Traumatic Spinal Cord Injury Rehabilitation in Saudi Arabia

[1]Yasir Aseri, [2]Mohammed Hassan Alharbi

Health affairs at the Ministry of National Guard

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Abstract-

This article examines the rehabilitation of patients with traumatic spinal cord injuries (SCIs) in Saudi Arabia. It begins by analyzing the Saudi Arabian government's stance through an evaluation of current legislation, policies, injury prevention measures, and available rehabilitation options for SCI patients. The author's perspective, developed through reflective practice and extensive experience in SCI rehabilitation within the country, is also presented. The discussion is framed around four key points: the inadequacy of existing legislation and policies to address the complex needs of SCI patients, the insufficiency of preventive measures and lack of comprehensive statistics on SCIs, the variability in acute and rehabilitation care across organizations, and the ineffectiveness of vocational rehabilitation options. These factors collectively contribute to a lower quality of life (QOL) for SCI patients and increase their risk of social exclusion. The article concludes with an exploration of the QOL of SCI patients in Saudi Arabia, highlighting the urgent need for unified standards and improved care practices.

Keywords: Traumatic, Spinal Cord Injury, Occupational Therapy and Physical Therapy, Rehabilitation, Saudi Arabia.

I. INTRODUCTION

This article discusses the rehabilitation of patients with traumatic spinal cord injuries (SCIs) in Saudi Arabia. First, the Saudi Arabian government's position is presented by analysing current Saudi legislation, policies, injury prevention measures and rehabilitation options available for SCI patients. The author's position on this issue, which was developed through reflective practice and accumulated experiences in SCI rehabilitation in Saudi Arabia, is also presented. The position is argued from four main perspectives. Firstly, the current legislation and policies do not specifically address the complex needs of people living with SCIs in Saudi Arabia. Secondly, current preventive measures are insufficient, and there is lack of published statistics on the incidence and prevalence of traumatic SCIs in Saudi Arabia. Thirdly, current acute and rehabilitation management of this target group significantly varies across organizations in the country. Although a few centres have shown remarkable improvements to meet international regulations for SCIs, many still do not meet the international objectives of best care because they are not operating under a unified code of practice. Moreover, vocational rehabilitation options for those with traumatic SCIs are not effective, thus reducing these patients' quality of life (QOL) and leaving them at higher risk of social exclusion. Lastly, the QOL of SCI patients in Saudi Arabia is discussed.

II. LEGISLATION AND POLICIES

Saudi Arabia is a highly religious country that is ruled by a theocratic doctrine of Islamic teachings. The Islamic Sharia is the formal foundation of the Saudi Arabian state, and Oneness of God and that Muhammad is his Messenger is imprinted on the nation's flag. The Quran sets the basic laws of Islam, and there is no distinction between secular and religious life. Islam has a significant influence on the legislation and the delivery of healthcare in Saudi Arabia. The Islamic Sharia emphasizes human rights, particularly the rights of individuals with disabilities to live with dignity and benefit from welfare (Country Profile on Disability, Saudi Arabia, 2002).

Trauma leading to a complete lesion to the spinal cord can result in devastating disability, often leaving patients with a range of complex medical, social and psychological consequences that will greatly influence their lives. With no current cure for the condition, the effects of a traumatic SCIs are typically life-long (Asirvatham & Zamzami, 2013). Ensuring that people living with disabilities in Saudi Arabia receive the most effective care and rehabilitation is clearly outlined in the Saudi Disability Code, Article 1 (2010) of The Supreme Council for the Affairs of Persons with Disabilities. The Saudi Disability Code, Article 1 (2010) also states that the rehabilitation of the disabled should be a coordinated process that utilizes all medical, social, psychological, educational and professional services to enable people with disabilities to achieve the maximum feasible degree of functional efficiency.

The Saudi Disability Code (2010), Article 1 also stresses the importance of enabling people with disabilities to adapt to the needs and requirements of their natural and social environments, and to develop their abilities to attain independence as productive members of society. The same article states that the government has a duty to prevent disability and to ensure that all medical, psychological, social, educational, informational and regulatory procedures aim to prevent or limit the effect of disabilities and pre-empt and ease the consequences thereof.

A review of the legislation and policies that support disabled people in Saudi Arabia reveals that legislation specific to the complex needs of those with SCIs is, unfortunately, absent. The absence of this legislation is the first issue that must be addressed to ensure consistency of the services provided for this group within a common national framework. Such legislation will ensure that people living with SCIs in Saudi Arabia know their rights and will lessen the burden on charities and individual initiatives that are constantly advocating for these patients' rights.

III. INCIDENCE, PREVALENCE AND PREVENTION

The incidences of traumatic SCIs globally range from as low as 8 per one million inhabitants to 174 per million inhabitants and differ significantly by geographical location (Furlan et al., 2012). To date, no studies have examined the reasons for the international variations in traumatic SCIs (DeVivo, 2000; Furlan et al., 2012; Alshahri et al., 2012).

Lee et al. (2011) conducted a literature review on the global incidence of traumatic SCIs. The review showed that Saudi Arabia and Qatar have the world's highest proportional rates of traumatic SCIs caused by transport accidents (85% in Saudi and 72% in Qatar). This incidence of 85% is the highest of all global statistics and mainly affects the male population of Saudi Arabia at a ratio of 9:1. This is mainly due to the driving ban on Saudi women (Alshahri et al., 2012).

In Saudi Arabia, collisions with camels account for one third of road traffic accidents and have been highly associated with cervical SCIs (Ansari, 2000). This is mainly due to the mechanisms of these collisions where camels tend to fall on the roofs of the vehicles after impact. As a response to accidents related to collisions with large animals, the government has fenced all major highways in the Kingdom of Saudi Arabia (KSA) and urges camel owners to apply a special reflective florescent paint to both sides of every camel to prevent night-time collisions.

However, there is scarce compliance by camel owners. Camels in Saudi Arabia are seen as a precious heritage and are sometimes sold at prices up to 500 thousand dollars. Thus, a strict penalty carrying a maximum fine of 100 thousand Saudi Riyals, known in Islam as 'Dia' or blood money, is currently imposed on camel herders if their livestock are involved in a fatal collision with a vehicle.

Most studies mention that the incidence of TSCIs is strongly associated with a country's economic status and infrastructure. However, this is not the case in Saudi Arabia. Alshahri et al. (2012) argued that the problem in Saudi Arabia is clearly behavioural. They argue that incompliance with wearing seat belts is a main contributor to TSCIs, specifically cervical injuries. They add that poor transportation from the location of the accident to the hospital has also been associated with the severity of the traumatic SCI. Alshahri et al. (2012)

said that the higher-than-expected rate of complete injuries might reflect poor practices in acute management and transport. The researchers suggested that a review of the acute and integrated management of TSCIs may be necessary. Societal issues, such as transporting the TSCI patients from the accident location without waiting for the arrival of trained emergency services staff, also contributes to the severity of the SCI.

A method to reliably measure TSCI incidence and prevalence must be developed in a more integrated manner across the entire health delivery sector because accurate and up-to-date representative statistics of TSCIs in Saudi Arabia still cannot be derived from the available data. This claim is also emphasized by Al-Jadid et al. (2010 a) and Alshahri et al. (2012) in their studies.

Peden et al. (2004) stated that there has been a major global change in the perception, understanding and practice of road injury prevention since the last World Health Organization report on road traffic prevention issued over 40 years ago. However, in Saudi Arabia, Alshahri et al. (2012) said that there has been little change in the high percentage of road traffic accidents associated with traumatic SCIs since 1997, which was already at very high levels. Ansari (2000) mentioned that Saudi Arabia lost more than 3.5% of its population in 1971–1997 due to road traffic accidents.

The World Report on Road Traffic Injury Prevention (2004) states that Saudi Arabia has set a target to reduce the incidence of road traffic fatalities by 30% by 2015. This report claims that long term targets are more effective than short term targets. However, this goal is aimed at reducing the fatality percentage with no clear objective for reducing the numbers of traumatic SCIs associated with these road traffic accidents. Some local plans, such as implementing stricter penalties for reckless and careless driving, and educating the Saudi population on the severity of the phenomena, are currently underway. However, their success in reducing the incidence of TSCI has not been determined.

IV. CURRENT REHABILITATION SERVICES IN SAUDI ARABIA—ACUTE AND VOCATIONAL

Over the last 30 years, the Ministry of Health (MOH) has established numerous rehabilitative services for persons with disabilities. Most of these programs offer physical, occupational and speech therapies and prosthetic and orthotic services within the existing modern and sophisticated healthcare service system and infrastructure. Rehabilitation programs and facilities, as an integral part of modern healthcare delivery services, have received due attention by government authorities, with services being made available to all citizens and residents. Both the public and private sectors in Saudi Arabia deliver specialised rehabilitation services for traumatic SCIs (Economic Bureau, Kingdom of Saudi Arabia, 2000).

As mentioned, the services provided for SCI patients vary significantly across healthcare settings in Saudi Arabia. The MOH is the main health provider in the country. Most MOH hospitals in different regions of KSA include medical rehabilitation departments. However, their services are mainly outpatient physiotherapy and do not include inpatient rehabilitation facilities (Al-Jadid, 2010). There is still a great need for more rehabilitation centres due to the growing population and increased road traffic accidents with likely consequences of traumatic SCIs.

Currently, rehabilitation facilities for patients with SCIs are only available in large cities in Saudi Arabia. In Riyadh, these facilities include the rehabilitation units of Prince Sultan Military Medical City and King Abdul-Aziz Medical City, the Rehabilitation Hospital of King Fahd Medical City and King Saud Medical Complex. Taif has the rehabilitation unit at Al-Hada Military Hospital.

In the private sector, Prince Sultan Humanitarian City, Riyadh Care Hospital and Abdul Latif Jameel Rehabilitation Centre in Jeddah are the only three hospitals offering specialised SCI rehabilitation. Thus, no collaboration, cooperation or common code of practice exists among these centres or in the public or private sectors.

My position is that SCI patients in Saudi Arabia should be treated early in these specialised spinal cord rehabilitation units, where better facilities and dedicated expert care exist. The management of SCI patients

in spinal units with multi-professional strategies and comprehensive rehabilitation improves functional outcome. A comprehensive SCI rehabilitation unit team consists of a doctor, a nurse, a physiotherapist, an occupational therapist, a speech therapist, an orthotist, a psychologist and a social worker (Parent et al., 2009).

Furthermore, research has shown that the use of an integrative care pathway is effective. New et al. (2011) claimed that 'a coordinated system of care for thoracic spinal cord injuries reduces complications, time of onset of spinal cord injuries until admission into rehabilitation, length of stay, costs and improves the efficiency of rehabilitation when compared to other systems of healthcare delivery'.

Earlier studies have mostly supported integrative pathways in various settings. Winter (1996) discussed their efficiency and positive impacts when used in developed countries. Recent studies by Parent et al. (2009) and Allen et al. (2009) also argued in favour of using integrative care pathways for SCI patients.

Currently, none the public sector rehabilitation options have full autonomy over equipment prescription. Saudi Arabia is a welfare state, and the dependence on the Ministry of Social Affairs to provide the disabled with medical equipment and fund home adaptions is tremendous. More collaboration between the Health and Social Care Ministries is needed.

From an international perspective, countries such as Canada and the United Kingdom are already implementing strategies of integrated care between the NHS and the social sector. Initiatives such as 'Our Health, Our Care, Our Say' (2006), 'High Quality Care For All' (2008) and 'Let Integration Happen' (2012) are all examples of how, on an international level, the integration of the health and social sectors is recognized as beneficial to the service user.

The Saudi Ministry of Labour and the Ministry of Social Affairs have together established many vocational rehabilitation centres for persons with disabilities across the country. These centres focus on rehabilitation of physically or mentally disabled people of all ages. There are three vocational rehabilitation centres for males in Riyadh, Dammam and Taif, and two for females in Riyadh and Taif. In addition, four vocational rehabilitation centres operate in Bukariyah, Hail, Jeddah and Abha (The Economic Bureau, KSA, 2000).

Vocational rehabilitation services provided by the Saudi government are high quality; however, this provision of institutionalized services is a method of social segregation rather than integration. Though the lack of local awareness does not show clearly in this paper, the general attitude of the Saudi public towards people with disabilities is pity, which could be preventing these patients' acceptance into society (Economic Bureau, KSA, 2000). My position on these vocational rehabilitation centres is that they are still unsuccessful in the integration and re-employment of those living with an SCI.

This position is also discussed by Al-Jadid et al. (2004) in a study on the QOL of people with SCIs. The researchers found a very high unemployment rate among SCI patients. Unemployment is highly correlated with reduced QOL, especially among males. Furthermore, most SCI patients that I have worked with in neurological rehabilitation at NGHA delay their plans to return to employment once discharged and choose to continue further rehabilitation aboard.

Little research has been done to investigate the issue of continuing rehabilitation abroad following traumatic SCI in Saudi Arabia. Al-Jadid (2010 c) stated that a quarter of SCI patients treated in RK Hospital in a four-year period sought further rehabilitation abroad. Rehabilitation in countries such as the Czech Republic, Germany, the UK, India and China has become very common among TSCI patients in Saudi Arabia.

From my experience in neurological rehabilitation in the past few years, a vast majority of SCI patients that have completed their rehabilitation program at NGHA seek further rehabilitation abroad. This has several causes. First, there is growing tendency in my area of practice to avoid using the Arabic equivalent of words such as 'paraplegic' and 'tetraplegic' with SCI patients and their families. This stems from Islamic and cultural influences where using terminal diagnostic wording shows a lack of faith in Allah's ability to cure.

Some Saudi SCI patients merely see their rehabilitation period as an initial step to their cure. There are two well-known and commonly used Islamic prophetic sayings that translate to 'There is cure for every disease' (Al-Bukahri 5354**)** and 'Allah created sickness, and he created cure for every sickness' (Al-Bukahri 2254**)**. Though they initially provide hope and motivation for patients, when applied out of context, these sayings can give patients unrealistic expectations of the efficiency of rehabilitation services.

Moreover, the issue of using stem cells for the repair of spinal cord injuries has been a concern raised by almost all SCI patients I have worked with in the past few years. This is mainly influenced by Chinese- and Indian-based hospitals that claim they can improve motor function below the level of injury using stem cells. Eager for help, accompanied by Saudi philanthropists' funding, Saudi SCI patients are admitting themselves into these hospitals for stem cell therapies. Sadly, the treatments are backed by little to no scientific evidence and are, at best, experimental. I believe that the majority of these institutes have deserted professional ethics and are only seeking profits.

V. QUALITY OF LIFE OF SPINAL CORD INJURY PATIENTS IN SAUDI ARABIA

Individuals living with SCIs in Saudi Arabia face a range of context-specific elements, such as extremely hot weather, gender segregation, environmental constraints and local attitudes towards disability (Al-Jadid, 2014). This could hinder patients with SCIs from fully integrating into the community. Asirvatham and Zamzami (2013) stated that 'spinal cord injury remains one of the most vital social and economic medical issues in the KSA. Living with disability in Saudi Arabia becomes a harsh reality'.

The literature on QOL of SCI patients could be used as an indicator of how effective some services provided for SCI patients are in Saudi Arabia. To date, only two published studies have explored the QOL of SCI patients. Al-Jadid et al.'s (2004) study on the QOL of male SCI patients found that unemployment, financial status, equipment supply and social isolation were the main factors affecting the QOL of males with traumatic spinal cord injuries.

Moreover, Al-Jadid et al. (2010 b) reported that the QOL of females in Saudi Arabia living with an SCI is not affected by unemployment and financial status. I believe this is due to cultural norms that consider males wholly responsible for family. Thus, issues such as social outlook and stigma were negatively correlated with the QOL of Saudi females with SCIs.

Following this line of logic, the literature on the QOL of Saudis with SCIs partially supports my position that more efforts must be made to establish vocational rehabilitation in Saudi Arabia. The studies on QOL by Al-Jadid et al. (2004) show that a majority of these patients remain unemployed and are at great risk of social isolation following discharge, despite the existence of such vocational facilities.

VI. CONCLUSION

In conclusion, road traffic accidents caused by motor vehicles are the main cause of TSCIs in Saudi Arabia. This has severe adverse social consequences, because those affected are mainly young males at their most productive ages. Rehabilitation services in Saudi Arabia are currently facing the challenge of reintegrating young SCI patients into society. To be truly successful, rehabilitation services need to be part of an integrated national approach to trauma prevention, and legislation and acts that specifically address the complex needs of people living with SCIs must be established.

The government of Saudi Arabia should work towards strengthening the infrastructure of primary- and secondary-level government hospitals for the diagnosis and acute management of SCI. There is also an urgent need to establish a national database where all current and new SCIs are recorded.

Healthcare professionals dealing with SCI patients in non-specialised settings should establish interdisciplinary knowledge towards integrating their efforts (Winter, 1996). In addition, more collaboration

and information sharing between existing SCI centres in Saudi Arabia will help establish shared protocols for better SCI rehabilitation

To date, contributions in SCI rehabilitation research in Saudi are limited. The various works of Dr Maher Al-Jadid and colleagues (2004, 2010 a, 2010 b, 2010 c, 2013, 2014), Alshahri and colleagues (2012) and Asirvatham and Zamzami (2013) remain the main points of reference in this field. More contributions from healthcare professionals in Saudi across the different fields of rehabilitation are needed.

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