An update on the access to inpatient rehabilitation facilities across Tunisia in 2023

Mise à jour de l'accessibilité aux services hospitaliers de rééducation en Tunisie en 2023

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Abstract

Introduction: Considering the growing global need and the complexity of health conditions, an intensive rehabilitation in inpatient departments is fundamental. Yet, in Tunisia, the distribution of Inpatient Rehabilitation Facilities is not illustrated.
Aim: To perform an update concerning the rehabilitation's beds-ratio /1000 Tunisian-inhabitants in 2023.
Methods: Data were collected from the Tunisian Ministry of Health, the Eastern Mediterranean Regional Office, and the National Institute of Statistics websites.
Results: The findings revealed a total number of rehabilitations' beds 132 among a total of 20000 hospital beds with a rehabilitations' beds-ratio equal to 0.01/1000 inhabitants. Only three Inpatient Rehabilitation Facilities were identified in Tunisia covering the Greater Tunis, North East, and Center east districts. There was inequity of distribution since the beds ratio is 1.07/1000 in the North east, 0.02/1000 in the Greater Tunis and 0 in the North West and the South of Tunisia.
Conclusion: This update highlighted the alarmingly low rehabilitation's beds-ratio in Tunisia, coupled to a significant regional disparity. Increasing beds in the existing Inpatient Rehabilitation Facilities and extending outpatient rehabilitation departments with inpatient units might be considered urgent solutions.

Key words: Extended care facilities – Health equity – physical and rehabilitation medicine

Résumé

Introduction: Compte tenu des besoins mondiaux croissants et de la complexité des conditions de santé, une rééducation intensive dans les services hospitaliers est fondamentale. Pourtant, en Tunisie, la répartition des établissements hospitaliers de réhabilitation n'est pas illustrée.
Objectif: Présenter une mise au point sur le ratio lits de réhabilitation/1000 habitants tunisiens.
Méthodes: Les données ont été collectées sur les sites Web du ministère de la Santé, du Bureau régional de la Méditerranée orientale et de l'Institut national des statistiques.
Résultats: Le nombre total de lits de réadaptation a été de 132 sur un total de 20000 lits d'hôpitaux avec un ratio de lits de réhabilitation égal à 0,01/1 000 habitants. Trois centres de réhabilitation hospitalière ont été identifiés en Tunisie couvrant les districts du Grand Tunis, du Nord-Est et du Centre-Est avec une disparité de distribution de lits hospitaliers de réhabilitation et un ratio de lits de 1.07/1000 au Nord Est, 0.02/1000 au grand Tunis et 0 au Nord West et Sud de la Tunisie.
Conclusion: Cette mise à jour a mis le point sur le ratio faible et alarmant de lits de réhabilitation en Tunisie, associé à une disparité régionale importante. L'augmentation du nombre de lits dans les établissements de réhabilitation pour les patients hospitalisés existants et l'extension des services ambulatoires avec des unités pour patients hospitalisés pourraient être considérées comme des solutions urgentes.

Mots clés: Equité pour la santé - patients hospitalisés- médecine physique et rééducation fonctionnelle

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Introduction

Rehabilitation is defined as "a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment" and includes all steps of care from diagnosis to social reintegration [1]. Thus, patients with complex medical diseases and functional limitations require inpatient care, commonly referred to as Inpatient Rehabilitation Facilities (IRF) [2]. These departments admit patients with various conditions such as stroke, neurological inflammatory diseases, spinal cord injury, brain injury, disorders of consciousness, cancer, severe burns, limb amputation, cardiac failure, osteoarthritis, all chronic pain conditions that influence Activities of Daily Living, and all child developmental disease [2-4].

Until 2023, there is a growing global need for rehabilitation due to the aging of populations, a high incidence of injuries, and developmental diseases [5, 6]. A study published in The Lancet, using the global burden of diseases [7], estimated that in 2019, one out of every three people had a medical condition that required rehabilitation. However, other studies have highlighted disparities in access to rehabilitation care worldwide [8-11]. In the Eastern Mediterranean Region and Africa, these statistics are lacking. In Tunisia, this disparity has been noted for both generalized and specialized care, with an imbalance in the distribution of healthcare services favoring coastal areas [12].Nevertheless, to the best of the authors' knowledge, no study has described the availability of rehabilitation care.

As one of the determinants of health equity, the bed ratio, a standardized indicator of healthcare accessibility, especially for inpatient services, enables comparisons within and among regions [13]. Therefore, the objective of this update was to describe the distribution of IRFs in Tunisia through the Rehabilitation Beds Ratio (RBR), which is the number of IRF beds available per 1000 Tunisian inhabitants.

Methods

This study was designed to describe RBR in Tunisia. Tunisia is a country located in North Africa, divided into seven districts Greater Tunis, North East, North West, Center East, Center West, South East and South West [14]. There are 24 governorates, and the Tunisian population count 11.8 million individuals [15]. The life expectancy at birth in Tunisia was 77 years in 2020, with 9.5% of the population being elderly and 2.5% having disabilities [13]. The healthcare system is comprised of both public and private sectors, with 20000 hospital beds [12]. Data were collected from the Tunisian Ministry of Health [12], the Eastern Mediterranean Regional Office (EMRO) [16], and the National Institute of Statistics [15] websites. Geographic Information System from excel 2022 was used to present the results.

Results

In Tunisia, there are only three IRF. The first one is the Mohamed Kassab Orthopedic Institution located in the Manouba suburb region of the capital Tunis, with a capacity of 42 beds. The second facility is in Sousse, a coastal region, and has a capacity of 20 beds. Both of these facilities are affiliated with universities. The third IRF is the Complex of Rehabilitation Djebel Ouest, a specialized pilot facility in Zaghouan, a north-eastern state, which has the highest capacity with 70 beds. In total, there are only 132 rehabilitation beds in Tunisia, accounting for just 0.6% of the total hospital beds in the country, and a RBR equal to 0.01 per 1000 Tunisian inhabitants. The percentage of rehabilitation beds in each hospital varies, ranging from 2.7% in Sahloul Hospital to 100% in the Complex of Djebel Ouest.

Table 1, illustrating the percentage of rehabilitation beds relative to the total number of hospital beds and the RBR per town and per district, reveals heterogeneity in the distribution of rehabilitation beds, influenced by the mission and specialization of each hospital. Indeed, the percentage of RB from the total beds in each hospital is unequal. It ranges from 15 % in Mohamed Kassab Orthopedic Institution, which is specialized in traumatology and orthopedics to 2% in Sahloul Hospital which is a polyvalent hospital and in Djbel Ouest where 100 % of beds are dedicated to rehabilitation.

Table 1. Characteristics of Inpatient Rehabilitation Facilities **(IRF) in Tunisia**

District	Town	IRF	Type of hospital with IRF	N of total hospital's beds	N of RB	% RB/total hospital's bed	RBR/1000 per district
Greater Tunis	Mannouba	Mohamed Kassab Orthopedic Institution	Orthopedics	268	42	15.7	**0.02**
	Tunis, Ben Arous, Ariana		No IRF				
North East	Zaghouan	Complex of rehabilitation DjebelOuest	Rehabilitative	70	70	100	**1.07**
	Bizerte, Nabeul		No IRF				
North west	Beja, Kef, Siliana, Jendouba		No IRF				**0**
Center East	Sousse	Sahloul Hospital	Polyvalent	720	20	2.7	**0.006**
	Monastir, Mahdia, Sfax		No IRF				
Center west	Kairouan, Kasserine, SidiBouzid		No IRF				**0**
South east	Gabes, Mednine, Tataouine		No IRF				**0**
South west	Gafsa, Kebili, Touzeur		No IRF				**0**

N: Number. **RB**: Rehabilitation Beds. **RBR**: Rehabilitation Beds Rate

The study of the RBR per region highlighted geographic disparities between the northern and southern regions, as well as between the eastern and western regions (Figure 1).

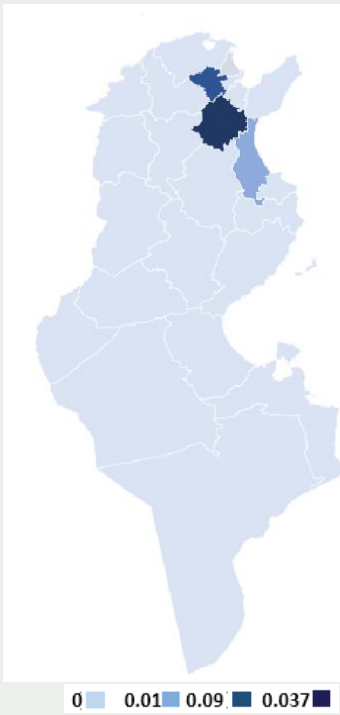

Figure 1. Disparity of regional distribution of rehabilitation's beds in Tunisia

Discussion

Health equity is one of the most important targets of Health-related Sustainable Development Goals in the EMRO as of 2020 [17, 18]. Rehabilitation is no longer a luxury but a necessity, especially in Low and Middle-income countries (LMICs) [7]. Since 2017, the World Health Organization, through the Rehabilitation 2030 project, has emphasized the need to scale up rehabilitation services worldwide [19, 20]. Furthermore, the demand for rehabilitation services is higher in LMICs, given that 70% of strokes occur in these countries [21], and it is projected that 80% of disabilities and deaths related to cardiovascular diseases will occur in LMICs by 2030 [22]. Additionally, the pandemic of the Coronavirus disease 2019 (COVID-19) increased the need for rehabilitation in people with anterior disability [7] due to confinement on one hand and due to long COVID-19 needs for cardiorespiratory rehabilitation on another hand [23, 24].

To the best of the authors' knowledge, this is the first study that displays the availability and distribution of IRFs in Tunisia, highlighting a significant regional disparity in their distribution. We have included only IRFs managed by physical and rehabilitation specialists. It is worth noting that there are several thermal centers and private rehabilitation centers in Tunisia that we didn't include because they lack supervision by a physical and rehabilitation doctor, and their activities are not well-documented, potentially leading to an underestimation of the RBR.

This study has revealed a shortage of rehabilitation beds in Tunisia, with an extremely low RBR of 0.01 per 1000 inhabitants, which is significantly lower than in developed countries [25]. For instance, in Europe, RBR varies but is significantly higher than in Tunisia, ranging from 0.08 per 1000 inhabitants in countries like Spain, Turkey, and Finland, to as high as 2 per 1000 inhabitants in Germany [25]. This discrepancy can be attributed to Tunisia's strategy, which has placed more emphasis on vital emergency specialties like cardiology and resuscitation at the expense of rehabilitation [12]. Actually, the doctor-to-patient ratio for cardiology (0.038 per 1000 inhabitants) and resuscitation (0.034 per 1000 inhabitants) is higher than for Physical and Rehabilitation Medicine doctors (0.006 per 1000 inhabitants) [12]. In the African and Eastern Mediterranean regions, the shortage of rehabilitation services extends beyond just the number of beds and includes a lack of qualified rehabilitation professionals [26] and limited access to assistive technology [27].

In addition to the global shortage, there is a significant heterogeneity in the distribution of IRFs across regions in Tunisia, resulting in unequal access to IRFs among regions. The three existing IRFs are likely to be overwhelmed, serving patients from all the other states, which exacerbates the unmet rehabilitation needs in Tunisia. Moreover, a patient's prognosis for rehabilitation greatly depends on their geographic origin. A similar situation was observed in a Korean study [8], which reported a disparity in RBR between the capital Seoul and other states, as well as an imbalance in the distribution of IRFs between urban and rural regions. In Tunisia, the situation is even more pronounced, as 21 urban regions lack IRFs. The distribution imbalance extends beyond rehabilitation services to other medical specialties, and according to statistics from the Ministry of Health, the density of doctors and hospitals, across all specialties, is higher in the Greater Tunis, north-eastern, and central eastern districts [12].

There are three models of IRF providers, including pilot rehabilitation structures, orthopedics, and rehabilitation departments within polyvalent hospitals. The experience and activity reports of these structures should be considered as valuable references for the implementation of new IRFs. It is worth noting that the paradigm of IRFs has evolved from their traditional role in acute hospitals, where they served as a continuum of care for acute surgical and medical conditions [2]. For the last two decades, they encompassed sub-acute IRFs that address chronic neurological and osteo-articular diseases and even complete independent rehabilitation pilot structures [3]. In the light of these findings, several actions should be taken to increase the RBR and reduce the regional disparity in rehabilitation beds:

- Increase the number of beds in existing IRFs.
- Expand outpatient rehabilitation departments to include inpatient units.
- Implement new IRF structures in underserved districts.
- Implement tele-rehabilitation programs to monitor patients at a distance, reduce length of stay, ensure real-

time monitoring of rehabilitation sessions in remote regions, and detect complications earlier. Since 2020, the COVID-19 pandemic has accelerated the development and implementation of such technologies, particularly in hospitals where IRFs have cared for post-resuscitation COVID-19 patients [28].

In conclusion, the RBR in Tunisia is alarmingly low, with a significant regional distribution imbalance in favor of the capital and eastern regions, resulting in inequitable accessibility to IRF structures. To address this shortage and distribution imbalance, increasing the number of beds in existing IRFs, equipping outpatient rehabilitation departments with inpatient units, and establishing day hospital structures to manage non-complicated rehabilitation cases are considered as urgent solutions.

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