

Cerebral palsy in Morocco: state of affairs and challenges

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ABSTRACT

Cerebral palsy (CP) constitutes a major public health problem in Morocco; there is a lack of prevalence and incidence studies.

Objectives. The aim of our work is to study and analyze the epidemiological profile of disability, list the challenges and pitfalls concerning the management of CP in Morocco and developing countries, and highlight practical recommendations for health policymakers in terms of CP in particular and disability in general.

Material and methods. Authors performed a literature search using MEDLINE, EMBASE, SCIENCE DIRECT, and Google scholar, but also searched in international and local journals to identify articles that examined CP in Morocco. Combination of keywords, such as "Cerebral Palsy" "disability" and "nervous system", and matching it with "Morocco", or other developing countries.

Outcomes. There are an unsatisfactory number of specialists in physical medicine, lack of good collaboration between specialists involved in CP management and physiotherapists. This situation is more pronounced in small cities and rural areas. However, in Morocco compared to other developing countries, as in Sub-Saharan Africa, the situation is much better.

Conclusion. CP is becoming a priority of Moroccan ministry of health and ministry of social affairs and huge improvements are made, mainly in university hospitals, the use of new techniques and reducing the management gap of regional hospitals, and rural areas with the recent use of telerehabilitation.

Keywords: cerebral palsy, disability, Morocco

INTRODUCTION

Cerebral palsy (CP) is the most common motor disability in childhood. It is a group of disorders that affect the ability to move and maintain balance and posture, and is responsible for activity limitation [1]. It is a non-progressive disorder of the developing brain that can occur in the antenatal, perinatal or postnatal period up to the age of 2 years [2,3].

In Morocco, CP is a big public health problem; there is lack of real prevalence and incidence stud-

ies. Due to the lack of statistics about CP in Morocco and other countries developing of Africa, there is a need to collate available data on this disorder.

OBJECTIVES

The aim of our work is to study and analyze the epidemiological profile of disability in Morocco, list the challenges and pitfalls concerning management of CP in Morocco and developing countries and

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highlight practical recommendations for health policy makers in terms of CP in particular and disability in general.

METHODOLOGY

Authors performed a literature search using MEDLINE, EMBASE, SCIENCE DIRECT, and Google scholar, but also searched in international and local journals to identify articles that examined CP in Morocco. Combination of keywords, such as “Cerebral Palsy” “disability” and “nervous system”, and matching it with “Morocco”, or other developing countries. Terms are entered as medical subject heading (MeSH). The references list of the articles retrieved were also reviewed to identify publications on the same topic. The report included data from the Ministry of Health in Morocco and the prevalence studies in different university hospital centers in Morocco.

RESULTS

Data of CP in Morocco: two national surveys on disability in general, carried out by the Ministry of Family, Solidarity and Equality and Personal Development, CP represented 22.8% of cases [4,5]. According to these surveys, hereditary and perinatal causes of disability, including CP, are third in ranking after acquired diseases (38.4%) and accidents and injuries (24.4%), all followed by aging (14.4%) [4,5]. Motor disabilities are the most frequent representing 26.4% [4,5]. The prevalence of disability situations, measured from these data is, therefore, 5.12% [5]. According to Moroccan population studies, around 1,530,000 people were disabled at the end of 2004 [5]. In 2014, it was at 6.8% [4]. There were 2,264,672 people who reported having disabilities of varying degrees of severity (mild, moderate, severe, very severe) compared to a population of 33,304,000 [4].

DISCUSSION

The prevalence is estimated by the number of cases per 1,000 births. As of now, there is still no study on the prevalence of CP in Morocco. Neonatal distress dominates the etiologies of CP. Regarding clinical forms, the studies are not consistent, hemiplegia is dominant in two studies but quadriplegia is the most common in another study (Table 1).

In the world, the prevalence of cerebral palsy is estimated to be between 2 and 2.5 per 1,000 live births or children of a defined age range. It is 1.33 times higher in males than in females [12,13]. In the United States, a study found that the average prevalence of CP was 3.3 per 1,000 births in 2002 [14]. In

Europe, the incidence is 2 per 1,000 newborns [15]. Although the subjects of interest are varied, the publications remain minimal. Much effort remains to be deployed to dissect the subject of CP.

The methodology of Moroccan prevalence studies does not allow a comparison of these figures with those of publications in the literature using incidence or prevalence in determining the frequency of CP (Table 1). Minded, the figures found at the national level reflect the rate of CP in a population of children consulting in a pediatrics department, with a large batch of children eliminated [11].

In Africa, the prevalence of CP is even higher than in developing countries [16]. Morocco's disability figures are close to those of low- and middle-income countries, close to that of Palestine (7%) [17] and Tanzania (7.8%) [18]. It was higher than in Zimbabwe (2.9%) [19], Jordan (2%) [20], Myanmar (4.6%) [21], Mozambique (5.8%) [22], South Africa (4.9%) [23] and Cambodia (4%) [24]. It was lower than Uganda (15.8%) [25], Bangladesh (9.07%) [26] and, Haiti (17.8%) [27].

In Morocco, there is no specialized center dedicated specifically to CP. The kingdom of Morocco has around 20 rehabilitation centers at hospitals with a paramedical team, at least headed by a physical medicine rehabilitation physician [11]. There are six medical and socio-educational centers for the disabled in Safi, Casablanca, Marrakesh, Salé, Oujda and Fes (Figure 1). Several medical and socio-educational civil associations exist in the kingdom but most of them are concentrated on the Kenitra- Rabat- Salé axis (Figure 1). Despite the presence of regional centers and civil medical and socio-educational associations, CP patients are taken care of depending on the proximity of the association and the patient's disability.

In Morocco, disability is generally kept a secret. It is believed to be the source of many problems. Having a disabled person is an ordeal for families. Families are confronted with demeaning imaginations of the persons with disability; and have to fight against the imagination of the population carrying images of disabilities, monsters and deformities. Also, families with low socio-economic income have difficulties meeting the needs of their children with CP. These needs entail medication, care, rehabilitation, food and continuous support. The parents of these children suffer from a high level of stress, more pronounced in mothers than in fathers [28]. The number of therapy sessions per year is subject to much speculation from many specialists [11]. During the first year of life, the management is gradually strengthened, and the family life is structured around the needs of the child. Life is relatively easier in the cities. It is necessary either to found a suitable therapeutic place, which is rare in our condition, or to organize home care.

TABLE 1. National studies about CP conducted in different University hospital center in Morocco

Places of study	Different University hospital center in morocco and cities				Published articles	
	University hospital Mohammed VI, pediatric department, Marrakech [6]	University hospital Mohammed VI, pediatric department, Marrakech [7]	Mohammed VI national center for the disabled, Oujda [8]	University hospital Hassan II, Fès neurology and physical medicine and rehabilitation department [9]	Rehabilitation center, Beni-Mellal [10]	Avicenna Military hospital, Marrakech [11]
Years	2007	2005	2011-2015	2005-2008	2016	2020
Type of study	Retrospective study	Retrospective study	Retrospective study	Interventional study "Botulinum toxin A injection"	Retrospective study	Letter to the editor
Number of children	332 births	607 births	576 All pathologies combined	26	144 All pathologies combined	
Average	4,5 years	5, 2 years	–	3-16 years	22,7 years	
Sex ratio H/F	1,2	1,3	–	Male +++		
Prevalence	*5,97 %	*6 %	**34.5%	–	**63,88.5%	
Causes	– Neonatal suffering: 53 % – Neonatal infections 8 % – Premature delivery: 9 %	– Neonatal suffering 62% – Premature delivery 25 %, – Neonatal infections: 20 %	– Neonatal suffering 44,8 %	– Neonatal suffering 92%	Perinatal etiologies: – Hypoxia: 6.3%. – Postnatal Infections (meningitis, hyperthermia of unknown origin in 9.7%, convulsions 4.2% cases, jaundice in 2.8% cases – Prenatal etiologies low weight at birth 16.7% prematurity 2.8%, multiple pregnancies 2.1%	
Clinical forms	– Hemiplegia 33% – Tetraplegia 22,9%, – Diplegia 9,63% – Unclassified 27,4%	– Hemiplegia 40% – Diplegia 16%, – Athetosis 15% – Unclassified 19% – Tetraplegia 10%	–	–	– Quadriplegia 41.9% (60) – Diplegia 35.4% (51) – Hemiplegia 9.7% (14) – Other forms 8.3% (12) – Monoplegia 4.9% (7)	

* Study carried out in pediatric department; all pathologies combined

** Study carried out in a rehabilitation center for the disabled, all pathologies combined

The second year is psychologically painful because the hope of getting better fades away. Gradually over the years, solutions will have to be found for their schooling and motor disorders. In our context, given the lack of structures specialized in the care of CP patients, the family goes to a medical center for follow-up.

Patients close to the different university hospitals in the kingdom are taken care of by the neurology and pediatric PMR services, the others are sent to provincial hospitals and centers for the disabled or to the nearest medico-social association. Families without health insurance cannot provide such costly support: drugs (antiepileptics, analgesics) and physiotherapy and surgery.

In Morocco, 2/3 of people with disabilities benefit from RAMED, the national health insurance scheme in the kingdom [6]. It is based on principles of social assistance and national solidarity for the benefit of

the poor. Families with the means turn to private practices. There are families who completely stop monitoring because the higher costs of care; that affect the standard of living of the whole family. In the suburbs, children with CP receive basic care from a health center, then latter do not have enough resources for rehabilitation.

Access to medical care services for children with CP is very limited for several reasons: geographic distance, financial reasons, complicated administrative procedures, and the fragmentation of the administrative organization of care. Parents are fully involved in the care, even if it is irregular and uncertain.

In Morocco, there are few specialized centers dedicated to CP. There are around 70 PMR doctors in the kingdom of Morocco, the majority of whom work in the private sector and in big cities. The kingdom has more than twenty departments, headed by at least one PMR doctor. These services provide mul-

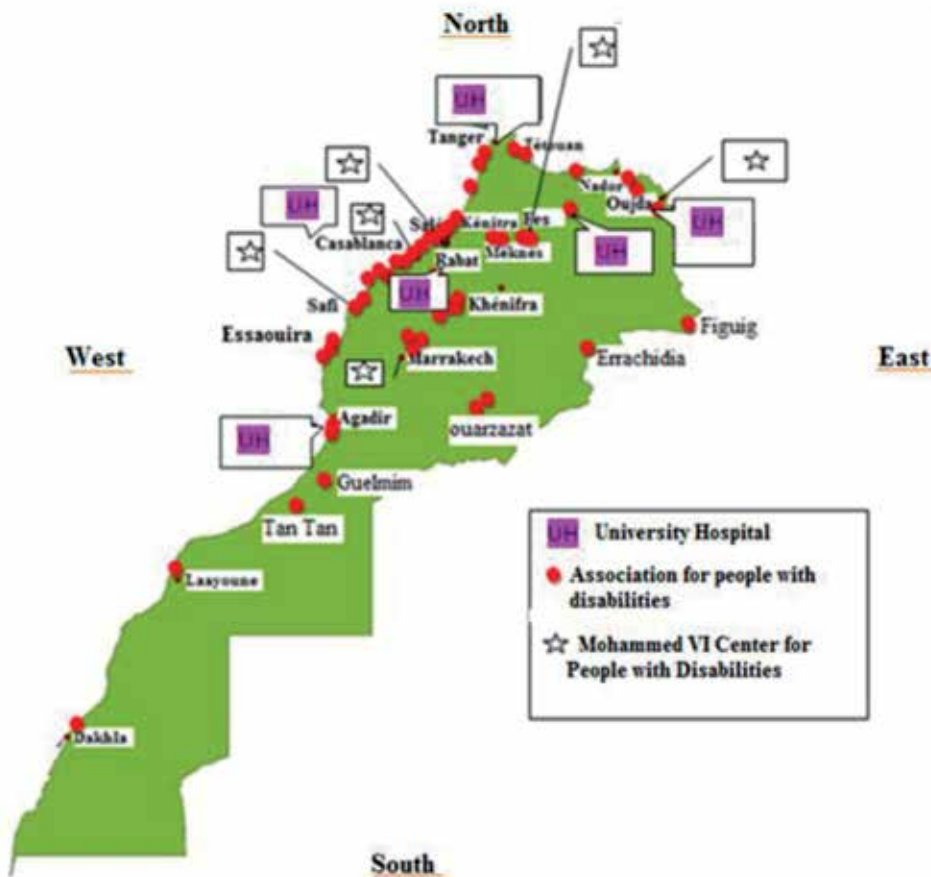


FIGURE 1. Mapping of the different University center, medico-social centers and disability associations in Morocco

tidisciplinary care. Parents turn to a PMR physician less often because of their ignorance of their role in CP [11]. Civil medical and socio-educational associations are concentrated on the Kenitra-Rabat-Salé axis, including 40 associations in Casablanca only. There are associations specifically dedicated to care of children with disability, others manage handicap in adults; also, there those associations which take care of sensorineural disability, while others are concerned with mental and physical disability. Psychologists, social workers, educators, come into the picture only on request. Occupational therapists do not exist yet, but training is being established.

In Morocco, CP patients benefit from a whole therapeutic arsenal to treat the complications of spasticity. The use of botulinum toxin is gaining ground. This antispastic product, simple to administer, is difficult to obtain in Morocco. This explains its expensiveness.

Unfortunately, despite this wealth of providers, multidisciplinary centers for disable people do not exist. There is no coordination of care between providers. Collegial decision does not exist. There is no communication between pediatric facilities and adult facilities. The overlap of skills reinforces the ignorance of multidisciplinary collaboration. The

intervention protocols are diverse and the results are disappointing.

We do not have any survival studies for these CP patients. Adult life with all the constraints of work, marriage and responsibility is unrecognized. Since disable persons have rights, the CP patient must assume responsibilities in society. Companies must open their doors to CP patients with healthy mental capacities. Disability only exists when environmental factors take over.

The general practitioner, consulted first; benefits from training on disability in the various faculties of the kingdom to optimize the management of CP. Currently, there is a PMR module in the fourth year of medicine and another for the sixth year. Such a policy would allow better preparation of future doctors to deal with situations of disability and more particularly CP.

Morocco has set up specific schools for the education of patients with disabilities. Currently, the state has opted for the integration of these children into mainstream school by adapting the means according to the needs of these children, such as accessibility, educational means, means of assessment for examinations. This inclusive education consists of offering to all the students the same learning oppor-

tunities within the ordinary Moroccan school system.

On the occasion of World Disability Day, each year, national forums will be held. CP has been a subject of debate in many discussions. The purpose of these forums is to sensitize political, social and professional actors in favor of these disabled patients.

Telemedicine has recently emerged in Morocco. Taking advantage of its strengths, consultations for CPs were carried out remotely. The patient is accompanied by his parents, at the telemedicine center, a whole team (PMR doctor, a neurologist, a physiotherapist, a computer specialist) answers the patient's questions. These meetings made it possible to:

- Readjust drug treatments without moving the patient.
- Refer patients to the nearest centers.
- Prescribe adapted and personalized protocols.

In the light of studies carried out in Morocco on CP, we recommend:

- Improvement of childbirth conditions because neonatal distress is frequent.
- Prevention of infections, especially postnatal meningitis.
- Improving the living conditions of the population in general and the parturient in particular.
- Pregnancy monitoring.
- Increase multidisciplinary consultations.

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CONCLUSION

Around the world, CP is viewed as a disability with poor health outcomes. In Morocco, CP is a major public health problem. Morocco spares no effort to legally and constitutionally promote the rights of children with CP. The needs of these patients are not only medical, but also social. Further studies would be needed to clarify the prevalence in Morocco, the cost of care and adult life.

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