ADDIS ABABA UNIVERSITY

COLLAGE OF HEALTH SCIENCES

SCHOOL OF ALLIED HEALTH SCIENCES

DEPARTMENT OF NURSING AND MIDWIFERY

PREVALENCE AND ASSOCIATED FACTORS OF ATTENTION DEFICIT HYPERACTIVITY; DEVELOPMENTAL DISORDER IN CHILDREN AT LIMMU GENET TOWN, JIMMA ZONE, OROMIA REGION , ETHIOPIA,2015.

BY

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"A Thesis Submitted to School of Graduate Studies of Addis Ababa University In Partial Fulfillment of the Requirement for The Degree of Masters of Science in Pediatrics and Child Health Nursing in Department of Nursing and Midwifery, School of Allied Health Sciences, College of Health Science."

ADDIS ABABA, ETHIOPIA

JUNE/2015

ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE, SCHOOL OF ALLIED HEALTH SCIENCE, DEPATMENT OF NURSING AND MIDWIFERY

Prevalence and associated factors of Attention deficit hyper activity developmental, disorder among children at Limmu Genet Town, Jimma Zone, Oromia region, Ethiopia,2015.

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February, 2015

Addis Ababa, Ethiopia

Acknowledgment

First and foremost, my heartfelt gratitude goes to my advisor Mrs. Rajalakshmi Murugan (Assistant professor), Addis Ababa University; for her unreserved valuable comment and contribution to this thesis with all great passion of dedication and commitment.

I am also very grateful to Department of Nursing and Midwifery, Addis Ababa University, for funding and giving chance to do this thesis.

I am greatly indebted to my dear friend Kefyalew Dagne, Debre Birihan Hospital and all my colleagues and experts from different institutions that helped me in providing constructive comment and suggestion to develop this thesis.

Finally, I would like to extend my deepest appreciation for all those participated as a respondent and data collectors in this Thesis. Had it not been with their effort and willingness this Thesis would have not been possible.

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Acronyms

ADHD----------Attention Deficit Hyper Activity Disorder

ADHD-CT --------- Combined Subtype Of Attention Deficit Hyper Activity Disorder

ADHD-HI---------- Hyperactive-Impulsive Subtype of Attention Deficit Hyper Activity Disorder

ADHD-IA---------- Inattentive Subtype of Attention Deficit Hyper Activity Disorder

AOR----------Adjusted Odds Ratio

APA---------- American Psychiatric Association

DBD---------- Disruptive Behavior Disorder Rating Scale

DISC-IV---------- Diagnostic Interview Schedule for Children IV

DSM-III-R---------- Revised Diagnostic and Statistical Manual III

DSM-IV---------- Diagnostic and Statistical Manual-IV

ICD-10---------- International Classification of Disease- 10

IRB---------- Institutional Review Board

HIV---------- Human Immuno Deficiency Virus

LTE-Q---------- List of Threatening Experiences Questionnaire

PCBs---------- Pesticides, Polychlorinated Biphenyls

SDQ---------- Strengths and Difficulties Questionnaire

SES---------- Socioeconomic Status

SPSS---------- Statistical Package for the Social Sciences

UK……United Kingdome

USA ……United states of America

Summary

Background: Attention-Deficit Hyperactivity Disorder (ADHD) 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 problems related to ADHD in adulthood that cause impairments of personal, social, academic, or occupational functioning . There is a variation of ADHD prevalence across different countries. In Ethiopia there is paucity of information on the prevalence and associated factors of it.

Objective: The aim of this study is to determine the prevalence of ADHD and its associated factor among children in Limmu Genet town,Jimma Zone, Oromia region, Ethiopia.

Methods: Community based quantitative cross-sectional study design was employed among children aged between 6 to 16 years old. 0 5 section („sefer‟) was selected from 15 section („sefer‟) in the town using simple random sampling and in turn 406 study subjects was also selected randomly from a household within each selected section („sefer‟), Multi stage cluster sampling. The 18-items of the Disruptive Behaviour Disorder rating scale (DBD), which was from Diagnostic and Statistical Manual for mental disorders 5th edition (DSM-V), was used to investigate the presence of ADHD symptoms. A structured questionnaire designed for the study was used for parental interview to identify associated factors.

Result: A total 387 study participants were completed the interview and the prevalence of ADHD was found to be 13.7%. Being preterm (AOR=10.92; 95% CI: 3.253-36.670), history of previous mental health problem (AOR=2.05; 95% CI: 1.004-4.179) and history of chronic medical problems (AOR=3.57; 95% CI: 1.515-8.693) were important factors significantly associated with ADHD.

Conclusion: Of children aged 6 to 16 years old, 13.7% have ADHD. The prevalence was high in this study that shows ADHD is significant public health issue that requires a great emphasis. So, early screening and intervention for ADHD should be integrated in primary health care and child care service settings.

Key Words: Inattention, Hyperactivity-Impulsivity, Combined type of ADHD and Stressful life evens

1. Introduction

1.1Background

All parents hope for a perfect child, but unfortunately some children are born with serious Neurodevelopmental disorders. Neurodevelopmental disorders are a group of conditions with onset in infancy or childhood(1). The disorders typically manifest early in development, often before the child enters grade school, and are characterized by developmental deficits that produce impairments of personal, social, academic, or occupational functioning. The neurodevelopmental disorders frequently co-occur; for example, many children with attention-deficit/hyperactivity disorder (ADHD) also have a specific learning disorder(2).

There is a wide spectrum of developmental disorders, the most common of which include Attention Deficit Hyperactivity Disorder (ADHD) and specific learning difficulties such as Dyslexia and Autism Spectrum Disorder. Two conditions which are increasingly profiled by the media/literature are ADHD and autism(3).

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common childhood neuropsychiatric disorders; According to the 4th edition of the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV), ADHD is characterized by:i) inattention, including increased distractibility and difficulty sustaining attention; ii) poor impulse control and decreased self-inhibitory capacity; and iii) motor over activity and motor restlessness in a child than expected for someone of that age and developmental level.(4, 5). Problems with inattention, hyperactivity and impulsivity results in functional impairment in academic, family, and social settings (6, 7). ADHD is most often identified when children first start school (8). Although symptoms begin in early childhood they can diminish between ages 10 and 25 years. Hyperactivity declines more quickly, and impulsivity and inattentiveness often persist into adolescence and adulthood(9).

Evidence suggests that there is no single factor that determines the expression of ADHD. The emergence of ADHD is best viewed as a final common pathway for a variety of complex brain developmental processes. Multiple factors have been implicated in the etiology of ADHD(5).

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 perinatal problems such as prematurity and low birth weight(10, 11). In-utero cigarette and alcohol exposure have been shown to increase the odds of developing ADHD two- to- three fold(12).

Currently, the diagnosis of ADHD is based on the consensus of experts that three observable subtypes: inattentive, hyperactive/impulsive, or combined are all manifestations of the same disorder. In order to reach diagnosis according to the latest version of the DSM, symptoms must have onset before the age of 12 (rather than an age 7 cut-off for symptom-related impairment in DSM-IV), be pervasive across settings (e.g. home and school) and associated with substantial impairment in functioning(2, 13).ADHD is not diagnosed in many children until they are older than 7 years when their behaviors cause problems in school and other places(4). Recent studies suggest that between 30% and 70% of children with ADHD continue to experience problems in adulthood(14).

1.2. Statement of the problem

ADHD is one of the most prevalent mental health problem of children having worldwide-pooled prevalence of 5.29% and ranging between 3% and 7% (7, 15) with a male-to-female ratio of 3:1 in population based studies(16) and between 5:1 to 9:1 in clinical samples (7). Research on gender differences suggests that girls may be consistently under identified and underdiagnosed mostly explained by differences in the expression of the disorder among boys and girls(17).

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(18). The subtypes of ADHD also differ among studies from different geographical locations (19). 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 primary school enrolment had been noted to range from about 30% to 95%. Even in contrast with a few community based study, the reasons for the apparent disparity in prevalence between the community and school studies are not quite clear (18, 20).

No matter how all the studies on epidemiology of ADHD among African children reviewed agreed on a higher prevalence of ADHD or Hyperactivity symptoms among boys compared to girls(18, 21, 22) they couldn‟t clearly figure out the statistics. Except a study from Egypt showing male: female ratio was 3.5 : 1.(23)

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 have few or no friends (50 - 70%), to underperform at work (70 - 80%), to engage in antisocial activities (40 - 50%), and to use tobacco and illegal drugs. 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. (12).

Unless diagnosed and managed as early as possible otherwise ADHD would cost great to society from poor academic .performance, poor socialization and occupational underachievement; Research has shown that ADHD cost the U.S. society between $143 billion and $266 billion in 2010 (approximately $2,000 per household)(6).

In spite of high morbidity, a large majority of children with ADHD, remain undiagnosed or do not receive appropriate specialist services (24). Late diagnosed and untreated children with ADHD also developed antisocial behavior, depressive symptoms and substance use disorders. Moreover, as a result of lack of awareness in the community, children with ADHD are rejected by their peers, siblings, parents, teachers and others and treated in negative way. So, they struggle with serious social, academic, psychological difficulties at each stage of development(25-27).In addition, ADHD children‟s parents are exposed for stress, feelings of incompetence, and marital discord(28, 29).

While childhood ADHD has been extensively researched in Europe and North America, very few studies are available in the African sub-region; particularly in Ethiopia where only one study was conducted. Even the previous published study done in Butajira, Southern Ethiopia was generally on mental and behavioral disorders not specifically on topic of ADHD. Therefore, the present study will estimate the prevalence and identified risk factors for ADHD among 6 to16years old children living in Limmu Genet town.

1.3. Significance of the study

The present study conducted to know magnitude of ADHD and its associated factors, so that realistic plans can be made to support these children and their families. Understanding the characteristics and number of children who have ADHD is key to promoting awareness of the condition, helping educators and providers to plan and coordinate service delivery, and identifying important clues for further research.

Furthermore, little is known about prevalence and risk factors for ADHD among children from a general population. To the best of my knowledge there is no current study done on this disorder in Ethiopia. Therefore, this study would come up with concrete evidence about magnitude and associated factors of ADHD that could add one more point on the existing outdated available information.

Often parents and community lack adequate knowledge how to identify socially treat and seek health care for a child with neurodevelopmental disorder like ADHD. Besides, there is documented evidence that health care providers neglect ADHD symptom at facility level. This is probably because of lack of sufficient information about magnitude and associated factors of ADHD. As a matter of fact, accurate information about ADHD status among children is quite essential.

The study findings will contribute to the development of local knowledge about ADHDs and be used to scale up the assessment of risks in children involving a careful exploration of ADHD vulnerabilities. The findings of this study might also help in influencing the development of appropriate policies, plans and intervention programs for the screening and treatment of ADHD. This study in turn, might improve the quality of care for children suffering from ADHDs.

2. Literature review

In a systematic review and metaregression analysis of worldwide prevalence of ADHD, that screened 9,105 abstracts published in the last 27 years; showed, the overall pooled prevalence of ADHD/HD was 5.29%. Besides, a result of ADHD magnitude from other parts of the world, such as: North Carolina – USA, Brazil - South America, Crete – Greece, the Island of Majorca – Spain, Australia, and Italy showed the prevalence to be 16.0%, 13.0%, 6.5%, 4.6%, and 2.4% (30-35)respectively.

Geographic location plays a limited role in the reasons for the large variability of ADHD/HD prevalence estimates worldwide. Instead, this variability seems to be explained primarily by the methodological characteristics of studies. All methodological variables evaluated were significantly associated with ADHD/HD prevalence rates, except response rate. Studies based on DSM-III-R or ICD-10 criteria, respectively, had significantly lower ADHD/HD prevalence rates than those using DSM-IV criteria. Studies that relied on information without impairment criteria were associated with significantly higher ADHD/HD prevalence rates than those relying on a best-estimate procedure. In 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. In these studies, both age and gender were significantly associated with prevalence rates (15, 36)

A review of literature search from Nigeria about epidemiology and co-morbidity of ADHD and ADHD symptoms in African among under 18 years old children and the prevalence of ADHD among school children according to studies conducted in Africa ranges between 5.4% and 8.7% with the prevalence being much lower among a population of children from the general community where a prevalence of 1.5% was documented. More over a study on the prevalence of ADHD from Nigeria, Morocco, South Africa, and Democratic Republic of Congo, are as follows: 8.7%,20%,5%,6%(37-41).Whereas, an epidemiology of ADHD symptoms among special populations of children with HIV infection, tuberculosis meningitis, and intellectual disability in Africa ranges between 45.5% and 100.0%. All the studies on epidemiology of ADHD among African children reviewed agreed on a higher prevalence of ADHD or Hyperactivity symptoms among boys compared to girls. (18, 20, 21, 42-44)

A cross sectional nationwide survey in US among children aged 8 to 15 used the National Institute of Mental Health Diagnostic Interview Schedule for Children–IV (DISC-IV), care giver module. The survey showed a prevalence of 8.7% with Girls were less likely than boys to have their disorder identified (AOR, 0.3; 95%) and the mean age was 9.9.The extent to which the prevalence of ADHD and its subtypes varies by population characteristics is plausible in lower-income populations because of their higher rates of putative ADHD risk factors such as low birth weight, lead exposure, and in utero tobacco exposure. The study had also revealed ADHD subtype prevalence, of the children, 4.4% met criteria for ADHD-IA, 2.2% for ADHD-CT, and 2.0% for ADHD-HI(45).

Based on school based cross-sectional comparative study that was conducted in Egypt; Arabic forms of Conner‟s questionnaires for both parent and teacher; and the DSM-IV criteria for diagnosis and grading of ADHD were used(2). The total prevalence of ADHD among basic school children was found to be 6.9% (6.8% in urban and 6.9% in rural), with male to female ratio of nearly 3.5: 1. The study revealed the major risk factors were neonatal problems: such as (cyanosis, low birth weight, jaundice, and incubation for other causes), family history of psychiatric illness, gender, family history of medical illness, consanguinity, antenatal illness and drug use, and family size greater than four. However, unemployed mother in the study was a protective factor, not a risk factor. In contrast, maternal smoking was not associated with ADHD. There was no statistically significant difference regarding most demographic data as regards age, mean age of parents, birth order, and residency, low maternal education, paternal smoking, an unemployed father, low paternal education, delivery by caesarian section, and disrupted families. Additionally, here was no strong association between the prevalence of ADHD and socioeconomic level. ADHD prevalence by subtype, combined type was 48.0%, inattentive type was 31.5% and hyperactive-impulsive type represented 20.5% (23)

A cross sectional study done in Kinshasa, Democratic Republic Congo among school children aged seven to nine years old, that used two behavioral instruments: the SDQ (Strengths and Difficulties Questionnaire) and the DBD (Disruptive Behavior Disorder rating scale); showed estimated prevalence of ADHD symptoms among the general school child population was 5.9% The mean age was 100 months . No differences in gender or age distribution were found between cases and controls. Regarding the parents‟ education level, no significant difference was found

between the two groups. Overall, no significant difference was noticed between the two groups regarding the family structure, parent‟s education, pregnancy, pre-and perinatal period, infant development, general health and socio-economic status were not correlated to DSM-IV ADHD symptoms. It was found that the risk for ADHD symptoms according to the DSM-IV criteria was fivefold when a family health problem was reported either among siblings or parents. Pregnancy, child‟s birth weight, neonatal period and infant development were normal for more than 95% of the children, both groups being comparable. The mean school performance was significantly lower among cases compared to controls. ADHD-C was most frequent and seen (86%) school children followed by ADHD-I and ADHD-HI(44). Based on a study from Turkey, on Primary school children aged 6–12 years that used two screening tool: Turgay„s DSM-IV based ADHD and disruptive behavior disorders screening scale. The results showed an ADHD prevalence rate of 8.6%.The subtypes were distributed as predominantly inattentive 1.6%, predominantly hyperactive/impulsive 6.1% and combined 0.9%. The male to female ratio was 3.5:1 for ADHD(all type). It was supported that ADHD did not show significant differences among cultures regarding its prevalence, male predominance and high DBD co-morbidity. On the other hand, the ADHD subtype distribution differed from the literature in favor of the predominantly hyperactive/impulsive subtype. (24)

Based on nationwide parent-based ADHD survey according to symptoms and other diagnostic criteria, of ICD-10 and DSM-IV; prevalence rates of 5.0% for the diagnoses of ADHD according to DSMIV symptom criteria and of 1.0% for ICD-10 diagnoses based on symptom criteria were found. In all age groups, the predominantly inattentive subtype was the most prevalent diagnosis, whereas the predominantly hyperactive-impulsive subtype was the least frequent diagnosis. A surprisingly strong association was found between the socioeconomic status of the families and ADHD prevalence rates, in the lower social class, the DSM-IV symptom-based prevalence rate was 2.5-fold higher compared to the rate in the higher social classes(7).

A community based cross sectional study on socio-demographic correlates of mental and behavioral disorders in Ethiopia around Butajira, among children age 5-15 with the Amharic version of the Diagnostic Instrument for Children and Adolescents (DICA) was used showed a prevalence of 1.5%. Sex was not associated with ADHD in the study. Although, the study had not attempted to measure SES by inquiring into income levels of households, they had measured

several variables which indicate SES levels. These include educational level of parents, family size and characteristics of houses. The results indicated that low SES is not associated with ADHD. The study had also reported an association of residence in urban areas and ADHD(46).

A prospective investigation that was explored for the first time about the association between perinatal mental stress and autistic traits and ADHD behaviors in 2-year-olds. Perinatal mental stress was significantly associated with ADHD behaviors in both genders after controlling for autistic traits. It was notable that significant associations were observed between ADHD behaviors in 2-year-old boys and prenatal maternal smoking and postnatal maternal baby blues symptoms(47) . Clinical and epidemiological associations showed a consistent association and dose–response relationship between prenatal exposure to maternal cigarette smoking and offspring ADHD. However, associations between less extreme alcohol use in pregnancy and offspring ADHD/ADHD symptoms are inconsistent(48, 49).

A systematic review of literature from UK showed that clinical and epidemiological associations showed a consistent association (OR=2.39) and dose response relationship between prenatal exposure to maternal cigarette smoking and offspring. Alcohol is a known teratogen and prenatal exposure to heavy maternal drinking can cause foetal alcohol syndrome, the behavioral aspects of which include symptoms of inattention and hyperactivity. Maternal stress in pregnancy has also been reported to be associated with offspring ADHD symptoms. It is not known whether low birth weight and/or prematurity and other associated pre/perinatal risks, are risk markers of ADHD or whether they are causal. Specific environmental exposures that seem to have relevance to the ADHD phenotype include organic pollutants (eg, pesticides, polychlorinated biphenyl (PCBs)) and lead(50-53).

Based on a systematic review of literature from US prenatal; In spite of inconsistencies, there was greater risk of ADHD-related disorders among children whose mothers smoked during pregnancy. On the other hand contradictory findings were reported in the alcohol studies, and no conclusion could be reached on the basis of the caffeine study. Results from studies on psychological stress during pregnancy were inconsistent but indicated a possible modest contribution to ADHD symptoms in the offspring. Many studies suffered from methodological shortcomings, such as recall bias, crude or inaccurate exposure assessments(54).

Conceptual frame work

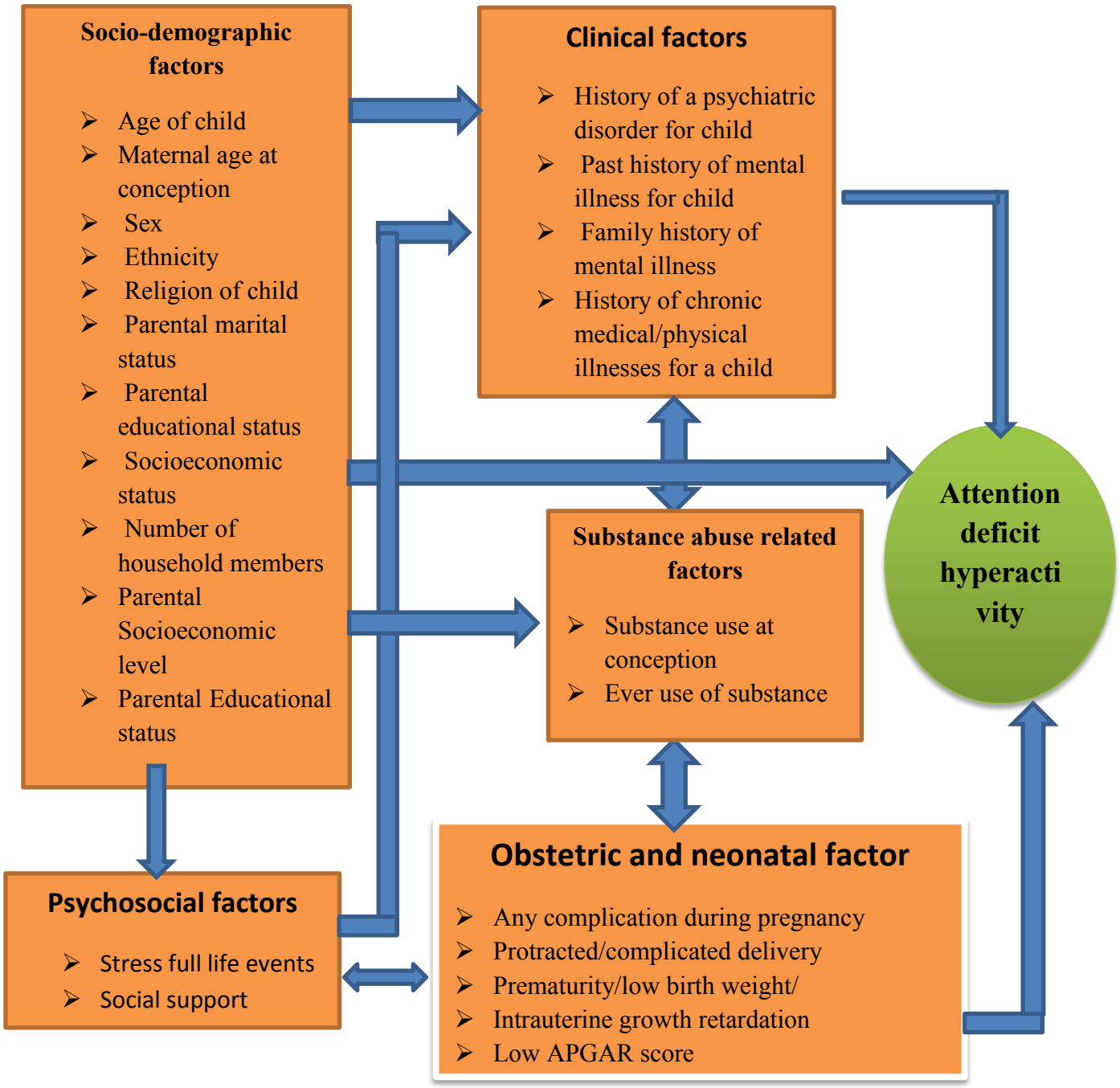

Figure 1: Schematic presentation of the Conceptual Framework developed from literature review for possible association of factors with ADHD among Children, 2015

3. Objectives

3.1 General objective

- To assess prevalence and associated factors of attention deficit hyperactivity among children in Limmu Genet Town, Jimma Zone, Oromia region, Ethiopia, 2015.

3.2 Specific objectives

- To determine the prevalence of attention deficit hyperactivity disorder among children in Limmu Genet Town, Jimma Zone, Oromia region, Ethiopia, 2015.

- To identify factors associated with attention deficit hyperactivity among children in Limmu Genet Town, Jimma Zone, Oromia region, Ethiopia, 2015.

4. Methods and Materials

4.1 Study Area

This study was conducted at Limmu Genet town, which is located 425 km in South west of Addis Ababa, capital city of Ethiopia. Limmu Genet town has 02 kebeles and 15 Sections. The town has 2,640 households with a total population of 12,674 where 6,397s are male and 6,277 are female. Of these Children account for about 4,500.There is one public district Hospital, one health center, two health posts, seventeen private clinics and ten private pharmacies.

4.2 Study Design

A Community based cross-sectional study design was employed

4.3 Study period

The study was conducted from January/ 2015 to May /2015.

4.4 Source population

The source population was all children who reside in Limmu Genet town, Jimma Zone, Oromia region, Ethiopia.

4.5 Study population

Study population was a sample of randomly selected children from the source population who fulfill the inclusion criteria.

4.6 Sample size Determination and sampling procedures

4.6.1 Sample Size Determination

For best of our knowledge; there is no study conducted on the prevalence of ADHD in Ethiopia. Therefore, the maximum number of sample required for this study was determined by taking the maximum prevalence of ADHD as 20% from a study conducted in Africa (38).

Using single population proportion formula and considering the following assumptions:

$$n = \frac{(Z\,\alpha/2)^2 * P\,(1-P)}{d^2}$$

Where;

n= sample size required for the study

P= the assumed population proportion of ADHD in Limmu Genet town = 20% (From a study in Morocco).

Z $\alpha/2$ = Z value at (α = 0.05) = 1.96 corresponding to 95% confidence level.

d = the margin of error =0.05

$$n = \frac{(1.96)^2 \times 0.2\ (1-0.2)}{(0.05)^2} = 246$$

Using design effect (D=1.5), because cluster sampling technique used, the final sample size required was: 1.5*246= 369

For possible none response during the study the final sample size is increased by10% to:

n = 369 +10% of 369 which is: 369+37 = 406

4.6.2. Sampling procedures and Sampling Techniques

Multi stage cluster sampling technique was used for the selection of sampling units. It was assumed that the population of Limmu Genet town is homogenous. The town has 02 kebeles and 15 sections. Among fifteen sections, five Sections were selected by simple random sampling method. Fresh list of households which has at least one child between 6 and 16 years old, in the five sections were prepared. After having a list of households and with equal allocation methods 81 eligible children who were available at the time of data collection in each household in five sections were taken as a study subject. When more than one child were found in a household only one child would be selected with lottery method.

4.7 Inclusion and exclusion Criteria

4.7.1 Inclusion criteria:

- Eligible child was between the ages of 6 and 16 years, who is able to Speak,
- Living in Limmu Genet town in the last 6 months.
- Children who had either parents or caregivers.

4.7.2 Exclusion criteria:

- Children who had sever disease condition
- Neurological handicap

4.8 Data collection procedures

4.8.1 Data collection instruments

Information was collected by face to face interviews using either parents or care giver as informant with a pre tested structured questionnaire. The questionnaire was adopted from existing literature. It had five parts: 1.Socio-demographic factors, 2. Psychosocial factors, 3.Substance related factor, 4.Clinical factors 5.Obstetric and neonatal factors. The presence of attention deficit hyper activity disorder was assessed using Disruptive Behavior Disorder rating scale(DBD rating scale) which was adopted from a study done in Africa (24, 44).

The instrument was previously been translated into Amharic and used for community surveys in Ethiopia. The instrument has 18 items and measures ADHD including its subtype; which include Predominately inattentive, subtype Predominately hyperactive/Impulsive subtype and the Combined Subtype. Stressful life events will be assessed using List of Threatening Experiences questionnaire (LTE-Q) which has 12-item. The 12 types of stressful life events was collapsed in to six categories from which only two categories which were applicable for children was taken and entered separately in to the model to determine which categories of events was most strongly associated with ADHD.

4.8.2 Data collectors

The principal investigator recruited ten diploma nurses to collect the data. Data collectors were trained and oriented on how to use and administer the questionnaire; the ethical principles of confidentiality and data management; how to identify participants and referral process that would have been followed in the case of adverse events occurring during the data collection process prior to their involvement with data collection. The investigator was also selected two BSc. Nurses for supervision who would move in each site to assist and supervise the data collection. Data was collected for 03 weeks.

4.8.3 Data quality control

The questionnaire was designed and modified appropriately. The questionnaire was translated to local language Amharic and Oromifa to be understood by all participants and translated back to English to make sure the consistency. Three days training was given for data collectors. Pre-test was done a week before the start of actual data collection; on 5% of the sample size at study area of Limmu Genet town other than selected Section and based on the finding from the pre-test, the questioner was revised and adopted and time needed for interview was estimated. The data collectors were supervised daily and 10% of the collected data was checked daily by the principal investigator and quality was maintained through field checks by field supervisors and principal investigator. Completeness, accuracy and consistency of data was also confirmed by double entry of data on the day of collection using Epi-Info Version 7. Missing data or discrepancies was resolved by revisiting the child within a week.

4.9 Study Variables

4.9.1 Dependent variable

1. Attention deficit hyperactivity disorder

4.9.2 Independent variables

1. Socio-demographic factors

- Age of child
- Maternal age at the time of pregnancy
- Sex
- Ethnicity
- Religion of child
- Parental marital status
- Parental educational status
- Socioeconomic status
- Number of household members

2. Psychosocial factors

- Stressful life evens

3. Substance related Factors

- Use of Substances at the time of pregnancy
- Ever use of substances

4. Clinical factors

- History of a psychiatric disorder for child
- Past history of mental illness for child
- Family history of mental illness
- History of chronic medical/physical illnesses for a child

5. Obstetric and neonatal factors

- Any complication during pregnancy
- Protracted/complicated delivery
- Prematurity/low birth weight/
- Intrauterine growth retardation
- Low APGAR score

4.10 Operational definitions

- Inattention: when the child has always or very often at least six of the symptoms for inattention based on DSM-V which have persisted for at least 6 months to a degree that is maladaptive
- Hyperactivity-Impulsivity: when the child has always or very often at least six of the symptoms for Hyperactivity-Impulsivity based on DSM-V which have persisted for at least 6 months to a degree that is maladaptive

- Previous Mental illness: Information either subjectively told or medically confirmed any of mental health problem manifestation.
- Combined ADHD: when a child has symptom that met the criteria both inattention and hyperactivity
- Stressful life evens: The presence of stressful life events explained by experienced one or more stressful life events in the last 6 months.

1. Loss of loved ones: If a family member or someone close to the respondent died within the last 6 months
2. Financial stress: If one lost his/her job or he/she had experience hunger due to lack of money within the last 6 months

- Use of Substances at conception: in this study it is defined as use of at least one of specified substance (cigarette, alcohol, khat, and other substances) throughout the time of pregnancy of the child being asked.
- Ever use substances: in this study it is defined as use of at least one of specified substance (cigarette, alcohol, khat, and other substances) even once in life time
- Low APGAR score: when the child fail to cry soon after delivery or fail to suck breast milk a couple of minutes later after delivery.

4.11 Data processing and analysis

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. Bivariate and multivariate logistic regression analysis was conducted to identify associated factors of attention deficit hyperactivity disorder. A p-value of < 0.05 was considered as statistically significant.

4.12 Ethical considerations

Ethical clearance was obtained from Department of Nursing and Midwifery Institutional Review Board , School of Allied Health Science,. College of Health Science, Addis Ababa University, After ethical clearance, letter was obtained from School of Nursing and Midwifery for kebele 01&02,Limmu Genet, administration to get permission to carry out data collection. Informed consent was obtained from parents or guardians of children for the study. The confidentiality of data of each study subject was maintained.

5. Result

From the total 406 children (age between 6 and 16 years) sampled for the study, 387 completed the interview yielding a response rate of 95.32 %.

5.1 Socio-Demographic Characteristics

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. Majority (54.3%) of the participants belongs to Oromo ethnicity and 176 (45.5%) were Muslim. About 190 (49.1%) of the participants live within a family size of 2 to 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).

Table 1. Socio-demographic characteristics of study participants at Limmu Genet Town; Jimma Zone, Oromia Region, Ethiopia, 2015.

Variables	Frequency(n=387)	Percentage (%)
Age in years		
6-11	275	71.1
12-16	112	28.9
Sex		
Male	192	49.6
Female	195	50.4
Ethnicity		
Oromo	210	54.3
Amara	83	21.4
Tigre	18	4.7
Gurage	40	10.3
Others	36	9.3
Religion		
Orthodox	163	42.1
Muslim	176	4.5
Protestant	48	12.4
Family size		
2-4	190	49.1
5-6	164	42.4
>=7	33	8.5
Income (house hold)		
<=500	102	26.4
501-1200	95	24.5
>=1201	190	49.1

Fathers education		
Unable to read and write	47	12.1
Able to read and write	56	14.5
Primary school	108	27.9
Secondary school	80	20.7
Diploma	60	15.5
Degree and above	36	9.3
Mothers education		
Unable to read and write	84	21.7
Able to read and write	50	12.9
Primary school	114	29.5
Secondary school	80	20.7
Diploma	48	12.4
Degree and above	11	2.8
Parental marital status		
Married	309	79.8
Divorced	49	12.7
Single/Separated/widowed	29	7.5

5.2 Psychosocial factors

Regards to stressful life events, 112 (28.9%) of study participants reported loss of loved one, of which 68 (17.6%) reported loss of friends and 30 (7.8%) reported loss of family member. One hundred thirty two (34.1%) have gone through a financial stress within the last six months.

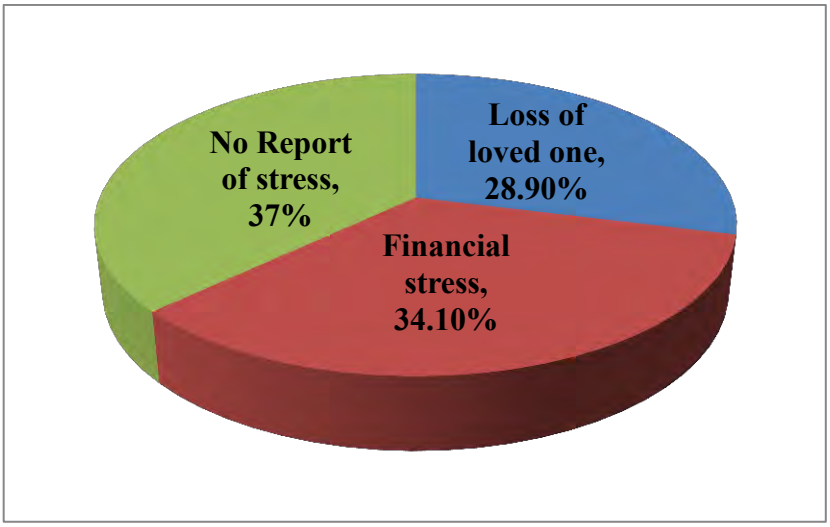

Figure 2. Distribution of study participants by psychosocial factors at Limmu Genet Town, Jimma Zone, Oromia Region, Ehiopia, 2015

5.3 Substance related factors

Among 387 mothers of study subjects, 136 (35.2%) used drugs; of these drugs, smoking(0.8%), chewing (10.9%) and alcoholic beverages (23.5%) during the time of pregnancy. Drug use in life time was reported as; 48.6% (n=188) had never used; and 51.4% (n=199) had used at least once in life time before conception, of which smoking (0.5%), chewing (18.1%) and alcohol (32.8%).

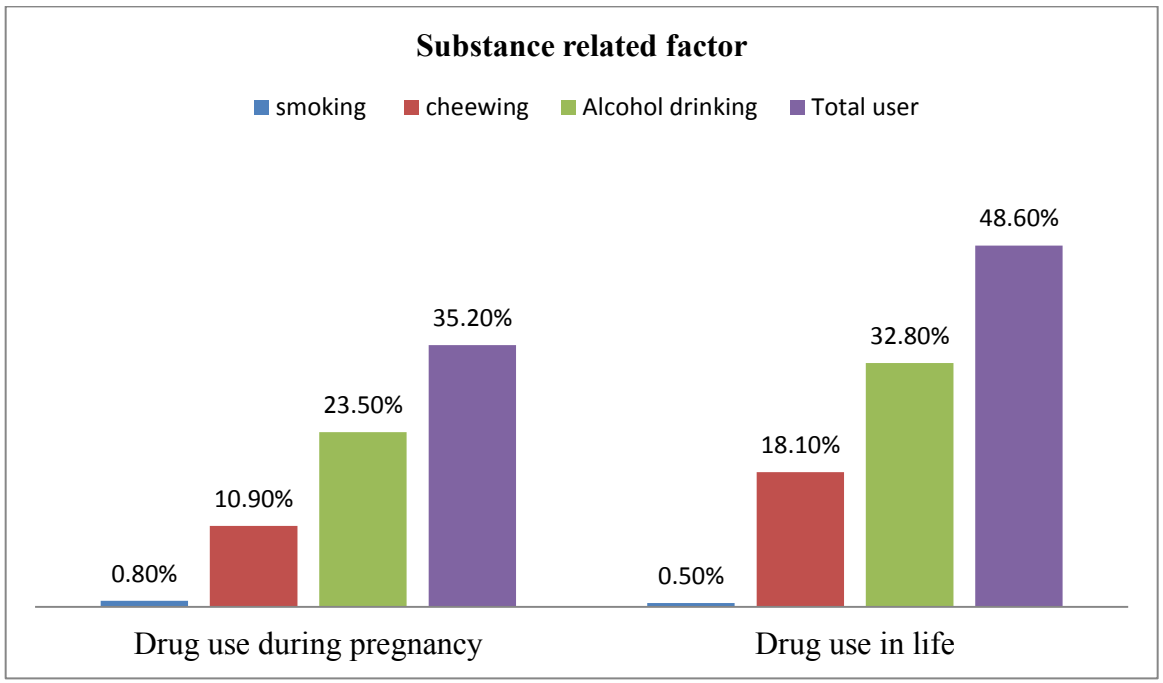

Figure 3 Distribution of children by Substance related factors of their mothers at Limmu Genet Town, Jimma Zone, Oromia Region, Ehiopia, 2015.

5.4 Clinical factors in children and family

From a total of 387 children participated on the study; 50 (12.9%) had previous history of mental illness problem whereas 56 (14.6%) has current mental illness problem. Family history of mental problem and medical disorders each were reported in 8 % of the study subjects.

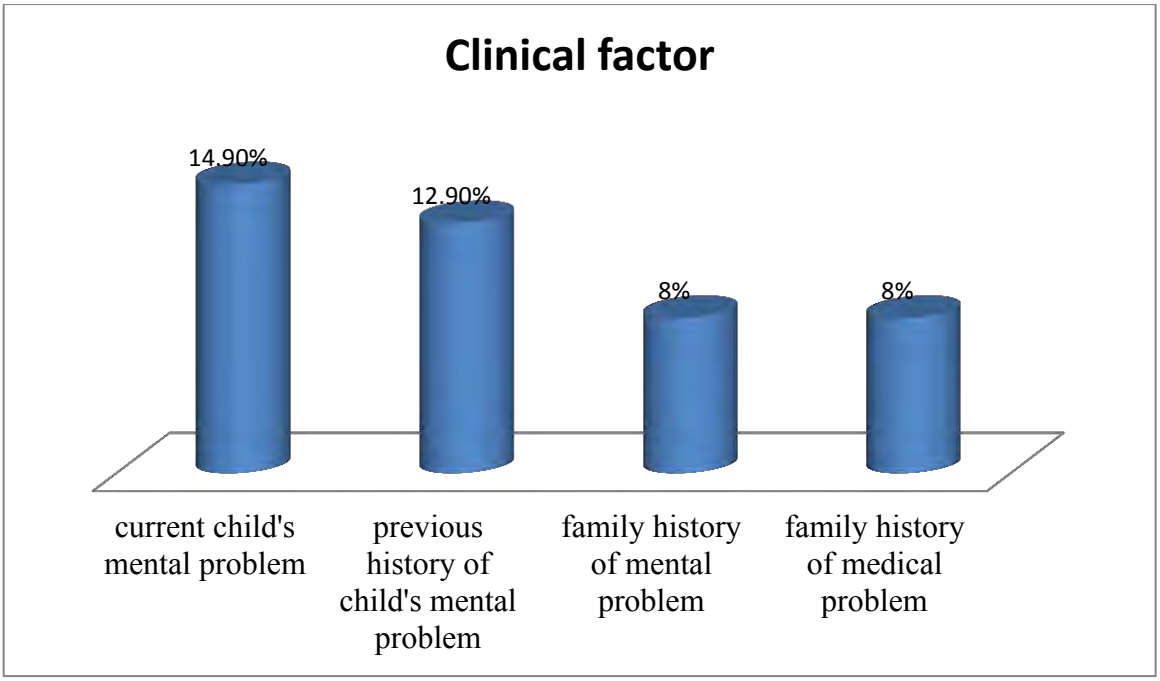

Figure 4 Distribution of children and family by clinical factors at Limmu Genet Town, Jimma Zone, Oromia Region, Ehiopia, 2015.

5.4 Neonatal and Obstetric factor Factors

Mothers of study subjects who have encountered problems during pregnancy were 17.6 %; such as, bleeding (10.1%), hypertension (3.6%) and others (1.8%). Majority of mothers of study subjects gave birth through SVD, 247 (63.8%) mode of delivery whereas (36.4%) of mothers gave birth abnormally (episiotomy, instrumental and C/S).

Related to neonatal factors children who had the following neonatal problems were; preterm (24.8%), LBW (25%), problem with breast feeding (29.2%) and those who didn‟t cried soon after birth (11.1%).

Table 2; Distribution of participants by neonatal and obstetric factors at Limmu Genet Town, Jimma Zone, Oromia Region, Ehiopia, 2015.

Variable	Frequency(n=387)	Percentage (%)
Maternal factor		
Types of maternal problems		
Bleeding	39	10.1
Hypertension	14	3.6
Other	17	4.4
Mode of delivery		
SVD	247	63.8
Episiotomy	59	15.2
Other	81	20.9
Neonatal factor		
Preterm		
Yes	96	24.8
No	291	75.2
Perceived LBW		
Yes	100	25.8
No	287	74.2
Didn't cried soon after birth		
Yes	43	11.1
No	344	88.9
Problem with breast feeding		
Yes	113	29.2
No	274	70.8
Other problem soon after birth		
Yes	40	10.3
No	347	89.7

5.5 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.

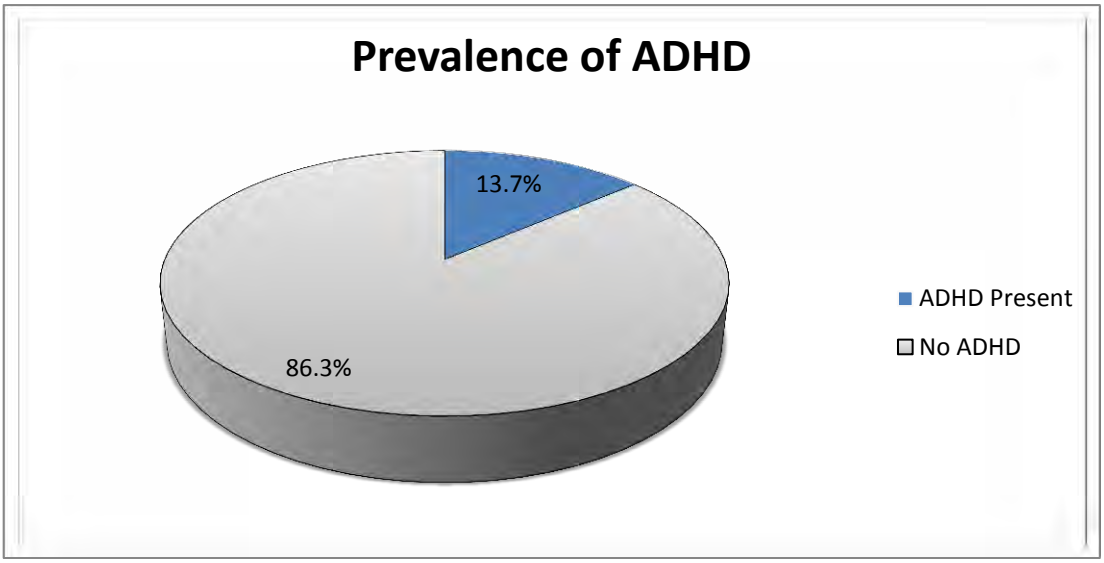

Figure 5: Prevalence of ADHD among Children aged 6 to 16 years of age at Limmu Genet town, Jimma Zone, Oromia Region, Ethiopia, 2015

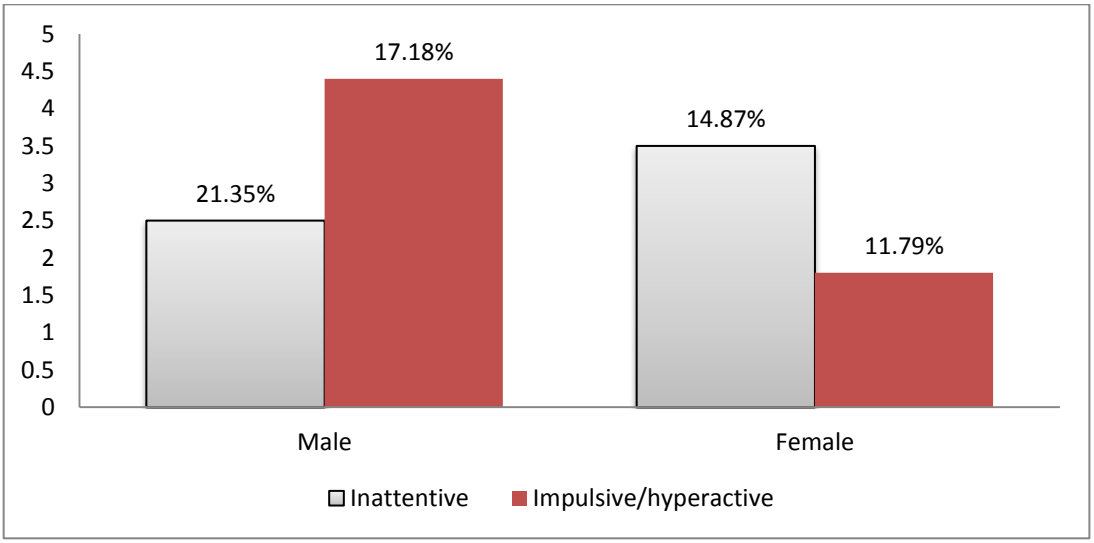

Figure 6: Prevalence of ADHD subtype by gender in study participants at Limmu Genet town, Jimma Zone, Oromia Region, Ethiopia, 2015

5.6 Factors Associated With ADHD

Bivariate logistic regression analysis was done to examine associations between ADHD and each of the determinant factors: socio-demographic, psychosocial, substance and drug use, clinical factor, and neonatal and obstetric factors. Among these factors, father‟s education, financial stress, child‟s previous mental problem, family history of chronic medical problems, maternal problems, neonatal problems, religion, marital status, drug use in life and being preterm fulfilled

the criteria ($p \leq 0.2$ of significant level), apart from this biological plausibility was taken in to consideration for further multivariable logistic regression analysis (Table 3).

After adjusting all confounding factors having p-value ≤ 0.2 on bivariate analysis, multivariable logistic regression analysis was done and the following variables were found significantly associated ($P < 0.05$). Among neonatal problem, those who were born being preterm have 10.92 times more likely to have ADHD as compared to who were not born being preterm (AOR=10.92; 95% CI: 3.25-36.67). Children who reported history of previous mental health problem has higher odds of experiencing ADHD than who did not report (AOR=2.05; 95% CI:(1.004-4.179)). Family history of chronic medical illness was also associated increasing the odds of having ADHD compared to who had no family history of chronic medical problems (AOR=3.57; 95% CI: 1.52-8.69).

Table 3: Bivariate and Multivariable logistic regression analysis of factors associated with common mental disorders among Children living in Limmu Genet town, JImma Zone, Oromia Region, Ethiopia, 2015.

Variables	**ADHD**		**COR(95%CI)**	**AOR (95%CI)**
	Yes	**No**		
Fathers education				
Unable to read and write	4	43	0.74(0.17-3.20)	1.633(0.39-6.83)
Able to read and write	9	47	1.53(0.43-5.40)	1.59(0.40-6.33)
Primary school	15	93	1.29(0.40-4.17)	1.27(0.34-4.79)
Secondary school	17	63	2.16(0.67-6.95)	1.79(0.48-6.63)
Diploma	4	56	0.57(0.13-2.44)	0.84(0.20-3.60)
Degree and above	4	32	1.00	1.00
Financial stress				
Yes	22	31	1.45(0.80-2.16)	1.25(0.67-2.34)
No	110	224	1.00	1.00
Child's previous Mental problem				
Yes	10	40	1.71(0.80-3.67)	**2.048(1.004-4.179)**
No	43	294	1.00	1.00
Family history of chronic medical problems				

Yes	8	23	2.40(1.01-5.70)	**3.57(1.515-8.391)**
No	45	311	1.00	1.00
Neonatal problems				
Yes	33	228	0.77(0.42-1.40)	1.18(0.64-2.19)
No	20	106		1.00
Preterm				
No	51	240	1.00	1.00
Yes	2	94	0.10(0.02-0.42)	**10.92(3.253-36.670)**
Religion				
Orthodox	32	131	1.00	1.00
Muslim	17	159	0.44(0.23-0.82)	0.82(0.41-1.68)
Protestant	4	44	0.37(0.13-1.11)	0.72(0.24-2.12)
Marital status				
Married	35	274	1.00	1.00
Divorced	13	36	2.83(1.37-5.34)	1.24(0.58-2.68)
Single/separated/ widowed	5	24	1.63(0.59-4.55)	1.13(0.41-1.95)
Drug use in life				
Smoking/ chewing	12	60	2.15(0.96-4.80)	0.70(0.31-1.64)
Drinking	25	102	2.64(1.34-5.17)	0.94(0.24-1.95)
Never	16	172	1.00	1.00
Health problem during pregnancy				
Yes	10	58	1.11(0.53-2.33)	1.22(0.60-2.55)
No	43	276		1.00

1.00=Reference for category

Adjusted : father‟s education, financial stress, child‟s previous mental problem, family history of chronic medical problems, maternal problems, neonatal problems, religion, marital status, drug use in life and being preterm

6. Discussion

Prevalence of Attention Deficit Hyperactivity

The overall prevalence of ADHD in this study was found to be 13.7% among children aged 6 to 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 (37,39-41). 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 (38,33-35).

Studies which was conducted in other parts of the world from North Carolina – USA, Brazil - South America, Morocco reported ADHD prevalence as follow; 16.0%, 13.0% and 20% respectively (30,31,38).

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 (15). In a meta analytic study it has also been found to be associated with higher prevalence rates of ADHD (35). 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 (15).

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(18) 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% (18) 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 (24).

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. Studies that used the "and rule" from North Carolina – USA, Brazil - South America, Crete – Greece, Island of Majorca – Spain, Australia, Italy reported the most common subtypes as follows; combined subtype, combined subtype, no report of subtype distribution, combined subtype, predominantly inattentive subtype, no report of subtype distribution (24, 25,34 ,35,36,37). 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 (38,39). 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 (17). 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 (18).

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 (3,26). 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 (41).

Factors Associated with Attention Deficit Hyperactivity

All of the socio-demographic factors in this study were not significantly associated with ADHD unlike other previous studies. In a systematic review and metaregression analysis of worldwide prevalence of ADHD both age and gender were significantly associated with prevalence rates (15), US, lower-income populations (33); Egypt family size greater than four (2,23) were all significantly associated with antenatal ADHD. However, the current result was in concordance with some other studies. Democratic Republic Congo, No differences in gender or age distribution parents‟ education level, family structure and socio-economic status were found between cases and controls (32). A study done in Ethiopia around Butajira, the results stated that low socioeconomic status was not associated with ADHD (34).

The possible reason for this difference may be raised due to variations in the study design, instruments used, sample size, residence and study settings. Instruments used in Egypt Conner‟s questionnaires for both parent and teacher; and the DSM-IV criteria for diagnosis and grading of ADHD were used and in US (DISC-IV) instrument was used, unlike our study, community based, Institutional school based study was conducted in Nigeria and Egypt. In addition, observation of more variables in this study might avoid confounding of the socio-demographic factors.

Among stressful life events, neither of experiencing loss of loved one due to death in the previous six months nor does financial stress have significant association.

Being Preterm

In this study being preterm is significantly associated with ADHD (AOR=10.92; 95% CI: 3.25-36.67). It is consistent with study conducted in Egypt, where neonatal problems have been shown as a risk factor (23). A systematic review done in UK, has demonstrated as it is not known whether low birth weight and/or prematurity and other associated pre/perinatal risks, are risk markers of ADHD or whether they are causal (50-53). This discrepancy could be explained as the heath service quality of developed country for premature babies is well advanced. In Africa, particularly in Ethiopia most of deliveries were attended at home even premature babies born at health institution couldn‟t able to get the required optimum care. Hence, the will suffer from problems such as neurophysiological and neurochemical which could probably lead the child to develop ADHD at later time. Most studies, including meta-analyses of premature and/ or

low birth weight children, found evidence of an association with ADHD (relative risk of 2.64 for ADHD in premature children) 55 and ADHD symptoms/attentional problems(50). Children born pre-term (<26 weeks and hence likely to be have LBW) are approximately four times more likely to have ADHD: an updated review in South Africa indicated children to be diagnosed with ADHD, particularly were the inattentive subtype(22). Although the statistical finding in this current study shows a significant association between being preterm and ADHD, it might be so because of little number of samples(n=2).

Previous History of Child Mental Illness

Children who has history of previous behavioral problem are 2.05 times more likely to develop ADHD compared to children with no history of behavioral problem in this study and this was in line with other studies done in UK; where Mood disorders (e.g. major depressive disorder, dysthymia and bipolar disorder) and anxiety disorders (e.g. separation anxiety, generalized anxiety disorder, panic disorder) are also commonly observed in children with ADHD. Instudy from USA, a clinically referred sample of 381 school age children with ADHD, 50% also had a mood disorder, while 33% displayed anxiety disorders(13). Despite the type of mental illness was not known for the fact that it was family"s perception; however, it could be justified as ADHD could be more commonly associated with other mental illness as it was supported in literature here above.

Family History of Chronic Medical Illness

In this study children having family history of chronic medical problems are 3.57 times more likely to develop ADHD than those with no family history of chronic medical problem. Despite this association had never been reported in literature mentioned in this thesis, It could be justified as chronic illness will cause prematurity or LBW which has been already demonstrated as a risk factor, it is obvious that chronic illness will cause malnutrition and mal absorption of micronutrient; Despite there is no convincing evidence yet that diet plays a major causal role in ADHD. Besides, dietary constituents that have been studied in relation to ADHD symptoms include sugar, artifi cial food colourings, zinc, iron, magnesium and omega-3 fatty acids. These, a separate issue relates to using dietary change to modify symptoms. Cross-sectional studies from Australia have observed nutritional deficiencies in children with ADHD relative to typically developing children. Among others, these include fatty acids, zinc and iron(55) . In addition,

some studies from UK and USA reported positive correlations between nutrition deficiency and ADHD symptom severity(13, 56) .

Although repeatedly reported and biologically plausible, because smoking is known to have an effect on physiological processes that may create risks relevant to the origins of ADHD, and Alcohol is a known teratogen and prenatal exposure to heavy maternal drinking can cause foetal alcohol syndrome, the behavioral aspects of which include symptoms of inattention and hyperactivity. However, after adjusting all confounding variables in multivariable logistic regression analysis; maternal smoking and alcohol consumption didn‟t show association with ADHD. Other variables Child age, child sex, maternal age, family income, family size, ethnicity, religion, drug use during pregnancy, mode of delivery, exposure to radiation, birth weight and failure to cry soon after birth were not associated with ADHD.

7. Limitations and strength of the study

7.1 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.

7.2 Strength of the study

Standardized tool was used to detect the presence of ADHD.

The study was community based.

8. Conclusion and Recommendations

8.1 Conclusion

The prevalence of ADHD was relatively high in the study community. This shows that ADHD is a significant public health issue that requires emphasis.

This study revealed that being preterm, history of previous behavioral problem and Family history of chronic medical were significantly associated with ADHD

8.2 Recommendations

To ministry of health and stake holders

- The Federal ministry of health should incorporate screening tool for ADHD with existing common mental health guidelines. And the screening instrument should focus on stressful life events, family history of chronic medical illnesses, Gestational age of Fetus and co-morbid psychiatric disorder.
- Standard trainings for mental health need and care Children should be designed for health professionals working in health facility.

To Jimma Zonal and Woreda Health Offices

- Jimma Zonal and woreda health offices should integrate mental health with Child care services and health extension workers should be trained on screening of ADHD during Childhood for referral and linkage to health institutions.
- The Zonal and woreda Health office should strengthen the Optimum obstetric care coverage in each health institutions to address Complication during pregnancy and decrease bad birth outcome.
- The Zonal and woreda Health office should work vis a vis with the surrounding school to equip teachers with the minimum quality to help them treat these student in a way that psychologically encourage them to advance in their school performance.

To health care providers

- Health professionals working in Under five service area should address children with strange Behaviour besides their routine care .

To researchers

- Community based longitudinal study should be done to see the cause and effect or temporal relationships of ADHD and determinant factors.

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10. Annexes

10. 1 Annexes –I: Consent form

9.1.1 Participant information document

This sheet is to be read for the participants of the study. My name is _____. I am working as data collector for **Mr. FIREW TIRUEH** in a survey conducted by the collaboration of School of Nursing and Midifery, Addis Ababa University to assess the prevalence and associated factors of Attention deficit hyper activity disorder among children in Limmu Getet town.

This will be critical input for policy makers and organizations involved on care and support for mental health activities. Your participation in this research is voluntary. If you decide not to participate, there will be no negative consequences for you. If you do decide to participate there will be no benefits for you. However your participation on this study is very important for achievement of the study and for paving the way for the integration of mental health service in the early detection and giving appropriate care for children at the community level thereby increasing the quality of care for these people.

There is no any risk that will occur to you because of your participation in this study. All the responses given by you and results obtained will be kept confidential using coding system whereby no one will have access to your response. You are not expected to give your name or phone number. Without permission from you and legal body, any part of this study will not be disclosed to third person. You have full right to refuse and withdrawal to participate in this study if you don‟t wish any time.

The interview period will take about 15 minutes. If you are willing to participate in this study, you need to understand and sign the agreement form, and then you will be asked to give your responses by data collectors.

Name of Investigator**: Mr. Firew Tiruneh Tel: **+251917830101

Name of Advisors: *Mrs. Rajilakshimi Murgan (Ass't prof.)* ***+251911721193***

Are you voluntary to participate in the interview? Yes ☐ No ☐

9.1.2 .Informed consent form

I hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participate voluntarily in the research project. I understand that I am at autonomy to withdraw from the project at any time.

Signature of participant _____ Date _____

Name and signature of Investigator_____ Date_____

Name and signature of data collector_____ Date_____

10.2 Annex II: English Version of questioners

Questionnaires on assessment of the prevalence of ADHD among Children in Limmu Genet town, Jimma Zone, Oromia region Ethiopia, 2015.

Introduction: Thank you for agreeing to take part in this brief interview. This study is intended to assess the problem in our country above all aiming to know the magnitude of the issue and paving the way for the integration of mental health service in the early detection and giving appropriate care for ADHD of children at the community level thereby increasing the quality of care for these people. You are not expected to give your name or phone number. Every data obtained from you will be kept confidential. Without permission from you and legal body, any part of this study will be disclosed to third person.

Instruction: The questionnaire has six parts. It will take about 15 minutes to complete the interview. Please try to respond all questions. Thank you very much for your patience.

SECTION I: SOCIO DEMOGRAPHIC INFORMATION				
S.No	Questioners	Alternative response	skip	Code
1.1	How old is your child?	Age in nearest full year ----------		
1.2	What is the Sex of child ?	1. Male 2. Female		
1.3	Maternal age at conception?			
1.4	What is the highest level of school mother attended?	1. Unable to read and write 2. Able to read and write 3. Primary school 4. Secondary school 5. Diploma 6. Degree and above		
1.5	What is the highest level of school father attended?	1. Unable to read and write 2. Able to read and write 3. Primary school 4. Secondary school		

		5. Diploma 6. Degree and above		
1.6	What is your child‟s religion?	1. Orthodox 2. Muslim 3. Protestant 4. catholic 5. Others _____		
1.7	What is your marital status?	1. Never married 2. Married 3. Divorced 4. Widowed 5. Separated		
1.8	What is your ethnicity?	1. Amhara 2. Oromo 3. Tigre 4. Gurage 5. Others		
1.9	What is your family‟s income level per month?			
1.10	How do you explain your family wealth relative to others?	1. Low 2. Moderate 3. High		
1.11	How many people live in the household as permanent family member?			
SECTION II: PSYCHOSOCIAL FACTORS				
2.1	In the last 6 months, does Child‟s family member suffer a serious illness, injury or	1. Yes		

	an assault?	2. No		
2.2	In the last 6 months does Child‟s family died?	1. Yes 2. No		
2.3	In the last 6 months does Child‟s close family friend or another relative died?	1. Yes 2. No		
2.4	In the last 6 months have you had a major financial crisis (serious money worries)?	1. Yes 2. No		
2.5	In the last 6 months, have you been sacked from job?	1. Yes 2. No		
2.6	In the last 6 months have you been unemployed? Not been able to work	1. Yes 2. No		
SECTION III: SUBSTANCE AND DRUG USE INFORMATION				
3.1	In your life, which of the following substances have you ever used? (**Non-medical use only**)			
3.2	Tobacco products (cigarettes, chewing tobacco, cigars, etc)	1. Yes 2. No		
3.3	Alcoholic beverages (beer, wine, Tela, Areke, etc.)	1. Yes 2. No		
3.4	Amphetamine type stimulants(chat)	1. Yes 2. No		
	During conception, which of the following substances have you ever used? (**Non-medical use only)**			
3.5	Tobacco products (cigarettes, chewing tobacco, cigars, etc)	1. Yes 2. No		

3.6	Alcoholic beverages (beer, wine, Tela, Areke etc.)	1. Yes 2. No		
3.7	Amphetamine type stimulants(chat)	1. Yes 2. No		
SECTION IV :CLINICAL FACTOR INFORMATION				
4.1	Have your child currently diagnosed with any psychiatric illness?	1. Yes 2. No		
4.2	Have your child ever diagnosed with any psychiatric illness?	1. Yes 2. No		
4.3	Do you have family member ever diagnosed with any psychiatric illness?	1. Yes 2. No		
4.4	Does your child has history of known chronic medical/physical illness?	1. Yes 2. No		
4.5	Have you had any medical illness during pregnancy.			
SECTION V: NEONATAL AND OBSTETRICS FACTORS				
5.1	Have you encountered any complication during pregnancy?	1. Yes 2. No		
5.2	Which?	3. Bleeding 4. Preeclampsia 5. Diabetes mellitus 6. Sexually transmitted infection 7. Other		
5.3	Mode of delivery	1. Spontaneous vaginal birth 2. vaginal birth after oxytocine 3. Episiotomy 4. Instrumental delivery 5. Ceserian section 6. Other _____		

5.4	Is your child born before 32 weeks month?	1. Yes 2. No		
5.5	Is your child low weight at the time of birth?	1. Yes 2. No 3. If yes, _____gm		
5.6	Does the child cried soon after delivery?	1. Yes 2. No		
5.7	Does your child feed breast milk soon after delivery?	1. Yes 2. No		
5.8	Does the child encountered any problem soon after delivery ?	1. Fill		
5.9	Have you been exposed to pesticide or insecticide?			

SECTION VI: ADHD symptom encountered within the last six month For each item, select the box that best describes this child. Put only one check		0	1	2	3
6.1	Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities				
6.2	Often has difficulty sustaining attention in tasks or play activities				
6.3	Often does not seem to listen when spoken to directly				
6.4	Often does not follow through on instructions and fails to finish schoolwork, chores, or duties				
6.5	Often has difficulty organizing tasks and activities				
6.6	Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework)				
6.7	Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)				
6.8	Often is distracted by extraneous stimuli				
6.9	Often is forgetful in daily activities				
6.10	Often fidgets with hands or feet or squirms in seat				
6.11	Often leaves seat in classroom or in other situations in which remaining seated is expected				
6.12	Often runs about or climbs excessively in situations in which it is inappropriate				
6.13	Often has difficulty playing or engaging in leisure activities quietly				
6.14	Often is "on the go" or often acts as if "driven by a motor"				
6.15	Often talks excessively				
6.16	Often blurts out answers before questions have been completed				
6.17	Often has difficulty awaiting turn				
6.18	Often interrupts or intrudes on others (e.g., butts into conversations/games)				

10.3 Annex III: Questionnaires: Amharic Version

ኮድ_____

10.3.1 የተሳታፊው መረጃ ቅጽ እና የተሳትፎ ማረጋገጫ

ውድ ተሳታፉዎች

ስሜ.....ይባላል፡፡ በ አዲስ አበባ ዩኒቨርሲቲ የድህረ ምረቃ ተማሪ የሆኑት አቶ ፍሬው ጥሩነህ ለሁለተኛ ዲግሪ መመረቂያ የምርመር የጥናት መረጃ ሰብሳቢ ነኝ ፡፡ ይህ ደብዳቤ በዚህ ምርምር ላይ ተሳታፉ እንዲሆኑ ለመጋበዝ ሲሆን የምርምሩ ዓላማ የአእምሮ መታወክ ሊሙ ገነት ልጆች ደረጃ ያለበትን ሁኔታ ለማወቅና እንዲሁም ለችግሩ አጋላጭ የሆኑ ተዛማጅ ምክንያቶችን ለማወቅ ነው፡፡ የተለያዩ ጥናቶች በአሁኑ ወቅት የአእምሮ መታወክ ከግዜ ወደግዜ እየጨመረ መምጣቱን ያሳያሉ፡፡ በዚህም ምክያት ልጆች ለተለያዩ ማህበራዊ እና ስነልቦናዊ ችግሮች በከፍተኛ ሁኔታ እየተጋለጡ መጥተዋል፡፡ይህ ጥናት ፓሊሲ ለሚያወጡ ተቋማት እና አእምሮ ጤና ላይ ለሚሰሩ አካላት ከፍተኛ ጠቀሜታ ይኖረዋል፡፡

በዚህ ጥናት ላይ የመሳተፍ ውሳኔው የእርስዎ ነው፡፡ አለመሳተፍ ቢፈልጉ የሚመጣብዎት ምንም አይነት ችግር አይኖርም፡፡ መሳተፍም ከወሰኑ ምንም አይነት ጥቅም አይኖርዎትም ሆኖም ግን በአእምሮ ጤና መቃወክ ምርመራ ላይ ከፍተኛ ነጥብ ካመጡ በእርስዎ ፈቃድ በአቅራቢያዎ ወዳለው ጤና ተቋም በመሄድ ተጨማሪ የአእምሮ ምርመራ ይደረግልዎታል፡፡

በጥናቱ ላይ በሚሳተፉበት ወቅት በእርስዎ ላይ የሚደርስ ምንም አይነት ጉዳት የለም፡፡ በዚህ ጥናት ላይ የሚሰጡት ማንኛውም አስተያየት እና መልስ በኮድ ስርዓት በሚስጢራዊነት የሚቀመጥ ሲሆን ለማንም ሰው አይሰጥም፡፡ ስምዎንም ሆነ ስልክ ቁጥርዎን መስጠት አይጠበቅብዎትም፡፡ ካለ እርስዎ ፈቃድ እና ህጋዊ መብት ለሶስተኛ ወገን መረጃው አይተላለፍም፡፡ ለእርስዎ ካልመሰለዎት ከዚህ ጥናት ተሳታፊነት ራስዎን የማግለል ሙለ መብት አለዎት፡፡ ቃለ መጠይቁ 15 ደቂቃ የሚፈጅ ሲሆን በዚህ ጥናት ላይ ለመሳተፍ ከፈለጉ የስምምነት ፊርማዎን በቅፁ ላይ መፈረም ይኖርብዎታል፡፡ ከዚያም መረጃ ሰብሳቢዎቹ ምላሽዎን እንዲሰጡ ይጠየቃሉ፡፡

የተመራማሪው ስም፡ ፍሬው ጥሩነህ ስልክ ቁጥር፡ +251917830101

የአድቫይዘር ስም፡ 1. መ/ት ራጂላከሰሺሚ ሙረጋን (ረዳት ፕሮፌሰር፣ አዲስ አበባ ዩኒቨረሲቲ) *+251911721193*

በቃለ መጠይቁ ላይ ለመሳተፍ ፍቃደኛ ነዎት? አዎ ---------- አይደለም ----------

10.3.2 የተሳትፎ ማረጋገጫ ፎርም

የሰነዱን ይዘት አንብቤ የተረዳሁ ሲሆን በዚህ ምርምር ፕሮጀክት ላይም ለመሳተፍ ፈቃደኛ ሆኛለሁ::በማንኛዉም ሰአት የማገኜዉን የጤና አገልግሎት ሳላጣ ከጥናቱ ራሴን የማግለል መብት እንዳለኝ ተረድቻለሁ::

የተሳታፊዉ ፊርማ _____ቀን_____

የተቆጣጣሪው ስም እና ፊርማ _____ቀን _____

የመረጃ ሰብሳቢ ስም እና ፊርማ _____ቀን _____

በ ሊሙ ገነት ከተማ ለ6 ወርና ከዚያ በላይ ለኖሩ ልጆች አእምሮ ህመም እና ተዛማጅ ምክንያቶቹን ለማጥናት የተዘጋጀ

መግቢያ፡ በዚህ አጠር ያለ ቃለመጠይቅ ለመሳተፍ በመወሰንዎ አመሰግናለሁ፡፡ ይህ ጥናት በአገራችን ያለውን የልጆቸሂን የአእምሮ ጤና መታወክ ይዘት ለማጥናት እና በቀጣይነትም የሚሰጠውን ህክምናና የጤና አገልግሎት ጥራት ለማሳደግ ታቅዶ የተዘጋጀ ነው፡፡ ስልክዎንም ሆነ ስምዎን መስጠት አይጠበቅብዎትም፡፡ በእርስዎ የሚሰጥ ማንኛውም መረጃ በሚስጥራዊነት የሚቀመጥ ይሆናል፡፡ ካለ እርስዎ ፍቃድ ወይም የህግ አካል በስተቀር ይህ መረጃ ለሶስተኛ ወገን አይሰጥም፡፡**መመሪያ**፡ መጠይቁ ስድስት ክፍል አለው፡፡ ቃለመጠይቁን ለማጠናቀቅ 15 ደቂቃ የሚፈጅ ሲሆን ሁሉንም ጥያቄዎች

የማህበራዊ አኗኗር መረጃዎች				
ጥያቄ.ቁ	መጠየቅ	አማራጭ	እለፍ	ኮድ
1.1	የ ልጅዎ እድሜ ሲንት ነው	ምላሾችበ ሚቀርበው ሙሉ አመት		
1.2	የ ልጅዎ ፆታ ምንድን ነው	ወንድ ሴትክፍል አንድ፡-		
1.3	ልጅዎነ ባረገዙ ግዜ እድሜዎ ሲንት ነበር			
1.4	የ ልጁ እናት የትምህርት ደረጃ ምንድን ነው	ማንበብም መጻፍም እማትችል ማንበብ እና መጻፍም የምትችል አንደገኛ ደረጃ ሁለተኛ ደረጃ ዲፕሎማ ዲግሪ/ ከዛ በላይ		
1.5	የ ልጁ አባት የትምህርት ደረጃ ምንድን ነው	ማንበብም መጻፍም እማትችል ማንበብ እና መጻፍም የምትችል አንደገኛ ደረጃ ሁለተኛ ደረጃ ዲፕሎማ ዲግሪ/ ከዛ በላይ		
1.6	የ ልጅዎ ሐይማኖት ምንድን ነው	ኦርቶዶክስ ሙስሊም ፕሮቴስታንት ካቶሊክ		

		ሌላ		
1.7	የ ትዳር ሁኔታዎ እንዴት ነው	ኣላገባውም ባለትዳር ነኝ ፈትቻለው ተራርቀን ነው የምንኖረው		
1.9	የ ቤትዎ ወርሃዊ ገቢ ስንት ነው			
1.10	የ ቤትዎን ሀብት ከ ሌሎች አንጻር እንዴት ይገልጻሉ	ኣነስተኛ መካከለኛ ከፍተኛ		
1.11	በ ቤትዎ ውስጥ ስንት ሰወች አሉ	2-4 4-6 >7		
ክፍል ሁለት፡-የስነ-ልቦናዊና ማህበራዊ ጉዳዮች መረጃ				
2.1	በ ባለፉት 6 ወራት ውስጥ የ ልጁ ቤተሰብ አባል ከፍተኛ ህመም አደጋ ወይም ጥቃት የደረሰበት አለ	አለ የለም		
2.2	በ ባለፉት 6 ወራት ውስጥ የ ልጁ ቤተሰብ አባል የሞተ አለ	አለ የለም		
2.3	በ ባለፉት 6 ወራት ውስጥ የ ልጁ ጓደኛ ወይም የ ሩቅ ዘመድ የሞተ አለ	አለ የለም		
2.4	በ ባለፉት 6 ወራት ውስጥ ከፍተኛ የገንዘብ እጦት ኣጋጥምዎታል	አለ የለም		
2.5	በ ባለፉት 6 ወራት ውስጥ ከ ስራ የ መባረር ሁኔታ ኣጋጥምዎታለ	አለ የለም		
2.6	በ ባለፉት 6 ወራት ውስጥ ስራ ፈልገው የጡበት ኣጋጣሚ አለ	አለ		

		የለም		
ክፍል ሦስት፡- የዕፅ ተጠቃሚነት ዳሰሳ				
3.1	በህይወትዎ ከዚህ በታች ከተዘረዘሩት የትኞቹን ዕፆች ተጠቅመዋል?/በህክምና ያልታዘዙ ብቻ/			
3.1.1	በ ሒዎትዎ ከ ሚከተሉት የትኛውን ተጠቅመዋል			
3.1.2	ትንባሆ / ሲጋራ	አዎ አይ		
3.1.3	መጠጥ(ጠላ፣አረቂ፣ጠጅ፣ቢራ፣ዋይን ወዘተ)	አዎ አይ		
3.1.4	ጫት ቅመው ያውቃሉ	አዎ አይ		
3.2	በእርግና ወራት ከዚህ በታች ከተዘረዘሩት የትኞቹን ዕፆች ተጠቅመዋል?/በህክምና ያልታዘዙ ብቻ/			
3.2.1	ልጅዎን ባረገዙበት ወቅት ከ ሚከተሉት የትኛውን ተጠቅመዋል			
3.2.2	ትንባሆ / ሲጋራ	አዎ አይ		
3.2.3	መጠጥ(ጠላ፣አረቂ፣ጠጅ፣ቢራ፣ዋይን ወዘተ)	አዎ አይ		
3.3.4	ጫት ቅመው ያውቃሉ	አዎ አይ		
ክፍል አራት፡- የጤና ሁኔታን የተመለከተ				
4.1	ልጅዎ በ አሁን ወቅት የ አይምሮ ችግር አለበት	አዎ አይ		
4.2	ልጅዎ ከዚህ በፊት የ አይምሮ ችግር ነበረበት	አዎ		

		አይ		
4.3	ከ ቤትዎ ውስጥ የ አይምሮ ችግር የነበረበት/አለበት አለ	አዎ አይ		
4.4	በህክምና የተረጋገጠ የቆየ የጤና/አካላዊ ችግር አለበት?	አዎ አይ ሌላ ይግለጹ		
4.5	በ እርግዝናዎ ወቅት ያጋጠሞት በህክምና የተረጋገጠ የቆየ የጤና/አካላዊ ችግር አለ?	አዎ አይ ሌላ ይግለጹ		
ክፍል አምስት:-የእርግዝና፣ ወሊድ እና የጨቅላ ህጻናት ጉዳዮች መረጃ				
5.1	በ እርግናዎ ወቅት ያጋጠሞት የጤና ችግር አለ	አዎ አይ		
5.2	ከሚከተሉት የቱ ነው የቱ ነው	የደም መፍሰስ የደም ግፊት የስኳር ህመም ያባላዘር በሽታ ሌላ		
5.3	የወሊድ ሁኔታዎ እንዴት ነበር	በማህጸን ያለ መዳኒት በማህጸን በ መዳኒት በ ማህጸን ኦፐራሲዮን በ መሳርያ በሆድ ኦፐራሲን ሌላ		
5.4	ልጅዎ 8 ወር ከሞላው በዋላ ነው የተወለደው	አዎ		

		አይ		
5.5	ልጅዎ ሲወለድ በጣም ቀጫጫ ነበር	አዎ አይ ሌላ		
5.6	ልጅዎ እንደተወለደ አልቅሱዋል	አዎ አይ		
5.7	ልጅዎ እንደተወለደ ወዲያው ጡት መጥባት ጀምሩዋል	አዎ አይ		
5.8	ልጅዎ ከተወለደ በዋላ ችግር አጋጥሞታል	አዎ አይ ካለ ይግለጹ		
5.9	ለ ጸረ አረም/ወባ ተጋልጠው ያውቃሉ	አዎ አይ		

ክፍል ስድስት ፡- የሕመሙ ምልክት መዳሰሻ ጥያቄወች (18 ጥያቄ)

0 =የለም 1 =በጣም አልፎ አለፎ 3= አነዳንድ ጊዜ ወይም በመጠኑ 4= ሁልጊዜ

ለእያንዳንዱ ጥያቄ ከአንድ በለይ መልስ መስጠት አይቻልም፡፡ለአነድ ጥያቄ ከአንድ ቦታ ላይ ምልክት ማድረግ ያስፈልጋል፡፡		0	1	2	3
6.1	በትምህርት ቤት ውስጥ ትምህርት እየተማረ ወይንም የቤት ሥራውን እየሰራ ባለበት ውስጥ ብዙ ጊዜውን ሌላ ነገር በመስራት ያሳልፋል?				
6.2	ልጅዎ በአነድ ስራ ወይም ጫዋታ ላይ ሀሳቡን ሰብስቦ መቆየት ይቸግረዋል?				
6.3	ልጅወን ሲያናግሩት እርሰወን ከልቡ የማያዳምጥ መስሎ ተሰምቶወት ያዉቃል ?				
6.4	ልጅዎ ዘወትር ትዛዞችን ያለመከተልና ሥራዎችን ያለመጨረስ ችግር ታይቶበት ያውቃል?	.	.	.	.

6.5	መምህሩ ካስረዱት በኃላና እርሰወ ምን መስራት እነዳለበት ካስረዱት በኃላ የተባለዉን ነገር መተግበር አቅቶት ያዉቃል?		.	.	.
6.6	ልጀዎ ረጅም ጊዜ ወይንም ትኩረት የሚፈልጉ ተግባሮችን ይጠላል?	.	.	.	.
6.7	ልጀወ በተደጋጋሚ የቤት ስራ ወይም የከፍል ስራ ለመስራት ሲዘጋጅ የተሰጡት መሳሪያወች ሁሉ ፍፁም ተሞልተዉ አይገኙም ነበር?	.	.	.	.
6.8	አንድ ነገር እየሰራ በአጠገቡ ሌላ ነገር ቢካሄድ የያዘዉን ስራ ማከናወን ይቸግረዋል ?		.	.	.
6.9	ልጅዎ እለትከእለት የሚያከናውናቸውን ተግባራት ረስቶ ያውቃል?	.	.	.	.
6.10	ልጀወ መቁነጥነጡን በማብዛቱ የተነሳ አርፎ እንዲቀመጥ ሰወች ነግረዉት ያዉቃሉ(ለምሳሌ፡-መቀመጫ ላይ ሆኖ መቁነጥነጥ፣እጅና ጣቶቹን መፍተል፣ መቅበጥበጥ፣ እንዲያዉ ተረጋግቶ መቀመጥ አለመቻል)	.	.	.	.
6.11	ልጅወ ት/ቤት በነበርበት ጊዜ ለረጅም ጊዜ ተረጋግቶ መቀመጫዉ ላይ መቆየት አስቸግሮት ያዉቅ ነበር?	.	.	.	.
6.12	ልጀወ አስፈላጊ ባልሆነ ሁኔታ መሮጥ ወይም በነገሮች ላይ መንጠልጠ፣በመዉጣት መዉረድ ወይም እቃወችን በማነሳት አስቸግሮት ያዉቃል ?	.	.	.	
6.13	ልጀወ ብቻዉንም ሆነ ከጎደኞቹ ጋር ረጋ ብሎ መጫወት ይቸግረዋል		.	.	.
6.14	ዘዎትር ልጅዎ እንቅስቃሴ የበዛበት ተግባር ይታይበታል?	.	.	.	.
6.15	ልጅዎ ሁል ጊዜ ለፍላፊና መናገር ከጀመረ ንግግሩን ማቆም እንደማይችል ሰወች ለእርሰወ ነግረዉት ያዉቃሉ	.	.	.	.
6.16	ልጅዎን አንድ ነገር መጠየቅ ፈልገዉ ገና ጥያቄዉን ሳይጨርሱ ፈጥኖ መልስ ሰጥቶ ያዉቃል	.	.	.	
6.17	ልጅዎ ከሌሎች ጋር በሚጫወትበት ጊዜ ወይንም ሰልፍ መጠበቅ በሚያስፈልግበት ጊዜ ተራውን ወይም ቅደም ተከተሉን ጠብቆ ለመቆየት ይቸገራል?	.	.	.	.
6.18	የልጁ መምህር ወይም ሌሎች ንግግር ወይም ጨዋታ በሚያደርጉበት ጊዜ ልጁ ጣልቃ እየግባ እነደሚያስቸግር ያቀረቡት ስሞታ አለ?	.	.	.	.

Declaration

I, the undersigned, senior MSc. student declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master of Pediatrics and Child Health Nursing.

Name: _____

Signature: _____

Place of submission: Department of Nursing and Midwifery, Collage of Health Science, School of Allied Health Science, Addis Ababa University.

Date of Submission: _____

This thesis work has been submitted for examination with my/our approval as university advisor(s).

Advisor:

Name Signature

1. _____ _____