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Occupational Therapists' Perspectives on the Provision of Rehabilitation Following Road Traffic Injuries in Saudi Arabia

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ABSTRACT

In Saudi Arabia, motor vehicle crashes (MVCs) are a major cause of injuries, deaths and disability. To reduce levels of disability associated with road traffic injuries (RTIs), rehabilitation is crucial. However, limited information is available regarding rehabilitation services in Saudi Arabia, particularly the role of occupational therapy following RTIs. This paper explores occupational therapists' perspectives on Saudi Arabian rehabilitation services. This descriptive qualitative study included semi-structured interviews with 13 occupational therapists working in rehabilitation settings in Saudi Arabia. Reflexive thematic analysis was utilised to identify themes related to their experiences and the potential for improved rehabilitation guidelines and practices. Five themes were identified. (i) Accessibility to rehabilitation following RTI was impacted by geographical location, high service demands, social support and financial issues. (ii) Pathway to rehabilitation following RTI varied, typically physician-led, with multi-disciplinary teams in rehabilitation services. (iii) Occupational therapy role in rehabilitation is perceived as poorly understood by others. (iv) Limitation to current rehabilitation services includes few highly experienced therapists, challenges to individualised care, and underdeveloped community reintegration. (v) Research is needed for better rehabilitation services through understanding people's experiences and perspectives to improve rehabilitation services. Overall, occupational therapists highlighted that the limited number of well-established rehabilitation facilities, mostly located in the central region of Saudi Arabia, negatively impact service provision and functional outcomes. Effective utilisation of occupational therapists' insights into the challenges of rehabilitating individuals after RTIs could improve the implementation, operation, governance, and investment in rehabilitation services in Saudi Arabia.

KEYWORDS

road traffic injuries, rehabilitation, occupational therapy, Saudi Arabia, motor vehicle crashes, multi-disciplinary

INTRODUCTION

Annually, approximately 1.35 million people worldwide lose their lives, and 50 million sustain serious injuries due to motor vehicle crashes (MVCs) (World Health Organization, 2018). In Saudi Arabia, MVCs are a major cause of injuries and disability (Al-Jadid, 2014), accounting for 52% of all injuries (Abolfotouh et al., 2018). In the year 2020, the Kingdom of Saudi Arabia (KSA) recorded 4618 deaths and 25,561 injuries caused by MVCs (Ministry of Health, 2021). While these figures highlight substantial fatalities resulting from MVCs in KSA, the proportion of survivors who sustain serious injuries is far greater. This means that the burden of injury and associated costs fall heavily on those who survive MVCs.

The prevalence of MVCs has massive economic consequences. In KSA, MVCs cost an estimated US$3.75 billion, nearly 2% of the national gross domestic product (World Health Organization, 2020). Furthermore, people injured in MVCs typically need additional healthcare services, including rehabilitation. For example, the annual rehabilitation expenses in KSA for road traffic injuries (RTIs) between 2017 and 2018 have been estimated at approximately US$1.63 million (Alghnam et al., 2022a). Furthermore, injured people

are expected to have increased use of health services up until 5 years after injury (Cameron et al., 2006). Therefore, RTIs not only have significant undesirable impacts on the country's resources and population health (Mansuri et al., 2015), but also have severe and long-term consequences for individuals, their families, and communities.

To reduce the impacts of MVCs, including the likelihood and severity of lifelong disabilities, access to rehabilitation is crucial. Most MVCs survivors, particularly those sustaining serious injuries, require some form and level of rehabilitation in their post-crash care journey (Alghnam et al., 2022b). However, little is known about the rehabilitation component of post-crash care in KSA, and clear rehabilitation guidelines following transport-related injuries are lacking (Alharbi et al., 2020). What is known is that following RTI and acute medical care (most often hospitalisation), rehabilitation in KSA typically involves a team of healthcare professionals, including psychiatrists, nurses, social workers, occupational therapists, and physical therapists (Mohan et al., 2006; Alghnam et al., 2022a).

The overall aim of post-crash care is to optimise an individual's recovery and successful reintegration into society (Mohan et al., 2006). Aligned with this aim, occupational therapists' primary objectives are to enable patients to engage in day-to-day activities; recover their former life roles such as caregiver, employee or student; and reintegrate into the community (American Occupational Therapy Association, 2020). With the recent development and growth of the occupational therapy profession in KSA, there is a notable shortage of information regarding its practice in the community (Meny et al., 2021) as well as a general lack of awareness of its role in rehabilitation among health professionals, particularly after MVCs (Meny and Hayat, 2017; Bindawas and Vennu, 2018). To summarise, knowledge gaps in two key areas relevant to rehabilitation following RTI within the KSA context are as follows: (i) the overall level and type of rehabilitation provision and (ii) understanding of the occupational therapist's role in rehabilitating MVC survivors. This study aimed to explore occupational therapists' views about rehabilitation provision following MVCs in KSA.

METHODS

Study design

We used a descriptive qualitative study design involving semi-structured interviews and reflexive thematic analysis (TA) to explore occupational therapists' experiences in rehabilitation settings and suggestions for improved rehabilitation guidelines and practices. This approach was chosen to obtain a description of rehabilitation provision and the role of occupational therapy following MVC in KSA while ensuring data-near findings from the perspective of occupational therapists practising in KSA (Doyle et al., 2020).

The study was approved by the Monash University Human Research Ethics Committee (31317).

Participants

A purposive sampling of licensed occupational therapists in KSA with at least 1 year of rehabilitation experience was sought to gather rich information about occupational therapy practice in rehabilitation settings (Moser and Korstjens, 2018). The plan was to interview between 10 and 20 therapists as an estimation to reach sufficient information power (Creswell, 2007; Malterud et al., 2016). Sixteen therapists expressed interest in the study, of whom 13 agreed to participate in an interview. All participants provided written consent to take part in the study.

Recruitment commenced in July 2022 through advertisements across the Saudi Occupational Therapy Association's social media channels. Snowball sampling followed initial recruitment from August 2022 to November 2022 to capitalise on the existing network of occupational therapists in KSA. Data collection was concluded in December 2022 as preliminary analysis of the 13 interviews indicated common emerging themes, which suggested sufficient information power to achieve the study aim (Malterud et al., 2016).

Data collection

Interview instrument

A semi-structured interview guide was developed, informed by the PI's PhD literature review findings on rehabilitation following RTI in KSA and quantitative analysis of rehabilitation services following RTI using a trauma registry from a major trauma centre in KSA (Alhashmi et al., 2023). The interview guide consisted of 13 semi-structured questions to facilitate conversation during each interview (refer to Appendix 1). The interview guide provided direction while also allowing participants the opportunity to express their thoughts freely.

Data collection procedures

Brief demographic questions were asked within the 1:1 semi-structured interview, and probing techniques were used to gather in-depth responses (McGrath et al., 2019). Three participants were interviewed in person, while 10 were interviewed via videoconferencing. Interviews were conducted in English, audio recorded, and then transcribed by the first author (DA). Following each interview, DA took time for reflexive practice. This included writing a reflexive log following each interview and between coding and theme development sessions.

Data analysis

The qualitative analysis involved a six-phase TA as recommended by Braun and Clarke (2021). Reflexive TA was utilised in this research as it provided flexibility and acknowledged the researcher's perspectives and biases when interpreting the data. The first author is an occupational therapist with a background working in

rehabilitation settings in Saudi Arabia and acknowledged that she comes with a few assumptions that influenced her interest in pursuing this research. These assumptions include the following. (i) Rehabilitation is a necessity for people following MVC, but it is not always accessible in Saudi Arabia. (ii) MVCs in Saudi Arabia are responsible for many lifelong disabilities. (iii) Occupational therapy is not fully utilised to help people following MVC in Saudi Arabia. In line with reflexive TA, in phase 1 (data familiarisation), DA listened to and transcribed all the interviews to familiarise herself with the data. Then, she read all the interviews twice while taking notes and reflecting on potential patterns and meanings. In phase 2 (coding), an inductive coding approach was used to identify the meanings in the data without any pre-existing theoretical framework (Braun and Clarke, 2021). To facilitate organising and managing the data, all interview transcripts were first uploaded into NVivo version 2020. Then initial codes were developed by the first author (DA) using NVivo by highlighting raw data segments relevant to the research questions and assigning them codes, that is, descriptive labels based on their meaning (Braun and Clarke, 2021). The first author, DA, met with two co-authors (AL and EF) on several occasions (separately and together) to discuss and refine the codes. The final stage of this phase was creating code clusters, whereby DA clustered similar codes together to consolidate further the coding and initiate the theme development phase. Then, in phases 3 and 4 (generating and developing themes), the aim is to identify broader patterns of meaning that share a core idea about the research question, referred to as themes (Braun and Clarke, 2021). This was achieved through grouping-related codes to guide the formation of themes, rather than use of a pre-defined or theoretical framework (Braun and Clarke, 2021). DA collaborated with EF and AL to discuss the generated themes, and to further develop them through reviewing the supporting codes and data. Subsequently, DA refined the themes throughout the writing process in phases 5 and 6 (refining themes and writing up). At this stage, the themes were given names to describe the experiences shared by the participants and how they related to one another. All research team members subsequently collaborated to finalise the presented themes.

RESULTS

Thirteen occupational therapists who work in rehabilitation settings participated in the study. A summary of their demographic characteristics is presented in Table 1. Most of the therapists (n = 12, 92.6%) had at least four or more years of experience. There was a similar representation of male and female participants (n = 6, 46.1% and n = 7, 53.8%, respectively) and similar proportions between those with occupational therapy graduate degrees (n = 6, 46.1%) and undergraduate degrees (n = 7, 53.8%). Over two-thirds of participants reported being educated and trained internationally (n = 9, 69.2%). Most of the therapists (n = 9, 69.2%) worked in the central region of KSA.

Table 1: Participant's characteristics (n = 13).

Item	Category	Total, n (%)
Level of OT education*	Undergraduate	7 (53.8)
	Graduate	6 (46.1)
Place of OT education	National	3 (23.0)
	International	9 (69.2)
	Both	1 (7.6)
Years of OT practice	10+	5 (38.4)
	7-9	3 (23.0)
	4-6	4 (30.7)
	1-3	1 (7.6)
Setting	In-patient rehabilitation	9 (69.2)
	Outpatient clinic	2 (15.3)
	Both	2 (15.3)
Sector	Affiliated Government Hospitals	7 (53.8)
	Ministry of Health Hospitals	3 (23.0)
	Private Rehabilitation Facility	2 (15.3)
	Both Affiliated and Ministry of Health Hospitals	1 (7.6)
Area of KSA where therapists are currently working	Central	9 (69.2)
	East	2 (15.3)
	West	2 (15.3)

*Undergraduate, in this instance, refers to those with a Bachelor's degree, while graduate indicates Master's and Doctorate degrees. Abbreviations: KSA, Kingdom of Saudi Arabia; OT, occupational therapy.

Themes

Five themes were identified through the reflexive TA of the therapists' perspectives of rehabilitation: (i) accessibility to rehabilitation following RTI; (ii) pathway to rehabilitation following RTI; (iii) occupational therapy role in rehabilitation; (iv) limitations to current rehabilitation services; and (v) research needed for better rehabilitation services. Table 2 provides an overview of the themes and sub-themes.

Each theme is presented as follows, with supporting quotes from participant interviews.

Accessibility to rehabilitation following RTI

Participants described the accessibility of rehabilitation services following RTI as a major issue impacting rehabilitation practice in KSA. Their responses focused on four issues that created potential barriers to good access to rehabilitation following RTI, which included (i) geographical location, (ii) high demand and associate access delays, (iii) lack of social support, and (iv) financial issues.

The geographical location

Overall, participants noted that governmental hospitals that provide rehabilitation services in Saudi Arabia are limited

Table 2: Developed themes and sub-themes.

Themes	Sub-themes
1. Accessibility to rehabilitation following RTIs	a. The geographical location
	b. High service demand and associated access delays
	c. Lack of social support
	d. Money as an issue
2. Pathway to rehabilitation following RTIs	a. The referral process
	b. Decisions throughout the in-patient rehabilitation journey
	c. Team members
3. Occupational therapy role in rehabilitation settings	a. The therapists' professional identity
	b. Collaboration, overlap or a misconception?
	c. The ambiguity of the OT role to others
4. Limitation to current rehabilitation services	a. Junior and general vs. senior and specialised
	b. Client-centred services vs. impairment-oriented service
	c. Community reintegration is underdeveloped
5. More research is needed	

Abbreviations: OT, occupational therapy; RTI, road traffic injury.

in number. One participant (P10) stated: "I would say we have limited access. If you are considering that wide context." However, the therapists also highlighted that Riyadh, the capital of Saudi Arabia, has some of the country's most well-established, advanced, and specialised rehabilitation facilities, and so "the central region is where occupational therapy and the rehabilitation services is well-developed" (P12). This meant therapists suggested those who live in Riyadh have considerably easier access to good quality rehabilitation services: "patients who are locally from Riyadh, it's easy for them" (P3) in comparison to those who reside elsewhere "I think some other areas, rural area will be more difficult" (P2).

The lack of rehabilitation facilities offering specialised rehabilitation services to trauma patients meant access limitations are widespread: "All around the kingdom, unfortunately, other than in Riyadh" (P3). Some services are available in big cities, though "The most privileged population, I would say, are in the central region and big cities, like Dammam and Jeddah. Jeddah is probably the second in the kingdom in terms of rehab … North, South, and some other areas. We cannot say all, but most of the cities don't have any rehab centres … The issues are in the remote cities" (P4).

Despite there being fewer rehabilitation services outside Riyadh, this does not mean people cannot receive rehabilitation services; on the contrary, the participants emphasised that people get transferred to Riyadh from all over the country to receive the needed rehabilitation services. "[In Riyadh], we are receiving referrals from all the cities in Saudi Arabia, not just from Riyadh" (P6).

High service demand and associated access delays

Participants expressed a second concern regarding the accessibility of services, which is the high demand for services leading to delays. Therapists attributed the high demand for rehabilitation services in Riyadh's well-established facilities to the demand from all over the country and the inability to meet service demand locally, which causes access delays. As stated by one participant (P2), "If the schedules are booked like two months in advance, then that means that this patient has to wait two months and sometimes they cannot afford to wait … especially when time is a very sensitive factor." These delays may negatively affect the patient's functional outcome: "sometimes we cannot suit [them] within the time limit, and it could affect his functionality" (P2).

The main causes of delays were attributed to the insufficient number of suitable rehabilitation facilities and their limited capacity in terms of beds and rehabilitation professionals. As participant explanations stated:

> Two things affecting timing, one that big patient list we have. And sometimes lack of staff. (P2)
> The availability of beds; we don't have the luxury of the number of rehabilitation beds in Saudi Arabia in general. (P1)

Certain governmental sectors have admission criteria that can result in a lengthy admission process, as several therapists pointed out. For example, one participant highlighted this issue, saying, "In governmental hospitals, patients should access rehabilitation in a timely manner if they are stable and fit for rehab. At the same time, it's a hassle. It takes lots of time, and the patient must wait, and sometimes they end up not being accepted" (P8). Another added, "Sometimes there are delays … It takes lots of time, and the patient must wait" (P13).

This issue of delayed access to rehabilitation services was a major concern among participants. They reported a high frequency of delays in receiving rehabilitation services, with lengths of delays ranging from weeks to many months before commencing rehabilitation. One example cited was a patient who had to wait a whole year before beginning rehabilitation sessions with a therapist: "I started the rehab sessions with the patient a year after he was injured" (P13).

Lack of social support

KSA is a collective society where family and friends collectively share responsibility for caring for each other. In this context, the availability of social support was seen by occupational therapists in this study as affecting the patient's ability to access rehabilitation services in many ways. Participants highlighted the importance of considering whether the family has the means to afford travel expenses and take time off work to accompany their loved one to the rehabilitation centre. If the injured person cannot drive and does not have the funds for transportation, relying on a friend or family member to provide transport is crucial to ensure they can access rehabilitation services. So, the

issues are often, as one participant noted: "Are they going to be able to afford that if it requires some travelling? Are they going to be able to take time off to take this family member to the rehab centre?" (P9).

Moreover, admission to certain rehabilitation facilities requires being an in-patient and having a sitter or caregiver present. Without such a person present, admission may not be granted in some facilities. Participants noted the accessibility issues if a caregiver is unavailable: "Normally, we're not admitting people without a sitter or caregiver with them. So, if there were no sitter or caregiver, they wouldn't be admitted at all" (P3).

An alternative identified by participants would be to obtain written consent from the patient's caregiver to a statement indicating their willingness to take the patient home upon completion of rehabilitation services. As described by one of the participants, "The family needs to write a statement that once the patient is finished from rehabilitation services, they will take him, and we will discharge him home" (P13). This approach is intended to address challenging situations in which the patient wishes to remain in the facility for an extended period or the family refuses to take them home, as this participant described: "His family doesn't want him at home. They don't want to accept him. They want him to be like staying in the hospital forever."

Several participants expressed that social support from a cultural perspective is sometimes more important than a patient's level of independence: "It's not about how independent or not the client is, but how well supported he is?" (P10). There was an overall sentiment that it is crucial to consider how well supported a patient is within their social network rather than just their individual capabilities. In some cases, patients may not feel the need for rehabilitation services because they have a strong support system in place. This was perceived as a key difference between Saudi culture and Western countries, as described by one of the participants:

> Assuming this is one of the biggest differences between Western countries and us, we have family networks. So sometimes the patients will be discharged when they're not fully independent, knowing that family will be taking care of them and … opposing to Western countries, no, they need to maximise the patient's independence as much as possible before discharge. (P10)

Money as an issue

Participants raised their concerns regarding the accessibility to rehabilitation services being hindered due to the high cost: "It is all about basically funding. People cannot afford to pay for rehab services privately from their pockets" (P3). Private rehabilitation centres are especially expensive, and without government funding or insurance coverage, patients may struggle to afford them, even though participants noted various sources that may be of assistance, such as "insurance or the Ministry of Health" (P7), and "out of pocket [payments] or rely on donations and charities" (P1).

In addition, participants noted that Saudis are fortunate to receive free healthcare, but eligibility criteria play a significant role in determining who can access services and where. In their words: "In our country, there is a policy that everyone can receive medical services if he or she gets injured …the government provide free care" (P4). "It depends on the organisation. Okay? … each organisation works differently" (P12).

However, while protocols and eligibility criteria may differ across organisations, participants viewed some organisations as prioritising the need for rehabilitation more than others. As this participant explained, "It depends on the organisation. If it's a bigger organisation, and they are more aware of the need for rehabilitation, they will address it early" (P12).

Finally, the cost associated with transportation was considered a key concern by therapists. One participant (P9) noted: "So transportation. That's a big one, and transportation not just from the house to the hospital, but from the house to proper vehicles to get them to the hospital … are they financially capable of doing that?" Can the patient afford the cost of transportation? This cost is not just related to the cost of gas or paid driver services; it can also involve time off work if a family member is required to transport the patient, as mentioned earlier regarding the availability of social support.

Pathway to rehabilitation following RTIs

Regarding the pathway to rehabilitation services for MVC survivors, participants talked about how referrals and decisions were made, as well as the team members involved in these processes.

The referral process

First, patients with RTI are admitted to the emergency (ER) "Any patient who was admitted due to a trauma through emergency will come into the ER … Okay, what is the next level of care needed for them? So, can they just be admitted to the floor?" (P9). Then, based on a patient's condition, they would be admitted to the hospital to receive proper medical care until they are stable enough to receive rehabilitation services. Some facilities provide early access to rehabilitation services such as physical therapy (PT) and occupational therapy in critical and acute care. One participant noted: "OTs or PTs … might be involved from as early as acute stages" (P10). Whereas other facilities would only provide necessary medical care to stabilise the patient and then refer them to another facility for rehabilitation services as required: "if there is potential to improve … they will transfer him as he is more stable to Rehabilitation Hospital" (P5).

All participants agreed that the referral to rehabilitation services always come from physicians: "Because the system here in Saudi is like referral based from doctors … Usually, it comes from the physical medicine and rehabilitation doctor, medical doctors, neurologist, or orthopaedic surgeon" (P1). Based on the physician's referral, the patient will either be admitted to a rehabilitation facility for intensive rehabilitation services or be referred to outpatient rehabilitation services. "The patient can be admitted to inpatient rehabilitation mostly if he needs an intensive therapeutic program, or they can be

admitted to the outpatient clinic if they need a therapeutic program, but not on a daily basis" (P11). It is important to note that not all medical facilities provide rehabilitation services to patients during their hospitalisation following RTI. Once a patient is referred to admission to a rehabilitation facility for a period, they will be assessed and then referred to receive the rehabilitation services needed for their specific conditions: "The person will be referred for PT, OT or speech, and the referral comes from the physician" (P4).

Decisions throughout the in-patient rehabilitation journey

Decisions regarding the patient's progress, length of stay, and discharge plan are typically made collaboratively by the multi-disciplinary team. This team includes not just allied health workers but also medical managers and social workers, all working together with the patient's best interests in mind. As one participant described: "multidisciplinary team … Not only allied health workers, even the medical affairs, you know, like managers, social workers, we work together for the patient" (P3). In certain cases, patient and family input may also be considered, such as through family meetings, with one participant explaining, "Sometimes there will be family meetings for discussion and education" (P2).

Team members

Participants described the rehabilitation teams in most facilities as including: "the consultant, the nurses, physical therapy and occupational therapy …, speech and language pathology, and the social worker" (P12). However, it was noted that the composition of teams can vary between facilities. In well-established rehabilitation facilities, the team typically includes a wide range of professionals including physiatrists, specialist physicians such as orthopaedists and neurologists, physical therapists, occupational therapists, speech and language pathologists, nurses, social workers, orthotists and prosthetists, psychologists, psychiatrists, neuropsychologists, recreational therapists, dietitians, case managers, vocational therapists, and assistive technology specialists.

Occupational therapy role in rehabilitation settings

Participants in this study believe that occupational therapy has an important role in aiding individuals with RTIs to regain their daily functional abilities, spanning from basic personal care to returning to work and previous roles. They explained that their role often overlaps with that of physical therapists and speech and language pathologists, fostering a collaborative environment in patient care. However, there are prevalent misconceptions that concerned participants about the clarity of the occupational therapy role, as many healthcare professionals perceive them primarily as equipment providers or specialists only for conditions like autism or attention deficit hyperactivity disorder (ADHD).

The therapists' professional identity

Participants described the role of occupational therapists as enhancing the occupational performance and activity participation of individuals with RTIs. As one participant described:

> [their role is to] facilitate engagement and activity of daily living from very basic activities of daily living, such as feeding, grooming, upper body, dressing, toilet and bathing, to the patient being able to safely return back to work or return back to their previous roles. (P1)

Essentially, they help patients resume their activities of daily living and engage in activities that are meaningful and significant to them.

Collaboration, overlap, or a misconception?

Participants reported they often work alongside other rehabilitation specialists, such as physical therapists and speech and language pathologists. They view the roles of these allied health professionals as overlapping in a manner that provides the best care for patients: "You will see this overlap between the allied health professionals' roles, but it's like more of a collaborative and like the cooperative sort of um overlaps to help our patients eventually" (P1). Another participant noted, "[occupational therapists collaborate] with speech specialists. For example, we collaborate for cognitive skills. We also collaborate with PT for physical issues" (P6). Participants in this study further considered there too often an overlap between the roles of PT and OT in rehabilitation, particularly in tasks related to mobility and transfers. They also emphasised that while the physical therapist focuses on the muscular aspects of these tasks, their focus is on the functional aspects of them. For instance, one therapist explained: "To transfer to the toilet from their bed, I have to think about it functionally, whereas the PT will think about it muscular-wise" (P12).

In many healthcare facilities, participants described there being regulations that distinguish between the responsibilities of occupational therapy and PT and a common notion that "The OT would treat the upper limb. PT would treat the lower limb" (P8). Some facilities reportedly limit occupational therapists to only treating hand and wrist injuries, with one participant highlighting, "The OT would see injuries relating to hand and wrists, and the remainder of the upper limb would be covered by the PT" (P10).

A number of participants described some additional misconceptions regarding their role. Besides the upper body distinction, participants indicated that some people believe that their main duty is to prescribe equipment. In Saudi Arabia, for example, many hospitals perceive occupational therapy services as equipment-oriented: "They are thinking that we are only for equipment" (P13). Additionally, some centres associate occupational therapy solely with "working in the

neuro and developmental clinics with autistic patients and ADHD cases."

The ambiguity of the OT role to others

Participants expressed concern about the lack of knowledge among healthcare professionals regarding the role of occupational therapy in rehabilitation after RTI. As noted by one participant:

> The majority of healthcare professionals do not know what occupational therapy is or the importance of rehabilitation. Only a few professionals, such as physiatrists, plastic surgeons, and orthopaedic surgeons, have a better understanding compared to other professionals. (P9)

Sometimes, due to a lack of knowledge, patients are not referred to occupational therapy when required. For instance, a patient with a head injury who is physically capable of moving "as long as the patient is physically able to mobilise, they don't see the need for rehabilitation!" (P12) because physicians do not recognise the need for occupational therapy services. Additionally, physicians may mistakenly misrefer the clients to services other than occupational therapy because they believe that certain body parts belong to specific types of therapists. For example, "The shoulder is for PTs, the elbow is the OTs, the arm Haha, it is funny. Humerus fracture, for example, goes to O&P [orthopaedics and prosthetics]! It doesn't come to OT!" (P8). Finally, a common case scenario is a generic referral where physicians tend to refer to occupational therapy evaluation and treatment without specifying the reason for the referral, with one participant stating, "Consultants don't try to specify the referral reason for OT they only write refer to OT. That's it! And OTs have to use our binoculars and investigation tools!" (P11).

Limitations to Current Rehabilitation Services

Therapists identified potential obstacles to improving rehabilitation services for individuals recovering from RTI. These include (i) a limited number of senior and specialised occupational therapists, (ii) the challenges to providing client-centred services, and (iii) community reintegration is underdeveloped as a part of the rehabilitation journey.

Junior and general versus senior and specialised

Occupational therapy is considered relatively new in Saudi Arabia, as this participant noted: "OT is a new profession … almost ten years plus minus since we started teaching this profession in Saudi Arabia. There is a lack of OTs and especially experienced OTs in rehabilitation organisations" (P3), which participants viewed as impacting the quality of services being provided: "The majority are junior therapists; they don't have someone to mentor them" (P10). This lack of experience and mentoring was seen as challenging, especially for new therapists when they start working, as this participant noted: "The quality of services being provided can be compromised when taking a new graduate to work in a new place without guidance" (P12).

In Saudi Arabia, most occupational therapists are generalists, as one participant stated: "It is difficult to find specialised occupational therapists" (P10). Typically, "one therapist covers the whole inpatient unit and all the different variety of cases and conditions" (P12). So, while specialised knowledge is needed to address complex issues, specialist occupational therapists are scarce and not typically available locally, making it difficult for patients to access the care they need unless they can travel long distances: "[the] specialised level of service is not available to them, usually typically is not available where they live. So, they have to make that trip in order to access that specialised care" (P9).

Client-centred services versus impairment-oriented service

Occupational therapy practitioners stress the importance of providing a client-centred service:

> We need to take into consideration the patient needs and priorities, of course. So, we sit with the patients and discuss their occupational performance. (P13)

Additionally, therapists consider each person's uniqueness and individuality, as well as their medical condition and occupational performance, to provide individualised treatment. This therapist described his approach:

> It really depends on each of these patients. It's very unique in the sense that it requires, like, an individualised treatment. There is a big break in that service, and so with that big break, it's really hard for the therapist to be holistic. (P9)

Despite their best efforts, therapists described facing several barriers in providing client-centred services; these included long waits between therapy sessions, scheduling overloads, and limited bed availability as limiting their ability to discover patient priorities fully:

> Sometimes we have to pick the priorities that, you know, focus on their medical needs because we need the beds, and you need the service, and there's overload. (P2)

In these cases, therapists report having to focus on medical needs and needing to prioritise accordingly. Additionally, as one participant reflected, the overwhelming presence of the biomedical model and service demands drive junior occupational therapists, in particular, to focus on the injured body part and impairments:

> Junior therapists who just started recently to work as fully independent therapists. They still lack the clinical reasoning, justification, and whole view of the OT process. They might be easily driven behind the biomedical model and thinking about Okay. Ah, range of motion. Okay, muscle tone, and so on, and all these things, and

> forgetting the big essence of our job. A patient's only seen by impairments rather than seeing holistically and is treated according to which body part is affected rather than how can we get this patient's back on his feet. (P8)

Thus, their focus is predominantly on reaching the normal or maximum movement level instead of promoting engagement, activity participation and functional gains as illustrated by a therapist

> We are talking about our perspective of rehab. It's like re-learning skills and rehabilitation rather than returning to Normal! which is, unfortunately, and for some of these survivors, not an option. But as I mentioned earlier, patients are seeking the normal, as well as some specialists. (P1)

Community reintegration is underdeveloped

The challenges to community reintegration for individuals with disabilities following RTIs were also highlighted. The participants explained that they primarily focus on the home environment, often overlooking the broader community mobility needs. They also expressed their concerns regarding the significant barriers that the patients face, complicating their transition back into society. Additionally, therapists acknowledge the importance of enabling independent driving for these individuals but often lack the necessary expertise to provide such services.

One area that was noted as lacking is community reintegration. Occupational therapists stated they tend to focus more on the home environment rather than mobility in the community: "When we think of what we want to look at, it is usually the home environment …, I'm not going to focus on the mobility in the community or outside the house" (P12). As a result, some patients may struggle to transition back into society after being discharged, with one therapist describing it as a "survival phase" (P1). Furthermore, in Saudi Arabia, there are limited community services available to facilitate reintegration, and therapists recognised the need for this to change:

> No, the community is not ready to accommodate people. Unfortunately, a lot of community practice areas are underdeveloped. Again, we talked about OT being young in Saudi Arabia. …the reintegration of people with disability within the community must be addressed. (P1)

Patients often face accessibility issues, such as the availability of proper ramps for wheelchair access, which can make navigating the community challenging: "The patient will go out, and he will face different barriers in the environment, like the ramps, and also driving a car" (P5). Considering "public transportations are still not yet established" (P2), therapists acknowledge the importance of enabling people with disabilities to drive and helping patients regain their ability to drive, but they also described not having the necessary knowledge or experience to provide this type of service: "we know about it. We know that it's our role. We know that we should do it, but we don't know how. We don't have experience" (P6).

More research is needed

Therapists identified that research is needed in KSA to better understand people's experiences of injuries following MVCs and perspectives of services to guide improving rehabilitation services.

Therapists are aware of the current research efforts in the field of road safety in Saudi Arabia, acknowledging the positive impact of the research on traffic rules and regulations:

> there's a lot of research happening to understand causes of road traffic accidents. A recent paper published from one of the trauma centres in Riyadh about road traffic accidents … and the results were significant because they came up with the recommendation that we need more strict laws. Research that addresses rehab in terms of driving assessment and safety on the road is needed. We don't know how many accidents happen because the person is actually unable to drive [due to their medical conditions]. (P10)

Therapists expressed hope to see more research specific to rehabilitation, such as driving assessments and road safety measures, to serve MVC survivors better. They recognise the need for this research, as some accidents may occur because individuals with some medical conditions are unable to drive safely, but they are driving anyway.

Research ideas varied from conducting basic descriptive studies on individuals with medical conditions that may impact their driving abilities to developing functional measures that can assess the rehabilitation needs of those who have experienced RTIs. Additionally, therapists highlighted the importance of gaining insight into the perspectives of those who are involved in the rehabilitation process following MVC through qualitative research methods that can inform policies and practices.

While objective outcome measures are commonly used in healthcare, therapists reflected that certain aspects such as peer support, driving and financial management are not commonly assessed in these measures:

> In health care, we use a lot of objective outcome measures, for example, Functional Independence Measure (FIM). However, peer support is not reflected in the FIM. Driving, for example, is not reflected in the FIM, financial management is not reflected in the FIM, so data is missing. But really, this is why qualitative is important. It really shows you the perspective of people who've been working in different um settings … inviting people to take part. (P1)

Therapists further highlighted the significance of, and need for, qualitative research which helps to provide a more comprehensive understanding of people's experiences and perspectives and encourages their participation in the research process.

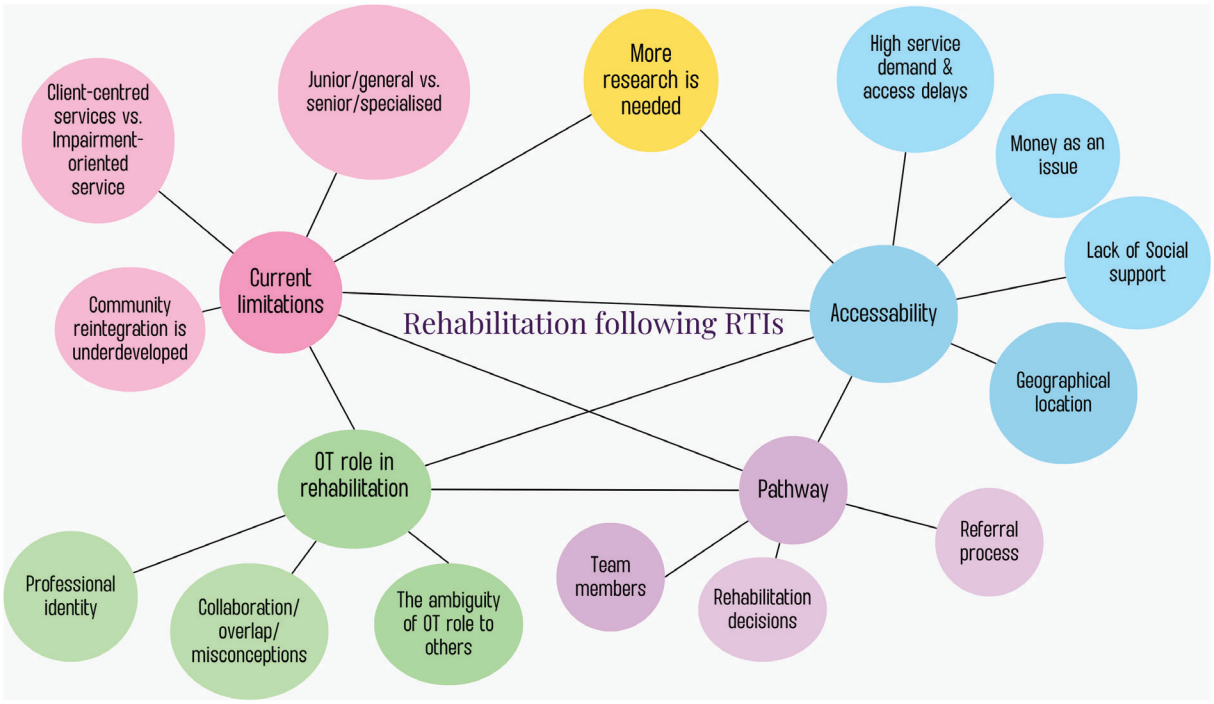

Figure 1: Rehabilitation following RTIs: interconnections between the themes.

Interconnections between the themes

All the themes and sub-themes are directly or indirectly interconnected (see Fig. 1).

For instance, a person's accessibility to good quality rehabilitation services is linked to their geographical location and social support network. However, the availability of money also plays a crucial role, as it may be needed to access the required rehabilitation services. Even after considering all these variables, there may still be delays in accessing rehabilitation services due to high demand nationwide. This highlights the impact of centralisation of the rehabilitation services in Riyadh city.

Then, considering the pathway to rehabilitation, the referral system plays a major role in accessing the needed services, including occupational therapy. Meanwhile, the role of occupational therapy is not very clear to other health professionals including physicians responsible for the referral to occupational therapy. Thus, the themes of occupational therapy role, rehabilitation pathway, accessibility and the limitations to current rehabilitation service provision are interconnected and can impact the provision of good quality care.

DISCUSSION

This is the first known study about the views of occupational therapists in Saudi Arabia regarding rehabilitation and their role following RTIs. The findings indicate that occupational therapists in this study are concerned about the accessibility of rehabilitation after RTI; they also identified several contributing factors. Notably, therapists suggested that the scarcity of rehabilitation services nationwide and the centralisation of well-established rehabilitation facilities in Riyadh pose significant challenges to delivering timely, quality rehabilitation services. Their views are supported by previous research indicating that rehabilitation facilities have insufficient resources, time and manpower to meet the needs of people with disabilities in KSA (Al-Jadid, 2013). These findings align with Al-Haidary et al. (2015), who reported that due to the limited number of dedicated rehabilitation centres, primarily located in Riyadh, the average rehabilitation admission time was over a year after injury in their sample of 130 participants with neurological injuries. This supports the view of a number of participants that long delays in accessing rehabilitation services are relatively common. Algahtani et al. (2021) also highlighted disparities in access to services that particularly impact the rehabilitation needs of people living in rural areas of Saudi Arabia, as occupational therapists in this study also noted.

The disparity in access to necessary rehabilitation care for people living in areas of the country other than Riyadh must be addressed. The therapists in this study expressed concerns that the quality of care and the functional outcomes for people following RTIs are being compromised by their inability to access rehabilitation. These concerns are supported by the findings of a systematic review of 108 studies conducted across multiple countries and various health contexts (Kelly et al., 2016), in which 77% of the included studies showed evidence of an association between distance from services and health outcomes, whereas patients who lived farther away from healthcare facilities experienced worse health outcomes.

In this study, occupational therapists were also concerned about the access disparity affecting their clients' functional outcomes because they view themselves as responsible for facilitating their clients' meaningful engagement in desired life roles and functional activities. For example, following RTIs, several conditions such as TBI, SCI and amputation require a long period of rehabilitation post injury and tend

to have poor functional outcomes if rehabilitation services, including occupational therapy, are not accessible (Chini et al., 2016). The study participants acknowledge their professional role and duty to assist RTI patients but also, as discussed earlier, identified many of the factors contributing to rehabilitation disparity as beyond their control. These factors directly hindered the therapists' capacity to provide the occupational therapy services necessary to accommodate patients' needs and facilitate better functional outcomes following RTIs.

These occupational therapists further perceived a lack of knowledge among physicians and other health professionals about the role and value of occupational therapy in rehabilitation and viewed this lack of understanding as also limiting clients' access to the occupational therapy services that they needed. Meny and Hayat (2017) reported similar findings from a study in the city of Makkah in Saudi Arabia that healthcare professionals lacked an understanding of occupational therapy, including its goals and treatment methods. They concluded that this lack of understanding hinders the provision of occupational therapy services for patients who require them to enhance their quality of life (Meny and Hayat, 2017). This suggests occupational therapists in KSA should invest in educating their fellow health professionals, which is a recommendation of participants in the present study as well.

A further factor contributing to the limited knowledge or understanding of occupational therapy among healthcare professionals is the fact that it is a relatively new profession in Saudi Arabia (Aljabri et al., 2024). Occupational therapists in this study suggested that this means the lack of experienced occupational therapists in rehabilitation organisations may also have detrimental effects on the quality of services provided since inexperienced therapists are challenged when starting to work in new environments where they lack mentors to guide them. In addition, participants noted that it means it is difficult to find specialised occupational therapists in areas like seating, mobility, assistive technologies, burns, and neurology. Consequently, those patients who require specialised services may not receive adequate or quality care.

This raises the question: Is it possible to improve the accessibility and quality of rehabilitation services for people with RTIs who live outside Riyadh, Saudi Arabia? In terms of transportation, it is likely that RTIs will prevent many patients from being able to drive to the rehabilitation services they require safely. As occupational therapists reported in this study, patients tend to rely on family or friends to drive or accompany them to the rehabilitation facility, given the lack of public transportation options. Oluyede et al. (2022) suggested a few possible solutions to overcome transportation barriers to receiving health care in North Carolina, USA, some of which may apply to the context of Saudi Arabia, for example, subsidising transportation costs or providing rides to those needing health care.

Another option to facilitate access to rehabilitation facilities would be to extend community-based rehabilitation practices, which participants in this study identified as a limitation in KSA's current rehabilitation service provision model. One of the interventions recommended is Early Supported Discharge (ESD) (Intercollegiate Stroke Working Party, 2016; Langhorne and Baylan, 2017). The intervention aims to help patients transition from hospital to home once they are medically stable (Langhorne et al., 2011). Then, instead of waiting to receive services in a rehabilitation facility, they would receive the same therapy from a multi-disciplinary team at home as they would have received in the hospital (Mas and Inzitari, 2015). ESD can be a possible solution. Evidence from clinical trials suggests that ESD can improve patients' independence and satisfaction while also reducing the risk of mortality and the need for future institutionalisation (Langhorne et al., 2011). If adopted in KSA, patients can receive the required rehabilitation services at their homes, meaning the burden of transportation is minimised, and subsequently, the service demand on the rehabilitation facilities in the central area would decrease. This would further drive towards community-based care and closer integration of hospitals and community sectors. For example, a shared care model, as proposed by Oluyede et al. (2022), would allow a specialised healthcare provider to work together with another healthcare provider who is located closer to the patient's home to coordinate their care so that the patient receives the rehabilitation services needed and feels well-supported without the need to travel long distances.

Finally, The Saudi 2030 Vision for Healthcare (2021) aims to improve access to health services and enhance traffic safety awareness. It also aims to achieve comprehensive and equitable geographical distribution and enable integrated healthcare systems for the entire Kingdom through meaningful procurement of services. These aims align well with our paper in terms of understanding the perspective of occupational therapists to be able to improve the rehabilitation services provided for those who need it in KSA. Based on the feedback we received from therapists regarding the rehabilitation services provided following RTIs, we understand that there is no universally applicable solution. Nevertheless, we hope that our recommendations will be useful in enhancing the quality of rehabilitation services in Saudi Arabia.

STUDY LIMITATIONS AND FUTURE RESEARCH DIRECTION

It is important to consider some limitations when interpreting the findings of this study. The sample size is relatively small, and there may have been selection bias given that recruitment relied on advertising through the professional association and snowball sampling. We interviewed 13 therapists, most of whom were relatively experienced practitioners with four or more years of experience. This means their views may not be representative of those of the majority of occupational therapists in Saudi Arabia, bearing in mind the relatively recent development of the profession in KSA (Aljabri et al., 2024) and the view expressed by participants that most Saudi occupational therapists practising in rehabilitation are relatively junior and inexperienced. Nevertheless, the views of experienced therapists in this study offer a deeper understanding of occupational therapy practices in Saudi Arabia

and, more specifically, valuable insights into rehabilitation following RTIs. Further research involving interviews with recipients of rehabilitation services would be useful to extend our understanding of issues identified in this study, including the impacts of access disparity, waiting times and service quality, from the perspectives of clients and families. A survey of all occupational therapists across the country may also assist in understanding the overall landscape of occupational therapy service provision in KSA.

While the generalizability of results to a broader population is generally not the aim of qualitative research, contextual information about a study setting assists the reader to make informed judgments about the extent to which the results are transferable to their context (Fossey et al., 2002). We have presented participant demographics to aid transferability (Kuper et al., 2008) but since the interviews were designed to enable data collection by telephone, it was not possible to collect detailed contextual information about the rehabilitation service settings where participants worked. A further issue that we encountered was that the interviewed therapists were from different rehabilitation facilities, making it difficult to identify specific sources of the challenges presented. To address this issue, future research could evaluate the quality of rehabilitation services provided by a particular facility, including a prospective data collection approach and observation of practice in this setting. This would enhance the utility of the findings for quality improvement initiatives.

CONCLUSION

In line with the Saudi 2030 Vision (Ministry of Health, 2021), there is a pressing need to broaden and enhance rehabilitation services in Saudi Arabia. Occupational therapists in this study provided valuable insights about rehabilitating individuals after RTIs, highlighting the need to address the disparity in access to necessary rehabilitation services nationwide by improving transportation options and community-based rehabilitation service provision. Utilising their perspective can improve implementation in Saudi Arabia.

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APPENDIX 1

The Perspective of occupational therapists on rehabilitation provision following Road Traffic Injuries in Saudi Arabia (Interview Guide)

1. How long have you been working as an OT?
2. Could you talk about your experience working with survivors of road traffic accidents (RTA)?

Prompts

- What is your perspective on the accessibility of rehabilitation services to RTA survivors?
- Describe those who can easily access rehabilitation versus those who hardly receive access.
- Timing
- Client-centred

3. What process would a patient go through from rehab referral to discharge following RTA?

Prompts

- How do they get the referral?
- Who decides what kind of rehabilitation services they need?
- Were you involved from the beginning?
- How timing is determined.

4. Can you talk to me about your role among other professionals in the rehabilitation team?

Prompts

- Role as OT versus PT and within the rehabilitation team.

5. What recommendations do you have for future efforts to improve the rehabilitation services provided following RTA?
6. Is there anything else that we have not talked about that you think is essential?