Physical Therapy Registry for Establishment of Cerebral Palsy In Itay El -Baroud, Rasheed and Shubrakheet at Al_Buhera governorate.

Mostafa M. Barghash* Hebatallah M. Kamal** Mohamed B. Ibrahem***

Physiotherapist in Damanhur ophthalmic hospital at AlBuhera governorate*.

Professor of Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery, Faculty of Physical Therapy, Cairo University**.

Assistance Professor of Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery, Faculty of Physical Therapy, Cairo University***

ABSTRACT

Back ground: Cerebral palsy (CP) registers appear to be appropriate tools for answering questions regarding the prevalence and characteristics of the disease. **Purposes**: physical therapy registry for establishment of cerebral palsy in Itay El -Baroud, Rasheed and Shubrakheet at Al_Buhera governorate. **Subject and methods**: Three hundreds forty seven children with CP receiving physical therapy services of both genders participated in this study. Their ages ranged from four months up to 12 years. They were recruited from three public hospitals, one private hospital, one Ministry of Health, Insurance hospitals and eight private centers in previous three cities. They were subjected to modified Australian Registry Form. **Results:** within study population the results revealed that the incidence of CP children who received physical therapy services was 1.02/ 1000 live birth in previous cities. Boys and girls represented 57.9% and 42.1% respectively from total cases. Governmental hospitals and private hospital represented 74.4 and 25.6 respectively. The percentage of CP types was spastic 80.1%, dyskintic 11.2%, ataxic 4.9% and hypotonic 3.7%.The results of Gross Motor Function Classification System (GMFCS) level V had the highest percentages and the results of Gross Motor Function Measure (GMFM) represented that less than one hundred was 70% from all percentages. **Conclusion:** registry of CP previous cities is high. Spastic type is the highest percentage while hypotonic type is the least percentage of total cases**.** Based on GMFCS and GMFM, most of patients were severe cases.

Keywords: Cerebral Palsy, Itay El-baroud, Rasheed, Shubrakheet, Registry GMFCS, GMFM.

INTRODUCTION

Cerebral palsy describes a group of permanent disorders in the development of movement and posture, causing activity limitation, attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication and behavior, by epilepsy and by secondary musculoskeletal problems.1

Cerebral palsy (CP) is a neuromuscular disorder caused by an injury to the fetal or infant brain that affects the development of movement and posture and causes activity limitations. The motor disorders of CP are often accompanied by disturbances of sensation, perception, cognition, communication, and behavior; by epilepsy; and by secondary musculoskeletal problems.2

According to The Surveillance of CP in Europe (SCPE) the incidence in Europe is 2 per 1000 live births. The incidence is higher in boys than in girls 1.33:1. The prevalence in Europe and Australia ranges from 35.0 to 79.5 per 1,000 live births for children born at 28 to 31 weeks gestation.3

The CP Register is a database of clinical information about CP. Information collected about each person with CP includes birth details, type and severity of cerebral palsy, other associated impairments and parent demographics. In Europe alone there are 18 different CP registers or population data collections on CP, and collaborative research efforts exist through a European network. Data collection on CP has also been done in Australia (register), the United States (surveys), and Canada (register). Besides monitoring trends, other public health contributions of CP registers might be to reduce the frequency of CP and to improve the quality of life of children with CP.4

The Gross Motor Function Classification System (GMFCS) is a common classification system and is an evidence-based classification tool of five levels ranging from level I, which includes children with minimal or no disability with respect to community mobility, to level V, which includes children who are totally dependent on external assistance for mobility.5

GMFCS Classification Levels: Level I – walks without limitations. Level II – walks with limitations. Limitations include walking long distances and balancing, but not as able as Level I to run or jump; may require use of mobility devices when first learning to walk, usually prior to age 4; and may rely on wheeled mobility equipment when outside of home for traveling long distances. Level III – walks with adaptive equipment assistance. Requires hand-held mobility assistance to walk indoors, while utilizing wheeled mobility outdoors, in the community and at school; can sit on own or with limited external support; and has some independence in standing transfers. Level IV – self-mobility with use of powered mobility assistance. Usually supported when sitting; self-mobility is limited; and likely to be transported in

manual wheelchair or powered mobility. Level V – severe head and trunk control limitations. Requires extensive use of assisted technology and physical assistance; and transported in a manual wheelchair, unless self-mobility can be achieved by learning to operate a powered wheelchair.6

Australian registry form uses validated measurement tools to record spasticity and functional severity of CP by Gross Motor Function Classification System (GMFCS).7

The aim of study: physical therapy registry for establishment of cerebral palsy in Itay El -Baroud, Rasheed and Shubrakheet at Al_Buhera governorate.

Subjects and methods: Approval letter from faculty of physical therapy was obtained to begin the study and written informed consent from each subject's parent to be participated in this study. This study was conducted from February 2017 until December 2017 using confidential modified Australian registry form. It included Clinical details of person with CP, GMFCS and GMFM. Clinical details involved (child details-parent details) Three hundreds forty seven CP Children with CP of both genders participated in the study. Their ages ranged from four months up to12 years. All children with CP were recruited from three public hospitals and eight private centers in Itay El-Baroud city, Rasheed city, Shubrakheet city at Al Buhera governorate. the appliances of the evaluation form took about one and half to two hours. The assessment of each CP child is started by observation from the entrance to the room. The child must be in comfortable environment to do different functional activities without any interruption according to their age with some motivation. Data collected through the assessment with filling full modified ACPRF. It filled by history from parents and other medical reports if presented. During session time, I can determine type of cerebral palsy, associated impairments and assessing the levels of functional activities through GMFCS and GMFM. Appliance of each scale took from 15 to 45 minutes.

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MATERIALS AND METHODS

Data were analyzed using SPSS computer package version 12. Results are expressed as numbers (frequency) and percentage (%). For qualitative data, chi-squared (χ^2) was used for testing relationship among some variables. For all tests $P < 0.05$ was considered to be statistically significant.

Results

: within the current study, the total number of children under age of 18 years old was 337889 representing 31.20% of target area population. Number of boys was 173675 representing 51.4% and the number of girls was 164215 representing 48.6%. Rural resident percentages were 67.4% and urban resident percentages were 32.6% of the cases. Gestational age in that study showed that, pre term percentage was 36.6 % , term percentage was 26.5 % , post term percentage was 16.4 % and unknown percentage was 20.5 % of all cases. According to delivery, 55% from all cases with normal spontaneous delivery and 45% by caesarian section delivery.

In the current study, hemiplegia percentage was 14.8%, diaplegia percentage was 50.7%, quadriplegia percentage was 34.5%, dyskinesia percentage was 11.2%, percentage of ataxia was 4.9% and percentage of hypotonia was 3.7% from sample cases.

According to GMFCS in this study, Severity ratio was 1.4% for level I, 10.7% for level II, 11.8% for level III, 21.9% level IV, and 54.2% level V from sample cases

According to Gross Motor Function Measure (GMFM): Total Score of dimension: By the use of the GMFM, of 243 patients have a total score of less than 100 representing 70%, 56 patients have a total score between 100 and 199 representing 16.1%, 28 patients have a total score between 200 and 299 representing 8.1%, and 20 patients have a total score of more than 300 representing 5.8% of the total children with CP

Levels of cerebral palsy severity based on GMFCS represented in table 1. Total score of dimensions by the use of GMFM table 2. Types of cerebral palsy illustrated in figure 1 and distribution of cerebral palsy spasticity illustrated in figure 2.

Table (1) Levels of cerebral palsy severity based on GMFCS.

Variable	Freq.	%	Rank
1- (GMFCS Level I)	5	1.4	5
2- (GMFCS Level II)	37	10.7	4
3- (GMFCS Level III)	41	11.8	3
4- (GMFCS Level IV)	76	21.9	2
5- (GMFCS Level V)	188	54.2	1
Total	**347**	**100**	**-**

(Table 2): Total Score of dimensions: By the use of the GMFM

Variable	Freq.	%	Rank
Total score of dimension < 100	243	70.0	1
Total score of dimension from 100- 199	56	16.1	2
Total score of dimension from 200- 299	28	8.1	3
Total score of dimension more than 300	20	5.8	4
Total	**347**	**100**	**-**

Figure(1) Types of cerebral palsy

Figure(2) Distribution of Spasticity
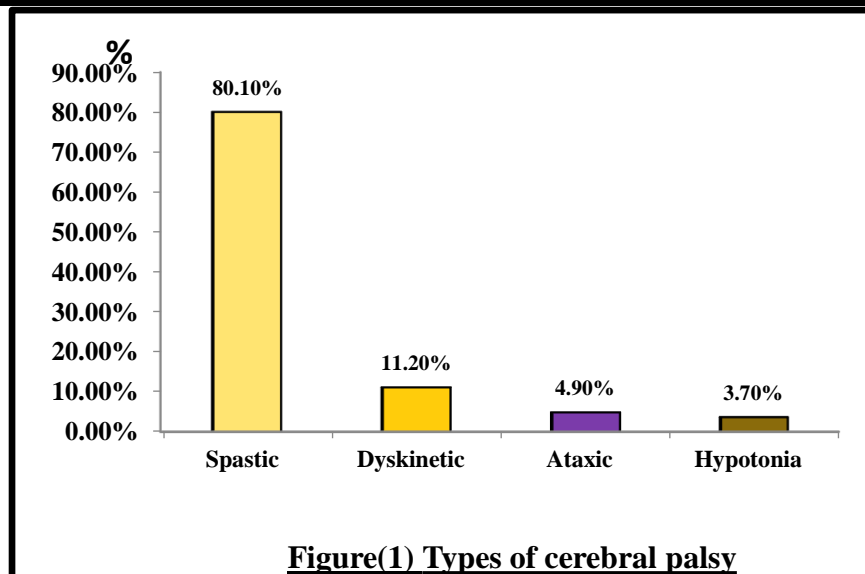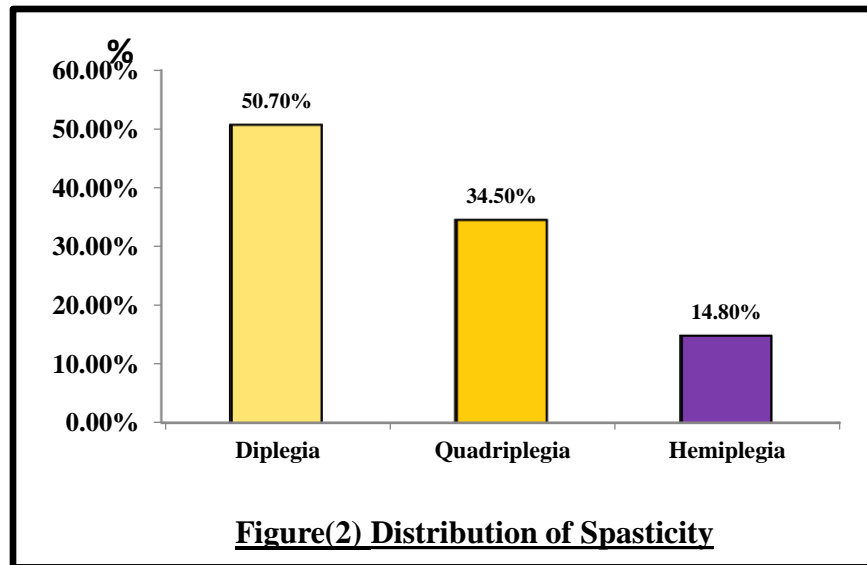
Conclusion

This study has great importance aiming to establish a data base about cerebral palsy. This may help to improve health services, awareness about cerebral palsy and establish registry of CP in Itay El-Baroud city, Rasheed city, Shubrakheet city at Al Buhera governorate. This study is not only counting cases but also using Australian registry form as a way of assessment by GMFCS and GMFM. It also done to assess physical therapy services and as a follow up cases. This study is limited to Itay El-Baroud city, Rasheed city, Shubrakheet city at Al Buhera governorate. So many studies may be done to cover whole areas in Al Buhera governorate and also whole Egypt.

DISCUSSION

The following data was taken from Unit of anticipation and monitoring administration health in the current cities. Latest information about population in the target area established in 31/12/2017 was 1082975, with 885874 urban in the target area representing 81.8% and 197102 rural representing 18.2%. Male showed 556650 representing 51.4% and female 526326 representing 48.6% in the target area. Children under 15 years were (31.20 % of total population) in target populations for this study.[8]

These results of current study revealed that the incidence of CP was 1.02 per 1000 birth live. That convenient with the prevalence were recorded in Saudi Arabia estimated prevalence rate of CP (0.70/1000 children less 18 years) had been recorded. **Yasin and Abd-elazeem., (2016)** also conducted a study at Banimazar district, Alminya governorate reported the incidence was 1:1000 live birth.[9] It contra convenient in Egypt ,**El-Tallawy et al.,(2014)** who recorded that the prevalence of CP was 2.03 and 3.6 per 1000 live birth in Al-Kharga district(2011) and Al-Queir city(2014) respectively[10,11]. The lower incidence in

target areas may be due to lower education and cultural levels, lack of physical therapy services and economical status.

The results of current study revealed that CP occurs in both genders; with higher prevalence in boys than girls. Boys were 57.9% and girls were 42.1% from all CP cases. This may be explained by the higher importance of healthy periodic follow-up during pregnancy of male sex which leads to increase the prevalence rate of CP in boys than girls. These results were convenient with the findings of **Yasin and Abd-Elaazem (2016)** reported that the ratio was higher among boys than girls in Bani_Mazar, Al Minya governorate. On the other hand, **El-Tallawy et al., (2011)** who stated that the prevalence rate of CP was higher among girls than boys in El-Kharga District- new Valley (Egypt). They explained their results due to the neglection of periodic caring for mothers with girls sex of fetus.

Regarding resident, the urban cases in our study were 32.6 % and while the rural cases were 67.4%. Rural CP cases were higher than the Urban CP cases. This may be due to poor of physical therapy services in rural areas which concentrated in urban areas. These results consistent with the work of **Yasin and Abd-Elazim (2016)** who stated that the percentage of CP cases in rural areas was higher than urban areas in Bani_ Mazar, Al Minya. Similar results reported by **Yasser et al., (2016)** who stated that the prevalence of CP in rural areas was higher than urban areas in Mit-ghamer, El dakahlia. In contradict, **Darwesh et al., (2017)** stated that the prevalence of CP in rural areas was higher than urban areas.

The gestational age categories in that study demonstrated that about 36.6% of the CP children were born premature. **Darwesh et al., (2017)** also reported high prevalence of premature CP cases in Imbaba-Giza. On

the other hand[12], **Yasin and Abd-alazim (2016)** reported about only 16% of premature CP cases in Bani_ Mazar, Minya.

Our results revealed about 55.6% of the CP cases were born from parents with positive consanguinity which is considered as a prenatal risk factors for CP as reported by **al-Rajeh** **et al., (1991)** who stated that consanguinity is one of the major risk factors for CP in Saudi Arabia[13] and **Bangash** **et al., (2014)** who stated that about 50% of the CP children in their study were born parents with positive consanguinity.[14] **Daher** **and** **El-Khairy** **(2014)** reported positive association between consanguinity and CP.[15] **Kruer et al., (2013)** stated that at least 20% of CP cases are believed to be inherited.[16]

About 55% of the CP cases in this study were born by normal labor delivery. **Darwesh et al., (2017)** reported that about 51.8% of the CP cases in their study in Imbaba, Giza were born by normal labor delivery. Similarly, **Yasser et al., (2016)** reported that about 56.8% of the CP cases in their study in Mit-ghamer, El dakahlia were born by normal labor delivery. On the other hand, **Yasin and Abd-Elazim (2016)** reported that only 37% of the CP cases in their study in Bani_ Mazar, Minya were born by normal labor. **O'Callaghan and MacLennan (2013) and Daher and El-Khairy (2014)** stated that cesarean delivery was associated with increased risk of CP emergency cesarean delivery rather than elective and added that for infants with CP, most of the caesarean deliveries were due to long labor, premature rupture of membranes, loss of amniotic fluid, no uterine contraction, multiple births and fetal distress.[17]

The data on this study showed most of CP cases (74.4%) were delivered in governmental hospitals that may be returned to low-income level for CP families and the

higher delivery cost. These results are consistent with those reported by **Darwesh et al., (2017)** who stated that 58.8% from all cases were delivered at governmental hospitals in Imbaba, North Giza

The results of the current study revealed that the percentages of varies types of CP were 80.1% spastic, 11.2% dyskinetic and 4.9% ataxia from all cases. For the spastic type, the diplegic CP represented the highest percentage (50.7%). These results confirmed with the findings of **Blair and Watson (2006)** who reported that spasticity is predominant in CP children occurring from 77% to 92%, dyskinesia percentage from 0.02% to 0.15% and ataxia percentage from 2% to 8%.[18] **Darwesh et al., (2017)** also stated that spasticity is predominant in CP children which represented 77.2% from all cases in Imbaba, Giza.

In the current study, GMFCS was used to investigate the severity of CP. The GMFCS is a valid and reliable classification system. The results of GMFCS were 54.2 % level V, 21.9 % level IV, 11.8% level III, 10.7% level II and 1.4% level I. Level IV was the highest percentage, this means that the severity of these cases was high. These results were consistent with **Pfeifer et al., (2009)** who reported that most of spastic children were level IV and V according to the GMFCS.[19] However, **Yasin and Abdelaziem (2016)** recorded 9.5%, 22.5%, 33%, 19.5%, 15.5% for levels V, IV, III, II and I respectively in Bani_Mazar, Minya.

Gross Motor Function Measure has five dimensions lying, sitting, kneeling, standing, and walking then calculate the total score of dimensions. These scores, which are clearly not solely related to age, are useful for describing the current motor abilities of individual children. In this study the distribution of scores for less than100, from 100 to 199, from 200 to 299 and more than 300 were 70%, 16.1%, 8.1% and 5.8%

from all cases respectively. That indicate to the prevalence of severity is high. These results were similar to the results of **Darwesh et al., (2017**) who recorded that low motor abilities of CP children.

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