ABSTRACT

This paper aims to explore the demographics of patients receiving a range of physical rehabilitation services at the Medical Rehabilitation Hospital, Medina, Kingdom of Saudi Arabia, between 2013 and 2017. The aims of the study were to statistically analyse the data for a range of indications, such as flat-foot, club-foot, knee osteoarthritis, diabetes footwear, amputations, drop-foot, various types of sprains, and foot deformity amongst other physical disabilities. The study was carried out at the Medical Rehabilitation Hospital, Medina during the year 2018. The data extraction was carried out for a five-year period ranging from 2013 till 2017 through the patients’ prescription forms, collected by the hospital. The statistical analysis was carried out using SPSS 21.0. Statistics showed a non-linear trend of physical disabilities during the five-year period.

This exploratory study thus highlights the need for broader, centralised data collection of this kind from all public and private hospitals in the Kingdom. This could lead to the development of an electronic database, which in turn would help the authorities to plan and manage the resources required for the rehabilitation of patients requiring such care. Moreover, it is recommended that a follow-up of patients be made an integral part of the data collection process so that the outcome measures can be gauged and the patients’ quality of life may be further improved.

This study provides important insights that medical rehabilitation programs need comprehensive strategies to further improve their effectiveness.

Keywords: Disabilities, trends, demographics, epidemiology, prevalence, Saudi Arabia
Introduction
The international classification of Functioning, Disability and Health (ICF) considers disability to be a multidimensional term that includes impairment, activity and functional limitations. As such, individuals during the course of their lives may experience disability, leading to a short-term or a long-term functional impairment, which can worsen with aging. Rehabilitation has proven to be an effective measure to reduce age-related disabilities and to improve functional impairment. However, a global consensus on the operational measures of disability as well as the need for rehabilitation services has not yet been reached. This knowledge gap must therefore be filled through region- or population-specific studies on the prevalence of disabilities; in particular, it can be filled through surveys designed for specific disabilities such as physical, neurological or psychological disabilities.

Carefully designed surveys for disability measurement provide evidence that enables disability policy-makers in a given country or region to make updated decisions on disability policies and programmes. The prevalence of disability globally is estimated to be 15%; however, there is a significant variation in this figure in different countries, which is attributed to factors such as study design and methodology, individuals’ personal circumstances and environmental factors. Therefore, the prevalence of disability globally cannot be relied upon for policy- and decision-making. Data on disability prevalence must be collected and analysed specifically for each region.

Disability is one of the most significant socioeconomic issues in the Kingdom of Saudi Arabia. Although some published research has addressed the epidemiology of disabilities at the national level, the reported data is limited to identifying the prevalence of specific types of disabilities. Due to a dearth of research publications providing socio-demographic data of patients receiving physical medicine and rehabilitation care in the kingdom, it is difficult to estimate the availability of resources and challenges pertaining to the rehabilitation care in this region. According to the General Authority of Statistics, KSA, the total population of Al-Madinah Al-Munawwarah region in 2017 was 2.1 million, where the total number of Saudi nationals is 2.0 million. The Medical Rehabilitation Hospital in the city of Medina is the only public-sector rehabilitation hospital having a bed capacity of 141. Therefore, it became imperative that data be collected for patients receiving rehabilitation care in the city of Medina, at the Medina rehabilitation hospital. Following statistical analysis, such data would help facilitate the development of a demographic profile of patients, to identify the needs of the physical rehabilitation aids and to arrange for the relevant expertise and equipment to serve the needs of such patients.

Methods & Material
Subjects
The study was carried out at the Medical Rehabilitation Hospital, Medina during the year 2018 and describes the socio-demographic profile of the patients who were referred by their primary care physicians and consultants to the hospital. The hospital is staffed with an occupational therapist, a physical therapist and two Prosthetists and orthotics. The data extraction was carried out for a five-year period ranging from 2013 till 2017 through the patients’ prescription forms, collected by the hospital. The statistical analysis was carried out using SPSS 21.0 A preliminary Levene’s test for equality of variances indicated that the variances in ages
Disabilities in Medina

of the male and female groups were significantly different; a two-sample t-test was performed that does not assume equal variances.

Results

Table 1: Age and number of patients stratified by gender

| Age Group (Years) | Total (n=1305) | Males (n=728) | Females (n=577) |
|-------------------|---------------|---------------|-----------------|
| 0-12              | 393           | 246 (62.6%)   | 147 (37.40%)    |
| 13-30             | 183           | 108 (59.02%)  | 75 (40.98%)     |
| 31-50             | 343           | 159 (43.36%)  | 184 (53.64%)    |
| 51-70             | 347           | 192 (55.33%)  | 155 (44.67%)    |
| 71-100            | 39            | 23 (58.97%)   | 16 (41.03%)     |
| Ethnicity         |               |               |                 |
| Saudi             | 1287          | 717 (55.71%)  | 570 (44.29%)    |
| Expatriate        | 18            | 10 (55.56%)   | 8 (44.44%)      |

The number of male children was greater than any other age group by 62.6%. The number of patients varied non-linearly from 2013 to 2017 (Figure 1).

The mean age of all patients was 33.93 (standard deviation [SD] 23.18) years. Patients were stratified into five age bands as follows: 0–12 years (393 patients; 30.1%), 13–30 years (183 patients; 14 %), 31–50 years (343 patients, 26.3%), 51–70 years (347 patients; 26.6%) and 71–100 years (39 patients; 3%). Saudi patients totalled 98.6% and the expatriates totalled 1.4%.

A two-sample Student’s t-test assuming unequal variances was performed to test the hypothesis that the mean age of the male and female patients was equal. The results showed that the mean age of male patients (M=32.37, SD=23.96, N=728) was significantly lower than females (M=35.89, SD=22.0, N=577), t (1275.3) = -2.76, p=0.006.

Furthermore, males were overrepresented in the age 0–12 group by 62.6%. A similar trend of male overrepresentation was seen in the age 13–30 group, the age 51–70 group and the age 71–100 group, accounting for 59.02%, 55.33% and 59.0%, respectively. Female dominance became apparent only in the age 31–50 group (men 46.4%) (p<0.05). The mean age of the entire population varied non-linearly over the course of the study period.
Figure 1: Number of patients who attended the hospital from 2013 to 2017, stratified by age band

Figure 2: Mean age of male and female patients stratified by age group over the course of study
The mean age of female patients for each age group was found to be greater than the mean for the entire period (Figure 2). The mean age of the entire population increased linearly over the study period. The same trend of an increasing mean age for each age group was observed when the data was stratified into males and females.

**Discussion**

The total number of female patients over the entire study period was found to be less than the total number of male patients. However, male children with physical disabilities was the largest group amongst all the patients. A nonlinear trend in relation to patients visiting the hospital was found for the entire study period; due to this trend, it is difficult to make an accurate prediction of the number of patients who might be in need of rehabilitation aids in the near future. Nevertheless, a conservative estimate can still be made based on the available data. On average, the number of patients in the age group of younger patients (age 31–50) were found to be more than any other age group. This could be related to a multitude of factors, and requires further in-depth study of the specific reasons why the patients require physical rehabilitation. This sort of study may help to identify the causes of physical rehabilitation needs in a younger population and help to develop measures to prevent such causes from happening. A comparison between the mean ages of the female and male populations indicated that the mean age of male patients was lower. Considering the trauma cases in the Kingdom, this may pertain to traumatic injuries; however, as mentioned earlier, further exploration is needed for this hypothesis to be conclusive.

**Conclusions**

Disability is one of the root causes that adversely affects the socioeconomic development of the Kingdom. This study explores the demographic profile of patients who were in need of rehabilitation care at the Medical Rehabilitation Hospital, Medina, Kingdom of Saudi Arabia, for a period of five years. The higher number of younger male patients highlights the need for an in-depth study for the prevalence and causes of specific physical disabilities in order to improve the situation and minimise the resources required of physical rehabilitation care.

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