherapist at Shell Petroleum Development Company Hospital, Nigeria.

November 2012-2014: Physiotherapist at the University of Benin Teaching Hospital, Nigeria.

August 2011-2012: Intern at the University of Port Harcourt Teaching Hospital, Nigeria.

Professional Certifications

Licence for practice by Medical Rehabilitation Therapist Board of Nigeria (2018).

German Society for Musculoskeletal Medicine(DGMSM) - Boppard Academy. Manual TherapyLBB 1, HSA 1. (2021).

STarT-Back Interactive skills-based training certification – UK, (2020).

Certified Appraisal Reviewer (CAR) (2021).

License for Practice by the UK Health and Care Professionals Council (HCPC) (2022).

Language skills

English – Native Speaker

German – Intermediate Level (B1)

List of Publications

Adje M, Steinhäuser J, Stevenson K, et al. Patients' and physiotherapists' perspectives on implementing a tailored stratified treatment approach for low back pain in Nigeria: a qualitative study. *BMJ Open*. 2022;0:e059736.

Adje M, Steinhäuser J, Stevenson K, Mbada C, Alonge V, Karstens S. Developing tailored intervention strategies for implementation of Stratified Care to Low Back Pain with physiotherapists in Nigeria: A Delphi Study. *BMC Health Services Research*. 2022; 23 (1), p. 134. <https://doi.org/10.1186/s12913-023-09123-1>.

Adje M, Steinhäuser J, Stevenson K, Mbada C, Karstens S. Exploring Treatment Expectations of Physiotherapists and Patients with Low Back Pain in Nigeria. Publication Series for the Institute of Health. Abstracts from the 5. Research Symposium Physical Therapy 2022.

Adje M, Steinhäuser J, Laekeman M, Rogan S, Karstens S. Evaluation of an E-Learning Approach on Stratified Care for Physiotherapy Bachelor Students, 2022. Accepted for publication at *BMC Medical Education*.