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Phenomenological exploration of experiences, satisfaction and quality of life after 1-month total knee arthroplasty rehabilitation: "pain decreased; discomfort disappeared"

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TKA is one of the most commonly performed surgical procedures worldwide. While quantitative studies assess patient satisfaction using outcome measures, limited qualitative research explores patient experiences. This study explores the patients' perspective about the satisfaction and experiences post rehabilitation and to also explore the factors influencing quality of life with physiotherapy after 1st month of TKA. Seven patients post TKA, aged over 45, participated in semi-structured face-to-face interviews. The patients are recruited using criterion-based purposive sampling. The interviews were audio-recorded and transcribed. Analytical software and hybrid thematic analysis were used. Credibility, transferability, dependability and confirmability were also ensured. Patients who had undergone TKA were interviewed one month after their surgery. Four main themes with 12 subthemes emerged influencing quality of life: (i) Pain and the recovery experience; (ii) Functional abilities and limitations; (iii) Satisfaction with recovery and Physiotherapy; and (iv) Psychological impacts and emotional aspects. This is the first qualitative study conducted in a low- and middle-income country (LMIC) focusing on patients' satisfaction and experiences following rehabilitation after TKA. The study reveals reduction in knee pain, along with improved mobility, satisfaction and quality of life after 1-month TKA.

Keywords Knee, Patient expectation, Patient satisfaction, Physical therapy, Total knee replacement, Quality of life

The total knee arthroplasty (TKA) procedure is a cost- effective and widely performed technique for over 4 decades, continues to grow in popularity across the globe[1]. From 2020 to 2026, India is predicted to have the fastest rate of growth in TKA[2]. By 2030, TKA is expected to increase by an astounding 673%, according to projections made in 2005[3]. Osteoarthritis stands as the primary indication for TKA[4–9] 96.2% of primary knee replacements in 2018 attributed solely to it. In 2019, approximately 62.35 million individuals in India were affected by osteoarthritis[10] different settings had varying rates of primary knee osteoarthritis: 29.2% in villages, 18.3% in towns, 19.3% in minor cities, and 33.2% in big cities[11]. By using patient-reported outcome measures, quantitative designs are frequently employed to evaluate patient satisfaction following total knee replacement[12].

TKA's effectiveness rests in its capacity to reduce pain, improve long-term function, and raise general quality of life[13]. Many studies have looked into and suggested that physiotherapy rehabilitation has benefits for reducing pain, increasing range of motion, strengthening muscles, and improving the ability to carry out daily tasks. But according to the most recent data, patients' quality of life after total knee replacement is given special consideration, particularly when it comes to physiotherapy rehabilitation[14–16]. In order to better understand the expectations and satisfaction levels following knee replacement surgery, as well as the lived experiences of patients with osteoarthritis, post-TKA experiences, and perspectives on the results of replacement surgery, studies are being conducted[4,7,17–19,30]. Despite these favourable results, a significant 30% of patients report feeling

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unsatisfied with the procedure because of problems including inadequate pain management, poor functional improvement, or unfulfilled pre-operative expectations[7]. Dissatisfaction following TKA may lead to reduced functional outcomes, increased demand for revision surgeries, decreased trust in healthcare services, and prolonged dependence on physiotherapy, thereby straining both patients' and the healthcare system. These implications support the World Health Organisation's call for people-centered and integrated health care. It calls for a fundamental change in the way health services are managed and provided, which encourages the acquisition of knowledge about the expectations and viewpoints of patients[20].

Directly examining patients' views on what pleasure means to them and determining their key objectives is an area that is still understudied qualitatively. To gain in- depth knowledge of post-TKA satisfaction, this component is essential. It is an essential component of system-based efforts to assess and improve the satisfaction rate following TKA[21]. However, there is limited research[22,23] examining patients' perceptions of their level of satisfaction following total knee replacement, particularly during physiotherapy rehabilitation. Given the increasing frequency of knee replacement surgery, this information would be very helpful in designing insights that would inform the development of tools to better assess and address satisfaction rate after TKA. This study was necessary since the patient's perspective on what factors affect their quality of life is not well understood or examined[24]. This served as the catalyst for a first phenomenological qualitative study in an LMIC that sought to understand patients' experiences, satisfaction, and quality of life after receiving TKA-assisted physiotherapy.

Method

This study is in accordance with the Standards for Reporting Qualitative Research. This study builds upon the preliminary report of extensive qualitative study approved proposed research by the scientific review board of Yenepoya Physiotherapy College (SRB/PhD/76/2024) on 15/05/2024, and received ethical approval from Yenepoya Ethics Committee-1 of Yenepoya (Deemed to be University), Deralakatte, Karnataka, India with a unique protocol reference number YEC-1/2024/222 on 26 June 2024 for the duration of the study from 26 June 2024 to 25 May 2025[24].

Design

A phenomenological qualitative study design was used to determine patients' experiences, satisfaction and quality of life who have taken physiotherapy treatment after TKA. It also roots in philosophy and psychology that focuses on the lived experience of humans. Interviews with individual patients were conducted on one-to-one basis. Consistent with existing qualitative research guidance, particularly in phenomenological studies, sample sizes between six to 12 are often adequate to achieve data saturation[25]. However, as few as six interviews may be sufficient to reach 80% saturation when the research question is specific and the participant group is relatively homogenous[25]. Our sample of seven participants was sufficient to achieve data saturation. Analysis of the initial five interviews revealed the core themes relevant to our research objectives. The subsequent two interviews contributed minimal new information (≤ 5% or even 0%.), indicating that the major thematic patterns had already emerged, specifically the 5^{+2} method. This aligns with existing empirical evidence suggesting that in relatively homogenous samples with focused research questions, saturation often occurs within the first six to seven interviews[25]. Thus, the sample size of seven was deemed appropriate for capturing the core themes[24–30].

Participants and data collection

This qualitative study was carried out from August 2024 to November 2024 with seven patients. Nine patients were initially recruited from a tertiary care teaching hospital located in Mangalore, Karnataka, India (1248 bedded), from the in-patient orthopedic ward who are admitted and undergone TKA and have taken physiotherapy management among them two were excluded later due to post- operative complications. Criterion sampling was used to ensure that participants spoke predominantly Kannada and English and came from a range of ethnic or cultural backgrounds. Individuals meeting the inclusion criteria- (1) Over 45 years old; (2) who have received physiotherapy rehabilitation post TKA for minimum 5 days during the hospital stay (3) who have undergone unilateral TKA prior to 1 month of the interview and (4) Speak and understand English/ Kannada were given a study information sheet in the relevant language. Those who agreed to participate provided informed written consent on the seventh day post TKA and it was likely to be their discharge day as well.

One-to-one face to face interviews were conducted approximately one month after TKA as it data swill allow sufficient time for initial healing and engagement in physiotherapy, while still capturing fresh and reflective experiences of rehabilitation and recovery. The study employed a tape recorder (Sony ICD-PX470 Digital Voice Recorder) to conduct in-depth interviews with patients in a suitable setting, which included a room that was a bright, quiet, illuminated, and sufficiently ventilated room. Interviews were conducted by author SS, who is physiotherapist and research scholar, speaks English and Kannada with full fluency and also has possessed training in qualitative research methods. Before the study, primary researcher had not built any relationships with participants. The semi-structured interview guide was developed by the PI under the guidance of the research supervisor along with seven panel members; including two occupational therapist, two bioethicist, one biostatistician, one social worker and one[28]. Since these open-ended questions use an inductive qualitative analysis method, they don't need to be validated. Considering its dynamic persona, the interview can be revised or updated in response to extending inputs[24]. The semi-structured interview guide is copyrighted under The Government of India with register number L-150625/2024 on 8th July, 2024.

The interviews included three main domains and in total eight open ended questions were included in the semi structure interview. A consensus was reached to develop open- ended focusing on patient experiences with regard to pain, functional and activity limitations and satisfaction levels following physiotherapy rehabilitation post TKA. To preserve reflexivity, field notes were taken both during and after the interviews. Every transcription was done exactly as written, with any necessary translations into English. The interview transcript was shared

Criteria	Strategies
Credibility	Had a prolonged engagement with study participants to build trust and rapport and to understand the context; Used semi- structured interviews to allow participants to freely express their perspectives; Used data saturation to ensure adequate data were collected; Read data repeatedly to obtain refined and revised codes intended to obtain depth of insight
Dependability	Used an interview guide to ensure similar questions were asked to all participants; Transcribed verbatim immediately after each interview session
Confirmability	Provided participants with the option to review the transcript of their interview
Transferability	Provided thick descriptions of the study context, participant characteristics, and the process of data collection and analysis; Reported the findings together with illustrative quotes from participants
Reflexivity	Listened attentively and respectively during interviews; Analysed the data authentically with an open mind

Table 1. Strategies adopted for enhancing trustworthiness.

Patient ($n=7$)	Age (years)	Sex	Height (cm)	Weight (Kg)	BMI (kg/m^2)	Interview duration (min: s)
P1	60	Male	183	96	28.7	14:57
P2	53	Female	160	55	21.7	13:08
P3	46	Female	155	80	33.3	14:15
P4	45	Female	165	61	22.4	17:25
P5	60	Male	170	82	24.7	13:41
P6	49	Female	160	55	21.5	10:41
P7	50	Female	160	62	24.2	11:20

Table 2. Demographic characteristics of patient undergoing physiotherapy after total knee arthroplasty recruited. *P* patient, BMI body mass index, *min* minutes, *s* seconds.

with participants via WhatsApp Version 2.24.24.83 compatible to IOS. To uphold the validity and reliability of the findings, this study employed the Lincoln and Guba criteria, which assess the trustworthiness of qualitative research concerning aspects such as credibility, reliability, conformability, and transferability.

The research team extended the sampling and data collection process until data saturation was reached and also allowed them to review, provide corrections, or offer comments as part of the member-checking process, ensuring the credibility of the study. Furthermore, a thick description strategy was adopted to enhance the transferability of the data, making the findings meaningful and relevant to an external audience, details are tabulated in Table 1.

Data analysis

To explore the patients' expectations, level of satisfaction, and quality of life, a qualitative interview analysis was carried out. Multiple phases of reflexive deductive- inductive thematic analysis[26,31–33] were performed using NVivo 15 V as a data management tool. Interview questions and analysis were iterative throughout the study to allow for emerging or irregular themes to be examined in later interviews. Preliminary themes emerged from discussion among researchers (SS and AJS), but were refined post open coding. The coding index was refined throughout the analysis to ensure that themes derived adequately represented obtained information. All codes and themes reached full consensus with the researchers.

Results

Sample characteristics

In total seven interviews were conducted with patients following 1-month TKA. Participant demographic characteristics are summarized in Table 2. The mean age of patients was 51.86 years, 71.43% (05/07) were women, and 85.71% were from upper middle (II) class (06/07) of economic background. All the six spoke Kannada as their primary language. Four main themes impacting quality of life following TKA emerged: (i) Pain and the recovery experience; (ii) Functional abilities and limitations; (iii) Satisfaction with recovery and Physiotherapy; and (iv) Psychological impacts and emotional aspects, details are tabulated in Fig. 1.

Theme 1: pain and recovery experience

Pain relief is one of the most immediate and significant outcomes noted by patients post-TKA. While many described a substantial decrease in pre-operative pain, there are nuances in their experiences.

Reduction in pain

After TKA, patients reported a discernible reduction in pain, especially in the area they had previously indicated as problematic. This decrease was measured by a number of people, some of whom reported improvements of up to 50%. Even with the improvement, persistent pain was often observed, especially in the vicinity of the incision. Emotional relief and hope for additional recovery were brought about by this partial pain reduction.

Fig. 1. Themes and sub-themes generated.

"…following the operation, the pain has decreased…" (P1).

"…pain is decreasing. There is a difference in the pain."(P2).

"…knee pain is decreasing,…. swelling is still present." (P3).

"…this partial pain reduction was accompanied by continued functional limitations and localized discomfort, particularly near the surgical site." (P4).

Occasional stiffness and discomfort

Routine activities like walking and using squat toilets were occasionally difficult before to TKA, however patients gradually adapted to the limitations following surgery by applying physical coping strategies. worries about getting well and having trouble doing things like sitting or bending. These difficulties made it difficult for them to easily carry out daily tasks.

"…if I go above my limit, it creates stiffness below my knee." (P1).

".I am unable to fold my knee because of the discomfort,." (P3).

"…I have been accustomed to sitting down for a long time." (P4).

"…I couldn't bend my knee at all,.it's still the same even after the surgery." (P7).

Expectation are not Met

Some patients felt that their expectations were not fully fulfilled, even in spite of the favorable results. Problems remained, including persistent pain, restricted range of motion, and difficulties performing everyday activities like extended sitting or cooking. Complete recovery and confidence in physical activity were further impeded by fear of reinjury.

"Although I can bend my knee to three-quarters of its capacity. In a supine position, I can flex my knee up to 90%. Sitting down for extended periods to make rotis and cook for my family has become especially challenging." (P2).

"I am afraid to put full weight on the leg, in case something happens again." (P6).

"I'm not completely satisfied with the results just a little bit okay, but not fully happy." (P7).

Theme 2: functional abilities and limitations

One major issue that shaped the patients' lived experiences during the sub-acute period of recovery was their functioning skills and limitations. The following subthemes were used to further examine this theme: improvements in mobility, ergonomic and environmental obstacles, and mobility improvements.

Improvements in mobility

Basic mobility, such as walking on their own and finishing necessary tasks, significantly improved, according to the patients. But more strenuous tasks, such as ascending stairs, travelling long distances, and getting in and out of cars, continued to be difficult.

"…amount of work that I used to do earlier now is something that I am unable to engage in." (P1).

"…if I climb more steps,…pain returns and restricts my ability to walk comfortably." (P2).

"…walking independently, and …not yet attempted to climb stairs." (P4).

Ergonomic and environmental challenges

Adaptations were necessary for daily routines, including reliance on chairs for toileting and avoiding floor seating. Prolonged sitting and postural issues were often reported.

Even though they acknowledged the advantages of physiotherapy, some patients were unhappy with the slow rate of improvement or found it difficult to follow the activities that were recommended. Ergonomics presented difficulties for the patients, especially when it came to handling toilet use, transfers, mobility and stair climbing.

"I am unable to sit down and use the toilet (squat toilet), but I can use a chair" (P2).

"The only things that are disturbing me are going to the toilet (squat toilet), sitting down on the floor, and getting up" (P4).

"…demonstrate how to improve further through the application of exercise." (P1).

"…exercises that they demonstrate should be performed at an unhurried pace…helpful if they make some improvements in terms of teaching exercises that can be done at home." (P1).

Functional dependence on assistive devices

Some patients relied on environmental changes and assistive technology to alleviate functional restrictions. This reliance emphasizes the need for assistive technology and customised ergonomic solutions to aid in recuperation.

"I walk while wearing a belt (knee). Without it, I feel pain." (P2).

"I relying on external support when necessary." (P4).

Theme 3: satisfaction with recovery and physiotherapy

Satisfaction and support provided by the health system was framed as an integral element of the rehabilitation process for all the patients.

Benefits from physiotherapy

The majority of patients expressed pleasure with the advantages they received from attending frequent sessions, indicating that physiotherapy was a major factor in their rehabilitation. Enhancements in mobility, functional independence, and pain management are important points.

"…exercising on a daily basis,…pain is decreasing" (P1).

"They (physiotherapist) not only carried out the necessary treatments but also carefully explained and demonstrated the exercises I should do at home to support my recovery." (P6).

"…no complaints about…physiotherapy treatment…I received" (P4).

"…I'm happy with them (physiotherapist). They did their job well, and I appreciate their effort." (P7).

Appreciable physiotherapy services

Consistently noted the positive interactions with their physiotherapists, which contributed to their sense of progress and recovery. Additionally, many patients emphasized the clear communication and personalized care provided, which enhanced their confidence in the rehabilitation process.

"Exercising makes me feel excellent afterward… they showed me how to do things, what to do, what not to do, and everything else." (P1).

"…the physiotherapists have paid close attention to my progress throughout my recovery." (P4).

"They performed extremely well, they spoke in Kannada, and I believe all of the exercises were done properly." (P5).

Satisfied with hospital care

Patients expressed overall satisfaction with the hospital environment, care, and the support they received, despite some challenges related to hospital restrictions. Several patients also highlighted the professionalism and attentiveness of the hospital staff, which positively influenced their recovery experience. Many expressed a willingness to stay longer in the hospital if it meant receiving additional support and guidance during their recovery.

"The atmosphere in the hospital was very comfortable, which made my recovery process much easier and less stressful." (P3).

"…hospital environment was very comfortable,…I felt well taken care of." (P6).

"I should have remained in the hospital for a longer period of time… it would have been preferable if I had done so for at least ten days." (P2).

Theme 4: psychological impact and emotional aspects

Patients' social and emotional loves were greatly altered by the psychological and emotional components of the treatment. Because of physical discomfort they hoped to involve in those activities once they recovered. Although mental distress was alleviated by pain management, persistent difficulties continued to cause concern.

Improved mental well-being

Patients' mental well-being was significantly impacted by the substantial psychological benefits they felt from pain alleviation and recovery progress. Many expressed confidence about their future recovery and were eager about going back to their regular activities, despite their continued anxiety about ongoing challenges.

> *"…pain is decreasing following surgery,…I am confident that it will be completely well in the days to come." (P1).*
>
> *"The situation is fine; it might grow better as the day goes on."(P2).*
>
> *"satisfied with the results… I experience a sense of being quite happy and relaxed" (P4).*

Adequate support from family

During recovery, family support was essential in promoting optimism and a sense of well-being. Patients continuously appreciated the emotional support from their families, which served as inspiration to keep up their rehabilitation.

> *"There is an overall feeling of satisfaction, indeed, …" (P1).*
>
> *"Yes, they are satisfied; they are satisfied about the current circumstances…." (P2).*
>
> *"…both myself and my family are very satisfied with the results. (P5, P6). We're all happy with how things have improved." (P5).*

Temporary reduction in social and recreational activities

Many patients had to modify or cut back on their involvement in social and recreational activities because to the physical limits brought on by pain and limited mobility. They did, however, say they hoped to resume these pursuits as their recuperation advanced.

> *"I've avoided social gatherings, temples, and other events because I don't feel comfortable moving around with my knee as it is." (P1).*
>
> *"I've avoided traveling or going far from home, as I find it challenging to bend my knee properly, which restricts my mobility." (P3).*
>
> *"I did not go to any of the weddings, and I should go from now on." (P4).*

Discussion

The purpose of the present qualitative study was to explore, patients' perspective about the satisfaction and experiences post physiotherapy rehabilitation and to explore the factors which influences quality of life with physiotherapy post 1-month TKA. To our knowledge, the current study is designed to be the first qualitative study in LMIC. The results highlight the complex interplay of social, psychological, and physical factors affect the course of rehabilitation. The theoretical framework developed from this study provides healthcare professionals, including physiotherapists and othopedician, with a deeper understanding of patient centered concerns related experience, satisfaction, and quality of life. These insights can inform the development of more patient-focused care models that promote open communication, shared decision making, and a collaborative approach to rehabilitation. Additionally, the role of physiotherapist professionalism and communication was emphasized by participants. This contrasts with findings which reported that some patients experienced dissatisfaction due to poor physiotherapy support and lack of relational community post TKA. The study also highlighted that unprofessional behaviour and insufficient follow-up contributed to long term discontent. Including such perspectives underlines the importance of building trust and providing consistent, individualized care rehabilitation[34].

The study found that, among other factors, such as fear and worries about surgical complications, some patients rank severe pain and the ensuing detrimental effect on their quality of life as the most crucial consideration when deciding whether to get TKA[5]. While our research confirms, pain levels after TKA have decreased, while some locations, such the incision site and the stiffness in the knee joint, still experience pain. It also demonstrates the impact of expectations for future improvement and emotional reactions to pain relief in shaping their overall post-operative experience.

Based on another study, people of all ages who have total joint arthroplasty believe that pain relief is the most significant result. While the younger patients gave quality of life and social participation higher rankings than increased function, the older adults considered enhanced function to be the most significant feature[7]. Our research reinforces the importance of mobility improvements while revealing persistent challenges in daily activities, environmental barriers, and ergonomics. Furthermore, our study adds nuance by illustrating patients' hope and motivation to re-engage in social and recreational activities, bridging the gap between functional recovery and the broader dimensions of quality of life and participation.

Furthermore, a study revealed that individuals who underwent total hip arthroplasty were better overall than those who underwent total knee arthroplasty. The patient's functional ability and quality of life are the most crucial effectiveness factors[12]. Additionally, to our research, regular exercise has a favourable emotional impact

on pain and healing, which leads to positive outcomes. In addition to these psychological and emotional factors, our study also included interviews that revealed a decrease in social interaction as a result of post- operative discomfort, gratitude towards care givers, and family support and satisfaction impacting their overall quality of life.

To the best of our knowledge, this is the first qualitative study in LMIC post TKA rehabilitation; in- depth exploration using thematic analysis; inclusion of local language for cultural sensitivity. Since reality and viewpoints vary depending on the time and place, the study's conclusions will be restricted to that period. The current research is exploring the perspectives of seven patients' as the data was saturated, who have undergone physiotherapy rehabilitation post TKA, so the findings are not generalizable, representative and transferable to wider populations.

Given that most patients were from the upper middle class, findings may not fully reflect the experiences of patients from lower socioeconomic backgrounds. This limits the transferability of the study to broader LMIC populations. Also, we notice that this research does not have diversity of ethnicity as it is restricted to south and southeast Asia and does not have diverse cultural backgrounds. Additionally, while phenomenological qualitative research typically relies on small sample sizes to allow in-depth, case by case analysis, this also restricts the extent to which the results can be applied to diverse settings.

Future research may include a mixed-methods study of patients' who have undergone physiotherapy post TKA after addressing all the concerns which are interviewed by this study and focus on the outcome of pain, satisfaction rate and overall improvement in quality of life.

Conclusion

After 1-month of TKA, patients report reduced pain, improved mobility, satisfaction and quality of life among other recovery factors. Healthcare professionals can create more patient-centered and successful interventions by addressing these holistic recovery factors, which will eventually enhance the quality of life for patients recovering after TKA in LMIC's.

Data availability

Data can be accessed through Mendeley Dataset, https://data.mendeley.com/datasets/65nz2zkzvp/1.

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Author contributions

S.S. contributed to the conceptualization, methodology, data curation, formal analysis, investigation, writing – original draft and A.J.S provided conceptualization to the study, methodology, writing – review and editing, project administration and supervision. Both the authors reviewed and approved the manuscript.

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Declarations

Competing interests

The authors declare no competing interests.

Ethical approval and consent to participate

The qualitative research/ study received ethical approval from Yenepoya Ethics Committee- 1 of Yenepoya (Deemed to be University), Deralakatte, Karnataka, India with unique protocol reference number YEC-1/2024/222, dated June 26, 2024. All patient undergoing physiotherapy after total knee arthroplasty have provided consent to participate in this study.

Additional information

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