



# Research Paper

## Stakeholders' Perspectives on Rehabilitation Services in KwaZulu-Natal Province, South Africa: A Mixed-method Study



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### ABSTRACT

**Background and Objectives:** South Africa is committed to enhancing rehabilitation services by 2030 through the National Rehabilitation Policy and the United Nations Convention on the rights of persons with disabilities. However, limited research focuses on rehabilitation services in KwaZulu-Natal (KZN) Province, South Africa. This study aims to provide insights from stakeholders on rehabilitation services in KZN Province focused on infrastructure, referrals, human resources, and multidisciplinary practices.

**Methods:** Using mixed methods, we conducted focus group discussions, interviews, and surveys involving 99 stakeholders, including rehabilitation practitioners, district and provincial managers, and social development representatives from eThekweni, AmaJuba, and King Cetshwayo in South Africa. Descriptive statistics and thematic analysis were used for quantitative and qualitative data.

**Results:** Public institutions reported inadequate referral pathways (2.9 out of 5) compared to private institutions (3.4 out of 5). Acute rehabilitation referrals primarily targeted secondary or tertiary facilities. Disjointed pathways, a lack of protocols, delayed referrals due to various factors and insufficient staff were identified. Physiotherapists were disproportionately more prominent, while social workers, psychologists and bio-kineticists were scarce. Both public (93%) and private (73%) care exhibited high doctor-to-patient ratios. Rehabilitation service disciplines were limited and fragmented, especially in rural areas. Thirty-four respondents (81%) stated no designated rehabilitation services units in their respective institutions.

**Conclusion:** Rehabilitation services, though present at all care levels in KZN, mostly begin at tertiary levels. Local-level rehabilitation is non-existent, with the public healthcare system relying on community rehabilitation workers. Referral pathways require standardization, especially at the local level. Enhancing primary healthcare's rehabilitation focus by bolstering workforce recruitment can significantly improve multidisciplinary practices. Expanding intermediate care facility licenses can alleviate system strain on KZN's public health sector.

**Keywords:** Infrastructure, Referral pathways, Human resources, Multidisciplinary practice, Rehabilitation services, South Africa



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↑ *What is “already known” in this topic:*

*Rehabilitation services in KwaZulu-Natal face significant challenges, including inadequate infrastructure, disjointed referral pathways, and a shortage of multidisciplinary professionals. South Africa's National Rehabilitation Policy and the UN Convention on the Rights of Persons with Disabilities aim to enhance access to rehabilitation services, but implementation remains limited in resource-constrained settings. Previous studies highlight the imbalance and fragmentation of rehabilitation services, particularly in rural areas, leading to inequitable access and poor health outcomes.*

→ *What this article adds:*

*It provides comprehensive insights from 99 stakeholders, including rehabilitation practitioners and managers, highlighting specific gaps in referral pathways and human resources. It demonstrates the disparities between public and private sectors in terms of rehabilitation service availability and quality, emphasizing the need for standardized referral protocols. 3. It recommends the establishment of intermediate care facilities and a greater focus on primary healthcare to improve multidisciplinary practices and alleviate the strain on the public health system.*

## Introduction

Despite South Africa being a signatory to the national rehabilitation policy [1] and the United Nations convention on the rights of persons with disabilities [2], access to rehabilitation services remains a challenge, particularly in resource-limited settings [3-8]. Specifically, in the KwaZulu-Natal (KZN) Province, South Africa, patients face difficulties in accessing rehabilitation services due to limited infrastructure, disjointed referral pathways, lack of patient involvement, transport costs, shortage of rehabilitation service disciplines, and geographically inaccessible institutions [5, 8]. The public health system's capacity to provide rehabilitation services in KZN is limited and does not adequately address the population's needs [5, 8, 9].

As healthcare services improve and the population lives longer, non-communicable diseases, such as stroke, diabetes, and cerebrospinal conditions are increasing [8, 10, 11]. However, these conditions are not being diagnosed at admission, and there is a lack of standardized rehabilitation service treatment plans [8, 12]. Providing appropriate rehabilitation services requires a multidisciplinary approach involving various healthcare professionals, namely physiotherapists, occupational therapists, social workers, psychologists, speech therapists, audiologists and nutritionists [4, 6, 13-19]. However, rehabilitation service teams in South Africa are imbalanced and incomplete due to a lack of funding for personnel [5, 13, 15-18].

Moreover, rehabilitation services infrastructure in the form of designated rehabilitation service units at district hospitals is almost non-existent [3-6, 9]. Such designated rehabilitation service units can be described as intermediate care facilities that restore the functional status of rehabilitation service patients through a multidisciplinary practice at lower-intensity care than an acute institution [20].

There is also a lack of informative research on indicators for appropriate rehabilitation services development, and no standard operating procedure guides the provision of rehabilitation services in KZN [9]. Referral pathways are irregular, leading to inadequate follow-up and avoidable complications for clients [3-6, 9]. Additionally, the field of rehabilitation services lacks innovation, with human resources being paper-driven and lacking preparedness for the fourth industrial revolution [21]. The South African government faces resource challenges in improving the healthcare system, including fiscal shortages, constrained innovation, stagnant technological advancement, and poor human resources for healthcare [20, 22, 23]. As a result, the increased prevalence of non-communicable diseases in rural areas puts pressure on the rehabilitation services system [3-6].

Biomedical practitioners at the clinical level focus on patient stabilization and are inappropriately aware of rehabilitation services [3-6]. As such, rehabilitation services data-capturing is nebulous and not meaningful. Rehabilitation service patients rely on traditional clinical practice that considers rehabilitation services as being separate from clinical care [3-6, 9]. Rehabilitation services patients are referred later than advisable

for recovery. Due to chronic shortages of rehabilitation staff, services are usually in urban areas, far from the patient's admission hospital. Rehabilitation service referral pathways lack a case-based system to categorize patients with similar clinical diagnoses to control costs (diagnosis-related groupers). This issue results in high costs for transport and long waiting times for sessions, resulting in fatigue and patients being lost in the system of the continuum of care [24].

In the South African government's quest to re-engineer primary healthcare [25, 26], rehabilitation services have been identified as an integral feature of a transformed public health system [9]. As a result, scientific evidence is essential to inform South Africa's Department of Health (DoH) in its quest. Therefore, this study was conducted to profile the status of rehabilitation service provision in South Africa regarding infrastructure, referral pathways, human resource practices, and multidisciplinary practices in KZN Province.

## Materials and Methods

### Study design

The study utilized the viable system model (VSM) as its theoretical framework to analyze rehabilitation infrastructure, referrals, and multidisciplinary practices in KZN. VSM, a systems theory, emphasizes the importance of external regulation for organizational success. The study employed a concurrent mixed-methods design, combining qualitative (focus group discussions) and quantitative (cross-sectional survey) approaches. This design aimed to comprehensively describe current rehabilitation practices in KZN, focusing on infrastructure, referral pathways, human resources, and multidisciplinary practices.

### Study population and sample description

The population included rehabilitation practitioners, district rehabilitation services managers, and policymakers from Amajuba District Municipality, King Cetshwayo District Municipality and the eThekweni Metropolis in KZN. Non-probability stratified and maximum variation purposive sampling were employed to recruit 99 participants. The qualitative component involved 57 participants, including practitioners, managers, and representatives from relevant departments. The quantitative component sampled 42 practitioners using the snowball method, representing different districts (Table 1).

### Data collection

Data collection commenced after the COVID-19 period, with quantitative surveys distributed before qualitative focus groups. Separate interviews were conducted for managers and practitioners. Interview schedules were designed collaboratively and piloted for refinement. Data collection involved one-to-one interviews, focus groups, and surveys conducted over two months. For the qualitative data collection, interview schedules were designed to profile data specific to different districts and focused on the current status and practices of rehabilitation services. Trustworthiness was ensured through the researcher's extensive experience and the use of actual quotes from participants. Interviews were between 30 and 60 minutes. Two one-to-one interviews were conducted with social development representatives from the King Cetshwayo District. Two focus groups were conducted by the researcher with rehabilitation service practitioners from the Amajuba District Municipality and the King Cetshwayo District Municipality. Three focus groups were conducted by the researcher with rehabilitation services practitioners in the eThekweni Metro and the King Cetshwayo District Municipality. One focus group was held with 2 provincial health representatives. The duration of the focus groups was between 30 to 40 minutes. Regarding quantitative data collection, a survey tool designed by the researcher and supervisors, aimed to enhance qualitative data. It consisted of six sections covering demographic profiles, rehabilitation practice, referral pathways, facility information, quality control processes, and service delivery. Likert scales and closed-ended multiple-choice items were utilized (Appendix A).

### Data analysis

Qualitative data were analyzed using thematic analysis to identify patterns and themes [27]. Quantitative data were captured using Microsoft Excel and analyzed using IBM SPSS software, version 24. The study ensured confirmability and dependability through an audit trail and the reflexivity of the researcher. Credibility was enhanced through data triangulation and thick description, ensuring the transferability of findings through consideration of context and participant experiences.

## Results

### Demographic characteristics of the study participants

The participants included 73 women (74%) and 26 men (26%) males aged 23 to 56 years (Mean±SD, 32.1±8.6 years), as shown in Table 2. Ninety-nine par-

**Table 1.** Qualitative sample description for focus groups and one-on-one interviews in King Cetshwayo, eThekweni and Amajuba districts

Functional Level	District	Institution	Designation	No. of Participants
Implementation/service provision	Amajuba	Amajuba district hospital	Practitioners focus group	15
Implementation/service provision	Amajuba	Mother and child hospital	Practitioners focus group	9
Implementation/service provision	Amajuba	District health office	Rehabilitation manager interview	1
Control/monitoring and evaluation	eThekweni municipality	King Edward hospital	Practitioners focus group	7
Implementation/service provision	King Cetshwayo district	Private rehab centre	Practitioners focus group	9
Implementation/service provision	King Cetshwayo district	Ngwelezane hospital	Practitioners focus group	10
Control/monitoring and evaluation	King Cetshwayo district	District Office	Rehabilitation managers focus group interview	2
Control/monitoring and evaluation	King Cetshwayo district	Social development district office	Social development managers interviews	2
Policy/intelligent development	KZN province	Department of health provincial office	Provincial rehabilitation managers	2
Total			57	

KZN: KwaZulu-Natal.

Participants (78%) spoke isiZulu as their first language, with the remaining 22% spoke English, Afrikaans, or other languages. As their highest qualification, 87 participants (88%) held an Honours degree. Approximately 71% of participants (71) were from the public sector, with 2% (2) working in a hybrid situation.

### Rehabilitation infrastructure

The majority (n=39, 93%) of the 42 rehabilitation services practitioners had access to assistive devices in their settings. Other rehabilitation services tools or facilities available as indicated by the 42 practitioners were plinths (n=36, 86%) and gym (n=34, 81%). Only 5/42(12%) and 4/42(10%) had access to hydrotherapy and suspension therapy respectively. Table 3 presents a joint display of quantitative and qualitative findings on rehabilitation services infrastructure.

### Referral pathways

According to 41 people (98%) out of the 42 rehabilitation practitioners through which the practitioners received clients at their facilities, it was through a referral from other practitioners. Walk-in or self-referrals were confirmed by 33(79%) of the 42 participants. Table 4 presents a combined display of quantitative and qualita-

tive findings on referral pathways in the three participating districts.

### Multidisciplinary practice (MDT)

Physiotherapists were the rehabilitation services specialists with the most evidence at the facilities, with nearly 86% of the 42 study participants confirming as such. The availability of social workers was affirmed by 62% of the participants, and speech therapists by 60%. The least available were bio kineticists (24%). While the participants had a positive perception of the professional experience of rehabilitation services practitioners at their facilities (median=3.0, interquartile range [IQR]=0.5), they were significantly less satisfied with the extent to which practitioners were consulted on the recruitment of new staff (median=2.0, IQR=2.0) as well as regarding their salary packages (median=2.0, IQR=2.0). Overall satisfaction with human resources-related practices was average, with a median score of 2.8 (IQR=0.8) on the 4-point scale.

Concerning multidisciplinary practice, 42 participants (86%) indicated that they collaborated with occupational therapists the most, followed by social workers (83%). There were markedly fewer practitioners collaborating with community health workers (52%), rehabilitation

**Table 2.** Demographics characteristics of quantitative study participants

Variables		Statistic
Age	Mean±SD	32.1±8.6
	Median	29.0
	Min-max	23-56
	Interquartile range	12.5

  

Variables		No. (%)
Gender	Female	73(74)
	Male	26(26)
Home language	IsiZulu	77(78)
	English	14(15)
	Afrikaans	5(5)
	Other	3(3)
Highest qualification	Three-year degree	5(5)
	Four-year degree/Honours	87(88)
	Postgraduate diploma	2(2)
	Master's degree	5(5)
Health sector	Public	71(71)
	Private	26(26)
	Hybrid	2(2)

assistants (45%), and community rehabilitation workers (24%). [Table 5](#) presents a combined display of quantitative and qualitative findings on human resources for rehabilitation services in the three participating districts.

## Discussion

The study was conducted to provide an in-depth analysis of the state of rehabilitation services provision in South Africa, with a particular focus on infrastructure, referral pathways, and multidisciplinary practice in selected municipal areas in the KZN Province. The results of the study reveal critical insights into the existing challenges and disparities within the rehabilitation services landscape in the province.

Quantitative evidence for rehabilitation service infrastructure indicates the presence of equipment and rehabilitation amenities, but qualitative evidence indicates almost no designated rehabilitation service units. This

issue shows that rehabilitation services remain mainly within hospitals. The biomedical approach to rehabilitation services persists, as only 14% of hospitals have designated units for rehabilitation services [5]. Practitioners lamented the lack of space to provide convenient rehabilitation services.

In my opinion, rehabilitation at this institution is not good because there is no support. Thus, we are unable to provide good rehabilitation services. For one, our workplace is not convenient for patients, we work with what we have to assist the patients. As I said, there is no space, and we cannot work properly (Practitioner A1).

Most institutions visited for this study are rural-based, and floor design plans for rehabilitation service practitioners are not conducive to allied patient care. Credence is lent to this conclusion that rehabilitation services require patients to walk from one section of the hospital to the other due to the dispersed nature of the locations,

**Table 3.** Combined display of results on rehabilitation infrastructure in eThekweni Metropolis, King Cetshwayo District Municipality and the Amajuba District Municipality

Theme	Quantitative (Survey)	Qualitative	Meta-inference
Rehabilitation infrastructure	<p>Rehabilitation infrastructure geographical location</p> <p>King Cetshwayo district: Private: 18% rural; 82% urban/semi-urban Public: 64% rural; 36% urban/semi-urban</p> <p>Amajuba district: Private: 0 Public: 78% rural; 22% urban/semi-urban</p> <p>eThekweni: Private: 0 Public: 78% rural; 22% urban/semi-urban</p> <p>Total: Private: (21% urban, 5% rural); Public: (38% rural; 36% urban/semi-urban)</p>	<p>Respondents viewed infrastructure as a barrier to rehabilitation service provision because it is limited: “Another thing is what I noticed in this hospital is there’s lack of infrastructure and resources; like for occupational therapy you’re supposed to have, let’s say for example a kitchen you can use to train”. (rehabilitation services practitioner).</p>	<p>Although participants reported the presence of various items of infrastructural equipment, focus groups and interviews detailed how most of this infrastructure is old and dilapidated and limited.</p>
	<p>Type of rehabilitation setting</p> <p>King Cetshwayo district: Private: 55% Exclusively rehabilitation; 45% part of a hospital; Public: 18% Exclusively rehabilitation; 82% part of hospital.</p> <p>Amajuba district: Private: 0; Public: 22% Exclusively rehabilitation; 78% part of hospital.</p> <p>eThekweni: Private: 0; Public: 22% Exclusively rehabilitation; 78% part of hospital.</p> <p>Total: Private: (14% exclusively rehabilitation; 12% part of hospital); Public: (14% exclusively rehabilitation; 60% part of hospital).</p>		

for example, the physiotherapist from the occupational therapist [4, 5]. Here it should be noted that the national rehabilitation policy 2000 emphasizes the development of rehabilitation units that are accessible to communities.

The public health sector can heed lessons from the private sector which possesses such units in most districts where they service rehabilitation patients referred from acute private hospitals. These intermediate care units synchronize all rehabilitation service providers in one referral protocol by doctors [20]. The study’s results are consistent with existing literature that emphasizes the significance of a well-functioning primary health-care system, comprehensive care, and integrated referral pathways [20]. Considering these results, the study recommends a collaborative approach to redesigning and managing a new model for rehabilitation service regarding diagnosis-related groupers, which in most cases comprise the major membership of critical rehabilitation services in KZN.

The continued institutionalization of rehabilitation services affects the referral pathways for patients. Most referral occurs between and within hospitals and local clinics. However, no standardized protocol exists; the results show disjointed and inadequate referral pathways in the three KZN districts in this study. The over-emphasis on biomedical stabilization at the hospital level causes de-

lays for rehabilitation patients. The study highlights the discretion of doctors in controlling the accessibility of rehabilitation services for patients. The dependence on doctors’ awareness and decisions regarding rehabilitation services referrals can lead to variations in care delivery, potentially affecting the continuity of rehabilitation services [12, 28].” One practitioner for instance stated: “It means if the doctor forgets to refer to the patient and for whatever reason, or is not aware of the availability of the rehabilitation in that hospital then that patient will be missed in the system to receive rehabilitation services”.

Poor referral pathways in KZN are further compounded by unsatisfactory awareness of rehabilitation services by doctors and poor patient data record-keeping. One practitioner pointed out: “Record-keeping by the Department of Health (DoH) for rehabilitation data is nebulous and not meaningful”. Another practitioner indicated that rehabilitation service patient data collection is not much more than “head counts”. Lack of rehabilitation service awareness can lead to patients being prematurely discharged and acquiring avoidable physical complications.

Therefore, we often get patients who are close to the discharge date and you don’t have enough time to do all that you can. They say, ‘social worker, tomorrow they are leaving’ (Rehabilitation practitioner E3).

**Table 4.** Combined display of results on referral pathways for rehabilitation services in eThekweni Metropolis, King Cetshwayo district Municipality, and the Amajuba district Municipality

Theme	Quantitative (Survey)	Qualitative	Meta-inference	
Referral pathways	Acute referrals	The majority (88%) of the 42 participants indicated that they received acute referrals at their settings. A marginal difference was observed in the acute referrals patterns between the public sector (90%) compared to the private sector (82%) but no major difference between rural areas (89%) and semi-urban areas (90%)	Common referral methods	Referrals occur in various ways: Doctor's discretion, MDT ward rounds, intra-disciplinary referral, referral condition-based. Some cases were found with assistance from CHWs in rural areas.
	Referring facilities	Hospitals (88%) were the most common source of cases referred for rehabilitation services, followed by private practice (74%) and clinics (67%).	Timeous referral characteristics	Public health institutions refer rehabilitation services cases to one another. Depending on the numbers of patients and available practitioners, clients receive care at the moment of referral. Health institutions in KZN refer the patient to an institution as close as possible to where the patient lives.
	Referral protocol elements	Usage of an outward/inward referral form was confirmed by 88% of the 42 study participants while communication with the receiving or outward facility was cited by 64%. Other elements of the referral protocol that were reported were the collection of statistics (55%), referral register (48%) and client and family support information (40%).	Delayed referral	Some clients receive delayed rehabilitation services care due to caregivers not being able to recognize a medical condition that requires rehabilitation. Lack of administrative staff leads to long waiting hours. Some patients needing audiology intervention receive it 10 years later.
	Facility referral information contents	Of the 42 participants, their setting's referral systems allowed for the type of client referred (95%), time spent in the continuum of care (43%) and frequency of visits (40%).	Failed referrals	Referral pathways are poor at identifying clients who require rehabilitation services. Doctors are unaware of rehabilitation services, misunderstanding rehabilitation in healthcare. CBR has led to unskilled personnel missing patients in local areas, thus breaking the chain in the continuum of care.

Abbreviations: MDT: Multidisciplinary practice; CHWs: Community health workers; KZN: KwaZulu-Natal; CBR: Community-based rehabilitation.

The introduction of a standardized referral protocol ought to exist across doctors, nurses and administrative staff [25]. Relevant training and workshops are required to ensure that all stakeholders know when and how to use the standard referral protocol. Monitoring and evaluation of the referral protocol needs to be followed up at the management level. Inadequate referral patterns can lead to decreased utilization of rehabilitation services, impacting patient outcomes [12, 28].

Respondents indicated the presence of most rehabilitation services practitioners, but multidisciplinary practice is minimal. The study reveals that while physiotherapists and occupational therapists are well-represented, other

crucial disciplines, such as dietitians, speech therapists, audiologists, social workers, psychologists, and biokineticists are notably under-represented. The provincial representative for rehabilitation services in KZN spoke at length about how this influences patients who do not have financial resources:

“Yes, they must, we encourage them to work together you know we're talking about patients who are struggling economically so when they come, we try to provide them with all the services, therefore they don't have to be coming to the facility to get one service and then come back and get another service. Therefore, we en-

courage them to work comprehensively; but it's (Provincial representative H2).

“- It's ideal for me because on the ground because I work directly with disability. When you engage with the patients through the community-based rehabilitation (CBR) workers you find that social workers are not part of the team (Provincial representative H1).

This skewed distribution highlights existing shortages or imbalances in the availability of different types of rehabilitation service disciplines, which impacts the comprehensiveness and effectiveness of rehabilitation service care [4-6, 13-16, 18]. The patients are sometimes referred to receive rehabilitation services, but unfortu-

nately, few or no providers of the required rehabilitation service exist in a given hospital or setting.

As stated above, referral usually occurs within hospitals in the form of ward rounds, but such ward rounds are seldom performed with a multidisciplinary approach. A critical concern emerging from the study is the high therapist-to-patient ratio reported in both public and private care settings [4-6, 13-16, 18]. This disparity can strain rehabilitation service professionals, negatively affecting the quality and timeliness of rehabilitation service care provided to patients in KZN. High rehabilitation patient numbers hamper adequate multidisciplinary practice because too few practitioners exist to provide time to service all patients within a multidisciplinary approach.

**Table 5.** Combined display of results on human resources for rehabilitation services and multidisciplinary practice in eThekweni Metropolis, King Cetshwayo District Municipality, and the Amajuba District Municipality (n=42)

Theme	Quantitative	Qualitative	Meta-inference
	No. (%)		
Human resources	Sector of employment King Cetshwayo district: Private: 11(26.2) Public: 11(26.2) Amajuba District: Private: 0(0) Public: 9(21.4) eThekwini: Private: 0 Public: 11(26.2) Total: Private 11(26.2) Public 31(73.8)		Quantitative results show available rehabilitation services practitioners; however, focus groups and interviews show that these practitioners are few. Most glaringly, social workers, biokineticists, speech therapists, and psychologists are the least available practitioners.
	Support staff availability Nurses: 37(88) Admin staff: 35(83) Security: 36(86) Cleaners: 38(90)	Adequacy of human resources: Chronic rehabilitation staff shortage; many patients, too few practitioners; vacant leadership positions for rehabilitation; Supportive human resource practices: Constant University consultation on practitioner training. Unsupportive human resource practice: Frozen vacant rehabilitation posts; rehabilitation not prioritised Limited funds for rehabilitation HR Labour brokering; rehabilitation practitioners substituted by CRWs. High comm serve turnover. Insufficient in-service training Rehabilitation managed by medical professions.	Support staff are available, but most are labour-brokered and there is a particular shortage of administrative staff. Practitioners end up doing admin instead of clinical practice. There are many patients and few practitioners. Although the burden is less for the private sector, they too have far too many patients and far too few practitioners. This is particularly keener in rural KZN settings. Results reveal lack of rehabilitation services prioritization by the DoH. Even leadership positions remain vacant for months on end. rehabilitation services funding, HR relegated for biomedical professions.
	Practitioner/patient ratio by sector Public: Many patients, few practitioners 39(93%). Enough practitioners 3(7). Private: Many patients, few practitioners 31(73.8). Enough practitioners 11(26.2). Practitioner/patient ratio by geographical location: Rural: Many patients, few practitioners 37(88). Enough practitioners 5(12). Semi-urban area: Many patients, few practitioners 38(90). Enough practitioners 4(10). Total: Many patients, few practitioners 36(87). Enough practitioners 6(13). Human resources rating score: n=42 Mean=2.6		



Theme	Quantitative		Qualitative	Meta-inference	
	No. (%)				
Multidisciplinary practice	Disciplinary collaboration frequency	Physiotherapist 36(86); Social workers 35(83); Speech therapists/audiologists 33(79); Nutritionists 29(69); Occupational therapists 28(66) Psychologists 27(64); Community rehabilitation workers 10(24).	MDT importance	Improves quality of care. Rehabilitation costs are saved when patients are cared for by MDT.	Multidisciplinary practice is minimal and not meaningful in KZN rehabilitation services practice. Although rehabilitation disciplines exist, they are few and almost always situated only in hospitals. Rehabilitation services staff shortages make MDT very limited.  Currently, DoH in KZN depends on periodical allied meetings as a credible source of MDT.  Quality MDT care in KZN primarily in private rehabilitation services care.
	Multidisciplinary assessment	Individual 18(43); Multidisciplinary team 6(14); Both individual & MDT 22(52); Others 2(5).	MDT current practice	MDT meetings and clinical notes are used as current MDT practice. Advice sought from specialists. Some hospitals perform ward rounds as a team. Admission/discharge MDT meetings. Clinical manager meetings with allied disciplines. Mobile visits by MDT hospital team.	
			Impediments to multidisciplinary practice	Doctors have the power of referral, which is often delayed. Doctors are held in higher esteem than rehabilitation services disciplines. Rehabilitation services not prioritized thus access to patients limited by doctor's permission. Disciplines are available but do not work as team. Chronic rehabilitation services staff shortages. Personal egos lead to working in exclusion.	

Abbreviations: MDT: Multidisciplinary practice; KZN: KwaZulu-Natal; HR: Health resources; CRWs: Community rehabilitation workers.

One practitioner stated: "I think what counts against us is time because we're short-staffed, we don't have the time to sit together and do that planning (Practitioner P2).

Patients without receiving multidisciplinary rehabilitation services face premature discharge due to bed demand. This issue leads to avoidable complications, such as contractures. If these patients are fortunate, they are later identified by community rehabilitation workers. However, limited knowledge in providing rehabilitation services by community rehabilitation workers leads to unsatisfactory results. Administrative staff shortages complicate the situation further as they coordinate referrals between disciplines. Low administrative staff numbers lead to an inefficient referral process, resulting in rehabilitation services patients being lost in the system.

Furthermore, the study underscores the fragmented nature of rehabilitation service disciplines, particularly in rural areas. This fragmentation poses challenges in delivering holistic and comprehensive rehabilitation service care, which is essential to address the diverse needs of patients. One practitioner stated: "Public rehabilitation overwhelmed, almost no time for MDT." The shortage of rehabilitation service providers, coupled with the frag-

mented nature of services, can contribute to inequities in rehabilitation service delivery, particularly between urban and rural populations in the province.

The study underscores the need for policy development, rehabilitation service skill enhancement, and quality assurance mechanisms to support the proposed intermediate care units. By leveraging the strengths of both the public and private sectors, this model has the potential to address the challenges identified in the study and improve the accessibility and quality of rehabilitation healthcare services in KZN.

## Conclusion

This study's analysis sheds light on the intricacies of rehabilitation healthcare service provision in KZN, South Africa. The challenges identified regarding referral pathways, discipline distribution, high therapist-to-patient ratios, lack of designated rehabilitation service units, and rural disparities in rehabilitation services access underscore the urgency for a collaborative effort for innovative solutions. By addressing these challenges and implementing the proposed model of district-based intermediate care units, policymakers, healthcare institutions and stakehold-

ers can work together to enhance rehabilitation service delivery and ensure equitable access to quality services within the province. It is hoped that this study will serve as a foundation for future initiatives aimed at transforming and improving rehabilitation services in the region.

## Ethical Considerations

### Compliance with ethical guidelines

This study was approved by the Ethical Committee of University of KwaZulu-Natal's Biomedical Research (Code: BREC/00001338/2020). Written informed consent was obtained from all participants after the purpose of the study was explained. Additionally, the participants' permission to audio-visually-record interviews was obtained. The study adhered to the principles of the Declaration of Helsinki.

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### Authors' contributions

Data collection, data analysis and writing the original draft: Senzelwe M. Mazibuko; Review and editing: Thayanthee Nadasan and Pragashnie Govender; Conceptualization and final approval: All authors.

### Conflict of interest

The authors declared no conflict of interest.

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## Appendix A: Data collection tool

### Introduction

Dear participant. You have been invited to be a part of this Doctoral research study because you are a medical rehabilitation practitioner in the King Cetshwayo District, Amajuba District, or the [eThekweni Municipality District](#). This survey is a part of the study's data collection. The study aims to create a model for the provision of medical rehabilitation services that are timeous, equitable, multidisciplinary and accessible to as many clients at the district and local level of care.

Your participation in this field research will provide quantitative expert opinion on medical rehabilitation from those who provide it on a daily basis. This survey will be used for data on the status of rehabilitation, equitable access to medical rehabilitation, multidisciplinary practice and the national health insurance's consideration of medical rehabilitation. This survey will gather information on socio-demographics, human resources for medical rehabilitation, referral pathways, rehabilitation facility information, quality control processes and service delivery. The subjective, personal and qualitative experiences gained from this interview will inform the researcher construct a model for District-based medical rehabilitation care.

### Objectives

To conduct a scoping review of PPP usage for rehabilitation service delivery in KZN.

Establish referral pathway practices for rehabilitation service, to establish current human resource practices for rehabilitation, and to establish current access to rehabilitation services in KZN.

Improve human resources for rehabilitation by re-engineering multidisciplinary practice in KZN. Improve access to rehabilitation infrastructure through the intermediate care approach at the district health system.

Ascertain and forecast cost risks to rehabilitation services from RAF and COIDA case managers and compensation office representative respectively.

Review level to which rehabilitation is considered by NHI Bill with participants. Assess participants' views on operational mechanisms of universally covered rehabilitation services.

Solicit expertise and the experiences of rehabilitation practitioners, managers, NGOs and patients respectively to develop model of rehabilitation service provision in KZN.

To identify strategies for stakeholder uptake and potential threats to the implementation of the model.

INCLUSION CRITERIA	EXCLUSION CRITERIA
All private and public health sector medical rehabilitation practitioners working within the eThekweni municipality, King Cetshwayo District Municipality and the Amajuba District Municipality who usually deal with rehabilitation cases due to road accidents and occupational injuries.	All private and public health sector medical rehabilitation practitioners who are not working within the eThekweni Municipality, King Cetshwayo District Municipality and the Amajuba District Municipality who usually deal with rehabilitation cases due to road accidents and occupational injuries.
All medical practitioners that are within the rehabilitation disciplines (physiotherapy, occupational therapy, psychology, social work, dietetics/ nutrition, biokinetics, speech therapists & audiologists).	All medical practitioners that are not within the rehabilitation disciplines (physiotherapy, occupational therapy, psychology, social work, dietetics/ nutrition, biokinetics, speech therapists & audiologists).

**Socio-demographic Profile**

Please mark with an (X) in the appropriate box to indicate your response on each question, if other please specify on the space provided

Age

Home language	IsiZulu	English	Afrikaans	Sesotho	Siswati	Setswana	Other: _____
Gender	1- Female		2- Male		Other:		

Race

Highest Educational qualification

Number of years/months in current position

Total years in experience

Which sector of health are you currently employed in?	Public	Private	Both
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**Human Resources for Medical Rehabilitation**

Please mark the box (X) which best corresponds with your response to each question/item.

Are all disciplines of medical rehabilitation present at your setting?	1- None present	2- PT & OT Only	3- Most are present	4- All are present
Are practitioners consulted on recruitment of new staff?	1- Not sure	2- No	3 – Yes	
What do you think of the level of experience of rehabilitation staff in your setting?	1- Not sure	2- Experienced	3- Partly inexperienced	4- Highly experienced
What is the nature of Doctor to Patient ratio at your setting?	1- Many patients, very few practitioners	2- Many practitioners, very few patients	3- Many practitioners, very few patients	4- Practitioners enough to handle patient load
How satisfied are you with your salary package?	1- Very unsatisfied	2- Not satisfied	3- Moderately satisfied	4- Very satisfied
Rate the quality of the rehabilitation staff at your setting.	1- Poor quality	2- Moderate quality	3- Acceptable quality	4- Excellent quality
Please indicate availability of following support staff at your setting :	1- Unavailable	2- Unreliably available	3- Available	
Professional nursing staff				
Administrative staff				
Security services				
Cleaners				
How much administrative work do practitioners have to do before providing rehabilitation service?	1- None	2- Very little	3- A lot	4- A very large percentage

### Referral Pathways

Please mark with an (X) in the appropriate box to indicate your response, if other please specify on the space provided.

How does your setting receive its clients?

1- Walk-in/Self-referral

2- Referral

3- Other:

Does your setting receive acute referrals?

1- Yes

2- No

Who are the usual initiating facilities that refer rehabilitation cases to your setting?

1- Clinic

2- Hospital

3- Private practice facility

4- Community Rehabilitation Centre

- Other

Does your setting use standardised referral protocol?

1- Yes

2- No

Please indicate whether your setting's referral protocol has the following (tick all that apply):

1- Outward/inward referral form

2- Communication with receiving/outward facility

3- Information for client and family/support network

4- Collect of statistics

5- Referral register to monitor follow-ups

6- Other (specify)

Does your setting's referral system allow for the following (please tick where applicable):

1- Indication of type of client referred (orthopaedic, neural, chest, musculoskeletal etc.)

2- An indication of the frequency of visits and/or follow-ups

3- An indication of time spent with patient starting from admission

4- Other specify

### Facility Information

What is the geographical location of your current setting?

1- Rural area

2- Semi-urban area

3- Urban area

4- Other (specify):

What type of setting is your current institution? (please tick where applicable):

1- Exclusively medical rehabilitation facility

2- Part of public hospital

3- Part of private hospital

4- Part of a clinic

5- Single private practice

6- Other (specify)

**What approaches across the Primary Healthcare continuum does your setting use, select all that apply from the list below?**

- 1 – Prevention
- 2 - Health promotion
- 3 – Curative
- 4 – Rehabilitation
- 5 – Palliative
- 6 - Health education
- 7 - Other (specify)

Please mark the practitioners you usually work in collaboration with at your current setting (mark all that apply)

- 1 – Physiotherapists
- 2 - Occupational therapists
- 3 - Dieticians/nutritionist
- 4 – Psychologists
- 5 - Social workers
- 6 – Biokineticists
- 7 - Speech therapist/ audiologist
- 8- Rehabilitation assistants
- 9 - Community Health Workers
- 10- Community Rehabilitation workers
- 11 - Other (specify)

Indicate whether the following infrastructure is available at your current setting

- 1-Gym
- 2- Ample working space for consultations
- 3- Plinths
- 4- Assistive devices
- 5-Treadmill
- 6- Bike
- 7- Suspension therapy
- 8- Parallel bars
- 9- Wall bar
- 10 - Walking frame
- 11- Hydrotherapy
- 12- Crutches
- 13 -Tilting bed
- 14- Other (specify)

Please select all factors of disability rehabilitation that are considered by your setting's programme as advised by the international classification of functioning, disability and health (ICF) assessed individually & as a multidisciplinary team? Select all applicable options, more than one option may be selected:

- 1 - Patients impairments
- 2 - Participation restrictions
- 3 - Activity limitations
- 4 - Contextual factors of patient's personal environment
- 5 - Multidisciplinary assessment & treatment
- 6 - Other (Specify)

How is rehabilitation assessed at your setting? Please select from the following list.

- 1 - Individually
- 2 - As a multidisciplinary team
- 3 - Both individual & multidisciplinary team
- 4 - Other (specify)

**Quality Control Process**

**Rate your setting's of quality service by responding with the level to which you agree/disagree with each of the following statements below. (Please select appropriate answer from the options below with an X):**

- Strongly Disagree**
- Dis-agree**
- Agree**
- Strongly Agree**

Our setting gets sufficient support from its suppliers.

Managerial support is very good at my setting.

The equipment used at my rehabilitation setting is sufficient and appropriate.

I feel as if the service we deliver at my setting is of good quality.

I feel satisfied with my remuneration package compared to my peers elsewhere

When patients are unhappy with our setting's service, they have recourse mechanisms to follow

My setting supports the continuous professional development of its staff practitioners

Regular meetings are held between staff and management on staff grievances

Our rehabilitation setting's practices are in line- with the most current quality assurance standards of its peers.

Please rate the ease of bureaucracy at your setting by indicating the level to which you agree or disagree with each of the following statements. ((Please select appropriate answer from the options below with an X?)

Practitioners do very little administrative work at my setting.

As a practitioner, I do not have to receive permission from many people in order to take an important medical decision.

At my setting, practitioners are overloaded with paperwork.

There is available support staff at my setting therefore practitioners do rehabilitation work and not much else.



Does your setting have a maintenance protocol?	1- Not sure	2- No	3- Partially	4- Yes
What are your areas of rehabilitation service delivery? (select all which apply to you)	Hospital ward			
	Hospital outpatients			
	Clinic			
	Outreach			
	School environment			
	Industrial setting			
Other (specify)				

What do you think is the average number of rehabilitation clients your setting receives per week?				
What is the main mode of administration at your setting?	Mostly paper-driven			
	Mostly paper-driven with some electronic means			
	Almost completely electronic			
	We only use an electronic administrative system			
	Other (specify)			

Please answer the following questions by selecting the most appropriate option.				
Does your setting have a mechanism for patients to lay grievance?	1- Yes	2- No	3- Not that I am aware of	4 - Other (specify):
Does your setting have a mechanism for practitioners to lay grievance queries?	1- Yes	2- No	3- Not that I am aware of	4 - Other (specify):
Does your setting provide feedback to patients regarding quality control?	1- Yes	2- No	3- Other (specify):	

Service Delivery	
Please answer the following questions regarding your setting's service delivery in the spaces provided	
Please approximate the total number of new patients you receive per week	
Please approximate the total number of patients who receive on-going treatment at your setting per week	
Which medical issues do clients mostly present with, please select from the following list (select all that apply):	
1- Neural	
2- Orthopaedic	
3- Muscular-skeletal	
4- Cognitive	
5- Speech/Audio	
6- Other (specify)	

Does your setting have a database to keep record of rehabilitation service?	1- Not sure	2 - No	3 – Yes	Other (Specify):		
How often is rehabilitation service evaluated at your setting?	1- Weekly	2- Monthly	3= Quarterly	4- Annually	5- Not sure	6- Other (specify)

Rate the level of your awareness of the listed Policies by indicating with a number that corresponds with the level of your knowledge. (0= Poor knowledge; 1= Little knowledge, only know working basis. 3= Good knowledge, can discuss essential topics of policy. 4= Excellent knowledge, in-depth policy knowledge)

National rehabilitation policy (NRP)

Convention on the rights of persons with disabilities (CRPD)

National health insurance (NHI)

What are the most common delays to patient service delivery (Please provide a short specific answer)?

How do you usually get feedback from patients (Please provide a short specific answer)?

What is the nature of feedback you personally get from patients?	1- Mostly negative	2- Mostly positive	3- Cannot answer
Do patients tend to follow-up at your setting?	1- No they do not	2- Very rarely	3- Most of the time

Do you think service delivery at your facility can improve? (If so, please explain how)

Rate the medical rehabilitation service equity of your setting and its environs by inserting the number that most corresponds with your level of agreement/disagreement with the following statements (1= Strongly disagree; 2= Disagree; 3= Agree; Strongly agree= 4):

My setting is situated in an area where rehabilitation service is most-needed

Most clients who are serviced by my setting do not live more than 15 km away

Transport routes from surrounding areas are safe and reliable for clients to reach my setting

The level of care we provide can be afforded by most clients in the community where my setting is situated.

My setting's services are available to all members of the community who most need it, regardless of their social class.

The quality of rehabilitation service provided by my setting is of a good quality

Rehabilitation programmes at my setting almost always do what they are intended to do

The results attained by my setting's programs are proportionate in terms of effort expended, money spent, resources used and time utilized

**National Health Insurance & Rehabilitation**

Rate the NHI's readiness for universal medical rehabilitation service provision by inserting the number that most corresponds with your level of agreement/disagreement with the following statements (1= Strongly disagree; 2= Disagree; 3= Agree; Strongly agree= 4): Government's intention to provide free medical healthcare for all citizens through the National Health Insurance is a sensible, measurable, achievable, realistic and time-based goal.

The NHI has much strength in a country and context such as South Africa.

The basic practicalities of the NHI are clear, well thought-out and implementable.

The South African Government places a visibly high priority on medical rehabilitation service?

The NHI places a high level of consideration on rehabilitation, a mechanism for improving the Health system.

Carefully read the following questions and answer them accordingly.

What is the level of your understanding of the term "public private partnership" (PPP)? Tick the appropriate option.

Very poor

Poor

Good

Very good

Other (specify):

If your answer to the question above is “good”, you can proceed and answer the questions below.

Name ONE way in which private healthcare can collaborate with Government to improve public healthcare can help improve availability of quality rehabilitation services:

Select the statement which best represents your opinion on PPPs being a tool for improving availability of medical rehabilitation services to the most-needed

1- Not sure, my knowledge is not informed enough

2- No, PPPs cannot improve availability of rehabilitation services because Public health is too dysfunctional.

3- Yes PPPs can improve rehabilitation service availability, but it will take time and work.

4- Other, specify:

If you are aware of any completed PPP project in the health sector, please rate the level of its success by choosing from the following options

Good

Bad

Not aware of any completed PPP in health sector

Other, specify:

What is your opinion of government’s proposal for PPPs to be a mechanism for implementing the national health insurance (NHI)

Realistic & achievable

Not informed enough to have opinion

Unrealistic & unachievable

Other, specify: