

Original Research Article

Impact and efficacy of Child Psychiatric Rehabilitation Services on Children's Functional Outcomes, Qatar

Balla Suliman Mohammed Suliman^{1*}, Stefan Milea²

¹Resident, Protection and Social Rehabilitation Center, Doha, Qatar

²Professor, Carol Davila University of Medicine and Pharmacy of Bucharest, Romania

***Corresponding author**

Balla Suliman Mohammed Suliman

Email: ballasuliman@yahoo.com

Abstract: Behavioral interventions are recommended as treatments for children with psychiatric disorders. Recent policies relating to child mental health in many countries appear to focus more on policing and assessing the numbers of children affected, and supporting the needs of child in this era. Relatively little is known about the management effectiveness and functional outcomes of child rehabilitation. This study was conducted to gain knowledge of changes of functioning and disability over time at rehabilitation services provided to children with psychiatric elements and compare functional gains by age and diagnosis. A prospective multicenter cohort design was used. Children presented at rehabilitation center and received management during the period from December 2010 to July 2016 were enrolled. Statistical analyses were used to compare functional gains across impairment groups and to examine the relationship between timing of intervention and functional gains. A total of 227 patients (171 males and 56 females) were enrolled in the current study. Their mean age was 8.66 ± 2.81 years (Range, 1 to 17 years). The majority 150 (66.1%) were from age group 6 to 10 years. The pattern of psychiatric disorder were variable. Chi square revealed significant differences in functional gains among patients with Asperger's syndrome, Learning disability, Attention Deficit Hyperactivity Disorders (ADHD), and Autism as p values were $p=0.000$, $p=0.009$, $p=0.01$, and $p=0.03$ respectively. Children less than 11 years of age had made significantly larger gains in all areas of function ($p=0.000$). The value of this study's analyses on educational experiences and outcomes of children with special educational needs. The majority of children receiving rehabilitation improve in the area of self-care, mobility, and cognition.

Keywords: Children Rehabilitation Services; Type of management; Functional Outcomes; Duration of management

INTRODUCTION

Overtly mentally disabled children are now more likely to survive in greater numbers and pose a major drain on the health and social services. Childhood disability is a public health concern since it affects the health and economic status of nations. The disabled child is a result of multiple factors. Most of these factors are modifiable by controlling the risk factors known to influence infant health and rectifying the quality of health services provided in our society [1]. Behavior problems in children are a particular challenge compared with social-emotion or mood problems [2].

There is growing pressure in health care to conduct outcomes studies in order to evaluate the quality, process, and efficacy of health and rehabilitation services. Relatively little is known about treatment effectiveness and outcomes of Child rehabilitation therapy [3]. The goals of rehabilitation

include augmenting learning, recovery, and adaptation using an interdisciplinary approach [3-5].

A proportion of patients show partial or no response [6]. Long-term effectiveness remains to be established [7, 8]. Important aspects of functioning may not improve such as academic achievement [9, 10]. Adverse effects on sleep, appetite and growth, though rarely serious and generally manageable, are common and may not be well tolerated [11].

Early childhood behavioral difficulties are highly predictive of a range of difficulties, including poor scholastic achievement and antisocial behavior and peer rejection during childhood, as well as poor outcomes in adulthood, such as criminal behavior, poor employment prospects, and mental ill health [10].

Nevertheless, over 80% of children with psychosocial problems do not receive treatment. A variety of methods of identifying children who could

benefit from early interventions, and ways of delivering interventions, are needed to meet the challenge of providing mental health care for children [12].

The Functional Independence Measure (FIM Instrument) is an assessment that is intended for use with children ages 6 months to 7 years who have acquired or congenital disabilities, but it may also be used with older children or adolescents who are delayed in the development of functional abilities [13].

Against the background of the above-described context, our principal aim in this study was to assess how successful is therapy employed for improving child behavioral and social adjustment, and do children with different disorders benefit similarly from management or are there significant differences? We hypothesized that (a) program implemented would lead to improvements in the intensity and frequency of child behavioral problems, including child conduct disorder and hyperactive-inattentive behaviors; and (b) there would be positive changes in children's social skills.

PATIENTS AND METHODOLOGY

Study design

The study was conducted between December 2010 and July 2016 in eleven Child Rehabilitation Services practice in Qatar. It was conceived as Cohort study of behavioral management (treatments as usual): a non-selected, consecutive patient sample was followed over a time span of 3 years. Data assessment was conducted in all cases.

The study was approved by the institutional review board. Participants if competent or their parents gave written informed consent.

Interviews

The initial face-to-face interview with one of the child's parents was conducted and took place at the rehabilitation center. The follow up interviews were administered by questionnaires to the same parent and occurred at presentation and every 3 to 6 month intervals following the initial interview during assessment period. A final interview was conducted when the child considered had receive a full educational or physical management. The interviews were conducted by researcher and consisted of structured questionnaires and standardized measures. In addition patients with pervasive disorders were assessed by Autism Diagnostic Interview – Revised (ADI-R) [14]

with the parent and a standardized observation; Autism Diagnostic Observation (ADOS) [15] with the child. The ADI-R and ADOS were administered by the researcher trained in the use of these instruments.

Reliable change (the extent to which statistical factors can be ruled out as an explanation for apparent change) and clinically significant change (the extent to which change is also clinically meaningful).

Study questionnaire

The initial interview included a structured questionnaire that was pre-tested. It consisted of questions regarding district of residence, mother's educational level, family income and receipt of rehabilitation services (Educational, physical or both).

Management

All practices that participated in the study employed personnel from different professions (child and adolescent psychiatrists, pediatricians, child and adolescent psychotherapists, etc.) in order to offer a broad variety of treatments (various forms of psychotherapy, including cognitive-behavioral, psychodynamic, systemic and family therapy; etc.). Due to this interdisciplinary orientation, it was possible to offer an individually tailored management package to each patient.

Functional outcome measure

The Functional Independence Measure for Children was administered (WeeFIM®). The WeeFIM instrument is designed to measure a child's overall function using a "minimum data set" [16]. The 18 items of the instrument measure global function of activities of daily living (see Table 1).

The assessment is intended for use with children ages 6 months to 7 years who have acquired or congenital disabilities, but it may also be used with older children or adolescents who are delayed in the development of functional abilities.

Reliable change (the extent to which statistical factors can be ruled out as an explanation for apparent change) and clinically significant change (the extent to which change is also clinically meaningful).

Most children undergoing rehabilitation receive occupational and physical therapy; however, speech therapy and psychology services are provided more selectively to those who need such treatments.

Table-1. The WeeFIM® Instrument Items

WeeFIM® Items
Self-Care
1. Eating
2. Grooming
3. Bathing
4. Upper Body Dressing
5. Lower Body Dressing
6. Toileting
Sphincter Control
7. Bladder
8. Bowel
Transfers
9. Transfer (Bed, Chair, Wheelchair)
10. Transfer (Toilet)
11. Transfer (Tub, Shower)
Locomotion
12. Walk/Wheelchair
13. Stairs
Communication
14. Comprehension
15. Expression
Social Cognition
16. Social Interaction
17. Problem Solving
18. Memory

Data analysis

The collected data was spread on master sheet and entered computer and managed statistically using SPSS version 21. Descriptive analyses expressed as mean ± Standard deviation (SD). Chi square (χ^2) test was used to compare the mean gains in self-care, mobility, and cognition across groups, with age and initial disorder. The confidence level was set at 95% CI and p values less than 0.05 were statistically considered significant.

RESULTS

All 11 facilities provided occupational therapy by occupational therapists, physical therapy by physical therapists, speech therapy by speech therapists, and psychology services by psychologists. Occupational therapy, physical therapy, and speech therapy units were separately arranged. Psychology and other services such as social work, life task, respiratory therapy, cognitive therapy, education or tutorial, or

recreational therapy were often offered. In addition, child life, art therapy, music therapy, aquatic therapy, and nutrition counseling were offered in one to two facilities.

A total of 233 patients were identified in the study period. Six patients were lost from follow-up or did not accept the pre given informed consent and all were excluded from the study. Therefore 227 patients (171 males and 56 females) remained for the final assessment.

Male to female ratio was 3.05:1. Their age ranged between 1 and 17 years old, with mean ± SD of 8.66 ± 2.81 years.

The majority 150 (66.1%) were from age group 6 to 10 years, whereas, pre-school children constituted 38 (16.7%) as shown in table 2.

Table 2: Age group of study patients (n=227)

Age group / year	Gender (%)		Frequency (%)
	Male	Female	
1 — 5	29 (12.7%)	9 (4.0%)	38 (16.7%)
6 — 10	115 (50.6%)	35 (15.5%)	150 (66.1%)
11 — 14	15 (6.7%)	6 (2.6%)	21 (9.3%)
15 — 17	12 (5.3%)	6 (2.6%)	18 (7.9%)
Total	171 (75.3%)	56 (24.7%)	227 (100.0%)

The pattern of psychiatric disorder were Autism, Learning disability, Down’s syndrome and

Asperger’s syndrome as seen in 140 (61.7%), 22 (9.7%), 10 (4.4%) and 1 (0.4%) respectively (Tables 3& 4).

Table 3: The pattern of psychiatric disorder among gender (n=227)

Psychiatric disorder	Gender (%)		Total
	Male	Female	
Autism	113 (49.8%)	27 (11.9%)	140 (61.7%)
Learning disability	16 (7.1%)	6 (2.6%)	22 (9.7%)
Mental retardation	11 (4.9%)	7 (3.1%)	18 (7.9%)
Attention Deficit Hyperactivity Disorders(ADHD)	9 (4.0%)	1 (0.4%)	10 (4.4%)
Down’s syndrome	6 (2.6%)	4 (1.8%)	10 (4.4%)
Asperger’s syndrome	1 (0.4%)	—	1 (0.4%)
Others	15 (6.6%)	11 (4.9%)	26 (11.5%)
Total	171 (75.3%)	56 (24.7%)	227 (100.0%)

Table 4: The pattern of psychiatric disorder among age groups (n=227)

Psychiatric disorder	Age group/year				Total
	1-5	6- 10	11- 14	15- 17	
Autism	26 (11.5%)	94 (41.4%)	15 (6.6%)	5 (2.2%)	140 (61.7%)
Learning disability	1 (0.4%)	20 (8.8%)	1(0.4%)	—	22 (9.7%)
Mental retardation	2 (0.9%)	10 (4.4%)	4(1.8%)	2(0.9%)	18 (7.9%)
Attention Deficit Hyperactivity Disorders(ADHD)	4 (1.8%)	5(2.2%)	1(0.4%)	—	10 (4.4%)
Down’s syndrome	2(0.9%)	8 (3.5%)	—	—	10 (4.4%)
Asperger’s syndrome	1(0.4%)	—	—	—	1 (0.4%)
Others	2(0.9%)	13 (5.7%)	—	11(4.8%)	26 (11.5%)
Total	38 (16.7%)	150 (66.1%)	21 (9.3%)	18(7.9%)	227 (100.0%)

Although we examined the relationship between total (combined) treatment as well as discipline-specific treatment and domain gain, the results were extremely similar; therefore, we report only analyses that included discipline-specific treatment.

We first examined the differences in functional gain(self care, mobility, cognition) with primary psychiatric disorder. Chi square revealed significant

differences in functional gains among patients with Asperger’s syndrome, Learning disability, Attention Deficit Hyperactivity Disorders (ADHD), and Autism as p values were p=0.000, p=0.009, p=0.01, and p=0.03 respectively. Whereas, functional gain were not significant in a group of patients with mental retardation, Down’s syndrome and other non-specified psychiatric disorders as p> 0.05 (Table 5).

Table 5: The differences in functional gain with primary psychiatric disorder (n=227)

Psychiatric disorder	Outcome (Changes)				Total
	Clinically significant	Reliable	Poor	Very poor	
Autism	83 (59.3%)	35 (25.0%)	14 (10.0%)	8 (5.7%)	140
Learning disability	16 (72.7%)	5 (22.7%)	1 (4.6%)	—	22
Mental retardation	4 (22.2%)	2 (11.1%)	7 (38.9%)	5 (27.8%)	18
Attention Deficit Hyperactivity Disorders (ADHD)	6 (60.0%)	3 (30.0%)	1 (10.0%)	—	10
Down’s syndrome	2 (20.0%)	1 (10.0%)	4 (40.0%)	3 (30.0%)	10
Asperger’s syndrome	1 (100.0%)	—	—	—	1
Others	9 (34.6%)	9 (34.6%)	6 (23.1%)	2 (7.7%)	26
Total	121 (53.3%)	55 (24.2%)	33 (14.5%)	18 (7.9%)	227

Next we examined the differences in functional gain (self care, mobility, cognition) with age groups. Chi square revealed significant differences in functional

gains among age groups (p=0.001), indicated that children who were less than 11 years of age had made

significantly larger gains in all areas of function (self-care, mobility, and cognitive) (Table 6).

Table 6: The differences in functional gain with age groups (n=227).

Age group / year	Outcome (Changes)			
	Clinically significant	Reliable	Poor	Very poor
1 — 5	19/38 (50.0%)	14/38 (36.8%)	3/38 (7.9%)	2/38 (5.3%)
6 — 10	92/150 (61.3%)	36/150 (24.0%)	15/150 (10.0%)	7/150 (4.7%)
11 — 14	9/21 (42.8%)	3/21 (14.3%)	6/21 (28.6%)	3/21 (14.3%)
15 — 17	1/18 (5.6%)	2/18 (11.1%)	9/18 (50.0%)	6/18 (33.3%)
Total	121/227 (53.3%)	55/227 (24.2%)	33/227 (14.5%)	18/227 (7.9%)

DISCUSSION

During the first three years of life, even children who are showing typical development may be at risk and in need of early intervention services. Children may show differences from the broad range of healthy development without necessarily having a specific disorder or disability. A child or adolescent with mental illness should be treated in the safest and least restrictive environment and needed services should provide more intensive services. Providing an appropriate continuum of mental health services for children and adolescents who have a mental health disorder is imperative. There is a great range of questions relating to psychiatric and psychological treatments for children and adolescents that require continuous research [17]. Child protection in Qatar has been given great care from different government institutions trying to provide support and services in this era. Child psychological disorders have been linked to impairing characteristics and difficulties, including low self-esteem, peers relationship problems, academic difficulties, social isolation, and depression. Moreover, it tend to have a chronic course, often being associated with anxiety problems [10, 18].

In the current study participants were followed up for at least 3 years. However, with few guidelines for practice in child rehabilitation, the degree of variability in type, intensity, and duration of rehabilitation therapy services provided remains unknown [3].The relationships between the quantity (number of treatment units) of rehabilitation services and functional outcomes have not been well studied [3,4,19].

One of the greatest demands is that for more effectiveness studies demonstrating that empirically supported interventions can be utilized in everyday health care [20]. Within the human condition, affective, behavioral, cognitive, and interpersonal aspects of an individual's life and problems are interrelated [10, 21].

In our present investigation, we simply related to the age, gender of patients to the outcome 3 years after presentation.

Our results provide evidence for the effectiveness of “real-world” management in children and adolescents with mental disability.

Contrary to the results of previous effectiveness studies [22-25], our study shows apparent treatment effects. The amount of rehabilitation therapy did uniquely contribute to gains in self-care, mobility and cognition, after controlling for other predictor variables.

However, restriction here should be mentioned, as the treatment effects cannot be shown for all disorders. This does not necessarily mean that these disorders without a proven effect cannot be sufficiently treated, but rather that it might not be the right setting or that so far no adequate specific treatment for children has been developed.

CONCLUSION

The study demonstrated that the majority of children receiving rehabilitation improve in the area of self-care, mobility, and cognition. It is recommended that functional assessment should be routinely performed by rehabilitation therapists to track changes and document treatment effectiveness.

Although there has been progress in the delivery of mental health services to children and adolescents in Qatar, a more concentrated and coordinated effort must be made to identify such children early and ensure that there is a continuous provision of services.

Compete of interest

The authors declare that they have no competing interests.

REFERENCES

1. Shawky S, Abalkhail BA, Soliman NK, Kordi MN. A non-comparative descriptive study of the risk factors for childhood disability, and the rehabilitation services in Jeddah, Saudi Arabia. Journal of family & community medicine. 2001;8(2):35-43.

2. Miller AR, Johnston C, Klassen AF, Fine S, Papsdorf M. Family physicians' involvement and self-reported comfort and skill in care of children with behavioral and emotional problems: a population-based survey. *BMC FamPract* 2005; 6: 12.
3. Chen CC, Heinemann AW, Bode RK, Granger CV, Mallinson T. Impact of pediatric rehabilitation services on children's functional outcomes. *American Journal of Occupational Therapy*, 2004;58: 44–53.
4. Dudgeon BJ. Pediatric rehabilitation. In J. Case-Smith, A. S. Allen, & P. N. Pratt (Eds.), *Occupational therapy for children*, 3rd ed., 1996. pp. 777–795. St. Louis, MO: Mosby.
5. Johnston MV, Steineman M, Velozo CA. Outcomes research in medical rehabilitation: Foundations from the past and directions for the future. In M. J. Fuhrer (Ed.), *Assessing medical rehabilitation practices: The promise of outcomes research*. 1997. pp. 1–41). Baltimore: Brookes.
6. Arnold LM, Elliott M, Sachs L et al. Effects of ethnicity on treatment attendance, stimulant response/dose, and 14-month outcome in ADHD. *J. Consult. Clin. Psychol* 2003; 71: 713-727.
7. Barkley RA, Guevremont DC, Anastopoulos AD, Fletcher KF. A comparison of three family therapy programs for treating family conflicts in adolescents with Attention-Deficit Hyperactivity Disorder. *J. Consult. Clin. Psychol* 1992; 60 450-462.
8. Barkley RA., Terri L, Shelton TL et al. Preliminary findings of an early intervention programme with aggressive hyperactive children. *Ann. N.Y. Acad. Sci*; 2003;794, 277 – 287.
9. Barkley RA., Terri L, Shelton TL et al. Multi-method Psycho-educational Intervention for Pre-school children with disruptive behaviour: preliminary results at post treatment. *J. Child Psychol. Psychiatry* 2000; 41: 319-332.
10. Sinead McGilloway S., Ni Mhaille G., Bywater T., et al. A Parenting Intervention for Childhood Behavioral Problems: A Randomized Controlled Trial in Disadvantaged Community-Based Settings. *Journal of Consulting and Clinical Psychology*, 2012; 80(1): 116–127.
11. Barkley RA, Edwards G, Laneri M, Fletcher K, Metevia L. The efficacy of problem-solving communication training alone, behavior management training alone, and their combination for parentadolescent conflict in teenagers with ADHD and ODD. *J. Consult. Clin. Psychol* 2001; 69: 926-41.
12. Reid GJ, Stewart M, Vingilis E, et al. Randomized trial of distance-based treatment for young children with discipline problems seen in primary health care. *Family Practice-The International Journal for Research in Primary Care*, 2013; 30(1), 14–24.
13. Deutsch A, Braun S, Granger CV. The Functional Independence Measure (FIM Instrument) and the Functional Independence Measure for Children (WeeFIM Instrument): Ten years of development. *Critical Reviews in Physical and Rehabilitation Medicine*, 1996;8(4): 267–281.
14. Lord C, Risi S, Lambrecht L, et al. The autism diagnostic observation schedule-generic: a standard measure of social and communication deficits associated with the spectrum of autism. *J Autism DevDisord* 2000; 30: 205–23.
15. Lord C, Rutter M., Le Couteur A. Autism Diagnostic Interview – Revised: a revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental disorders. *J Autism DevDisord* 1994; 24: 659–85.
16. Msall ME, DiGaudio K, Rogers BT, et al. The Functional Independence Measure for Children (WeeFIM). Conceptual basis and pilot use in children with developmental disabilities. *Clinical Pediatrics*, 1994;33(7): 421–430.
17. March JS. The future of psychotherapy for mentally ill children and adolescents. *J Child Psychol Psychiatry*. 2009;50:170–179.
18. Ahmadi A, Sharif M. Developing an Integrated Art and Cognitive Behaviour Therapy Program for Approach to Paediatric Anxiety Disorders. *International Journal of Fundamental Psychology and Social Sciences(IJFPSS)*, 2015; 5(3): 23-27.
19. Chen CC, Heinemann A.W., Granger C.V., Linn R.T. Functional gains and therapy intensity during subacute rehabilitation: A study of twenty facilities. *Archives of Physical Medicine & Rehabilitation*, 2002;83: 1514–1523.
20. Bachmann M., Bachmann C.J., John K., et al. The effectiveness of child and adolescent psychiatric treatments in a naturalistic outpatient setting. *World Psychiatry*. 2010;9(2):111-117.
21. Shilling, H. N. How Integrative and Eclectic Therapists Make Treatment Selection Decisions: A Qualitative Study (PhD), University of Wisconsin Madison, Pro Quest LLC.2012.
22. Weisz JR, Weiss B, Donenberg GR. The lab versus the clinic – effects of child and adolescent psychotherapy. *Am Psychol*. 1992;47:1578–1585.
23. Weisz JR, Donenberg GR, Han SS. Bridging the gap between laboratory and clinic in child and adolescent psychotherapy. *J Consult Clin Psychol*. 1995;63:688–701.
24. Weisz JR, Donenberg GR, Han SS. Child and adolescent psychotherapy outcomes in experiments versus clinics: why the disparity? *J Abnorm Child Psychol*. 1995;23:83–106.
25. Weisz JR, Jensen PS. Efficacy and effectiveness of child and adolescent psychotherapy and pharmacotherapy. *Ment Health Serv Res*. 1999;1:125–157.