ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 8, Issue, 05, pp.30582-30586, May, 2016

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

PREVALENCE OF ATTENTION DEFICIT HYPERACTIVITY DEVELOPMENTAL DISORDER AMONG CHILDREN IN JIMMA ZONE, OROMIA REGION, SOUTH WEST ETHIOPIA

[1,*]Rajalakshmi Murugan, [2]Firew Tiruneh and [3]Maria Therese

[1]Department of Nursing, College of Health Science, Mizan-Tepi University, Mizan Teferi, Ethiopia
[2] Prevalence of Attention Deficit Hyperactivity Developmental Disorder among Children in Jimma Zone, Oromia Region, South West Ethiopia
College of Nursing, Mother Theresa Post Graduate Institute of Health Science and Research, Puducherry, India

ARTICLE INFO

Article History:
Received 16th February, 2016
Received in revised form
27th March, 2016
Accepted 25th April, 2016
Published online 10th May, 2016

Key words:
Inattention,
Hyperactivity,
Impulsivity and Combined type.

ABSTRACT

Attention-Deficit Hyperactivity Disorder is a common childhood neuro- developmental disorder with early onset, affecting 5.4% and 8.7% of African children. Recent studies reveal that 30% to 70% of children continue to experience the problem in adulthood. In spite of high morbidity, a large majority of children with Attention-Deficit Hyperactivity Disorder remain undiagnosed or do not receive appropriate specialized services because of lack of technology. The disease causes impairments of personal, social, academic, or occupational functioning. Even though studies in Africa show that large numbers of children are having the disease, there is paucity of information on the prevalence in Ethiopia. This study was aimed todetermine the prevalence of Attention-Deficit Hyperactivity Disorder among children in Jimma Zone, south west Ethiopia. Community based descriptive cross-sectional study design was employed among children aged between 6 to 16 years old. Simple random sampling was used to select 02 Woredas from 17 woredas in Jimma zone. Then 03 kebeles were randomly selected from each selected woredas; and in turn 406 study subjects were selected randomly from a household within each selected section, Multi stage cluster sampling. A validated an 18-items of the Disruptive Behaviour Disorder rating scale was used to investigate the presence of Attention-Deficit Hyperactivity Disorder symptoms. Out of all, 95.3 %(n=387) of study participants were completed the interview and the prevalence of Attention-Deficit Hyperactivity Disorder was found to be 13.7%, 95%CI (10.1, 17.3), with male to female ratio of nearly 1.3: 1. The prevalence was high in this study; that shows Attention-Deficit Hyperactivity Disorder is significant public health issue that requires a great emphasis; affecting males more than females. So, early screening and intervention of the disease should be integrated in child care service settings and supported with high technology.

Citation: Rajalakshmi Murugan, Firew Tiruneh, Maria Therese, 2016. "Prevalence of attention deficit hyperactivity developmental disorder among children in jimma zone, oromia region, South West Ethiopia", *International Journal of Current Research*, 8, (05), 30582-30586.

INTRODUCTION

Neurodevelopmental disorders are a group of conditions with onset in childhood(WHO, 2013). There is a wide spectrum of developmental disorders, which include Attention Deficit Hyperactivity Disorder (ADHD) and specific learning difficulties such as Dyslexia and Autism Spectrum Disorder (ADDM, 2012). Attention-deficit/hyperactivity disorder (ADHD) is one of the most common childhood neuropsychiatric disorders increasingly profiled by the media/literature(Sadock, 2007); ADHD is characterized by inattention, poor impulse control motor over activity and restlessness in a child than expected for someone of that age and developmental level(Kliegman, 2007).Attention deficit hyperactivity disorder is most often identified when childrenfirst start their school (Willcutt, 2012).This disorder is identified after the age of 7, because their behaviors cause problems in school and other places(Sadock, 2007). Recent studies suggest that between 30% and 70% of children with ADHD continue to experience the problems in adulthood (Louw, 2009). There is a strong genetic association, in probably more than 80% of cases with multiple genes being implicated play a role in the inheritance of this disorder (such as DAT1 and DRD4). Parental ADHD elevates the risk for developing ADHD eight-fold. There is an association with

Corresponding author: Rajalakshmi Murugan,
Department of Nursing, College of Health Science, Mizan-Tepi University, Mizan Teferi, Ethiopia.

perinatal problems such as prematurity and low birth weight (Tais, 2012; Vogel, 2014). During pregnancy mothers who consumed cigarette and alcohol, their baby in-utero have been shown to increase the odds of developing ADHD two- to- three fold(Department of Paediatrics and Child Health, 2006). ADHD is one of the most prevalent mental health problems of children having worldwide-pooled prevalence of 5.29% and ranging between 3% and 7% (Erik Winther Skogli, 2013; Guilherme Polanczyk, 2007) with a male-to-female ratio of 3:1 in community studies(RA:, 2006) and between 5:1 to 9:1 in Hospital based studies (Erik Winther Skogli, 2013). The gender differences suggested that girls may be under identified and underdiagnosed because of differences in the expression of the symptoms among boys and girls (PO:, 2008).

In Africa, The prevalence of ADHD based on a few studies coming from the continent ranges between 5.4% and 8.7% among populations of school children (Bakare, 2010). The subtypes of ADHD also differ among studies from different geographical locations (William W. Hay, 2007). These prevalence studies of ADHD carried out among sub-Saharan African children in primary schools might not be representative of the actual prevalence in the general population; where the rate of school enrolment had been noted to range from about 30% to 95%. (Adewuya AO, 2007; Bakare, 2012).

Problems with inattention, hyperactivity and impulsivity results in functional impairment in academic, family, and social settings(Association, 2000; Erik Winther Skogli, 2013). Children diagnosed with ADHD continue to show ADHD symptoms at different levels throughout adolescence and adulthood in 40–80% of cases, leading to numerous problems including: to drop out of school (32 - 40%), to underperform at work (70 - 80%), to engage in antisocial activities (40 - 50%). Children growing up with ADHD are more likely to experience teen pregnancy (40%), to speed excessively and have multiple car accidents, and to experience depression (20 - 30%) and personality disorders (18 - 25%) as adults(Department of Paediatrics and Child Health, 2006).

In spite of high morbidity of disease, the majority of children with ADHD remain undiagnosed and not received any appropriate specialized care.(Neyir Gul, 2010) (24). In Ethiopia there is a scarcity of study related to ADHD prevalence. This problem will affect the children, in such a way that, they will be rejected by their peers, siblings, parents, teachers and others and treated in negative way.

Consequently, they will struggle with serious social, academic, psychological difficulties at each stage of their development in their life, this may affect individual, family, society and nation in other hand. So, Identifying the prevalence and characteristics of ADHD in children will promote awareness of the condition, helping policy makers, educators and health care providers to plan and coordinate service delivery, so that realistic plans can be made to support these children and their family in order to improve their quality of life. Therefore, the aim of this study is to elicit the prevalence of ADHD and its distribution among children in Jimma Zone, South West Ethiopia.

Objectives

To determine the prevalence of attention deficit hyperactivity disorder among children in Limmu Genet Town, Jimma Zone, south west, Ethiopia.

METHODS AND MATERIALS

- **Study design**
  Community based cross-sectional study was conducted with Parent rating of child was made for the diagnosis of ADHD.

- **Study area and period**
  Study was conducted at Jimma Zone, Southwest Ethiopia from January, 2015 to June, 2015.

- **Source and Study populations**
  This study was confined to children who reside in Jimma Zone, South west Ethiopia. Study Population was a sample of randomly selected children between the age of 6 and 16 years from the source population, who can able to Speak, and had either parents or caregivers.

- **Sample size**
  Sample size was determined using single population proportion formula with an assumed population Proportion of ADHD in Jimma zone 20%. Since, the total sample size was less than 10,000 we used correction formula. Moreover, we used design effect of 1.5 and added 10% for possible none response rate. The final calculated sample size was 406.

- **Sampling procedures and Sampling Techniques**
  A total of 406 study subjects were selected from the zone using multistage cluster sampling. Simple random sampling was used to select 02 Woredas from 17 woredas in the zone. Then 03 kebeles were randomly selected from each selected woredas. After a fresh list of households was made available 406 households were selected from the total 06 kebele with systematic random sampling and proportional allocation method. In turn only one study subject was randomly selected within each selected households.

- **Study Variables**

- **Dependent variable**
  Attention deficit hyperactivity disorder

- **Independent variables**
  Socio-demographic factors

- **Data collection Instruments and technique**
  A validated and standardized Disruptive Behavior Disorder rating scale tool, which was adopted from a study done in Africa and a structured questioner for parents were used. In this study parent rating of child was made for the diagnosis of ADHD. The Rating was: to meet the criteria for ADHD inattentive sub-type, the child must have at least six of these symptoms which have persisted for at least 6 months

to a degree that is maladaptive. To be consistent with the criteria for ADHD hyperactive sub-type, six or more of these symptoms should be in the "Always or very often" and the "Often" categories of hyperactive sub-type.

- **Data quality assurance**
  The data quality was maintained in such a way that questionnaire was translated to local language Amharic to be understood by all participants and translated back to English to make sure the consistency. Training was given for data collectors. Pre-test was done two week before the start of actual data collection; on 5% of the sample size outside study area.

- **Data Analysis procedure**
  The coded data was checked and cleaned by entering into Epi Info version 7 and then exported into Statistical Package for the Social Sciences (SPSS window version 20) for analysis. The prevalence of Attention deficit hyperactivity disorder; descriptive statistics; using frequencies, tables, graphs, mean and standard deviations was performed to present the information. A p-value of < 0.05 was considered as statistically significant.

- **Ethical consideration**
  Ethical clearance was obtained from Institutional Review Board of department of Nursing and midwifery, Addis Ababa University. Permission letter was obtained to carry out the study from department to local government authority. A written Informed consent was obtained from parents or guardians of children for the study. The confidentiality of data of each study subject was maintained.

RESULT S

Socio-Demographic Characteristics

From the total 406 study subjects sampled for the study, 387 completed the interview yielding a response rate of 95.32 %. Of the total participants, 275 (71.1%) were between the age groups of 6 to 11 years. The mean (SD) age of participants was (9.83 ± 2.77) and the median age of the participants was (9.00). Of the total respondents, 195 (50.4%) were females; the mean (SD) age was 9.0 ±1.3 years for males and 9.0±1.2 years for females. About 190 (49.1%) of the participants live within a family size of 2 - 4. Children whose parents earn more than 1,200.00 birr per month were 190 (49.1%) and whose mothers and fathers had diploma and above educational background were 15.2% and 24.8% respectively.

Table 1. Distribution of study subjects by age group and sex in Jimma Zone, Oromia Region, South West Ethiopia, 2015

Table 1. Distribution of study subjects by age and gender

	Gender				Total	
Age group	Male		Female			
	N	%	N	%	n	%
6-11	131	68.2	144	73.8	275	71.1
12-16	61	31.8	51	26.2	112	28.9
total	192	49.6	195	50.4	387	100

Prevalence of Attention deficit hyperactivity disorder Symptoms

The overall prevalence of ADHD among children was 13.7%, 95%CI (10.1, 17.3). There was a higher Prevalence of ADHD in male than female children (15.6%; 95%CI (10.9, 20.3) versus 11.8%; 95%CI (7.2, 16.4)); with male to female ratio of nearly 1.3: 1. The highest prevalence of ADHD was among 7, 8 and 12 years old children each (15%).The younger the birth order, the higher the prevalence of ADHD. The proportion of inattentive type was 18.1% and was slightly higher in males (1.4: 1), the hyperactive-impulsive type represented 14.5 % with a male to female ratio of 1.4: 1. The distribution ADHD subtype by sex is presented in Figure 1.

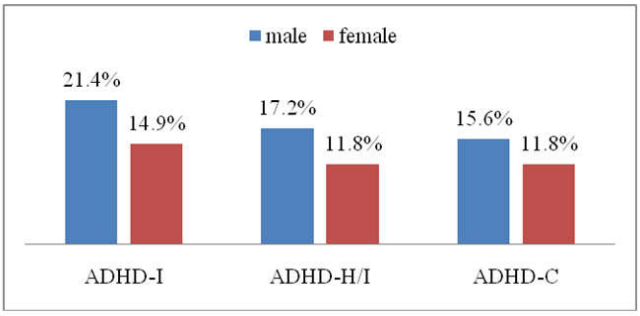

Fig. 1. Distribution of ADHD subtypes by sex

DISCUSSION

Prevalence of Attention Deficit Hyperactivity

The overall prevalence of ADHD in this study was found to be 13.7% among children aged 6-16 years old. The prevalence of ADHD in this study was higher than those studies conducted in other countries of Africa. The ADHD prevalence as reported in the studies from Nigeria, South Africa, Democratic Republic of Congo, and a review of epidemiology done in Africa are as follows: 8.7%, 5%,6% and 5.4%-8.7% respectively (Adewuya AO, 2007; Brown RT, 2001; DP, 1996; Sayal K, 2006). Moreover, the result is higher than the worldwide pooled prevalence of ADHD (5.29%), and other countries in the world; a study from Venezuela, Crete – Greece, the Island of Majorca – Spain, Australia, Italy reported ADHD prevalence as follows: 7.2%,6.5%, 4.6%, 2.4%, and 1.4% respectively (Cardo E, 2007; Montiel-Nava C, 2002; Polanczyk G, 2007; Zuddas A, 2006). However, Studies which was conducted in other parts of the world from North Carolina – USA, Brazil - South America, Morocco reported ADHD prevalence higher than the finding in our current study as follow; 16.0%, 13.0% and respectively(Rowland AS, 2001; Skounti M, 2006). The high prevalence of ADHD in this study could be explained by our exclusion of the impairment Criterion, which has been found to significantly alter the prevalence of ADHD (all types). In the US reported that the prevalence rate in Tennessee country was without impairment criteria 16.1% and 6.8% when impairment criteria has been taken in to consideration (Guilherme Polanczyk, 2007). In a Meta analytic study it has also been found to be associated with higher prevalence rates of ADHD (Polanczyk, 2007). Furthermore, instruments that

was used could also justify for the high prevalence result as compared with studies mentioned here above; Diagnostic Interview Schedule for Children–IV (DISC-IV) the SDQ (Strengths and Difficulties Questionnaire) and the DBD (Disruptive Behavior Disorder rating scale); and besides all methodological variables evaluated were significantly associated with ADHD/HD prevalence rates. Studies based on DSM-III-R or ICD-10 criteria, respectively, had significantly lower ADHD/HD prevalence rates than those using DSM-IV criteria (Guilherme Polanczyk, 2007).

The study setting is another reason for the discrepancy of the finding for the fact that the rate of Primary school enrolment in African countries had been noted to range from about thirty to ninety five percent with much lower rates in sub-Saharan African countries. Therefore, the prevalence studies of ADHD carried out among African children in primary schools might not be representative of the actual prevalence in the general population. Age was also another factor, When age increases, it has been shown that the prevalence of ADHD decreases; the prevalence ranged in school aged children from 2.4 to 16.1% and in the adolescents it ranged from 2.2 to 9.9% (Bakare, 2012). However, our result is comparable with other studies based symptoms with no functional impairment criteria. For instance studies from Colombia, Taiwan, Australia, USA, Brazil and poerto Rican had reported prevalence of ADHD as follows: 15.8, 9.9, 14.7, 16.0%, 13.0% and 8.9 % respectively (Neyir Gul, 2010). The subtypes of ADHD also differed among studies in relation to the methodological differences.

The frequency of ADHD subtypes found in this study (i.e, inattentive 18.1% and impulsive/hyperactive 14.5%) displayed a different distribution when compared to the studies which provide the methodological similarity mentioned before. The ADHD prevalence as reported in the studies that used the "or rule" from Nigeria – West Africa and Maracaibo – Venezuela are as follows; predominantly inattentive subtype and combined subtype (Montiel-Nava C, 2002; Sayal K, 2006). While the combined and inattentive subtypes were found as the prevalent subtypes, hyperactive impulsive subtype was found to be the least frequent in the most of epidemiological studies (PO:, 2008). Different from ADHD literature, the hyperactive/impulsivity subtype of ADHD was found to be the most common subtype in our study similarly to the study in Turkey (Bakare, 2012). Although a study in Nigeria from the clinical population indicates a 6:1 to 9:1 ratio of males to females, the ratios drop to 3:1 to 4:1 in epidemiology studies (ADDM, 2012). A consistent finding in the ADHD literature is the greater number of males than females (3.1/1), which has been replicated in our study also, with the male/female ratio of 2/1 and 1.4/1, inattentive and hyperactive impulsive subtypes respectively. Consistent with the ADHD literature review in Africa, the predominantly inattentive subtype of ADHD did show male predominance (Brown, 2001).

Limitation of the study

Tools used to assess some independent variables like clinical factors, neonatal factors and obstetric factors were not standardized had a possibility of recall bias. Tools used for ADHD assessment (i.e, DBD-rating scale) was based on parent response didn't incorporate impairment criteria which may overestimate the prevalence.

Conclusion

The prevalence was high in this study; affecting males more than females that show Attention-Deficit Hyperactivity Disorder is significant public health issue that requires a great emphasis. Understanding the characteristics and the prevalence of ADHD in children in Ethiopia and promote awareness of the condition this research will help government policy makers, educators and health care providers to plan and coordinate service delivery, so that realistic plans can be made to support these children and their family in order to improve their quality of life.

Acknowledgment

First and foremost, our heartfelt gratitude goes to Addis Ababa University and Mizan-Tepi University, for funded for this research. We would also like to extend our deepest appreciation for all participants, supervisors and data collectors in this research.

REFERENCES

ADDM. 2012. Prevalence of Autism Spectrum Disorders (ASDs) Among Multiple Areas of the United States in. USA: Centers for Disease Control and Prevention (CDC),.

Adewuya AO, F. O. 2007. Attention deficit hyperactivity disorder among Nigerian primary school children prevalence and co-morbid conditions. *Eur Child Adolesc Psychiatry,* 16:10-15.

Association, A. P. 2000. Diagnostic and Statistical Manual of Mental Disorders (4th ed.). Washington, DC, USA: American Psychiatric Association.

Bakare, D. M. 2012. Attention deficit hyperactivity symptoms and disorder (ADHD) among African children: a review of epidemiology and co-morbidities. *Afr J Psychiatry*, 15(358-361).

Bakare, M.O., U. V., Ebigbo PO, Orovwigho AO. 2010. Problem and pro-social behavior among Nigerian children with intellectual disability: the implication for developing policy for school based mental health programs. *Italian Journal of Pediatrics*, 36(37).

Brown, R.T., F. W., Perrin J.M., Stein M.T., Amler R.W., Feldman H.M., Pierce, K. and Wolraich, M.L. 2001. Prevalence and assessment of attention-deficit/hyperactivity disorder in primary care settings. *Pediatrics,* 107:43.

Cardo E, S. M. and Llobera J. 2007. Estimation of the prevalence of attention deficit hyperactivity disorder among the standard population on the island of Majorca. *Rev Neurol*., 44(10-14).

Department of Paediatrics and Child Health, M. S., Faculty of Health Sciences, University of the Free State, Bloemfontein, South Africa. 2006. The medical management of attention-deficit/hyperactivity disorder: spoilt for choice? *S Afr Psychiatry*, 9(143-151).

DP, C. 1996. Attention deficit disorder: a review of the past 10 years. *J Am Acad Child Adolesc Psychiatry*, 35(978-987).

Erik Winther Skogli, M. H. T., Per Normann Andersen, Kjell Tore Hovik and Merete. 2013. ADHD in girls and boys – gender differences in co-existing symptoms and executive function measures. *BMC*, 13(298).

Guilherme Polanczyk, M. S. d. L., Bernardo Lessa Horta, Joseph Biederman and Luis Augusto Rohde. 2007. The Worldwide Prevalence of ADHD: A Systematic Review and Metaregression Analysis. *Am J Psychiatry*, 164(6).

Kliegman, M., Behrman, MD, MDJenson, Stanton, MD. 2007. NELSON TEXTBOOK OF PEDIATRICS (18th ed.): Saunders, an imprint of Elsevier Inc.

Louw C, O. M. A. P. M. 2009. General practitioners' familiarity, attitudes and practices with regard to Attention Deficit Hyperactivity Disorder (ADHD) in children and adults. SA Fam Pract, (512).

Montiel-Nava C, P. J., López M, Salas M, Zurga JR, Montiel-Barbero I, Pirela D, Cardozo JJ. 2002. Estimations of the prevalence of attention deficit hyperactivity disorder in Marabino children. *Rev Neurol* 35(1019-1024).

Neyir Gul, A. T., S. Ebru Cengel Kultur, Murat Topbas, Ismail Ak. 2010. Prevalence of Attention Deficit Hyperactivity Disorder and Comorbid Disruptive Behavior Disorders Among School Age Children in Trabzon. *Bulletin of Clinical Psychopharmacology*, 20(1).

PO, Q. 2008. Attention-deficit/hyperactivity disorder and its comorbidities in women and girls: an evolving picture. *Curr Psychiatry Rep*., 10(5).

Polanczyk G, D. L. M., Horta BL, Biederman J, Rohde LA. 2007. The worldwide prevalence of ADHD: a systematic review and metaregression analysis *Am J Psychiatry* 164(942-948).

RA:, B. 2006. Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment.: The Guilford Press.

Rowland, A.S., U. D., Catoe K.E., Stallone L., Long S., Rabiner D., Naftel, A.J., Panke. D., Faulk, R., Sandler, D.P. 2001. Studying the epidemiology of attention-deficit hyperactivity disorder: screening method and pilot results. *Can J Psychiatry,* 46:(931-940).

Sadock, B. J. S. V. A. 2007. Kaplan & Sadock's Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry (10th ed.): Lippincott Williams & Wilkins.

Sayal K, G. R. and Ford T. 2006. Barriers to the identification of children with Attention Deficit/Hyperactivity Disorder. *J Child Psychol Psychiatry,* 47(744-750).

Skounti M, P. A., Mpitzaraki K, Vamvoukas M, Galanakis E. 2006. Attention-deficit/hyperactivity disorder in schoolchildren in Crete. *Acta Paediatr*., 95(658-663).

Tais, S.M., A. J., Rachel, E.V., Joaquín, F., Guilherme, V.P. 2012. Attention deficit hyperactivity disorder. In: Rey JM, ed. IACAPAP e-Textbook of Child and Adolescent Mental Health. Geneva: International Association for Child and Adolescent Psychiatry and Allied Professions.

Vogel, W. 2014. An update on attention deficit hyperactivity disorder (ADHD). *SAMJ*, 104(1).

WHO. 2013. Autism spectrum disorders & other developmental disorders From raising awareness to building capacity Introduction. Geneva, Switzerland.

Willcutt, E. G. 2012. The prevalence of DSM-IV attention-deficit/ hyperactivity disorder: ameta-analytic review, *Neurotherapeutics*, 9(3).

William W. and Hay, J., MD. 2007. current pediatric diagnosis and treatment (18 th ed.). USA: McGraw-Hill Companies, Inc.

Zuddas A, M. G., Oosterlaan J, Cavolina P, Ancilletta B, Sergeant J. 2006. Factor structure and cultural factors of disruptive behaviour disorders symptoms in Italian children. *Eur Psychiatry*, 21(410-418).

****