

**A retrospective review of pre-schoolers referred for psychiatric services at the  
Charlotte Maxeke Johannesburg Academic Hospital**

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## Candidate Declaration

I **Lavinia Deborah Lumu**, declare that this research report is my own work. It is being submitted for the degree of a **Masters in Medicine (Psychiatry)** in the University of the Witwatersrand, Johannesburg. It has not been submitted for any degree or examination at this or any other University.

A handwritten signature in black ink, appearing to read 'Lavinia Deborah Lumu', is written over a faint, circular watermark or stamp.

The 26<sup>th</sup> day of March, 2014

## **Dedication**

To my father, Samuel Bosa Lumu.

**Presentations arising from thesis**

1. Witwatersrand University, Division of Psychiatry, 24<sup>th</sup> Research Day held on the 13<sup>th</sup> June 2012.
2. Presented at the SASOP (South African Society of Psychiatrists) 60th Annual Congress, on the 9<sup>th</sup> September 2012.

## **Abstract**

The study is a retrospective review of pre-schoolers 6 years old and younger who were referred to the Charlotte Maxeke Johannesburg Academic Hospital Child, Family and Adolescent Unit, Johannesburg for psychiatric intervention between 1 January 2006 and 31 December 2010.

The study described and analysed demographics and the various characteristics of children 6 years old and under who were referred to the unit for psychiatric intervention. The several psychiatric conditions and interventions were also evaluated.

One hundred and forty nine (149) pre-schoolers who were 6 years old and under presented to the Unit and the majority were male (77.2%;N=115). The mean age of presentation was 54 months (SD=12.59) and the majority of the pre-schoolers were referred to the Unit by medical professionals. Attention-Deficit/ Hyperactivity Disorder (ADHD) was the most common presenting condition. Girls were more likely to present with Anxiety disorders (44.1%;15/34) and Reactive Attachment Disorder (35.3%;12/34) and boys were more likely to present with Autism Spectrum Disorders (26%;30/115). There were no statistical differences in the rates of Attention-Deficit/ Hyperactivity Disorder between girls (38.2%;13/34) and boys (43.6%;65/115) with ADHD ( $\chi^2=2.705$ ;  $df=1$ ;  $p=0.1001$ ). A psychological assessment was conducted in 68.5 % (102/149) of referrals. Almost half the children (46.3%; N=69) received pharmacological intervention. The defaulting rate after the initial assessment was high.

The study highlights the frequency of psychiatric illness in pre-schoolers and necessitates the need to conduct further research in this vulnerable age group at other clinical sites.

## **Acknowledgements**

I would like to acknowledge my supervisor, Dr Lynda Albertyn who has been an astute guide and pillar of support and to Dr Alison Bentley for her supervision and assistance with the statistical analysis of the data.

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## **Abbreviations**

DSM: Diagnostic and Statistical Manual of Mental Disorder

DSM-IV-TR: Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> edition Text Revision

ADHD: Attention- Deficit/ Hyperactivity disorder

ICD: International Classification of Diseases

BITSEA: Brief Infant-Toddler Social Emotional Assessment

MPH: Methylphenidate

FDA: Food and Drug Administration

ODD: Oppositional Defiant Disorder

HPA: Hypothalamic-Pituitary-Axis

OCD: Obsessive-compulsive disorder

CGI: Clinical Global Impressions Scale

CY-BOCS: Children's Yale-Brown Obsessive Compulsive Scale

SSRIs: Serotonin Selective Reuptake Inhibitors

PTSD: Posttraumatic Stress Disorder

PDD: Pervasive Developmental Disorders

ASD: Autism Spectrum Disorders

ESAT: Early Screening of Autistic Traits questionnaire

CESDD: Checklist for Early Signs of Developmental Disorders

EIBI: Early Intensive Behavioural Intervention

CD: Conduct Disorder

IQ: Intelligence quotient

RAD: Reactive Attachment Disorder

CAFU: Child, Adolescent and Family Unit

CMJAH: Charlotte Maxeke Johannesburg Academic Hospital

NVD: Normal vaginal delivery

C/S: Caesarean section

HIV: Human Immune-deficiency Virus

FAS: Foetal Alcohol Syndrome

df: Degrees of freedom

$\chi^2$ : Chi-square value

## **Introduction**

Children are vulnerable individuals at a critical point in their human development. Healthy emotional, intellectual and behavioural development is essential for the development of a functional and healthy adult. In some cases, there may be a disruption in the formation of a healthy and functional adult. There may be disturbances in emotional, intellectual and behavioural development occurring in early childhood. Such disturbances may be as a result of the early onset of psychiatric disorders or social stressors, resulting in a change in behaviour. Impairments are often missed in early childhood and as a result can lead to disruption in the normal development of the child. Psychiatric disorders often start early in childhood and may progress into adulthood, which in some cases is too late to modify (Anselmi et al. 2008; Beyer et al. 2012; Kim-Cohen et al. 2003).

Children, especially pre-schoolers (children 6 years old and under) are at risk of psychiatric disorders being missed; as is the case with depression in this age group due to pitfalls in the diagnostic criteria (Luby et al. 2003b). Psychiatric disorders in pre-schoolers are often identified only when they start formal education; which in some cases is too late.

The main aim of the study was to make a descriptive review of children, 6 years old and under who were referred for psychiatric services at the Child, Adolescent and Family Unit at the Charlotte Maxeke Johannesburg Academic Hospital, South Africa. There was a need to establish the rates of psychiatric disorders in this young age group and to ascertain how these children were managed. The several interventions offered, were also described.

The hypothesis was that the frequency of psychiatric disorders in children who are under 6 years old was significant. This group of children referred for psychiatric assessments

demonstrated that there is a growing need to screen young children. There is a need to treat these young children to prevent the progression of psychiatric symptoms and to delay progression into full-blown psychiatric disorders.

## **1. Literature Review**

Children who present with psychiatric problems in their pre-school years are at high risk of progression of psychiatric disorders into their schooling years. A study conducted in Germany focused on children in their pre-school years who were screened for psychopathology through the Child Behavioural Checklist (Achenbach & Rescorla 2000) completed by their primary- caregivers and were followed up 4 years later to their fourth year of primary school, where a follow-up Child Behavioural Checklist (Achenbach & Rescorla 2000) was then completed. Their findings revealed that there is indeed a progression and persistence of psychopathology in pre-schoolers who at base-line, were suspected of having a psychiatric disorder (Beyer et al. 2012) based on the CBCL screening tool. The German study indicated that psychopathology does present in pre-school children and that there is a possible progression of psychopathology in the growing child based on screening tools. There is also evidence of psychopathology progression into a complexity of potential psychiatric disorders. Children who initially presented with externalizing behaviours progressed to having a combination of both externalizing and internalizing behavioural disturbances.

Another study suggests that there is a continuity and progression of psychopathology in pre-school children that persists into pre-adolescence. A Brazilian study focused on the continuity of psychopathology in pre-school into pre-adolescence in a developing country, as a differentiating factor from other studies in the developed world. It is likely that in a developing country the likelihood of psychopathology in pre-schoolers would be higher, given the added socio-economic stressors experienced in a developing country. They compared their findings with developed countries. They assessed pre-school children at 4 years old using the Child Behavioural Checklist (Achenbach & Rescorla 2000)

and then followed- up and assessed them again at 12 years old (defined as pre-adolescence). They found that children presenting with externalizing behaviours at 4 years old were more likely to persist with psychopathology in pre-adolescence (2 years old). This suggests that early screening for psychopathology may be important, as children who present at a young age are more likely to present with psychopathology in later life, irrespective of their background. They concluded that their findings were in keeping with studies done in developed countries demonstrating that strained socio-economic backgrounds do not have a significant influence on the progression of psychiatric illness later on in life (Anselmi et al. 2008). The Brazilian study is of importance to the South African context, as South Africa too is a developing country that may have similar challenges as Brazil in terms of adverse socio-economic backgrounds that may contribute to the expression of psychopathology seen in pre-schoolers. Irrespective of background, psychopathology has similar trends in progression to developed countries.

There is a paucity of studies that focus on pre-schoolers with psychopathology in South Africa and the rest of Africa. Raman (2011) conducted a retrospective study that focused on child and adolescent mental health services at the Rahima Moosa Hospital, Johannesburg, Gauteng, South Africa over a one-year period. In a 12-month period (1 January to 31 December 2007), 303 children between the ages of 1 to 16 years were seen and of the 303, only fourteen children were under the age of 5 years. Due to the small number of pre-schoolers in the study, no conclusions could be made about the pre-schoolers with psychiatric diagnoses in that study (Raman 2011). The study did however; highlight the growing need to expand psychiatric services for all children.

Pre-schoolers who utilize general health services regularly may be more predisposed to psychopathology, as evidenced in a study that focused on health utilization amongst pre-



schoolers (2 to 5 years old) (Lavigne et al. 1998a). The study was a retrospective analysis of pre-schoolers who presented for health services in private facilities. Their mothers completed the Child Behavioural Checklist (Achenbach & Rescorla 2000) as a screening tool and provisional psychiatric diagnoses based on DSM-III-R were assigned. Their results implied that there is a relationship between utilization of health services and possible psychopathology.

Infant psychiatry is a proposed term to describe possible psychopathology occurring in infants (Foreman 2000). Some of the issues concerning this nosology are determining what an infant is and the possibility for an infant to develop identifiable psychopathology. The importance of early identification of a psychiatric disorder is that there might be modes of intervention that could prevent the progression of psychopathology in later life. Foreman (2000) proposes that infant psychiatry is a term used to describe the relationship that forms between mother and child and the impairments in the development of that specific relationship manifesting in different ways, which may predispose to psychopathology later on. There is limited evidence to support the validity of the term infant psychiatry, but Foreman (2000) motivates that there could be a place for infant psychiatry as a recognized discipline. The value of adopting the term, infant psychiatry, would lie in the possibility that very early identification of psychopathology is amenable to early intervention and therefore prevention of progression of a psychiatric disorder (Foreman 2000). Research is required to determine the validity of the term 'infant psychiatry'.

The World Association for Infant Mental Health is a non-profit organization that embraces the term 'infant mental health' (World Association for Infant Mental Health 2014). The organization aims to promote the mental wellbeing and healthy development of infants. The organization focuses on improved knowledge about mental development and mental

disorders in children from conception to three years of age. This term is broader than the proposed 'infant psychiatry' term that only focuses on psychopathology as a result of impaired attachment between mother and child. Infant mental health encompasses all psychopathology in the infant that may be as a result of external environmental factors as well. The Western Cape Association for Infant Mental Health is a South African association that is affiliated to the World Association for Infant Mental Health, which has similar goals (Western Cape Association for Infant Mental Health 2014). Associations such as these are important in developing the field of infant mental health through research and support of professionals. More research in the field of infant mental health will result in a clearer understanding of the early detection and progression of psychopathology in very young children.

A study investigated mental health problems in young children referred to child welfare agencies in the United States of America (McCue Horwits et al. 2012). The sample size comprised of 1,117 children aged 12 to 36 months. Screening tools utilized for mental health problems included the Brief Infant-Toddler Social Emotional Assessment (BITSEA) for infants aged between 12 to 18 months of age. The Child Behavioural Checklist (Achenbach & Rescorla 2000) was utilized to screen toddlers between 19 to 36 months of age. Of the sample size, 34.6% of 12 to 18 months aged infants had high scores on the problem scales on the BITSEA. The results emphasize that young children in the care of child welfare as young as 12 months of age can present with mental health problems. More research needs to be conducted in the infant age group and the field of infant psychiatry needs to be developed.

There are certain factors that predispose pre-schoolers to psychiatric disorders later in life. A study that was conducted in Romania focused on institutionalized toddlers (Zeanah et al.

2009). The aim of the study was to determine whether placing institutionalized children in foster care would decrease the likelihood of psychopathology developing. They compared institutionalized children, children in foster care and children within families and used the Pre-school Age Psychiatric assessment as a tool to screen children for psychiatric disorders according to the Diagnostic and Statistical Manual – IV Text Review (DSM-IV-TR) (American Psychiatric Association 2000). Children were identified from 6 – 30 months and followed-up at 54 months to assess for psychopathology. Psychiatric disorders were grouped into externalizing disorders (including Attention-Deficit /Hyperactive Disorder (ADHD), Conduct Disorder and Oppositional Defiant Disorder) and internalizing disorders (including depression and anxiety). Overall, institutionalized children were more likely to develop psychopathology. However, among children who had been institutionalized, children placed in foster care were less likely to develop internalizing disorders compared to children who remained in institutions and this may have been attributed to the parental relationships that the children developed with their foster parents, leading to decreased levels of anxiety and depression. Results suggest that the rates of psychopathology seem to be higher in boys compared to girls. Pre-schoolers, especially ones who have been institutionalized from a young age, are at an increased risk of developing psychopathology. The male sex is also a risk factor in the pre-school age group for developing psychopathology. The study highlights the fact that intervention in the form of foster care placement is a positive factor in reducing psychopathology later on in the pre-school years (Zeanah et al. 2009).

Zeanah (2011) also recommended that children in foster care who need to be transferred from foster care to placement should have the least harmful transition to placement. The recommendation is to gradually build attachments with the new caregiver and to maintain contact with the previous caregiver until the child has adjusted to their new environment. This would also lessen the likelihood of psychopathology as a result of impaired attachment

due to poor relationships and attachments with multiple caregivers (Zeanah, Shauffer & Dozier 2011).

Young children with a family history of psychiatric disorders are often predisposed to the development of a psychiatric disorder. Of interest and requiring further research, would be the outcomes of children who were born to mothers with psychiatric disorders at the time of pregnancy. Longitudinal research would be required to establish the incidence and progression of psychiatric illness in children born to psychiatrically ill mothers. A prospective study focused on the timing of exposure of a child to maternal depression and the expression of psychiatric symptoms in the child (Essex et al. 2001). Four-hundred and twenty- one children with a mean age of 73 months (SD=3.5) who were exposed to maternal depression were screened for psychiatric symptoms. Of the sample, 38 % (n=44) had initial exposure to maternal depression within the first year of life and 66% (n=61) had initial exposure to maternal depression during their pre-school years. The results revealed that pre-school children, mainly girls, who were exposed to maternal depression initially in their pre-school years, were more likely to have 'pure' externalizing symptoms. Exposure to maternal depression in infancy led to high enduring externalizing and internalizing symptoms. The study concluded that postpartum depression needs to be screened and treated adequately to decrease the likelihood of psychiatric symptoms in pre-school children.

Another longitudinal study focused on the impact of maternal depression and personality disorders on child development and assessed the mother and infant at 2 months and 18 months (Conroy et al. 2012). This was the first study that focused on maternal depression and personality disorders and the impact on child development. The sample comprised of 200 women and their children. A third of the women met criteria for Cluster A personality disorders (33%; N=36), 39 % ( N=43) met criteria for Cluster B personality disorders and 64%

(N=70) met criteria for Cluster C personality disorders. There was an overlap with the personality disorders. Infants of mothers with personality disorders and maternal depression at 18 months had more dysregulated behaviour and internalizing and externalizing behaviour. Maternal depression was independently associated with cognitive impairment and internalizing behaviour in the children. The impact of maternal depression and comorbid personality disorders may affect the progression of psychopathology in the developing child. As a preventative measure of psychopathology in the young child, one must ensure optimal management of postpartum depression and comorbid psychiatric disorders in the mother.

An infant of a mother with psychopathology is at risk of developing a mental illness due to impaired attachment and a family history of psychiatric disorders. A study focused on depressed mothers and the attachment formed between mother and child (Cicchetti, Rogosch & Toth 1998). They hypothesized that infants and toddlers of depressed mothers were more likely to develop maladaptive behaviours compared to children of mothers without psychiatric disorders. They also evaluated the risk of insecure attachments and compared children of depressed mothers with children of mothers without psychiatric disorders. The sample comprised of 156 toddlers and their mothers with a mean age of 20.39 months (SD= 2.62), of which 104 mothers had been diagnosed with Major Depressive Disorder and 52 mothers without psychiatric disorders. The majority of toddlers (43.5%) of depressed mothers were more likely to be insecurely attached compared to only 18.2% of toddlers of mothers without psychiatric disorders. Children of depressed mothers were more likely to have behavioural difficulties (externalizing and internalizing disorders), implying a link to insecure attachment. Infants and toddlers of mothers with psychopathology need added support and intervention to prevent poor outcomes in the infant and toddler. Screening and early intervention is required in infants and toddlers of mothers with psychopathology, as these children are at high risk of impaired attachment and other psychopathology.

There are certain factors that impact on the development of psychopathology in pre-schoolers. Some factors emerge as early as during perinatal development. A cohort study conducted in Norway focused on extreme preterm babies born at a gestational age of less than 28 weeks with a birth weight ranging from 500-999 grams; who after birth required ICU admission (Elgen et al. 2012). The preterm babies were then followed-up until 5 years of age and at this stage were screened for psychopathology using a Strength and Difficulties Questionnaire (Goodman 1997) and were compared to a group of children who had normal and uneventful births. The children were further subjected to an intellectual assessment and a neurodevelopment assessment and all efforts were made to exclude syndromic children and physically ill children. The results revealed that mental health scores in the preterm group were higher than in the general population group, implying that pre-schoolers who were born extreme pre-term were more likely to develop some form of psychopathology. In the preterm group the children with severe neurodevelopment disability were at an increased risk of psychopathology compared to children in the general population. Boys in the preterm group were more likely to develop hyperactivity and conduct problems compared to the girls in the same group. Boys in the preterm group also had lower IQs in comparison to girls in the same group.

The EPICure study, was a longitudinal study that focused on psychiatric disorders in children born extremely preterm (<26 weeks gestation) (Johnson et al. 2010). Children born extremely preterm were three times more likely to have a psychiatric disorder when compared to their classmates at 11 years of age. Parents reported behavioural problems on screening tools at 2.5 years and 6 years of age. Extremely preterm children were at an increased risk for ADHD, emotional disorders and Autism Spectrum Disorders (ASD) by the age of 11 years old. They concluded that early screening for psychiatric disorders is essential in extremely preterm children as they are considered to be a high risk group. The evidence suggests that extreme preterm birth is a risk factor for psychopathology in the pre-

schools years. Complicating risk factors include neurodevelopmental delay, the male sex and psychological issues, such as impaired attachment, which further predispose the growing child to future possible psychopathology. Neurodevelopmental delay may be identified as a risk marker for future psychopathology in young children.

Rutter (1985) set out to test resilience in the face of adversity and the resistance to psychiatric disorders. The pattern of stressors, individual exposure to environmental factors, compensating mechanisms and the development of self-esteem; all contribute to development or degradation of resilience. Factors that promote resilience in children include an appropriate degree of structure and control, the availability of personal bonds and intimate relationships, and the acquisition of coping skills. Infants may be protected from adversities by their cognitive capacities, but older children may be more resilient as a result of their greater level of understanding. Importantly, a person's ability to cope successfully with stress and adversities can be strengthening. It is normal to have to meet challenges and overcome difficulties in life. A child's ability to face adversity and develop resilience is dependent on a plethora of factors ranging from secure attachment, nurture and emotional support by their primary-caregiver (Rutter 1985). Through nurturing of the child, self-confidence and the development of coping skills, which are tools to face adversity, are developed. A well nurtured and securely attached child is thus more resilient to adversity and less likely to develop psychopathology.

Another study highlights the role of resilience and the development of psychopathology. The study focussed on resilience in pre-schoolers exposed to intimate partner violence and determined that some children did not develop psychopathology because they were more resilient than other children (Howell 2011). Some factors that influenced resilience included a child's ability to regulate emotions, older children and maternal mental health. Resilience is

an important factor that could determine psychopathology but it is difficult to measure in pre-school populations.

Children in pre-school seem to be less likely to develop psychopathology compared to children who have never been enrolled in pre-school (Caniato et al. 2010). Children in crèche or pre-school are in a structured environment and receive stimulation through the several educational modalities. A study that focused on toddlers in two play groups ranging from 12 months of age (SD=15 days) in the first play group to 16.5 months (SD=26 days) in the second group. Each group met on weekday mornings for 7 months. In both groups it was noted that the toddlers developed social skills and an acquisition of peer-related interaction skills (Mueller & Brenner 1977). Children assimilate important social and behavioural skills essential for appropriate development. Children, who are only enrolled in school at 6 years of age, as is the case for the majority of South African children, are at an increased risk of psychopathology. Psychopathology present in the pre-school years may only be diagnosed much later when the child is enrolled in school. Children, who are enrolled early into pre-school, have a better chance of receiving earlier intervention if they are symptomatic. Teachers are an important factor in identifying symptomatology, as they spend most of the school day with the child. A study conducted in Bavaria, Germany focused on the prevalence of developmental impairments in children enrolled in kindergarten (Caniato et al. 2010). A total of 4,005 children (girls n=1,929 and boys n=2,076), with an average age of 5.86 years (S.D. = 0.36) were assessed over a four year period. They found that boys (47.51%) were more likely than girls (30.03%) to present with some form of developmental impairment. Boys were more likely than girls to present with motor and cognitive deficits (19.26%) identified through several screening tools. Children enrolled in kindergarten were less likely to develop impairments. Overall children enrolled in kindergarten were less likely to have developmental impairments. If there were any developmental impairments identified,



children enrolled in kindergarten were able to receive appropriate interventions, thereby improving their outcomes and further development (Caniato et al. 2010).

Overall research in pre-schoolers has been limited in the past, but research in the field of pre-school psychopathology is growing. The past lack of research has also resulted in the inconsistent management and irregular use of pharmacotherapy with unpredictable outcomes in pre-schoolers, that has led to a lack of standardized approaches to this age group (Greenhill et al. 2003). Younger children also metabolize medication slightly differently from older children and adults, which may lead to unpredictable reactions to medication that are not seen in older children and adults (Greenhill 1998).

There are also ethical dilemmas to consider about conducting clinical trials and other studies in pre-schoolers. There is the ethical issue regarding the fact that pre-schoolers are unable to consent. Young children are reliant on their guardians to provide consent and in some cases, if the child does not provide assent to take part in a study; the study still proceeds if the guardian provides consent. There are also issues with the 'off-label' use of medications prescribed by clinicians that in some cases might not be suitable for pre-schoolers because of the mode of administration or the invasive medication monitoring (Greenhill et al. 2003). Because of the ethical considerations in drug clinical trials and the lack of research in the pre-school age group, clinicians are often forced to prescribe medication 'off –label' without the knowledge of the adverse effects of medication in the pre-school age group. More research is required in pre-schoolers to formulate appropriate practice parameters and standardized guidelines so that there is a consensus on safety in the treatment and management of pre-schoolers presenting with psychopathology, thereby preventing under- or over-medicating pre-schoolers presenting with psychopathology.

Some practice parameters have been developed to provide standardized care and management of children and adolescents, including pre-schoolers. The practice parameters describe assessment and treatment of children and adolescents' various psychiatric disorders including ADHD that are based on the current scientific evidence and clinical consensus of experts in the field. Psychopharmacological and psychosocial interventions are also recommended (American Academy of Child and Adolescent Psychiatry 2007a).

A Finnish study screened 3 year old children for behavioural and emotional problems utilising the Child Behavioural Checklist 2-3 as a screening tool, which was completed by parents (Sourander 2001). The study was a primary-screening study that screened all children who presented to the well-baby clinics. Boys were more likely to present with disruptive behaviours related to externalizing disorders compared to girls. Higher education in parents was associated with lower levels of externalizing and internalizing disorders and children from single parent homes were more likely to have internalizing disorders. The study highlights the issues around classification and diagnosing in young children, as some behaviours e.g. being unable to sit still or concentrate, are deemed normal for toddlers. This is a huge drawback in diagnosing psychopathology in pre-schoolers and emphasizes how important a developmental approach is to diagnosis and treatment. Although screening tools have been formulated for pre-schoolers, validating a diagnosis is an issue. Nonetheless screening tools are useful in identifying pre-schoolers who are at a high risk of psychopathology later on in their lives.

Classification of pre-school psychiatric disorders becomes challenging as the DSM-IV-TR (American Psychiatric Association 2000) and International Classification of Diseases (ICD-10) psychiatric criteria for the various diagnoses does not cater for children less than 6 years old. Pre-schoolers are unique in the sense that they behave and interact differently from

older children and adults. A 2-year old toddler may not have the ability to verbalize depressive symptoms, such as 'feelings of hopelessness' the way an older child or an adult can because emotional, behavioural, cognitive and social development is still on-going. As a result, as highlighted in a German study pre-schoolers (0-5 years old) often do not meet the full criteria for disorders such as major depression and Post-Traumatic Stress Disorder (PTSD) yet clinically they have severe symptomatology (Postert et al. 2009). Screening tools such as the Child Behavioural Checklist (Achenbach & Rescorla 2000) have been utilized in pre-schoolers to identify high- risk children presenting with possible psychopathology, but of concern are the limiting factors with regards to the diagnostic criteria in the DSM-IV- TR (American Psychiatric Association 2000) and being able to make diagnoses using criteria that exclude pre-schoolers or do not take them into account. The DSM-IV-TR (American Psychiatric Association 2000) criteria makes provision for pre-schoolers with Autism Spectrum Disorders (under the Pervasive Developmental Disorders), ADHD and Reactive Attachment Disorder. Due to the limitations of the DSM-IV-TR (American Psychiatric Association 2000) and a lack of revision to include pre-schoolers; clinicians are forced to utilise V-coding on Axis I to bring factors to the focus of clinical attention that cannot be captured in other Axis I diagnoses. The DSM-5 has been recently published and has included the addition of a subtype for PTSD in children younger than 6 years, indicating that there is an acknowledgement that pre-schoolers present slightly differently when compared to older children and adults (American Psychiatric Association 2013).

Important factors that impact on pre-school psychopathology include environmental factors, the interplay between parent and child and the quality of that important relationship. Should the parent-child relationship be maladaptive or dysfunctional, it can often contribute to pre-school psychopathology, as seen in externalizing disorders or attachment disorders.

A review on two case reports focused on pre-school children presenting with Schizophrenia and the progression of psychopathology. The review focused on 2 children aged 4.25 years

and 5.92 years old who presented with psychotic symptoms and were diagnosed with Schizophrenia after extensive investigations, including ruling out Autism Spectrum Disorders, as it is known that Schizophrenia is not only rare in childhood but even rarer in the pre-school population (Beresford, Hepburn & Ross 2005). The review highlights the pitfalls and the challenges that clinicians face when treating very young children. Young children can present atypically and the key to diagnosing them is through a detailed history that is heavily reliant on parent reporting, as young children are not always able to verbalize the symptoms they experience to the evaluating clinician. Furthermore, after extensive investigations, young children's response to medication is extremely unpredictable and there is a lack of research in response to medication in this age group. The clinician then has to resort to a 'trial and error' scenario in order to improve symptomatology. The review is longitudinal and follows both children until 9 years old and 11.92 years old respectively and found that the psychopathology persisted. This highlights that pre-schoolers diagnosed with psychopathology may have continuity of the psychopathology into later childhood but because this was a review of 2 case reports, general conclusions cannot be drawn. The review highlights the need to conduct more prospective research in the pre-school age group.

There is enough evidence to suggest that psychopathology exists in the pre-school age group. There seems to be a lack of research in South Africa, which may underplay the prevalence and the severity of psychopathology in pre-schoolers.

### 1.1 Attention- Deficit/ Hyperactivity Disorder in pre-schoolers

Attention- Deficit/ Hyperactivity Disorder (ADHD) is one of the most common presenting disorders in pre-schoolers and if left untreated leads to marked impairment in academic and social functioning. Untreated ADHD in this vulnerable age group also leads to the development of disruptive disorders which may further impair the child's functioning (DuPaul et al. 2001). Although ADHD is commonly diagnosed in pre-schoolers, little is known about the efficacy of medication prescribed to pre-schoolers and the immediate and long term effects of treatment. Methylphenidate (MPH) is commonly prescribed to pre-schoolers for the treatment of ADHD, although it is not registered for use in children 6 years old and under. A large scale study conducted in the United States of America focused on children between the ages of 3 years and 5.5 years old diagnosed with ADHD according to the DSM-IV criteria (Kollins et al. 2006). Three hundred and three children participated in an 8-phase, 70-week trial that included screening, parent training at baseline, an open-label phase, double-blind crossover titration, double-blind parallel efficacy, open-label maintenance, and double-blind discontinuation. Medication efficacy was assessed during the crossover titration phase using parent and teacher rating tools. Milder forms of ADHD were managed through parent training and this also aided to exclude children presenting with externalizing disorders that did not meet the criteria for ADHD according to the DSM-IV-TR. The study demonstrates the efficacy for the use of MPH (immediate-release) formulation in the treatment of ADHD in pre-schoolers, but does not account for the efficacy for longer acting psychostimulants. The study reveals that MPH is in use in the pre-school age group and is being prescribed despite the lack of Food and Drug Administration (FDA) approval.

A German study made a comparison between pre-schoolers (5 to 7 years old) and grade-schoolers (8 to 12 years old) presenting with ADHD (Hanisch et al. 2004). Computer-based attention performance tasks were conducted. Depending on the nature of the specified attention deficit, subjects were assigned to groups of cognitive subtypes and the effects of

Methylphenidate (MPH) were analysed depending on age and cognitive subtype. Both groups showed measurable attention deficits. Supervisory attention functions are comprised of two dimensions: attention selectivity and attention intensity. Attention selectivity is split into focused attention and divided attention. Attention intensity is divided into alertness and sustained attention. Pre-schoolers were especially impaired in supervisory attention functions. The performance on computerized attention tasks was particularly improved by MPH in all children. The study highlights that there are already measurable attention deficits in pre-schoolers that are comparable with grade-schoolers, indicating that inattentive symptoms as part of ADHD occur in pre-schoolers. The important outcome of the study was the improved inattentive symptoms when the children were placed on MPH, demonstrating its efficacy in pre-schoolers.

The relationship between the primary-caregiver and the child contributes to externalizing disorders in that adverse relationships may influence the child's behaviour negatively leading to an exaggeration of externalizing behaviour, including ADHD. Pre-school children with untreated ADHD are often difficult to manage leading to poor disciplinary measures by the primary-caregiver which leads to worsening hyperactivity symptoms as seen in ADHD. A small study confirmed that for effective treatment of ADHD in pre-schoolers (mean age=4.78 years old) and resolution of symptoms there needs to be one active component to treatment; either medication or parent training (Heriot, Evans & Foster 2008). Unfortunately, the study was a case series with very small numbers, so it could not be differentiated whether parent training or medication was superior. The study highlighted the need to conduct further research in the pre-school age group that present with ADHD to formulate treatment guidelines. More research is required to explore the efficacy of parent training in pre-schoolers with ADHD and other externalizing behaviours. Non-pharmacological interventions are as important in the management of ADHD as pharmacological intervention.

A systematic review focused on all studies published in pre-schoolers; 6 years and younger between the years 1967 to 2007 that were diagnosed with ADHD, or who had equivalent symptoms and the interventions and outcomes (Ghuman, Arnold & Anthony 2008). Various aspects affecting the management of ADHD in pre-schoolers were focused on. Highlighted is the dilemma that clinicians face when presented with a pre-schooler displaying symptoms of ADHD. Although ADHD is largely treated pharmacologically in the school-going age; children do present with ADHD symptoms before the age of 6 years of age, but because MPH is not registered for use in children under 6 years of age the clinician is often left to use MPH 'off-label'. Data are limited on the long term effects of MPH on the growing child, as the studies available only focus on acute safety and efficacy of ADHD treatment. The systematic review highlights the paucity of studies on non-pharmacological interventions in pre-schoolers with ADHD. However the few studies described have shown the efficacy of parent training. There have been anecdotal reports on other interventions involving modification of diet to improve ADHD symptoms and the findings are that only the elimination diet (additive free diet) had some effect on improving ADHD symptoms, but this was limited (Ghuman, Arnold & Anthony 2008).

In summary, MPH can be used in pre-schoolers for the treatment of ADHD with fair efficacy. The lowest possible dose should be used and side-effects should be strictly monitored. Parent training, as a form of intervention, is effective in addressing the externalizing behaviours and other disruptive behaviours that often occur comorbidly with ADHD. Alternative interventions such as elimination diets could be considered in children when there is a history of formula intolerance, food sensitivity, or general allergy but studies have demonstrated that alternative interventions are not as effective. (Ghuman, Arnold & Anthony 2008).

Screening tests for ADHD in high- risk children are essential in helping to make early diagnoses, ensuring intervention early in the disorder preventing a poor outcome. Screening for ADHD should ideally be conducted in the pre-school years when the disorder usually manifests. The pre-developmental years are important for developing appropriate social and academic behaviour. Screening would therefore be an important tool utilized in the pre-school years to identify the susceptible pre-schoolers and ensure that treatment is obtained early to improve long term outcomes and decrease the progression to other disruptive disorders, which often result if ADHD is untreated. A study conducted in Iran, made an attempt at establishing the prevalence of ADHD in pre-schoolers (referred to as children in kindergarten) and also set out to determine the validity of utilizing Conner's parent – teacher questionnaire as a screening tool for ADHD in children in 'kindergarten' aged between 5 to 6 years old (Abdekhodaie, Tabatabaei & Gholizadeh 2012). After the screening tool was utilized, a clinical interview was conducted according to the DSM-IV-R criteria to ensure the validity of the Conner's' parent–teacher questionnaire. The study found an overall prevalence of ADHD in Iranian pre-schoolers to be 12.3%. The prevalence of ADHD in boys was 18.1% and 6.7% in girls; with a significant gender difference ( $p < 0.0001$ ). The sensitivity and specificity of the Conner's' questionnaires were estimated to be 90.3% and 81.2%, respectively, with a predictive criterion validity of the questionnaire estimated at 90.3%. They concluded that the Connor's parent-teacher questionnaire can be a suitable method for the primary screening of children for ADHD, especially early on in the pre-school years at the onset of ADHD to improve childhood outcomes in social and intellectual development (Abdekhodaie, Tabatabaei & Gholizadeh 2012).

The safety of MPH in pre-schoolers has been poorly investigated in the past. The FDA does not approve of MPH as treatment for ADHD in children 6 years old and under due to the lack of research on MPH in children under than 6 years of age. The European Medicines Agency also proposes similar recommendations for MPH (European Medicines Agency 2009) in



children under 6 years of age. The FDA has registered Amphetamine use in children as young as 3 years old but Amphetamines are not available for use in South Africa and the efficacy is not clear. The dilemma that clinicians face is that the onset of severe ADHD symptoms starts before the age of 6 years old and if left untreated leads to impairment in crucial development. Wigal et al. (2006) set out to explore the safety and efficacy of MPH in children in their pre-school years between the ages of 3 to 5 years of age. One hundred and eighty three children were recruited for the study, consisting of a 1-week open-label lead-in (n = 183); a 5-week placebo-controlled, double-blind phase (n = 165); a 5-week double-blind, parallel phase (n = 114); and 10 months of open-label maintenance on MPH. The discontinuation rate in pre-schoolers was higher (11%) due to adverse events on MPH compared to similar studies in older children of school-going age. Adverse events measured included sleep and appetite changes, irritability and outbursts, changes in growth, pulse and blood pressure changes. The study found that some of the adverse effects disappear over time (e.g., irritability, emotionality) but careful monitoring was required in the long term and other more stable adverse events (e.g., appetite reduction, trouble sleeping) were managed with dose reductions. They concluded that strict monitoring and management of the adverse events of MPH is required in pre-schoolers, as they seem to be more susceptible to adverse effects on MPH than older children (Wigal et al. 2006).

Another study also focused on the effects of psychostimulants in pre-schoolers. Pre-schoolers were pooled from developmental disorders institutions. They were diagnosed with ADHD and followed up at 3 months, 12 months and 24 months on treatment (Ghuman et al. 2001). Twenty-seven children between the ages of 3 to 5 years of age were recruited and followed -up as the psychostimulant was titrated to maintenance doses. The results indicated that pre-school children had a good response to short- and long-term psychostimulant treatment, but there was a high rate of side effects. The discontinuation rate was as high as 11% (3 children) as a result of side effects. This study further echoes the fact

that psychostimulants overall are useful in the treatment of ADHD in pre-school children, but need to be used cautiously due to the several side effects that can occur in this young age group. It would seem that pre-school children are more susceptible to side-effects as a result of psychostimulant medication compared to older children of school-going age, but studies that have been conducted thus far are of small sample size and so it is difficult to generalize to larger populations.

ADHD in itself impairs the development in the growing child if left untreated. A further complication is the presence of comorbidities which can lead to further impairment in the growing child. The Preschool ADHD Treatment Study (PATs) focused on pre-schoolers with ADHD and set out to determine the clinical picture of ADHD and the comorbidities (Posner et al. 2007). Three hundred and three pre-school children aged 3–5.5 years (Mean= 4.41 years) who had a diagnosis of ADHD, Combined or Hyperactive-Impulsive type were included in the study of which 76% were male. Comorbid diagnoses were high in prevalence, with only approximately 30.4% (92/303) of participants having no co-morbid diagnoses. Approximately half (52.1%) of the sample was diagnosed with Oppositional Defiant Disorder (ODD) and approximately one fifth of children (22.4%) were diagnosed with a communication disorder (Phonological Disorder, Expressive Language Disorder, Communication Disorder not otherwise specified, Mixed Expressive-Receptive Language Disorder, Stuttering). Anxiety disorders were diagnosed in 14.5% of children of which specific phobias were present in 22 children. The rates of comorbidity were comparable to children with ADHD of school-going age. Pre-schoolers diagnosed with moderate to severe ADHD are more likely to have comorbidities, which may likely further impair the development of this vulnerable age group.

The Preschool ADHD Treatment Study (PATs) further went on to determine the impact of comorbidity on the response to MPH in pre-schoolers with ADHD (Ghuman et al. 2007 &

Posner et al. 2007). One hundred and sixty five children (74% boys) between 3 and 5 years of age (mean age = 4.7 years), with a DSM-IV diagnosis of ADHD, entered the 5-week crossover titration phase. Oppositional Defiant Disorder (ODD) was the most common comorbid disorder and was present in 90 pre-schoolers. The study sample had a high rate of comorbidity occurring in 118 (71.5%) of the participants. Forty seven (28.5%) had no comorbid disorders present; 69 (41.8%) children had one comorbid disorders and 34 (20.6%) children had two comorbid disorders. The findings in the study concluded that pre-school children with no or one comorbid disorder (primarily ODD (74%)); were the best responders when treated with MPH for their ADHD. Pre-schoolers diagnosed with ADHD and two comorbid disorders showed a moderate treatment response to MPH; whilst pre-schoolers with ADHD and three or more co-morbid disorders did not respond to MPH treatment. The results suggest that pre-schoolers with ADHD and comorbid disorders are more likely to have a poor response to MPH, if they have more than one comorbid disorder. This may result in a worse prognosis in pre-schoolers with ADHD, which already impairs crucial social and intellectual development and is further complicated by comorbid disorders.

### 1.2 Anxiety disorders in pre-schoolers

Anxiety disorders in pre-schoolers are very difficult to identify and diagnose. One of the difficulties in diagnosing anxiety disorders in pre-schoolers is the symptomatology. Children of young age with anxiety are often inhibited and withdrawn. There is very limited research in pre-schoolers on the clinical presentation of anxiety disorders, but symptoms such as irritability, shyness, school refusal, somatising, social withdrawal and sleep disturbances are all suggestive of anxiety disorders in pre-schoolers (Hatzinger et al. 2012). In addition, clinicians are also faced with the difficulty of diagnosing anxiety disorders in young children who have not yet developed the capacity to express their emotions verbally and this results in the excessive reliance on the primary-caregiver, who has to become the mouthpiece for the child. Diagnosing anxiety in this age group is highly reliant on changes in behaviour observed by the primary-caregiver and the use of screening tools e.g. Child Behavioural

Checklist and questionnaires. The quality of mothering influences the accuracy of reporting. The validity and the reliability of the DSM-IV-TR criteria are also questionable for anxiety disorders, due to the limited reporting that can be obtained in a clinical interview from very young children.

Hatzinger et al. (2012) conducted a study in 30 pre-schoolers with a mean age of 4.84 years presenting with a range of psychiatric disorders, including a range of anxiety disorders. Their hypothesis was that pre-schoolers with psychiatric disorders were more likely to show an increase in cortisol and sleep disturbances when compared with a control group. In older children and adults increased hyperactivity of the Hypothalamic - Pituitary - Axis (HPA) was observed in Post-Traumatic Stress Disorders and other mood disorders as well as evidenced by an increase in cortisol secretion that is usually released in situations of stress. Sleep was observed and analysed with the administration of the Behavioural Checklist and the Strengths and Difficulties Questionnaire as screening tools to identify symptomatology. Their results concluded that children diagnosed with a psychiatric disorder are more likely to have higher cortisol secretion at baseline and during challenge conditions, more sleep disturbances and more psychopathology compared to healthy controls. Cortisol levels were elevated, suggesting HPA hyperactivity in children with psychiatric disorders, especially in girls with psychiatric disorders. The children with psychiatric diagnoses had a shorter sleep duration, longer sleep onset latency, more awakenings and an overall decreased sleep efficiency. There were more reports of being bullied, hyperactivity, and more victimization compared to healthy controls. The study concluded that pre-schoolers with psychiatric disorders, including anxiety disorders are more likely to have sleep disturbances and associated increased secretion in cortisol, suggesting HPA hyperactivity compared to healthy controls. The increased cortisol release may have long term implications in the brain of the growing child including decreased brain plasticity, which is important for brain

development (Hatzinger et al. 2012). It therefore makes it imperative that anxiety in pre-schoolers is treated and managed timeously.

A pilot study focusing on toddlers with anxiety disorders set out to clarify the validity and the reliability of the DSM-IV criteria with regards to diagnosing anxiety disorders in pre-schoolers (Warren et al. 2006). The main difficulty was the limiting criteria in the DSM-IV that requires verbal reports of anxiety symptoms, which may not be possible in young children due to their level of language development, making diagnosing anxiety disorders according to the DSM-IV very challenging for the clinicians and resulting in the possibility of underdiagnosing anxiety disorders in young children. The study modified certain criteria on the DSM-IV criteria in Generalised Anxiety Disorder and Social Phobia and utilized the modified criteria and the original criteria where comparisons were made. Seventy-two children between 18 months to 5 years old were included in the study of which 19 met the modified Social Phobia criteria, where they eliminated the criterion that the individual fear that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing, to the observed behavioural criterion of a persistent reluctance to approach unfamiliar people and an 'excessive shrinking' from contact with others. Of the 19 children who were diagnosed with Social Phobia on the modified criteria only 8 met the original DSM-IV criteria for Social Phobia. Twenty-nine children met the modified Generalized Anxiety Disorder criteria where they substituted 'two or more fears' with excessive anxiety and worry criteria based on clinical practice. Of the twenty nine children only 5 met DSM-IV criteria Generalized Anxiety Disorder and 35 met no anxiety disorder criteria (Warren et al. 2006). The pilot study although small, raises controversial issues about the diagnosing of anxiety disorders in young children, as the current criteria do not take into account the inability of young children to appropriately verbalize their anxious feelings, due to their level of development. This implies that young children with anxiety disorders are left untreated and are therefore vulnerable to impairment and progression into full-blown psychopathology. A further

confounding factor is a lack of screening tools specific for anxiety disorders that would aid in identifying children at risk of developing anxiety disorders.

Ercan et al. (2012) published a case report on pre-school children with Obsessive–Compulsive Disorder (OCD) on Fluoxetine treatment. OCD is rare in children and even rarer in pre-schoolers, but when present the symptoms are disabling to the point that intervention is required. There are no screening tests for OCD in pre-school children and when diagnosed the choice of intervention is non-pharmacological, including the use of cognitive-behavioural therapy techniques, which in most cases needs the involvement of the whole family with limited results in severe OCD. The use of Fluoxetine in pre-schoolers is limited and studies are few and according to the FDA the use of Fluoxetine for anxiety disorders is to be used in children 6 years old and above. The case report focused on 4 children under 6 years of age, with disabling OCD symptoms who were managed via non-pharmacological methods with no improvement. The children were placed on trials of Fluoxetine advocated as the drug of choice in treating the OCD symptoms, due to previous case reports that demonstrated the safety of Fluoxetine. The 4 children generally, when titrated to Fluoxetine 5mg daily showed improvement in the OCD symptoms and there was a decrease in their daily impaired functioning, as evidenced by improved scores on the Clinical Global Impressions Scale (CGI) and the Children’s Yale-Brown Obsessive Compulsive Scale (CY-BOCS) total. On higher doses of Fluoxetine, although there were no adverse events; the children did display behavioural disinhibition that resolved when the Fluoxetine was decreased. Overall the case report highlighted the efficacy of Fluoxetine in treating OCD in pre-schoolers that seems to supersede non-pharmacological intervention, especially if the OCD symptoms are disabling. More research needs to be conducted to confirm the efficacy of Serotonin Selective Reuptake Inhibitors (SSRIs), including Fluoxetine in larger sample sizes. Screening tools are essential in identifying children at high risk of developing anxiety

disorders especially in very young children who are often at an added risk (Ercan, Kandulu & Ardic 2012).

Post-Traumatic Stress Disorder (PTSD) is characterized by experiencing a traumatic event and subsequently developing associated symptoms, where the individual experiences anxiety symptoms when reliving the traumatic event. Many of symptoms are expressed verbally e.g. hypervigilance and anxiety symptoms. For young children the DSM-IV-TR criteria fall short in diagnosing PTSD. Yet young children are exposed to traumatic events and develop pathological symptoms subsequently. A large sample-sized community survey of 3860 was conducted in pre-school children between the ages of 2 and 5 years old and the prevalence of PTSD according to the DSM-III-TR was found to be 0.1% indicating that young children do develop PTSD symptomatology (Lavigne et al. 1996).

The DSM-IV-TR criteria (American Psychiatric Association 2000) does not give specifiers for diagnosing young children who are 6 years and under with regards to Post-Traumatic Stress Disorder which does present in this age group, but may be underdiagnosed due to the lack of validity and reliability of the criteria.

Thabet et al. (2006) focused on 309 pre-schoolers (157 boys and 152 girls) with a mean age of 4.7 years (range 3–6) exposed to trauma of varying degrees in the war torn Gaza strip bordering the Mediterranean Sea between Israel and Egypt. Trauma exposure was graded utilizing the Gaza Traumatic Checklist - Parent Form which consists of 17 items covering different types of traumatic events that the child may have been exposed to, ranging from witnessing bombardment of homes by helicopters to witnessing mutilated bodies on television. Parents were also required to complete the Strengths and Difficulties

Questionnaire (Goodman 1997) version for pre-school children and the Behavioural Checklist which were utilised to screen emotional and behavioural problems in children. Pre-schoolers exposed to trauma in the study were more likely to have a high prevalence of the following symptoms: increased frequency of temper tantrums, fears, over-activity, attention seeking and poor concentration; in contrast to older children of school-going age, who often present with posttraumatic stress and depressive disorders more in keeping with the DSM-IV-TR criteria (Thabet, Karim & Vostanis 2006). The study highlights the adverse impact that war trauma has on children of this vulnerable age, but little is understood about the mechanisms of the symptomatology. The study confirms that although pre-schoolers are young, vulnerable and unable to fully verbalize their emotions; they still experience trauma and display implicit behavioural and anxiety symptoms despite the symptoms not fully meeting the DSM-IV-TR criteria (American Psychiatric Association 2000).

A similar study was conducted by Feldman and Vengrober (2011) that focused on Israeli children between the ages of 1.5 to 5 years old exposed to war and living near the Gaza strip. Of the 148 children exposed to war repeatedly, 37 % (N=56) were diagnosed with PTSD. Exposed pre-schoolers were twice as likely to develop PTSD, when compared to toddlers. The difference with this study is that there was emphasis placed on maternal well-being and comparisons were made to mothers of children with PTSD and mothers of children who did not develop PTSD, despite exposure to war. Mothers of children who developed PTSD reported more symptoms of depression, anxiety and PTSD when compared to mothers of children without PTSD despite exposure to war. The study implied that a mother's resilience to exposed trauma would determine the progression of psychopathology in the child (Feldman & Vengrober 2011).



Another study focused on 114 children between the ages of 2 and 10 years old (mean age=6.7 years [SD=2.7]) with PTSD in preschool- and elementary school-age children exposed to motor vehicle accidents (Meiser-Stedman et al. 2008). Forty-seven (41.2%) of these children were pedestrians who were knocked by a motor vehicle and 54 (47.4%) were passengers in a car that was involved in an accident. Six children (5.3%) were involved in an accident while riding a bicycle, and six (5.3%) were passengers on a bus that was involved in an accident. Children in the study sustained mild injuries, with 28 (24.6%) receiving no injuries, 80 (70.2%) sustaining soft tissue injuries, and six (5.3%) sustaining some kind of fracture. Eighteen children (15.8%) were admitted to the hospital as a result of their injuries, and seven (6.1%) lost consciousness during or shortly after their accident. The children between the ages of 2 and 6 years old received an initial assessment for which the diagnosis of PTSD was based on the alternative algorithm. The PTSD alternative algorithm is based on parent-reported symptoms and there is a reduction in the required number of endorsed avoidance symptoms (from three symptoms to one symptom), as well as the removal of DSM-IV criterion A2 concerning emotion at the time of trauma. The diagnosis of PTSD based on the alternative algorithm criteria was only a moderately sensitive predictor of this same diagnosis at the 6-month follow-up as 50% of cases were undetected. They concluded that the adoption of the alternative algorithm criteria for PTSD based on parent report in the assessment of psychopathology among 2- to 6-year-old children was a more sensitive predictor of PTSD in children between 2 and 6 years old and should replace the established DSM-IV-TR (American Psychiatric Association 2000) criteria for PTSD. The study does cast some doubt on the validity of using the DSM-IV-TR (American Psychiatric Association 2000) criteria in the diagnosis of PTSD in young children.

The DSM-5 has been recently published and has now included a special subtype for PTSD in children younger than 6 years of age, thereby making the diagnosis of PTSD in pre-schoolers more valid (American Psychiatric Association 2013).

Anxiety disorders are common in young children, but because of the child's immature verbal abilities and the pitfalls of screening tools and diagnostic criteria; anxiety disorders are often missed or under-diagnosed. Screening tools and diagnostic criteria need to be adjusted to accommodate for the possibility of symptomatology in young children, but also be sensitive to normal anxiety expected for that age, thereby preventing diagnosing normal anxiety as pathological.

### 1.3 Autism in pre-schoolers

Pervasive Developmental Disorders (PDD) or Autism Spectrum Disorders (ASD) are characterized by marked impairments in reciprocal social interaction, language, and communication and by the presence of repetitive or stereotypic patterns of behaviour and interests according to the DSM-IV-TR (Chakrabarti & Fombonne 2005). In the DSM-5, the term ASD is utilized to describe all the Pervasive Developmental Disorders including Autistic Disorder, Asperger's Disorder, Childhood Disintegrative Disorder and Pervasive Developmental Disorder Not Otherwise Specified. In the DSM-IV-TR, researchers found that these separate diagnoses were not applied consistently in different clinical settings and that the DSM-5 diagnosis of ASD was more accurate and inclusive (American Psychiatric Association 2013). Autism in young children can be difficult to diagnose. In addition children with developmental delay can often present with the same symptomatology that is seen in autism and the two conditions are often comorbid. Efforts have been made to develop screening tools for the early detection of autism in young children, as early intervention has been shown to improve outcomes (Chakrabarti & Fombonne 2005). Dereu et al. (2012) set out to focus on children identified as being at high risk for Autism Spectrum Disorders (ASD) through an early screening project. They then followed up the children to observe how many children went on to have the diagnosis of ASD. The study was prospective and followed a sample of children between the ages of 2 and 4 years old with the aim of examining the diagnostic status of children at 4 years of age with a false positive screen for ASD on the Checklist for Early Signs of Developmental Disorders (CESDD). At 2 years of age the

CESDD or Early Screening of Autistic Traits questionnaire (ESAT) was utilized. The study sample consisted of 41 at-risk children (26 boys and 15 girls) who were all screened within a day-care facility with an average 22.35 months old (SD = 6.56) . The children were then reassessed at approximately 4 years old (mean age = 49.40 months, SD = 1.71). At the age of 4 years old the diagnoses of ASD and other developmental disorders were made according to the DSM-IV-TR by a multi-disciplinary team. Of the 31 children with a positive screen for ASD on the CESDD, 11 children were diagnosed with ASD, two children received a 'working diagnosis' (therefore inconclusive diagnosis) of ASD, 14 children had other developmental problems, and only four children received no diagnosis yet. Of the 12 children with a positive screen on the ESAT, six children were diagnosed with ASD, five children had other developmental problems, and only one child received no diagnosis. The study focused on the predictive validity of screening instruments for ASD beyond diagnostic outcome and thereby examine if developmental problems in positive screen children persist throughout early childhood. Screening positive or negative on the CESDD did not lead to differences in outcome measures at age 4. However, screening positively or negatively on the ESAT was related to outcome differences at age 4. Children with a positive screen on the ESAT had a lower development quotient and lower age equivalents for both receptive and expressive language than children with a negative screen. However, positive and negative screen children on the ESAT did not differ in their ASD symptom severity at age 4. This study's results imply that many children who have false positive screening for ASD, have other developmental problems and some of these children persist in having developmental difficulties until they are 4 years old. It seems that early screening tools for ASD also detect children with other developmental disorders. In other words; children with a positive screen for ASD in their toddler years are at risk and should be monitored in the later years, as the screening tools for ASD have a low specificity and the use of other diagnostic instruments to establish the diagnosis ASD should be utilised to differentiate true positive diagnoses from false positives in the screened cases (Dereu et al. 2012).

The focus of research is on early behavioural interventions with the emphasis being placed on language and cognitive development to improve childhood outcomes, because there is no known cure for ASD. A study screened children for developmental problems and included 10,903 children aged between 4 and 6 years who were living in the Midlands, United Kingdom (Chakrabarti & Fombonne 2005). Children with symptoms suggestive of PDD were then intensively assessed by a multidisciplinary team using standardized diagnostic interviews, psychometric tests, and medical workups. After extensive assessments, a diagnosis of a PDD was confirmed in 64 children, indicating that the combined prevalence of PDD was 58.7 per 10,000 (95% CI=45.2–74.9) with 64 children (85.9% boys) having a diagnosis of PDD. According to the study there is an increase in the rate of PDD compared to a similar study conducted 15 years prior (Chakrabarti & Fombonne 2005). There seems to be an increase in the diagnosis of ASD or PDD which might be due to the development of screening tools and an increased awareness of the disorder.

Behavioural interventions have been utilised in autism to improve the outcomes of children with this disabling disorder. The key is intervention as early as possible, to improve the outcomes of the disorder. Magiati, Charman & Howlin (2007) provided outcome data on 44 pre-school 23- to 53-month-old children with ASD, who participated and were evaluated after 2 years of either home-based Early Intensive Behavioural Intervention (EIBI) in a community setting, or autism specific nursery provision. The children in the EIBI group received 1:1 home teaching and the families used discrete trial teaching techniques. Both groups of children showed improvements in age equivalent (or raw) scores in several developmental areas. There were no significant differences in outcomes in cognitive, language and play skills or autism severity at follow-up when intake IQ differences were accounted for statistically. The study highlights the fact that there is no statistical significance between either modes of intervention in young children with autism; therefore indicating that home-based EIBI in a community setting or autism specific nursery provision both have beneficial

outcomes. Their findings suggest improving autism-specific school-based provision for pre-schoolers with ASD as a choice of intervention in ASD (Magiati, Charman & Howlin 2007).

Screening tools are essential in the early identification of autism in young children. There are multiple screening tools and it is often difficult to determine the appropriate screening tool that will be most useful in identifying autism in young children. Identifying the most appropriate screening tool that will be highly specific and sensitive to picking up autism in young children is also an important issue. Research into the validity of screening tools is difficult as there are multiple studies that utilise different screening tools leading to non-conclusive results when the data is amalgamated, making it difficult to determine the ideal screening tool. Vostanis et al. (1994) recommended in a publication that although there is a general awareness by clinicians of autism and that is important to identify early; a standardized form of screening and clinical observation needs to be established to reach a consensus and to aid in the diagnosis of autism in the future and also for future research purposes (Vostanis et al. 1994).

#### 1.4 Disruptive behaviours in pre-schoolers

Disruptive behaviours in young children manifest in the form of Oppositional Defiant Disorder (ODD) where the child refuses to obey persons of authority and can be quite defiant and also Conduct Disorder (CD) where the child disobeys basic rules and violates the basic rights of others, as well as behaving aggressively according to the DSM-IV-TR criteria (American Psychiatric Association 2000). Disruptive disorders in young children are often difficult to identify and diagnose, because part of normal early development as a child involves developing autonomy and independence. Many young children defy adults and display aggressive outbursts, such as tantrums in an effort to explore their boundaries and express feelings of frustration respectively. Barkley et al. (2002) conducted a longitudinal study that focused on pre-school children screened for possible disruptive disorders, who

were followed-up for 3 years to identify the progression of the disorders and possible comorbid disability. An effort was made to identify an association between disruptive behaviours and adaptive disability in pre-school children. Adaptive disability was defined as the inability to learn the requisite skills for social self-sufficiency e.g. attending to self-care independently and making friends, which is indicative of the development of independence and autonomy in the young child. The study grouped children into two groups; the disruptive behavioural group and the disruptive behavioural group with adaptive disability respectively. The results showed that pre-school children diagnosed with disruptive behaviour and adaptive disability combined were more likely to have a poor prognosis in terms of social and academic functioning when compared to young children diagnosed with disruptive behaviours but no adaptive disability. Young children in the disruptive behaviours with adaptive disability group were more likely to be diagnosed with ADHD and Conduct Disorder had had more disabling behaviours at home and poorer academic performance. The study suggests that adaptive disability is indicative of a worse prognosis in pre-school children with disruptive behaviours, leading to the likelihood of poor social and academic performance. Adaptive disability is an identifiable poor prognostic factor (Barkley et al. 2002).

The validity of the DSM-IV-TR (American Psychiatric Association 2000) criteria for disruptive disorders in pre-school children needs to be tested to establish the validity and the reliability of diagnoses assigned to young children. A review set out to establish the validity of the DSM-IV-TR criteria in the diagnosis of disruptive disorders in young children (Keenan & Wakschlag 2002). 'Normal' disruptive behaviours need to be established, as toddlers tend to have tantrums and have aggressive outbursts as part of appropriate developmental behaviour, which is usually outgrown. Diagnostic criteria should be valid and should be able to appropriately identify behaviour that is disabling and pathological to the point that there is impairment in social, intellectual and daily functioning. Conclusions from combined studies reported that disruptive disorders can be identified using the DSM criteria, but diagnosis of

Conduct Disorder in young children is more problematic and there is no clarity on the use of the DSM criteria. They recommended further longitudinal research to be conducted to observe the progression of disruptive disorders in pre-school children (Keenan & Wakschlag 2002).

Further research was conducted to establish the validity of the DSM-IV-TR (American Psychiatric Association 2000) criteria in the diagnosis of disruptive disorders in pre-school children (Keenan et al. 2007). The study set out to test the validity and the reliability of the DSM-IV-TR criteria by focusing on 123 children between the ages of 3 to 5 years old who presented with symptoms of ODD and CD. Parents and teachers were interviewed to elicit the symptoms of disruptive disorders, as well as clinical interviews to confirm the diagnoses of disruptive disorders. The study concluded that most DSM-IV-TR ODD and CD symptoms could be reliably and validly assessed in pre-school children. The study still questions when behaviour is deemed to be pathological in young children and recommends further research in this regard (Keenan et al. 2007).

Disruptive behaviours are often the result of external circumstances such as, a strained relationship between parent and child and also difficult home circumstances that can precipitate disruptive behaviours in young children. Intervention is often geared to behavioural modification, but the efficacy of behavioural intervention in the treatment of disruptive behaviours in young children needs further corroboration. A Norwegian study hypothesized that parent training and combined parent training with child therapy would be more effective in improving child conduct problems, compared to children where there was no intervention (Larsson et al. 2009). One hundred and twenty-seven children aged between 4 to 8 years old were referred to child psychiatric outpatient clinics because of severe oppositional or conduct problems. The children were randomly allocated to either the parent

training group, parent training with child therapy group or the waiting- list control group. In the parent training group, parents were placed in a program that taught them the use of positive reinforcement disciplinary strategies, effective parenting skills, coping with stress skills and strengthening children's social skills, using video snippets for discussions in the parent group, role play, rehearsals and homework assignments. On average parents attended 92% of the scheduled meetings. The child therapy involved a group of six children who met with two therapists in the clinic for 18 weekly 2- hour sessions based on the Incredible Years Dinosaur School Program. The aims of the group therapy were to increase child social skills, facilitate conflict resolution skills and increase playing and cooperation with peers, using video snippets for discussions, role play, rehearsals and home assignments. Out of the 88 treated children, 70 children (79.6%) were no longer assigned a formal ODD diagnosis at the one year follow-up, but 11 (15.7%) met criteria for 'sub-threshold' ODD and of the eight children (9.1%) who met criteria for CD pre-treatment, two children (2.3%) continued to have CD. Fourteen children in parent training group combined with child therapy had ADHD at the follow-up compared to 22 before treatment. Combined parent training and child therapy showed the most significant reduction of child conduct problems immediately after intervention, but these improvements were not sustained one year later. The study showed significant reductions in child aggressive behaviours at home, improvement of parental practices and reduction in parental stress, both according to mother and father reports. Parents also reported high levels of satisfaction with the intervention and would recommend it to other parents having similar child behavioural problems (Larsson et al. 2009). There is evidence to support parent training and child therapy as an effective intervention in the treatment of disruptive disorders in pre-school children. For the outcomes of the intervention to be maintained in the long-term, follow up treatment may be required.

The same Norwegian study also went on to further hypothesize that the disruptive behaviours in the same sample and the improvements in behaviour after intervention could



be generalized to different settings such as the nursery school after a one-year follow-up. Children with disruptive behaviours at home often display these behaviours at school as well, which may hinder the child's ability to progress academically and socially. In the Norwegian study, in the same sample, 44 (39%) of the children had pervasive conduct problems and at the 1-year follow-up, 83% (n=70) of the children exhibited clinical levels of conduct problems in day-care/school setting, and 30 of them (35% of the total sample), had pervasive conduct problems. Although it could be generalized that combined parent training and child therapy effectively reduced aggression levels in day-care/school setting acutely; the efficacy of these interventions was not maintained a year after intervention with a statistically significant relapse rate. The results highlighted the fact that despite the improved symptoms on parent reports after intervention; at a 1-year follow-up the improved behaviour may not be generalized to the day-care/school setting. This indicates that according to teachers' reports after 1-year follow-up scores of disruptive behaviour, this behaviour may still be high despite earlier intervention (Drugli & Larsson 2006). Although behavioural interventions in the form of parent training and child therapy seem to be effective in the treatment of disruptive behaviours in young children, the efficacy is not sustained and the improvements in behaviour are not maintained in the day-care/school setting, which indicates that interventions for disruptive behaviours in young children should also be extended to the day-care/school setting to manage pervasive disruptive behaviours. More research with larger sample sizes in different settings is required to establish appropriate and effective management of disruptive disorders in pre-school children.

### 1.5 Depression in pre-schoolers

Depression in young children is extremely difficult to diagnose, as young children have not fully developed social skills, struggle to identify feelings and often have difficulty expressing feelings of sadness, hopelessness and guilt as per the DSM-IV-TR (American Psychiatric Association 2000) criteria. The biggest pitfall the clinician faces in diagnosing depression in pre-schoolers is the reliability and the validity of the DSM-IV-TR (American Psychiatric

Association 2000) criteria, which have not been adjusted to accommodate young children, who are unable to verbalize symptoms of depression. This leads to the mistaken assumption that depression does not occur in young children. Luby et al. (2003a) set out to establish the clinical picture of depression in pre-school children. One hundred and seventy-four children between the ages of 3 and 5.6 years were recruited from community and clinical sites with a possible diagnosis of depression. The most common presenting depressive symptoms included sadness or irritability, with noted anhedonia. Somatization was more common in the group diagnosed with depression compared to other control groups but this was not a significant symptom in the pre-school group. The findings in the study imply that the clinical characteristics of depression in pre-school children are sadness and/or irritability with associated vegetative changes and anhedonia demonstrated by lack of pleasure in activities and play. The depressed pre-school children in addition, displayed significantly more destructive and/ or suicidal play themes compared to the control groups. The results further suggest that anhedonia is a highly specific symptom of depression, suggesting that pre-school children presenting with this symptom are more likely to have clinical depression. Sadness and/or irritability emerged as a highly sensitive symptom, observed in 98% of depressed pre-school children. Comorbidities were highly prevalent in depressed children with 42% having additional ADHD and 62% having ODD and 41% were comorbid for both ADHD and ODD. Twenty-eight percent of depressed pre-school children had comorbid anxiety disorders. Somatization was of low frequency in the sample (38%) suggesting that it was not a significant symptom of depression in pre-school children. The researchers concluded that clinicians should familiarize themselves with the typical symptoms of depression in pre-school children, with the knowledge that the presence of sadness and/or irritability is the most sensitive symptom and anhedonia is the most specific symptom when considering clinical depression in pre-school (Luby et al. 2003a). The study highlights the fact that depression does occur in pre-school children and clinicians require some vigilance in identifying depressive symptoms in young children and making the diagnosis of depression.

Luby et al. (2003b) also published a report highlighting a study where the DSM-IV criteria for Major Depressive Disorder was modified to suit pre-school children in adequately identifying clinical depression in young children. A group of 145 pre-school children were recruited and their caregivers underwent a diagnostic assessment for preschool children. The duration of depressed mood for 2 weeks in the original DSM-IV criteria was found to be too stringent and was removed and instead parent reporting on a sustained unhappy mood was considered valid. The results demonstrated that the modified DSM-IV criteria for Major Depressive Disorder encapsulated a group of pre-school children with severe depressive symptoms and social impairment compared to the control groups. The study highlighted the validity of the modified DSM-IV criteria and emphasized the deficiencies of the current DSM-IV criteria in diagnosing clinical depression in approximately 75% of the pre-school group with milder forms of depression. Only clinical depression in pre-school children was diagnosed. More longitudinal studies are required to test the validity and the reliability in diagnosing depression using the modified DSM-IV criteria (Luby et al 2003b). This study demonstrates the reliability and the validity of the DSM-IV criteria in diagnosing depression in pre-school children is questionable. It may be that because young children cannot verbalize certain depressive symptoms; major depression is not diagnosable in young children unless it is severe. Current research has revealed that pre-school children do present with significant depressive symptoms, which are often overlooked in the current DSM-IV criteria. More research is required to test the validity and the reliability of the criteria in diagnosing depression in young children.

Dysthymia, although deemed to be less severe than major depression has a longer duration for up to one year according to DSM-IV criteria. A descriptive study analysed the evidence of dysthymia according to DSM-IV criteria in pre-school children (Kashani et al. 1997). Three-hundred pre-school children between the ages of 2 and 6 years old were assessed for possible dysthymia and only 8 children (2.7%) were diagnosed with dysthymia. The duration

of the dysthymia ranged from 14 months to 4 years. All 8 children had aggressive and somatic complaints as part of their presentation and psychomotor agitation occurred in 75% of the 8 children, which is not part of the DSM-IV criteria for dysthymia. Hopelessness and anhedonia were not reported as part of the symptoms of dysthymia in the pre-school children but all 8 children had a positive family history of psychiatric illnesses ranging from mood disorders to substance use disorders. The study has small numbers and therefore it is very difficult to draw conclusions and generalize the study to other populations. Dysthymia does seem to commonly present in pre-schoolers and large longitudinal studies need to be conducted to confirm the validity and reliability of the DSM-IV criteria for dysthymia and to establish the prevalence of dysthymia in pre-school children.

The prevalence of depression in pre-school children is unclear due to the limited research in this age group. A study conducted in Spain set out to establish the prevalence of depression in their population by screening 1427 children between the ages of 3 to 6 years old who were enrolled to nursery schools in their areas (Domènech-Llaberia et al. 2009). After screening, 222 were identified to have possible depression and were further assessed by a pair of clinicians according to the DSM-IV criteria. After assessments by clinicians, 16 children (1.2%) were assessed as having major depression according to the DSM-IV criteria. The results confirm that the previous notion that pre-school children do not get depressed is false and suggests that longitudinal studies need to be conducted in this age group.

Preliminary studies confirm that depression does occur in young children but there are a lack of prospective studies, which demonstrate the progression of depression and other psychiatric disorders into adolescence and adulthood. Studies initiated in the pre-school years may be useful in establishing the early onset of depression and if early interventions are implemented, whether the outcomes of the developing child may be improved.

Symptoms such as anhedonia and melancholia have been indicative signs of major depression in adults, but there is very little research on the occurrence of these symptoms in children which would aid in diagnosing depression. Anhedonia is defined as the loss of interest in pleasurable activities and melancholia is defined as a lack of reactivity despite joyful events, psychomotor retardation, sleep disturbances, decreased appetite and inappropriate guilt. Luby et al. (2004) set out to investigate whether a melancholic subtype of depression similar to that seen in adults can be identified in pre-school children. One-hundred and fifty-six pre-school children between the ages of 3 and 5.6 years and their caregivers underwent a comprehensive psychiatric assessment and were divided into 4 study groups which were compared. The groups comprised; depressed pre-schoolers with anhedonia, depressed pre-schoolers without anhedonia, a psychiatric comparison group with DSM-IV ADHD and/or Oppositional Defiant Disorder, and a non-psychiatrically impaired control comparison group. The results indicated that 54 depressed pre-schoolers were identified, and 57% of these children in the depressed group had anhedonic symptoms, changes to stress cortisol reactivity and higher rates of a family psychiatric history of major depression. These findings are similar to the findings seen in melancholic depression in adults, where there is anhedonia, lack of reactivity or brightening in response to joyful events, psychomotor retardation, significantly more family history of major depressive disorder and greater severity of depressive symptoms. Coupled with the melancholic symptoms, there were also alterations of cortisol in response to stress, which was observed more in the anhedonic group compared to the other groups. The alterations of cortisol response to stress noted in pre-school children also occurs in adults with melancholic depression. The study recommends further longitudinal research to establish the validity of the melancholic subtype of depression in pre-school children (Luby et al. 2004). The evidence suggests that not only do pre-school children present with depression that is diagnosable according to the DSM-IV criteria; but also highlights the fact that symptoms specific to depression, such as anhedonia and melancholia present in young children. Despite the lack of validity and reliability of the DSM-IV criteria it is still useful in diagnosing

the melancholic subtype of depression in pre-school children and emphasises the need to conduct further research to establish validity and reliability of the criteria.

Few studies compare young children and older children with the clinical picture of depression. There is also very little research on the early diagnosis of depression and the progression of depression into childhood and adolescence. A Canadian study focused on clinical characteristics of depression in children and youth by conducting a retrospective review of 75 youths aged 6-17 years referred for depressive disorders to child psychiatry in 2002-2003 (Breton et al. 2012). The study excluded 2 pre-school children as they were below 6 years of age yet they had been referred to child psychiatry for depression. Depression among boys between the ages of 6-11 years revealed a more behavioural profile, as 50% of the boys with a diagnosis of depressive disorder were referred for disruptive behaviour problems as well. Suicidal ideation was found to be as common in children (71%) as in adolescent boys (72%) and adolescent girls (84%) suggesting that suicidal ideation is a common symptom that presents with depression in childhood and adolescence. The major pitfall of the study was the exclusion of pre-school children even though they had been referred for depression. This may be accounted for by the fact that only 2 pre-school children were identified with depression. The sample size was not large enough to form a pre-school group. The study also excluded girls between the ages of 6 to 11 years old, due to the extremely small sample size of only 4 girls, therefore making it difficult to draw conclusions when compared to boys of the same age in a larger sample size (Breton et al. 2012). Research needs to be conducted from the pre-school years to establish the onset of depression, so that early intervention can be implemented to improve childhood outcomes and lessen the likelihood for the progression of depressive symptoms and suicidal ideation in older children and adolescents.

### 1.6 Reactive Attachment Disorder in pre-schoolers

Speltz, Greenberg & DeKlyen (1990) conducted a review article citing evidence to suggest that a large portion of pre-school children (aged 3–6 years) who present at mental health clinics display behavioural difficulties, as a result of severe attachment difficulties with their primary-caregivers (Speltz, Greenberg & DeKlyen 1990). Children with impaired attachment are at an increased risk of psychopathology as a result of childhood social and emotional maladjustment and eventual adult psychopathology. Zeanah (2011) described attachment as a young child's tendency to seek comfort, support, protection and nurturance from at least one adult caregiver. He further elaborates that young children attach differently, depending on the experiences they have with the different caregivers. If a caregiver is nurturing and sensitive to the child's needs, then the child is more likely to form a secure and healthy attachment. Through the child's experience with the caregiver, the child develops expectations about the dependability of the attachment figure to provide security, support and nurturance. The expectations have an impact on how the child experiences and behaves in intimate relationships and this is also related to future social and psychological adaption. Interference with the process of attachment may lead to subsequent psychopathology (Zeanah, Shaffer & Dozier 2011).

Pre-school children who are described as controlling, commonly display disoriented and disorganized behaviour as infants and end up using controlling strategies in relation to their parents, which leads to a role reversal between parent and child (Vallance 2004). Some children may also use overt controlling–punitive strategies to control their parents. Children who use controlling strategies commonly present at children's mental health clinics. The study found that of approximately 50% of pre-school children referred to clinics with emotional, behavioural, or functional difficulties (e.g. eating, sleeping problems, enuresis, encopresis), were identified in a laboratory setting as using controlling attachment strategies, compared to 12% of children in a control group. Moreover children who use controlling

attachment strategies are at greater risk for social and emotional maladjustment in their childhood and adulthood. As children mature into adults, pervasive maladaptive attachment may lead to chronic personality disorders. The article recommends that in the clinical setting, in addition to the child being assessed, parents should be assessed separately and there should be combined parent-child assessment in order to observe the interactions between the primary-caregiver and child which may highlight any abnormal attachment. The review article concludes and recommends that impaired attachment is important to identify in the pre-school years, so that early intervention may be implemented to prevent or delay the onset of maladaptive social, behavioural and emotional development and halt the progression of child and adult psychopathology (Vallance 2004).

Follan et al. (2011) aimed to determine whether it would be possible to discriminate between ADHD and Reactive Attachment Disorder (RAD) in school aged children, as they considered it important to make a clear differential diagnosis especially in abused and mistreated children. Symptoms of RAD are difficult to discriminate from other disorders, especially externalizing disorders including ADHD. According to the American Psychiatric Association (2000), disinhibition, inattention and over-activity have been described in both RAD and ADHD. Neglect in early childhood and multiple care-givers may be associated with both diagnoses and comorbidity and symptom crossover, making it difficult for clinicians to differentiate between RAD and ADHD. The study recruited 107 children, 38 of whom had a diagnosis of RAD and 30 had ADHD. Cases were recruited through community mental health services and specialist ADHD clinics and the control group of 39 normally developing children was recruited through family practices. The results indicated that of the 47 clinic children, 30 had a diagnosis of ADHD and more than half of these (53%) had risk factors for RAD, such as parental drug and alcohol use, parental mental health problems and disrupted early care, or substitute care. Their findings suggested that a combination of parental report, teacher questionnaires and clinician observation aided in an appropriate clinical assessment. Their findings further suggested that disinhibited friendliness to strangers in RAD may be an



attempt by the child to gain approval of the adult they perceive to be most important, or to control a situation they perceive as unpredictable. In the case of children with ADHD, disinhibited friendliness to strangers may simply be a symptom of impulsivity. Despite this, the study suggests that clinicians are able to discriminate the core disorder of ADHD from RAD even where these factors may coexist (Follan et al. 2011). In young children, differentiating between ADHD and externalizing disorders is often difficult, given the symptom overlap that occurs in both disorders. A detailed clinical assessment involving primary care-giver assessments and child assessment combined with observed parent-child interactions in the clinical setting aide in appropriate diagnoses. RAD is important to screen for and identify in the pre-school years, as this disorder is often a precursor to maladaptive social, emotional and behavioural development and possible adult psychopathology if no intervention is implement early on.

### 1.7 Mental retardation in pre-schoolers

Intellectual disability is coded on axis II of the DSM-IV-TR (American Psychiatric Association 2000) as Mental Retardation and often occurs comorbidly with other psychiatric disorders in pre-school children. The DSM-5 describes Mental Retardation as 'Intellectual Disability' (intellectual developmental disorder) in an effort to focus on the impact of adaptive functioning and encourage a more comprehensive assessment, as there will no longer be a multi-axial domain of diagnosis in the DSM-5 (American Psychiatric Association 2013). It is important that intellectual disability in pre-school children is identified early and that grading the severity of intellectual disability is undertaken so that early appropriate intervention and rehabilitation can take place. There are concerns about testing intellectual functioning at a young age. Intellectual functioning comprises many facets and tests that may only measure one aspect of intellectual functioning, which may not reflect future developmental growth. Furthermore, there are questions about whether tests for intellectual functioning administered at a young age reflects the intelligence quotient (IQ) of the child in later childhood. Some of these questions about the assessment of the pre-school child's

intellectual functioning were partly answered in a study conducted in Taiwan, a developing Asian country where 313 pre-school children with uneven or delayed cognitive profiles were followed through to early childhood. IQ stability was explored by different tests among children with different clinical diagnosis. One hundred and sixty-eight children had non-autistic intellectual disability, 73 children had Autism Spectrum Disorder (ASD), 58 children had mixed receptive-expressive language disorder and 14 children had other heterogeneous diagnoses. Children with an 'uneven cognitive profile' were defined as having the absolute difference between verbal intelligence quotients (VIQ) and performance intelligence quotients (PIQ) obtained from a standardized test of more than 15 (i.e. one standard deviation of the standardized scores). Children with the 'delayed cognitive profile' were defined as having full-scale intelligence quotients (FSIQ) which were less than 85. Intellectual assessments that were administered included the Wechsler Series of Intelligence Tests – Chinese [i.e. either by Wechsler Preschool and Primary Scale of Intelligence – Revised – Chinese version (WPPSI-R; Wechsler 1989, 2000) or by Wechsler Intelligence Scale for Children-III-Chinese (WISC-III; Wechsler 1991, 1997)] for cognitive re-evaluation beyond the pre-school years. The results indicated that IQ stability in the majority of diagnostic subgroups was fair to good, but in the subgroup of mixed receptive-expressive language disorder some scores were noted to lack stability between initial IQ and follow-up IQ. There is evidence that there is value in IQ assessments in young children, as IQ seems to stabilize over time suggesting that there is accuracy and stability in early IQ assessments (Yang et al. 2011). Early IQ testing in young children who are intellectually impaired is beneficial to the child, as early intervention and remediation can take place. More studies are required to validate the possibility that IQ scores in pre-school children equate with IQ scores obtained in later childhood.

In conclusion many studies demonstrate that children who are 6 years old and younger present with psychiatric illnesses, although research in this age group is limited in South Africa and the rest of Africa.

The hypothesis of the current study is that the frequency of psychopathology in children who are 6 years old and under who are referred for psychiatric services is high. The high frequency necessitates a growing need to provide adequate psychiatric services, including the full complement of a multi-disciplinary team to improve childhood outcomes. The aims of the study were as follows:

1. To describe the total number of children 6 years old (72 months) and under with psychiatric disorders referred to CAFU at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) compared with the rest of the clinic population during the same time period. The focus will be on the demographic, perinatal developmental and socio-economic factors.
2. To identify and describe which psychiatric disorders are classified according to Diagnostic and Statistical Manual of Mental Disorders (DSM) – IV Text Revision (TR) (American Psychiatric Association 2000) present in this age group, interventions and rates of follow-up after the initial assessment.
3. To analyse the frequency of different psychiatric diagnoses according to DSM-IV-TR focusing mainly on Axis I diagnoses, Axis II and common Axis III diagnoses.
4. To make comparative analyses of the differences in perinatal developmental factors, psychiatric diagnoses and interventions across the sexes and across the different race groups.

## **2. Methods**

The study is a retrospective review that was conducted at the Child, Adolescent and Family Unit (CAFU) at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) that caters for the population in east and central Johannesburg (Johannesburg Hospital 2011). The hospital is a tertiary hospital and is a referral centre that provides specialist services to its population. The population of Johannesburg is an estimated 12 million people of which the hospital caters to roughly a third of the population (Brinkhoff 2013). CAFU's psychiatric staff consists of 2 child and adolescent psychiatry sub-specialists as well as general psychiatric registrars who rotate every six months through the clinic as part of their training. CAFU also has a complement team of child and adolescent psychologists and nurses. The Unit does not offer occupational therapy and social services and therefore does not have the full complement of a multi – disciplinary team. Children requiring these services are referred to other units in the hospital or to external resources.

The study is a retrospective review of children 6 years old and younger, who had been referred to the Child, Adolescent and Family Unit (CAFU) during the time period 1 January 2006 – 31 December 2010.

### **2.1 Inclusion criteria**

1. All children who had been referred for the first time to CAFU between the 1 January 2006 and 31 December 2010; who are aged 6 years old (72 months) and younger were included in the study. Any 'missing data' found in the files was accounted for by labelling the missing item as 'unknown'.
2. Children with mental retardation or neuro – developmental delay with comorbid behavioural or emotional disturbances are usually referred for intervention at CAFU and were included in the study

## 2.2 Exclusion criteria

Children with mental retardation and neuro–development delay disorders and no behavioural or emotional disturbances are attended to at a separate neuro – developmental clinic that is run by the department of Paediatrics and so by default were excluded from the study.

The clinical files of patients who attend CAFU were the clinical data source. The records of all patients who were referred for psychiatric services from 1<sup>st</sup> January 2006 to 31<sup>st</sup> December 2010, who were 6 years old and younger were collected. The files are kept in a filing system according to year of first consultation to CAFU. The files were manually located, as the register at the clinic does not contain the patient ages. The file records were based on the initial psychiatric assessment which comprised a full clinical history, a child psychiatric interview, a psychological assessment, which included intellectual and emotional assessment and a psychiatric feedback interview. All assessments were conducted at the Unit. The file records contained the demographic and socio – economic data as well as diagnoses according to the DSM -IV-TR criteria. Data collection sheets were utilised to aid the collection process (See Appendix E: Data collection sheet).The demographic variables (Appendix A) focused on several categories including age from 18– 72 months, sex, race, religion, language, year of first visit, home address area and referral source. The developmental history (Appendix B) variable was categorised according to birth method of delivery, perinatal complications, milestones, feeding, family psychiatric history of significance and who the primary-caregiver was. The socio – economic variable (Appendix C) was categorised according to parental level of education and employment of the parents. The parental relationship status was also categorised. The psychiatric diagnoses and interventions (Appendix D) was categorised according to the different disorders and the various interventions. The compliance variable (Appendix D) was categorised according to the frequency of follow – up to the clinic.

### 2.3 Ethical considerations

Consent from the Charlotte Maxeke Johannesburg Academic Hospital, Chief Executive Officer was obtained for data collection from the file records. The Human Research and Ethics Committee of the Witwatersrand University approved the study unconditionally on the 30<sup>th</sup> September 2011, certificate clearance number M110909. In addition, informed consent from the patients and their families was not required as the names of the patients in the study remained anonymous. As a part of the initial psychiatric assessment, all guardians of patients in the Unit signed informed consent forms which stated that information may be used for the purposes of research. The records were the primary and exclusive source of information for the study.

### 2.4 Data Analysis

Data was captured on a Microsoft Excel spread sheet. A descriptive analysis of the data using the Microsoft Excel 2010 was conducted. Comparisons by gender, race, psychiatric diagnoses and interventions were performed with Fisher's Exact test when variables were less than 5 and Chi-square test when variables were greater than 5. Statistical significance level was stated at  $<0.05$  and *GraphPad InStat* Version 3.10 32 bit for Windows created on the 10<sup>th</sup> July 2009, was utilised for statistical calculations.

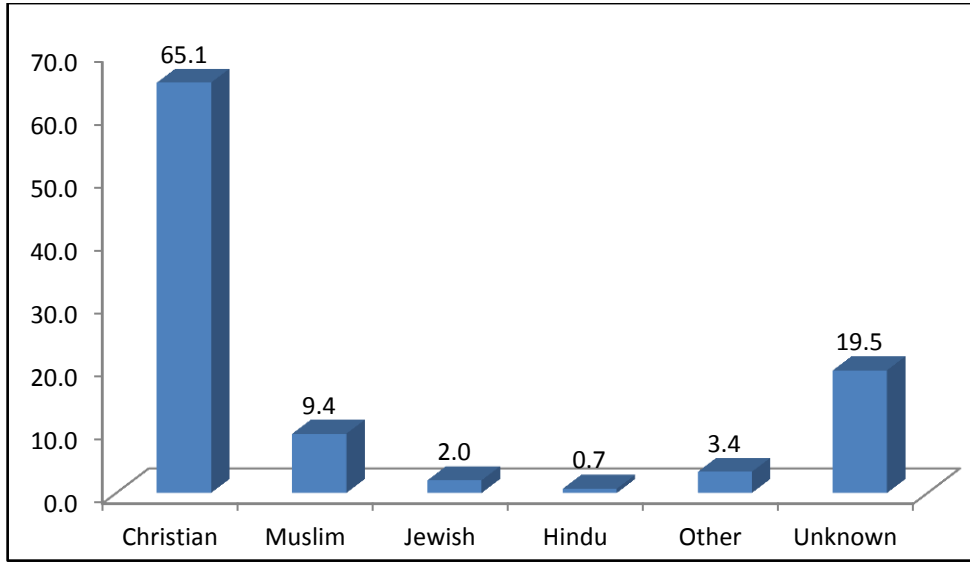
### **3. Results**

A total of 149 children, who were 72 months and under were referred for psychiatric assessments between 1 January 2006 to 31 December 2010, forming 9.97% of the total number of children (N=1495) seen in the unit in the same time period. Per year the mean number of children under 6 years seen was 29.80 (SD=1.64).

#### **3.1 Demographic factors**

The mean age of the children was 54 months (SD=12.59). The patient age range was from 18 months to 72 months of age. The study sample comprised a majority of boys, 77.2 % (N=115) with girls forming the minority, 22.8 % (N=34). The distribution of race was: Black (37.6%; N=56), White (36.9%; N=55), Coloured (13.4%; N=20) and Indian (12.1%; N=18).

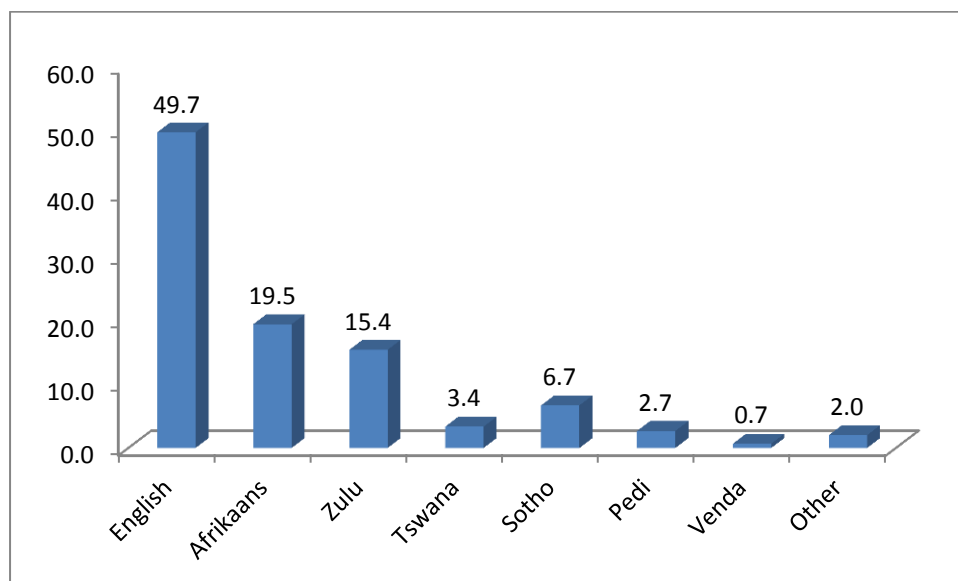
The majority of the children were of the Christian faith (65.1%; N=97). The minority faiths are represented in *Figure.3.1.1*.



**Figure 3.1.1: Religion %**

### 3.1.1 Home languages

Seventy-four (49.7%) children spoke English as their home language and the other half represented the several languages spoken in South Africa as represented in *Figure 3.1.2*. 'Other' languages spoken included non-South African languages such as Shona and French, which were spoken by foreign nationals from Zimbabwe and the Democratic Republic of Congo respectively.



**Figure 3.1.2: Home Languages %**

### 3.1.2 Schooling

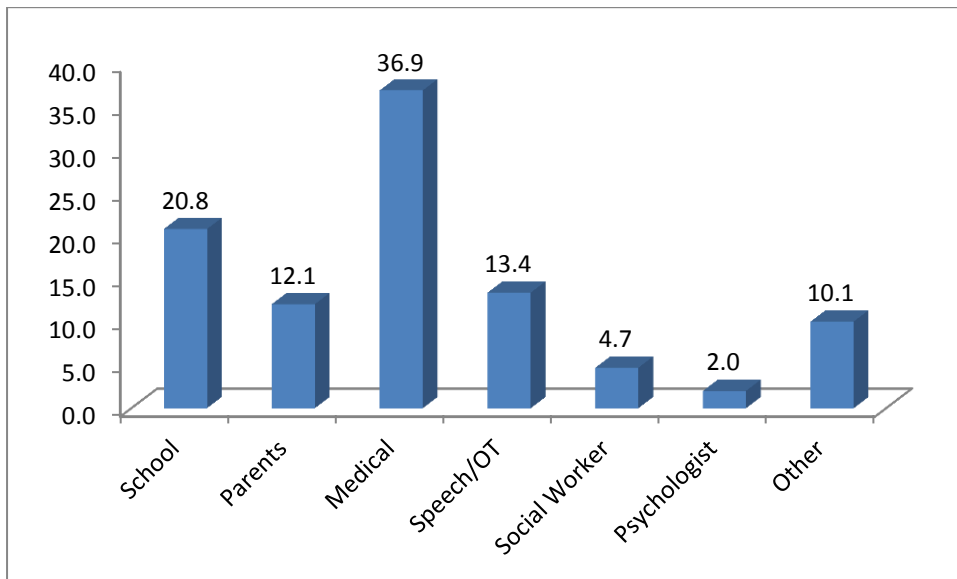
The majority of the children were enrolled in nursery school or crèche amounting to 75.2% (N=112); whilst six children (4.0%) were enrolled in primary school and 20.8% (N=31) were not enrolled in school.

### 3.1.3 Referral sources

The children were referred from the Charlotte Maxeke Johannesburg Academic Hospital drainage areas including the East Rand and the South Rand; 28.2% (N=42) and 26.8% (N=40) respectively, which formed the largest numbers in the sample size. The rest of the children were referred from central Johannesburg (15.4%), the North of Johannesburg (11.4%), the West Rand (10.1%) and other areas outside of Johannesburg (8.1%). The



majority of children were referred by medical practitioners (36.9%; N=55) that included nurses and doctors, followed by referrals from school (20.8%; N=31). *Figure 3.1.3* shows all sources of referral to the Unit. 'Other' referral sources include children referred to the unit by friends, associates or word of mouth.

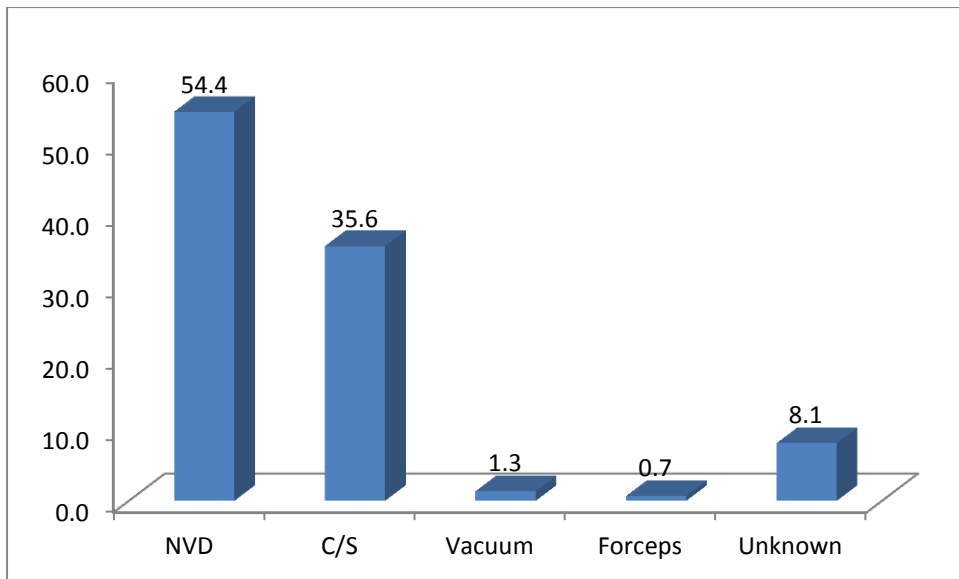


**Figure 3.1.3: Referral sources %**

### **3.2 Perinatal factors**

#### **3.2.1 Mode of delivery**

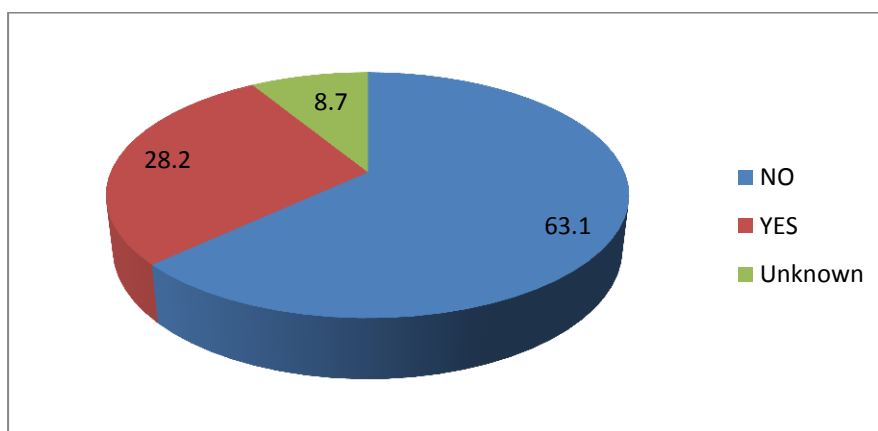
The majority of the children were delivered via normal vaginal delivery (NVD) (54.4%; N=81), whilst 53 children (35.6%) were delivered via caesarean section(C/S) for which the reasons were not clearly stated in the file records. Other modes of delivery included vacuum delivery (1.3%; N=2), forceps delivery (0.7%; N=1) and in 12 children (N=12) the mode of delivery was unknown or not stated in the file records.



**Figure 3.2.1: Mode of delivery %**

### 3.2.2 Perinatal complications

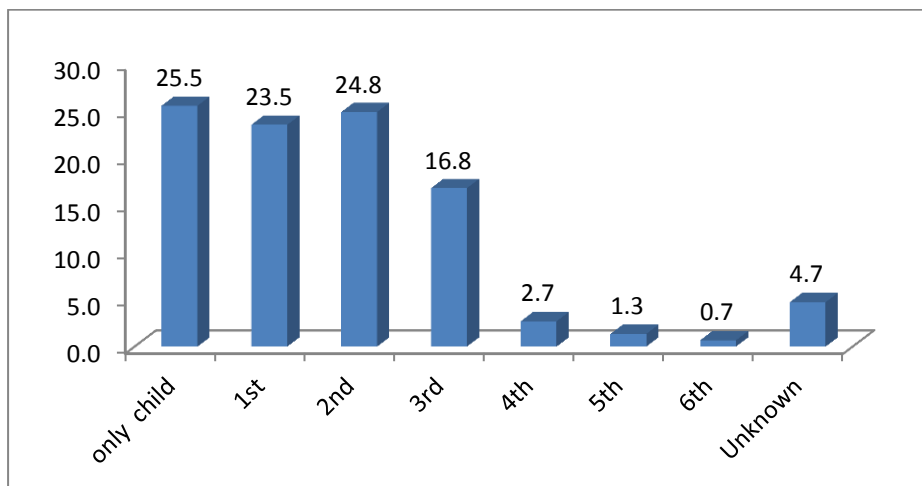
Perinatal complications occurred in 42 children (28.2%) and the complications were categorized into major complications where Intensive Care Unit (ICU) admission was required or neonatal sepsis. Twenty children (13.4%) had major complications and 22 children (14.8%) had minor complications which included neonatal jaundice. Ninety-four children (63.1%) had no perinatal complications and in 13 children (8.7%) perinatal complications were unknown, as the data was not documented in the file records.



**Figure 3.2.2: Perinatal complications %**

### 3.2.3 Birth positions

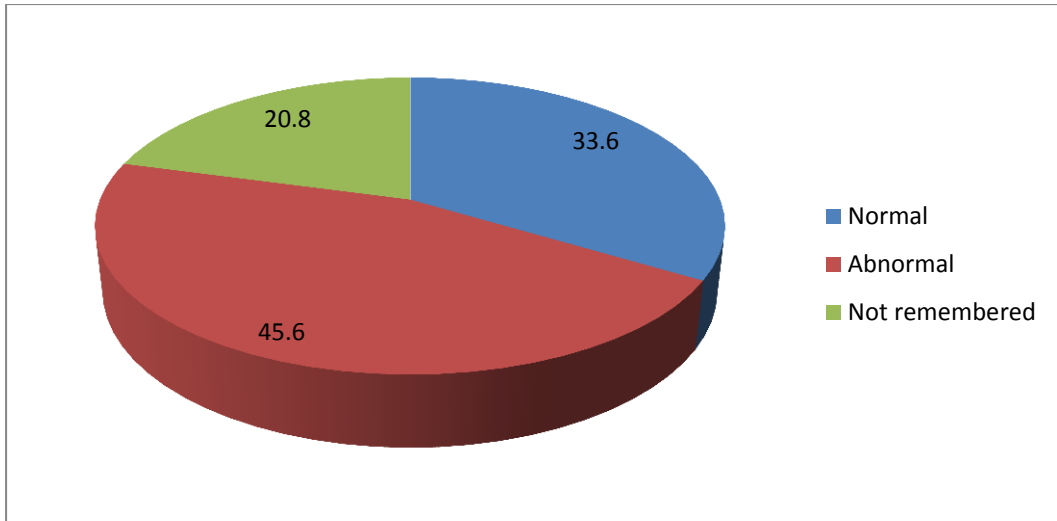
With regards to birth positions, there were 38 children (25.5%) who were an only child, 35 children (23.5%) were first born, 37 children (24.8%) were second born and 25 children (16.8%) were third born as represented in *Figure 3.2.3* below. In 7 children (4.7%) the birth position was unknown as in some cases it was either not stated in the file or the child in question had been placed in a home or foster care.



**Figure 3.2.3: Birth position %**

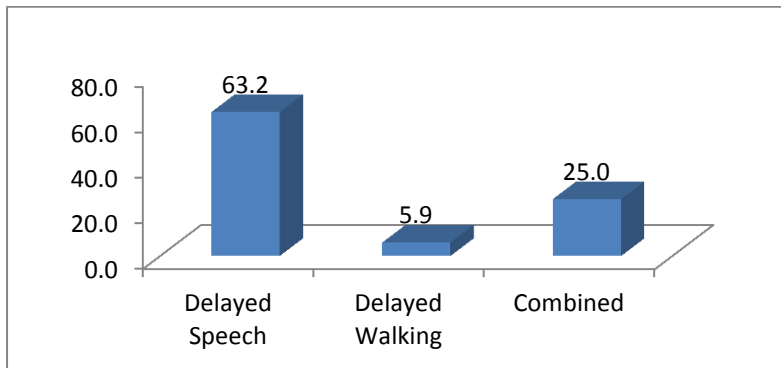
### 3.2.4 Milestones

Fifty children (33.6%) had normal milestones, 68 children (45.6%) had abnormal milestones whilst 31 children's (20.8%) milestones were not remembered as represented in *Figure 3.2.4*.



**Figure 3.2.4: Milestones %**

Almost half the children (45.6%) who were referred to the Unit had abnormal milestones ranging from delayed speech (63.2 %; 43/68), delayed walking (5.9%; 4/68 or combined delayed speech and walking (25%; 17/68) as represented in *Figure 3.2.5*.



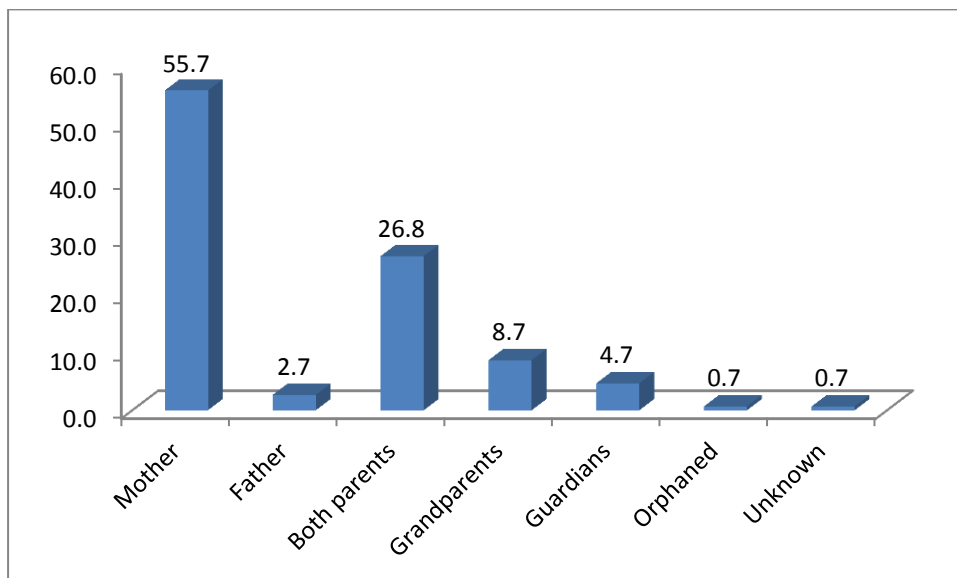
**Figure 3.2.5: Delayed milestones %**

### 3.2.5 Feeding

Eighty children (53.7%) were breastfed whilst 54 children (36.2%) were bottled fed. Feeding as an infant was unknown or not documented in the file records for 15 children (10.1%). The mean duration of breastfeeding was 9.9 months (SD = 8.6).

### 3.2.6 Primary-caregivers

In over half the children (55.7%; N =83), the biological mother was the primary-caregiver. In 40 children (26.8%) both parents were the primary-caregivers and in 4 children (2.7%) the father was the primary-caregiver. Thirteen children (8.7%) were cared for by their grandparents. Seven children (4.7%) and were cared for by guardians from foster homes or distant relatives. Only one child was orphaned and staying in a home with no guardian and in one case the primary-caregiver was not documented in the file records. See *Figure 3.2.6* below.

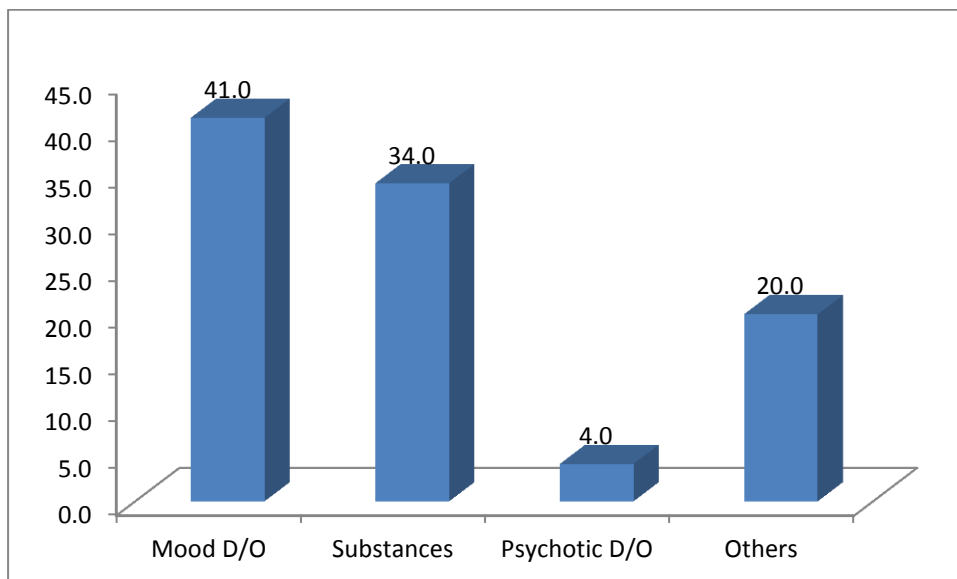


**Figure 3.2.6: Primary-caregivers %**

### 3.2.7 Family history of psychiatric illness

Almost two-thirds of the children (59.7%; N=89) had a family history of psychiatric illness and only 38 children (25.5%) had no family history of psychiatric illness. In 22 children (14.8%), family history of psychiatric illness was unknown. Family history ranged from mood disorders (27.5%; N=41), substance use disorders (22.8%; N=34) and psychotic disorders (2.7%; N=4). The disorders categorized in the 'other' category forming 13.4% included ADHD

(N=6), learning disorders (N=6) Mental Retardation (N=5) and Autism Spectrum Disorders (N=3). See *Figure 3.2.7* below.

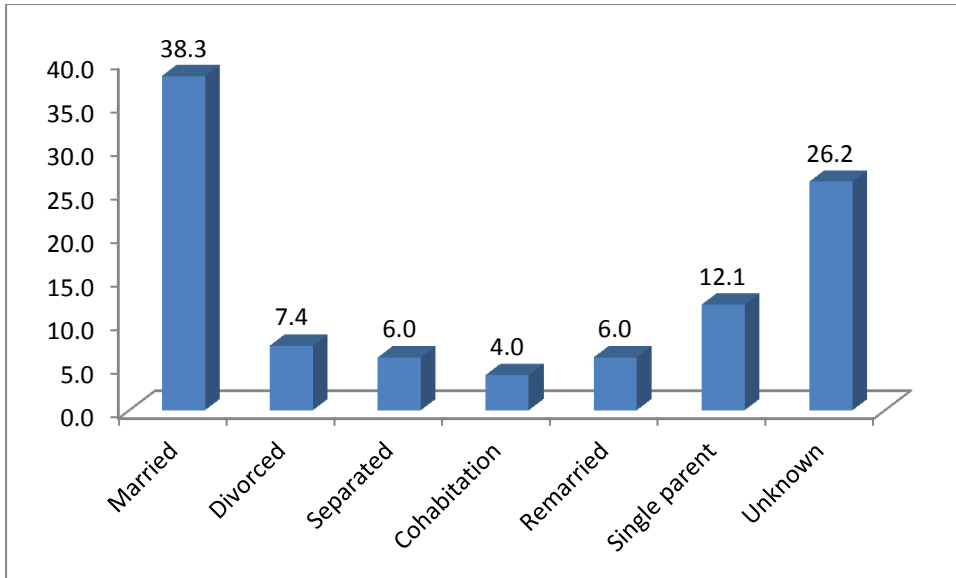


**Figure 3.2.7: Family history of psychiatric illnesses %**

### **3.3 Socio-economic factors**

#### **3.3.1 Parents' relationship statuses**

Fifty-seven children (38.3%) had parents who were married. Eighteen children (12.1%) had just a single parent and 9 (6%) children's parents had remarried. Six (4%) children's parents were in cohabitation whilst 9 (6%) children's parents were separated and 11 (7.4%) children's parents were divorced. Over a quarter of the children's parents' statuses was missing and accounted for as unknown (26.2%; N =39). See *Figure 3.3.1*.



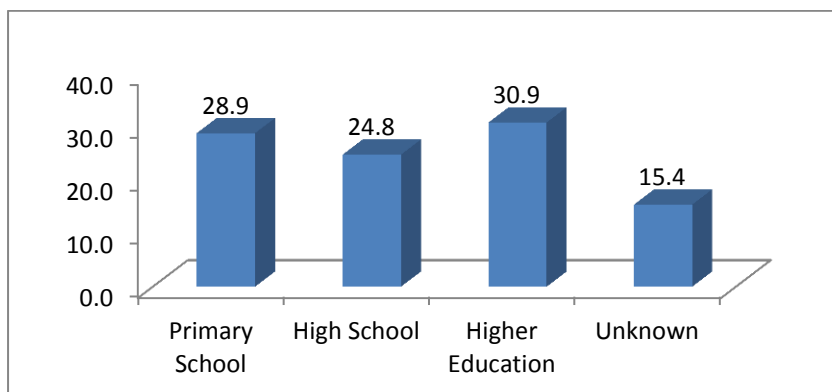
**Figure 3.3.1: Parents' relationship statuses %**

### 3.3.2 Parental education

#### *Maternal education*

Forty-three (28.9%) mothers completed primary school education and 37 (24.8%) mothers completed high school education which is 12 years of formal schooling in South Africa.

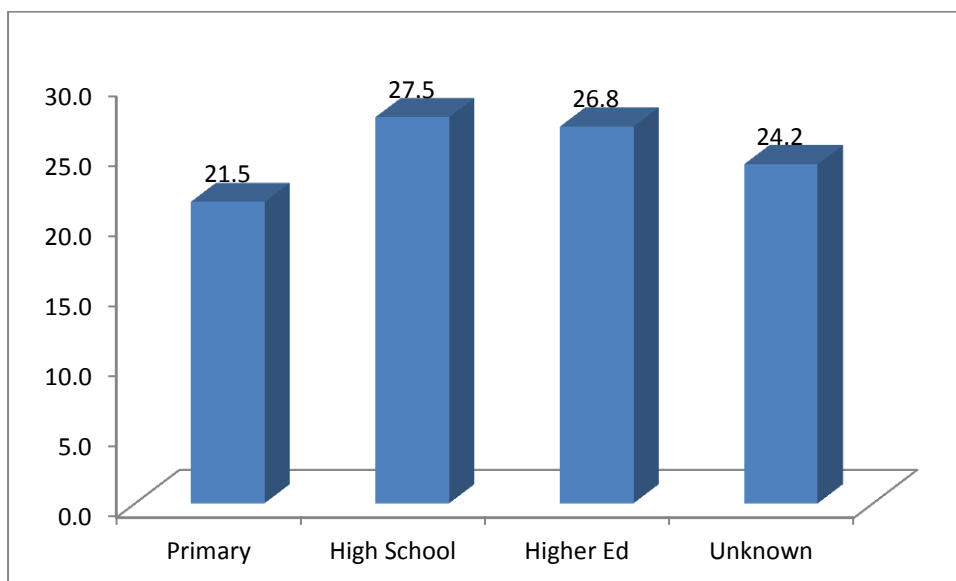
Forty-six (30.9%) mothers completed higher education in the form of diplomas and degrees and formed a slim majority. In 23 cases (15.4%) the mothers' level of education was unknown and accounted for. See *Figure 3.3.2*.



**Figure 3.3.2 Maternal Education %**

### *Paternal education*

Thirty- two (21.5%) fathers completed primary school education and 41 (27.5%) fathers completed high school education. Forty (26.8%) fathers completed higher education in the form of diplomas and degrees. In 36 cases (24.2%), fathers' level of education was unknown. See *Figure 3.3.3* below.



**Figure 3.3.3: Paternal education %**

### *Both parents*

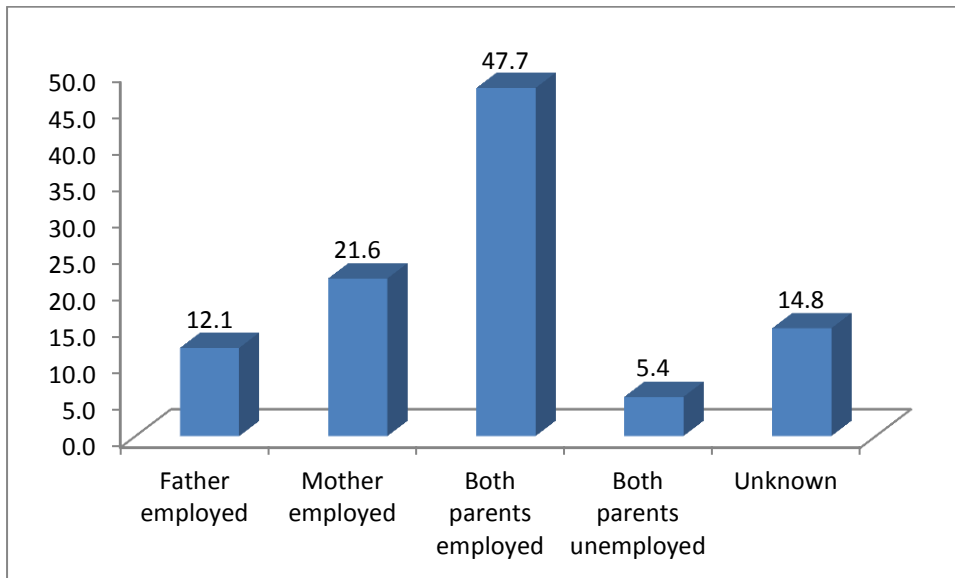
In very few cases both parents were found to be highly educated. Only 29 (19.5%) sets of parents had completed high school education where 12 years of education was completed and only 16 (10.7%) sets of parents had completed higher education in the form of diplomas and degrees obtained from higher centres of learning. In 15 (10.1%) cases the level of education for both parents was unknown.

### 3.3.3 Parental employment

Despite the low levels of education, in 71 cases (47.7%) both parents were employed forming almost half the cases. In 18 cases (12.1%) only fathers were employed and in 30



cases (21.6%) only mothers were employed. In 8 cases (5.4%) both parents were unemployed. Twenty –two (14.8%) cases were accounted for as unknown. See *Figure 3.3.4* below.



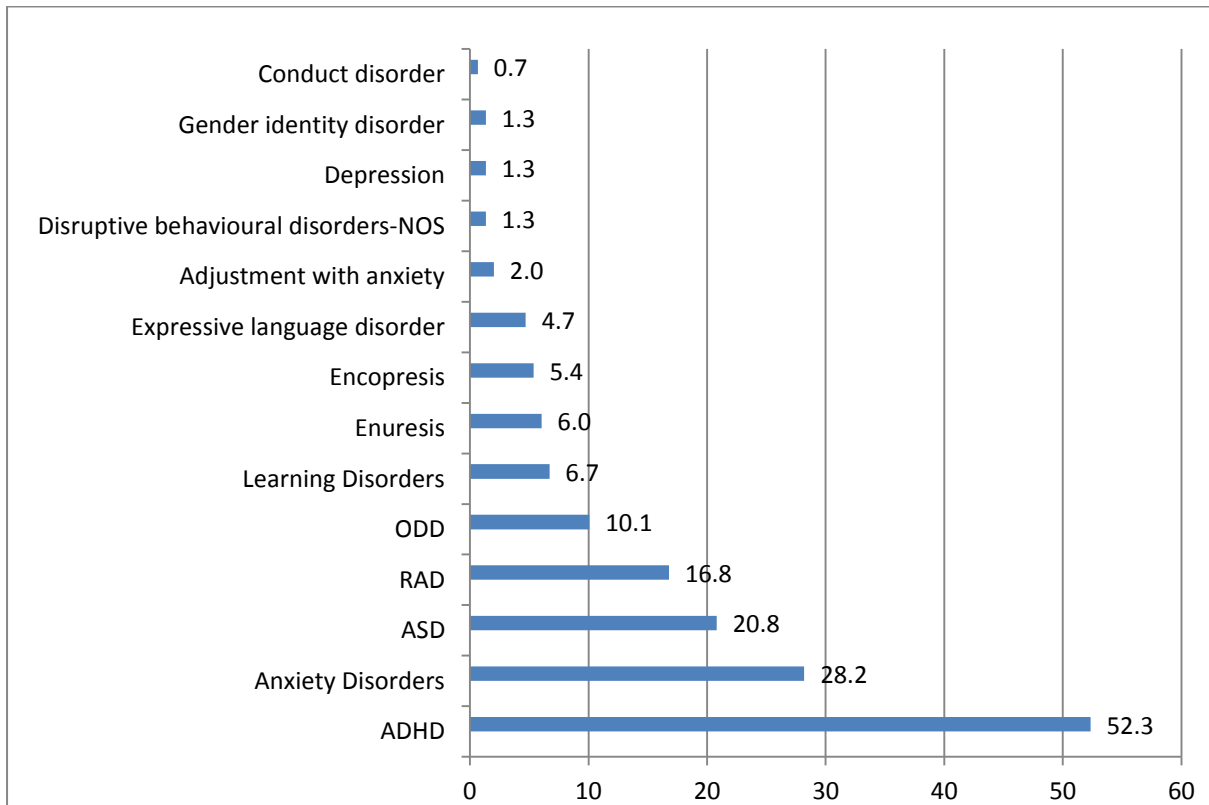
**Figure 3.3.4: Parental employment %**

### **3.4 Psychiatric diagnoses**

#### **3.4.1 Axis I**

Almost half the children referred for psychiatric assessments were diagnosed with ADHD (52.8 %; N=70). Anxiety disorders (28.2%; N=42) were the second most diagnosed psychiatric disorders in this age group. A fifth of the children were diagnosed with Autism Spectrum Disorders (ASD) (20.8%.N=31). Reactive Attachment Disorder (RAD) was diagnosed in 25 children (16.8%) and Oppositional Defiant Disorder (ODD) in 15 children (10.1%). *Figure 3.4.1* represents all the disorders that were diagnosed in the children referred for assessment that were coded on Axis I according to the DSM-IV-TR criteria (American Psychiatric

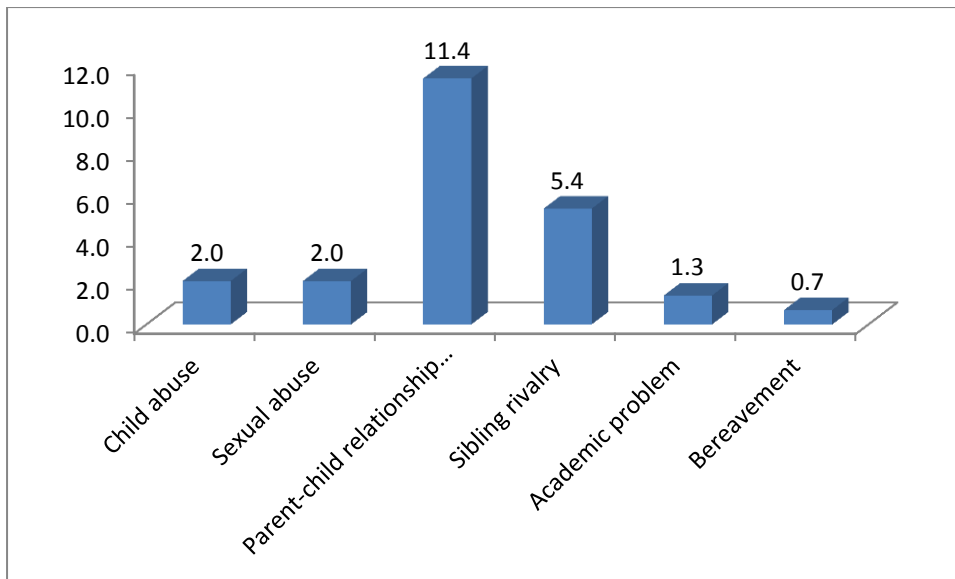
Association, 2000). In some instances the disorders occurred comorbidly in the children that were assessed at the Unit.



**Figure 3.4.1: Axis I diagnoses %**

**\*Please note that some children may have been assigned more than one diagnosis**

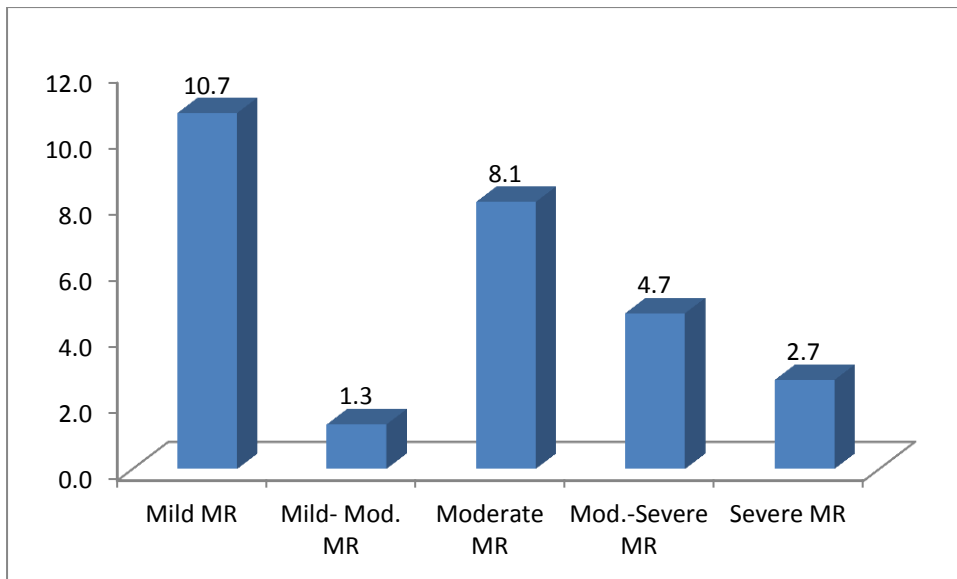
V-codes are commonly used on Axis I to capture the focus of clinical attention that may impact on the disorder and is usually a psychosocial factor and not a mental disorder. *Figure 3.4.2* represents the commonly assigned V-codes.



**Figure 3.4.2: V-codes %**

### 3.4.2 Axis II

Coded on Axis II according to the DSM-IV-TR criteria (American Psychiatric Association 2000) is intellectual disability as 'mental retardation' and personality disorders. All diagnoses were made using the DSM-IV-TR criteria (American Psychiatric Association 2000) and thus the term 'mental retardation' was used. Forty-one children (27.5%) forming over a quarter of the children referred had intellectual disability ranging from a mild mental retardation to severe mental retardation. The most commonly diagnosed form of intellectual disability was mild mental retardation forming 10.1% (N=16) of the children referred for assessment. Intellectual disability was a clinical diagnosis based on the Griffiths Scales of mental development to assist in estimating IQ (Aldridge Smith et al. 1980). The IQ scores were estimated clinically, as some of the subscales of the Griffiths scale were difficult to convert into an absolute value e.g. locomotor behaviour or hearing. The ranges of intellectual disability were not based on full-scale scores and estimates were made clinically from mild to severe mental retardation. See *Figure 3.4.3*.



**Figure 3.4.3: Mental Retardation%**

### 3.4.3 Axis III

Axis III is reserved for medical conditions that may have impact on the clinical picture according to the DSM-IV-TR (American Psychiatric Association 2000). Twenty-three children (15.4%) were diagnosed with a medical condition and 13 children (8.7%) were diagnosed with epilepsy which was the most commonly occurring medical condition. Two children (1.3%) were diagnosed with Human immune-deficiency virus (HIV) on anti-retroviral treatment and a further 2 children (1.3%) were diagnosed with possible syndromes and were referred for confirmation of the syndromes to the Paediatric neurodevelopmental clinic for opinion. Four children (2.7%) were diagnosed with Foetal Alcohol Syndrome (FAS).

It is to be noted that 7 children (4.7%) were not assigned a diagnosis after the initial psychiatric assessment and were referred accordingly.

### 3.5 Interventions

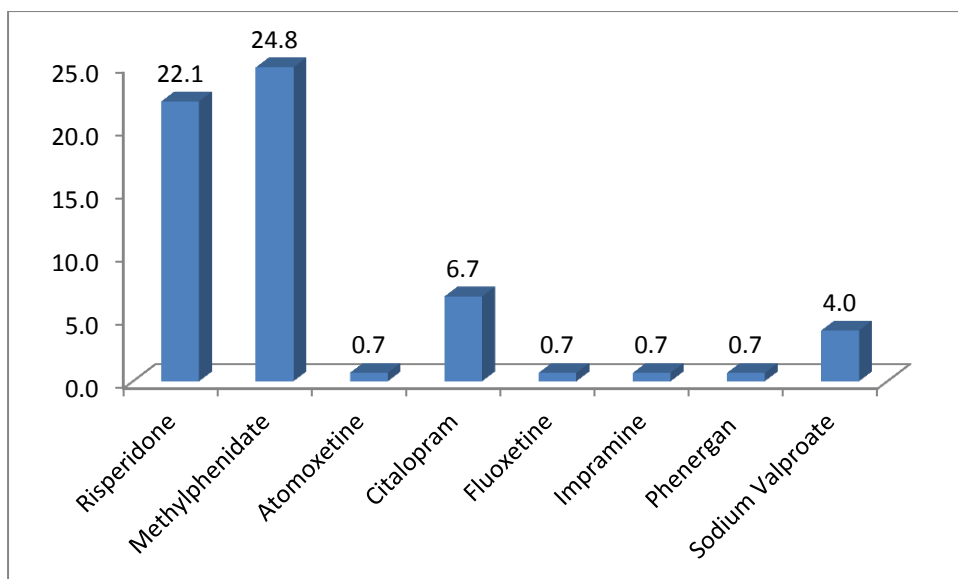
The majority of children (83.9%; N=125) had contact with psychological services in the form of a psychological assessment, where emotional and intellectual assessment were conducted in 68.5% (102/149) pre-schoolers. Psychological intervention in the form of parent

counselling, play therapy and other forms of therapy were offered. Just over half (54.4%; 81/149) the parents of the children were referred for parent counselling. Only 14.8 % (22/149) children were referred for play therapy, 4 families were referred for family therapy and 2 parents received supportive therapy.

Almost half the children (46.3%; N=69) were treated with medication. Children referred to allied health services; which are not offered in the Unit and requires special referral included occupational therapy (34.9%; N=52) and speech therapy (40.3%; N=60) .Only 14 children (9.4%) were referred to social services which is not a service offered in the Unit. Referrals were made to referrals made to other specialities (21.5%; N=32) such as General Paediatrics, Paediatric Neurodevelopmental Clinic and the Teddy Bear Clinic for Abused Children.

### **3.6 Pharmacological intervention**

The most commonly prescribed medication was Methylphenidate (MPH), which was prescribed to 37 children (24.8%) and correlates with the most common Axis I diagnosis which is ADHD. Risperidone, an atypical antipsychotic was prescribed for 33 children (22.1%) and Citalopram, a Selective Serotonin Reuptake Inhibitor (SSRI) was prescribed for 10 children (6.7%). Sodium valproate, an anticonvulsant was prescribed for 6 children (4%). Other medication prescribed included Promethazine (Phenergan) (N=1), Fluoxetine (N=1), Atomoxetine (N=1) and Imipramine (N=1) as represented in *Figure 3.6.1*.



**Figure 3.6.1: Pharmacological interventions %**

Median daily doses

The median daily doses (milligrams) prescribed were calculated and tabulated in *Figure 3.6.2*.

Medication	Numbers	Percentage %	Median value (mg)
Risperidone	33	22.1	0.3
Methylphenidate	37	24.8	10
Atomoxetine	1	0.7	10
Citalopram	10	6.7	10
Fluoxetine	1	0.7	5
Imipramine	1	0.7	10
Phenergan	1	0.7	10
Sodium Valproate	6	4.0	400

**Figure 3.6.2: Median daily doses**

### 3.6.1 Compliance factors

Sixty-six children (44.3%) followed-up at the unit and for 35 children (23.5%) follow-up after the initial assessment was not required. Forty-eight children defaulted appointment follow-ups resulting in a high defaulting rate of 32.2%.

### **3.7 Males vs. females: Comparative analysis**

Comparisons were made between males and females using the top 5 Axis I diagnoses. Chi-square test was utilised to calculate p-values and statistical significance was  $<0.05$ . In cases where the values were less than 5, then Fischer's exact test was utilized to calculate p-values. Thirty-four females and 115 males took part in the study. There was no statistical significance between males and females with regards to ADHD ( $\chi^2=2.705$ ;  $df=1$ ;  $p=0.1001$ ) and this non-significance could be a result of the small sample size and the fact that only 34 females took part in the study. Females were more likely to be diagnosed with anxiety disorders ( $\chi^2=6.736$ ;  $df=1$ ;  $p=0.0094$ ) and Reactive Attachment Disorder ( $\chi^2=12.176$ ;  $df=1$ ;  $p=0.0005$ ) when compared to males. Males were more likely to be diagnosed with Autism Spectrum Disorders ( $p=0.0029$ ; Fischer's exact test) when compared to females. There was no statistical significance for Oppositional Defiant Disorder ( $p=0.7409$ ; Fischer's exact test) when males and females were compared. Comparisons were made between males and females for the Axis II diagnosis of Mental Retardation ranging from mild to severe mental retardation and it was found that boys were more likely to be diagnosed with mental retardation and this was statistically significant ( $p=0.0070$ ; Fischer's exact). See Table 3.7.1. There were no significances in perinatal factors between the sexes. The perinatal factors analysed included perinatal complications ( $\chi^2 = 2.802$ ;  $df=1$ ;  $p=0.0941$ ) and abnormal milestones ( $\chi^2=0.718$ ;  $df=1$ ;  $p=0.3969$ ). Psychological ( $\chi^2=0.077$ ;  $df=1$ ;  $p=0.7810$ ) and pharmacological ( $\chi^2=1.155$ ;  $df=1$ ;  $p=0.2825$ ) interventions between males and females were not significant.

Diagnoses	Males Number/ total (%)	Females Number/ total (%)	Percentage%	Chi-squared value ( $\chi^2$ )	p-value
ADHD	65/115 (56.5%)	13/34 (38.2%)	78/149 (52.3%)	2.705	0.1001
Anxiety Disorder	27/115 (23.5%)	15/34 (44.1%)	42/149 (28.2%)	6.736	*0.0094
Autism spectrum disorder	30/115 (26.0%)	1/34 (2.9%)	31/149 (20.8%)	Fischer's exact test	*0.0029
Reactive attachment disorder	13/115 (11.3%)	12/34 (35.3%)	25/149 (16.8%)	12.176	*0.0005
Oppositional defiant disorder	11/115 (9.6%)	4/34 (11.8%)	5/149 (10.1%)	Fischer's exact test	0.7409
Mental Retardation	38/115 (33.9%)	3/34(8.8%)	41/149 (27.5%)	Fischer's exact test	*0.0070

**Table 3.7.1: Comparisons across males and females**

- \* means statistically significant p-value<0.05
- Chi-square test was applied and if values were <5 then Fischer's exact test was applied
- All p-values in the table are derived with one degree of freedom for Chi-square test
- Total no. of males = 115 (77.2%)
- Total no. of females = 34 (22.8%)
- Total no. of children < 6 years old = 149

### **3.8 Races: Comparative analysis**

A comparison was made across the races of the children to find any associations. There were 56 Black children (37.6%), 55 White children (36.9%), 20 Coloured children (13.4%) and 18 Indian children (12.1%) in the study. The Chi-squared test was utilized for statistical analysis in this category and the Coloured and Indian group were combined together due to the small sample size. If values were less than 5, the Fischer's exact test was utilized. With regards to perinatal factors there were no significant differences across the races for perinatal complications ( $\chi^2=8.586$ ;  $df=2$ ;  $p=0.0137$ ) and abnormal milestones ( $\chi^2=4.136$ ;  $df=2$ ;  $p=0.1265$ ). The Chi-squared analysis conducted in the family history factor revealed that there seems to be an association with family history of psychiatric illness and children



of White race based on the file records ( $\chi^2=14.519$ ;  $df=2$ ;  $p=0.0007$ ). There were no significant associations with the top 5 Axis I diagnoses except for Oppositional Defiant Disorder which was especially associated with children of White race ( $p=0.0118$ ; Fischer's exact test). Analysis revealed that Black pre-schoolers ( $\chi^2=10.786$ ;  $df=2$ ;  $p=0.0045$ ) were more likely to have mental retardation (mild to severe range) as a diagnosis on Axis II, when compared to the rest of the study sample. The values were all statistically significant. See *Table 3.8.1*. There were no significant differences across the races with psychological ( $\chi^2=4.168$ ;  $df=2$ ;  $p=0.1244$ ) and pharmacological ( $\chi^2=1.688$ ;  $df=2$ ;  $p=0.2932$ ) interventions.

Diagnoses	No. of Blacks	No. of Whites	No. of Coloureds and Indians	Chi-squared value ( $\chi^2$ )	p-value
ADHD	29	31	18	0.740	0.6906
Anxiety Disorders	11	16	15	4.433	0.1090
Autism spectrum disorders	16	10	5	3.628	0.1630
Reactive attachment disorders	6	10	9	2.850	0.2405
Oppositional defiant disorder	2	11	2	Fischer's exact test	<b>*0.0118</b>
Mental retardation	24	11	6	10.786	<b>*0.0045</b>

**Table 3.8.1: Comparisons across races**

- \* means statistically significant  $p\text{-value} < 0.05$
- Chi-squared test was applied to all above variables except if the variable is  $< 5$  then Fischer's exact test was applied
- All p-values in the table are derived with two degrees of freedom for Chi-square test

### **3.9 Psychiatric diagnoses and associations**

#### **3.9.1 Attention-Deficit/ Hyperactivity Disorder**

There were no significant perinatal factors that were associated with children who had ADHD. Chi-square test was used for statistical analyses and no associations were found for perinatal complications, ( $\chi^2=0.640$ ;  $df=1$ ;  $p=0.4236$ ) abnormal milestones ( $\chi^2=1.523$ ;  $df=1$ ;  $p=0.2171$ ) or family history of psychiatric illness ( $\chi^2=1.885$ ;  $df=1$ ;  $p=0.1698$ ). There was no association with ADHD and Mental Retardation (ranging from mild to severe mental retardation) which is coded on Axis II ( $\chi^2=0.818$ ;  $df=1$ ;  $p=0.3657$ ). In addition, an analysis was done to see if there was an association with ADHD and speech delay which was the most commonly reported delayed milestone but there was no statistical significance ( $\chi^2=2.509$ ;  $df=1$ ;  $p=0.1132$ ).

#### **3.9.2 Anxiety disorders**

There were no significances for perinatal factors associated with anxiety disorders. The perinatal factors analysed included perinatal complications ( $\chi^2=0.878$ ;  $df=1$ ;  $p=0.3489$ ), abnormal milestones ( $\chi^2=3.012$ ;  $df=1$ ;  $p=0.0826$ ) including speech delay ( $\chi^2=2.163$ ;  $df=1$ ;  $p=0.1414$ ); and family history of psychiatric illnesses ( $\chi^2=0.408$ ;  $df=1$ ;  $p=0.5231$ ). There was no association between the anxiety disorders and Mental Retardation (ranging from mild to severe mental retardation) ( $\chi^2=5.133$ ;  $df=1$ ;  $p=0.0235$ ).

#### **3.9.3 Autism Spectrum Disorders**

There was an association that was statistically significant for ASD and abnormal milestones ( $\chi^2=8.246$ ;  $df=1$ ;  $p=0.0041$ ); implying that children with ASD are more likely to have abnormal milestones. An analysis was done on speech delay specifically; as it was the most commonly reported delayed milestone and the analysis showed a statistical significance ( $\chi^2=6.925$ ;  $df=1$ ;  $p=0.0085$ ) validating that there is an association with ASD and speech delay. Other perinatal factors such as perinatal complications ( $\chi^2=0.785$ ;  $df=1$ ;  $p=0.3755$ ) and family history of psychiatric illnesses ( $\chi^2=0.031$ ;  $df=1$ ;  $p=0.8610$ ) showed no significance in ASD. The analysis for ASD and Mental Retardation ( $\chi^2=36.322$ ;  $df=1$ ;  $p=0.0000$ ) showed a

strong significance suggesting that children with ASD are highly likely to have mental retardation (ranging from mild to severe mental retardation). All associations were calculated using Chi-square test.

#### 3.9.4 Oppositional Defiant Disorder

There were no associations for ODD and all the perinatal factors including perinatal complications ( $\chi^2=2.672$ ;  $df=1$ ;  $p=0.1021$ ), abnormal milestones ( $\chi^2=0.318$ ;  $df=1$ ;  $p=0.5727$ ) including speech delay ( $p=0.4977$ ; Fischer's exact test) and family history of psychiatric illness ( $p=0.3414$ ; Fischer's exact test). There was also no association between ODD and Mental Retardation ( $p=0.2387$ ; Fischer's exact test) when analysed. Chi-square test was used and in cases where values were less than 5, then Fischer's exact test was used.

#### 3.9.5 Reactive Attachment Disorder

There were no significant associations for RAD and all the perinatal factors including perinatal complications ( $p=0.1209$ ; Fischer's exact test), abnormal milestones ( $\chi^2=0.506$ ;  $df=1$ ;  $p=0.4769$ ) including speech delay ( $p=0.1335$ ; Fischer's exact test) and family history of psychiatric illness ( $p=0.0571$ ; Fischer's exact test). Children with RAD were less likely to have Mental Retardation ( $p=0.0148$ ; Fischer's exact test). All statistical analyses were conducted using Fischer's exact test as some values were less than 5 in the analyses. Only the abnormal milestones were analysed using Chi-square test and the rest of the analyses were conducted with Fischer's exact test.

#### **4. Discussion**

The study is a retrospective review of children 6 years and under referred for psychiatric services at CMJAH, CAFU. To our knowledge, there is no such study documented that has focused on this age group in South Africa and the continent of Africa. There are international longitudinal studies but none that study pre-schoolers, their psychiatric diagnoses and interventions in this manner (Beyer et al. 2012; Lavigne et al. 1996 & Lavigne et al. 1998b).

The hypothesis of the current study was that the frequency of psychopathology in children who are 6 years old and under, who are referred for psychiatric services would be high.

One hundred and forty nine (149) pre-schoolers who were 6 years old and under presented to the Unit and the majority were male. The mean age of presentation was 54 months and (SD=12.59). The patient age range was from 18 months to 72 months. The majority of the pre-schoolers were referred to the Unit by medical professionals. Attention- Deficit/ Hyperactivity Disorder (ADHD) was the most common presenting condition. Girls were more likely to present with Anxiety disorders (44.1%;15/34) and Reactive Attachment Disorder (35.3%;12/34) and boys were more likely to present with Autism Spectrum Disorders (26%;30/115). There were no statistical differences in the rates of Attention- Deficit/ Hyperactivity Disorder between girls (38.2%13/34) and boys (43.6%;65/115) with ADHD ( $\chi^2=2.705$ ;  $df=1$ ;  $p=0.1001$ ). A psychological assessment was conducted in 68.5 % (102/149) of referrals. Almost half the children (46.3%; N=69) received pharmacological intervention. The defaulting rate after the initial assessment was high.

The results have demonstrated that pre-schoolers indeed present with a high frequency of psychiatric disorders, with almost half the pre-schoolers who were referred requiring pharmacological intervention. The results have demonstrated that there is a pre-school population that require psychiatric intervention and thus places emphasis on the need to expand services to cater to this vulnerable age group.

There is lack of research on psychopathology in pre-schoolers, which may be as a result of an assumption that children at this vulnerable age are unlikely to be diagnosed with a psychiatric illness. Psychiatric medication is not approved for use under the age of 6 years old for e.g. Methylphenidate (MPH); which is registered for use as a psychostimulant in the treatment of ADHD in children over the age of 6 years old by the FDA. Yet MPH is used regularly 'off-label' by clinicians in the treatment of ADHD. Due to its common use in pre-schoolers, there has been a body of research which advocates the use of MPH for the treatment for ADHD in pre-schoolers with close monitoring (Ghuman et al. 2001; Ghuman et al. 2008; Kratochvil et al. 2006 & Wigal et al. 2006).

Although there is a lack of research of pre-schoolers, the few studies that have been conducted suggest that psychopathology manifests implicitly in the pre-school years and in childhood and adulthood has the potential to be amplified into full-blown psychiatric illness (Anselmi et al. 2008). The pertinent issue, is that psychopathology in the pre-school years may be detrimental to the vulnerable developing child. Psychopathology can interfere with critical areas of the child's development. Important social, behavioural and cognitive aspects of development take place in the pre-school years that are vital for the formation of a well-adjusted child and an adult that is a fully functional member of society. The pre-school years are also the years where very important relationships with the growing child are developed, which impact on the way the child interacts and socializes with others in the later years. Impaired attachment too, can occur as a result of psychopathology and if not managed early can lead to severe psychopathology e.g. the personality disorders.

The current study obtained 149 files of children who were referred for psychiatric services at the Unit for the first time. One of the aims of the study was to establish the percentage of pre-schoolers referred to the Unit in the 5 year period (between 1 January 2006 to 31

December 2010), which was 9.97% of the total number of children (N=1495) seen in the unit in the same time period. The low percentage could be as a result of the fact that the Unit is a tertiary centre and it is only children who have severe problems that are referred by schools and fellow health professionals. Due to the heavy reliance on referrals to the Unit, there may be a number of children seen at the primary health care level, who are never referred or who may be untreated in the community because their symptoms may not be severe enough.

A young child's physical health is documented and their physical growth is monitored on a clinic card known as the Road to Health Card (RTHC). The RTHC is issued at primary health care level and is monitored by primary healthcare workers. This card contains important information such as the birth history, immunizations and contains a percentile growth chart to monitor the child's growth and in addition, any illnesses are documented. Growth monitoring is emphasized particularly in children under the age of five years of age. The RTHC may be seen as a mobile databank and in certain circumstances, may be the only reliable source of information, particularly in a population with fragmented health services or migrating families, which are common in developing countries (Tarwa & De Villiers 2007). A pitfall in the RTHC is the lack of focus on the child's emotional and psychological wellbeing and the quality of the relationship with the primary- caregiver, which is not documented on the RTHC.

Important features of impaired attachment, which if identified early can be better managed, may be missed resulting in a possible progression to psychopathology. There is no room to document any early psychopathology, meaning that most healthcare providers at primary healthcare level are not sensitised to assess a young child's emotional and psychological wellbeing.

Incorporating the emotional wellbeing of the child onto the RTHC may assist primary healthcare workers in being more vigilant and also assist in more timely referrals.

### *Parental employment*

In almost half the cases, both parents were employed (47.7%; N=71) but in a large number of cases (14.8%; N=22), employment statuses were unknown. The more educated the parents are, the better the health-seeking behaviour. Many pre-schoolers of less educated parents or of a lower socio-economic class may be less likely to present at the Unit, indicating that the numbers of pre-schoolers referred to the Unit is not truly representative of the population of pre-schoolers with possible psychopathology. There may be a large unaccounted for population of pre-schoolers who are not referred to the Unit for psychopathology due to a lack awareness by their guardians.

The Unit is located in an urban area and as a result pre-schoolers from rural areas who may be unable to access mental health services may have been excluded from the study. The sample size based on an urbanized population and it would thus be difficult to generalize the results to a larger population in a developing country like South Africa.

### *Age*

The mean age of the children was 54 months (SD=12.59) with the youngest child referred being 18 months of age. It is to be noted the mean age of the children referred to the Unit is well below 6 years (72 months) and this highlights the possibility that children below the age of 6 years old often have symptomatology.

### *Sex*

Of the 149 pre-schoolers referred to the unit, an overwhelming majority of the children were male (77.2%; N=115) and only were 34 females (22.8%). Similar studies conducted have demonstrated that more boys present with symptomatology when compared to girls. In studies conducted in older children findings also suggest that boys are more likely to present with psychopathology than girls. Other studies conducted in pre-schoolers suggests that boys present more with externalizing behaviours (ADHD, Conduct Disorder and Oppositional

Defiant Disorder ) and girls on the other hand present with more internalizing disorders (anxiety disorders and depression) (Zeanah et al. 2009).

### *Schooling*

In the current study, of all the children referred to the Unit, 112 children (75.2%) were enrolled in nursery school or crèche. The results would imply that most children were referred for psychiatric services by schools. However, the majority of children were referred to the Unit by medical professionals (36.9%; N=55) comprised of doctors and nurses followed by school referrals (20.8%; N=31). These results indicate that children with problems at school are usually initially assessed by a general practitioner or a paediatrician, who seem to be the first port of call for the parents. The South African School's Act (1996) made schooling compulsory for children aged 7 to 15 years, while the Education Laws Amendment Act (2002) set the age admission into Grade 1 as the year in which the child turns seven (Statistics South Africa 2012). This indicates that crèche pre-school education is not compulsory and as a result only children from more affluent backgrounds are afforded the opportunity to go to crèche or pre-school. The current study may not be truly representative of the South Africa's population because three quarters of the children were enrolled in pre-school.

Mueller and Brenner (1977) conducted a study that noted that young children who are enrolled in nursery school or crèche developed better social skills and were less likely to develop psychopathology. In pre-schoolers attending crèche, when symptoms did emerge, they were noticed and identified at school by the teachers; who would then make referrals to treatment facilities. It may be that in the past, fewer children went to nursery school or crèche, and so psychopathology was only identified when the child was enrolled for primary school at the age of 7 years. Studies have demonstrated that children who have psychiatric disorders and are enrolled in crèche likely are more to be identified and managed, than children with a disorder who are not in crèche (Caniato et al. 2010). This may imply that



children with psychopathology enrolled in crèche or nursery school are more likely to be identified early and will receive treatment earlier than children not enrolled.

#### *Referral source*

The majority of the children were referred by medical professionals implying that the referred pre-schoolers were assessed privately by medical professionals and resulting in extra expenditure for psychiatric screening. Children from lower socio-economic backgrounds do not get the opportunity for a psychiatric screening unless they present with severe symptomatology. The population of pre-schoolers referred to the Unit seem to come from a more affluent class of people and this is not representative of South Africa's population. In the latest Census conducted in 2011, results revealed that there was still a huge discrepancy in the distribution of the annual average income per household, where White-headed households still have the highest average annual income (R365 134 per annum), followed by Indian/Asian-head households (R251 541), Coloured-head households (R112 172) and Black-head households who had the lowest average annual income (R60 613) (Statistics South Africa 2012). The distribution of race in South Africa is as follows: Blacks = 79.2%, Whites = 8.7%, Indians/Asians and Coloureds = 12.1% (Statistics South Africa 2012).

#### *Race*

The distribution of race in the study sample was: Black (37.6%; N=56), White (36.9%; N=55), Coloured (13.4%; N=20) and Indian (12.1%; N=18) children. Although White people form less than 10% of South Africa's population, more than a third of the pre-schoolers referred to the Unit for psychiatric services were White. White people also seem to come from more affluent households. There may be many pre-schoolers with psychopathology from lower socio-economic backgrounds, who are of the Black race that may have been excluded from the current study sample. This implies that the study sample is not representative of the general South African population and therefore results may not be generalizable.

### *Perinatal factors*

Perinatal factors focused on included mode of delivery, perinatal complications, birth positions, milestones and feeding, in an attempt to identify factors that may contribute to psychopathology. Most children were delivered via normal vaginal delivery (54.4%; N=81) and by caesarean section (35.6%; N= 53). The caesarean section rate is higher than the WHO (World Health Organization) recommended rate of 5% to 10% (Gibbons et al. 2010). In the South African private sector, the caesarean section rate is as high as 60.4%, where most were carried out because of a previous caesarean section; maternal request and HIV status (Naidoo & Moodley 2009).

Forty-two children (28.2%) perinatal had complications. The perinatal complications were categorized into major complications and minor complications. Major complications included neonatal sepsis and ICU admissions and this occurred in 20 children (13.4%) in the study. Minor complications included neonatal sepsis and occurred in 22 children (14.8%). Perinatal complications may impair normal development and if not managed appropriately may lead to psychopathology later on in childhood. There are few studies to confirm the link of perinatal complications and psychopathology later on in childhood. A study found associations between perinatal complications and the increased risk to develop ADHD and cognitive impairment (Milberger et al.1997).The study focused on pregnancy, delivery and infant complications ranging from maternal age, maternal infection and illness during pregnancy, neonatal medical complications, maternal substance abuse and family problems during pregnancy. Factors associated with cognitive impairment included complications of low birth weight and extended infant hospital stay. Maternal substance use and family problems during pregnancy was associated with lower digit symbol and Full Scale IQ scores. Maternal illness or infection during pregnancy, neonatal medical problems, maternal substance use or family problems and maternal emotional problems or difficult infant were consistently associated with ADHD and impaired cognitive functioning. Another study confirmed an association with perinatal complications and Schizophrenia progression in adulthood (Jones

et al. 1998). The study was a 28-year follow-up of the 1966 North Finland General Population Birth Cohort and Schizophrenia was the long-term outcome of pregnancy and perinatal complications. Low birth weight (<2500 g) and the combination of low birth weight and short gestation (<37 weeks) were more common among persons with Schizophrenia. The study suggests that there is an association with perinatal complications and psychopathology. Perinatal complications in the current study were high. The current study did not focus on maternal mental disorders that may have contributed to perinatal complications e.g. maternal substance abuse.

### *Milestones*

Milestones are an important indicator of the growing child's development and if there is delay in milestones this may be a strong indicator of impairment in the growing child. Just under half of the children (45.6%; N=68), had delayed milestones; which implies that children with possible psychopathology may have some form of developmental delay. The majority of children where developmental delay was reported had speech delay (28.9%; N=43) as the most reported form of developmental delay. Speech is a significant milestone and delay in speech is often quickly noticed by primary-caregivers and is often an indicator of developmental delay and possible psychopathology.

### *Socio-economic factors*

The socio-economic factors that were focused on; included who the primary-caregiver was, family history of psychiatric illness, parental relationship status, parent education and parent employment. Just over half the children (55.7%; N=83); had their biological mother as their primary care-giver. Four children (2.7%) had their father as their primary care-giver and over a quarter of the children (26.8%; N=40) had both parents as primary care-givers. The results highlight just how many children are raised in single-parent households which formed a majority in this study. The results are in keeping with latest research that states that only 33% of children live with both parents and only 4% live with their fathers. Only 39% of

children stay with their mothers which is lower than the results in the study (Ndebele 2013). Children from single-parent households are at an increased risk to develop psychopathology. A Swedish population-based study compared children of single parents with children of two parents (Weitoff et al. 2003). Girls of single parents were more than twice as likely to commit suicide and more than three times more likely to die from addiction to drugs or alcohol than girls of two parents. Boys of single parents were more than five times more likely to die from addiction to drugs or alcohol. People from single-parent households had a greater risk of psychiatric disease during both childhood and early adulthood, compared to those of two parents. The risk of psychiatric illness was higher in boys. To ensure a balanced and well-adjusted child; it is preferable that a child is from a home where both parents are involved, because children from single-parent headed homes are more likely to develop psychiatric disorders.

Over half of the children (59.7%; N=89) referred for psychiatric services had a family history of psychiatric illness. Mood disorders (27.5%; N=41) and substance use disorders (22.8%; N=34) accounted for the majority of psychiatric illnesses. ADHD (4%; N=6), learning disorders (4%; N=6), mental retardation (3.4%; N=5) and ASD (2%; N=3) accounted for the minority of psychiatric illness. Pre-schoolers with a family history of psychiatric illness are at increased risk of psychopathology due to the genetic risk factors and as well as impaired attachment if their primary-caregiver has a psychiatric illness as well. Maternal depression leads to impaired attachment and an increased risk in behavioural problems in pre-schoolers (Cicchetti et al. 2001). Family history of psychiatric illness is an important risk factor that can predispose a child to psychiatric disorders. ADHD and the Autism Spectrum Disorders (ASD) have been shown to have genetic aetiology and children who are diagnosed with these disorders often have a family history of psychiatric illness (Freitag 2007). Pre-schoolers with genetic loading for psychiatric disorders are at an increased risk of psychopathology - manifestation due to the risk of inheriting the disorder as well as the environmental factors

associated a mentally ill parent, such as having a primary-caregiver with psychiatric illness or a substance use disorder which may in fact accelerate the progression to psychopathology. Associated factors such as child neglect and abuse may occur in children of parents with psychiatric illness, or substance use disorders.

### *Parental education*

It would be assumed that educated parents would be more likely to be able to identify psychopathology in their children and would take the necessary measures to seek help for this. Forty-six mothers (30.9%) completed higher education and 40 fathers (26.8%) completed higher education. Thirty-seven mothers (24.8%) completed high school education, which is 12 years of schooling and 41 fathers (27.5%) completed high school education. There were many cases where parents' level of education was not documented. In only 16 cases (10.7%) both parents completed higher education. In the Census 2011, the proportion of persons aged 20 years who have no schooling was 8.6%, persons who had some primary level education 12.3%, persons who had completed primary level was 4.6% and persons who completed higher education was 11.8% (Statistics South Africa 2012). The parents in the current study had much higher rates of education compared to the general population of South Africa. The pre-schoolers referred to the Unit seemed to come from households of parents who were better educated than the general population. The parents in the current study were better educated and they were more likely to take their children to health professionals for psychiatric screening, because they may be more aware of the possibility of psychopathology manifesting in young children. Children from lower socio-economic backgrounds are more likely to have parents who are less educated and less informed about the possibility of psychopathology and would also not have the resources to have their children screened for a psychiatric illness by a health professional. This indicates that there may be many children from lower socio-economic backgrounds with psychopathology who have been undiagnosed or missed. Parents who are highly educated and employed are likely to take their children with suspected psychopathology to private

facilities The Unit is part of a state hospital which caters to the general public, mostly those who do not have private medical aids.

### *Psychiatric diagnoses*

The Axis I psychiatric diagnoses made after the psychiatric assessment were quantified. The most commonly diagnosed Axis I diagnosis was ADHD occurring in 78 children (52.3%). Although more boys (56%; 65/115) were diagnosed with ADHD compared to girls (38.2%; 13/34), the statistical analysis was not significant for boys with ADHD ( $\chi^2=2.705$ ;  $df=1$ ;  $p=0.1001$ ). The ratio of boys to girls was 3.4:1 and only 34 girls took part in the study. Other studies suggest that boys are more likely to be diagnosed with ADHD when compared to girls (Hanisch et al. 2004 & Posner et al. 2007).

On Axis II, statistical analysis revealed that Black pre-schoolers ( $\chi^2=10.786$ ;  $df=2$ ;  $p=0.0045$ ) were more likely to have mental retardation (mild to severe range) as a diagnosis, when compared to the rest of the study sample. Boys were more likely to be diagnosed with mental retardation than girls ( $p=0.0070$ ; Fischer's exact). The values were all statistically significant.

The second most commonly diagnosed Axis I disorder was anxiety disorders which were observed in 42 children (28.2%). Research has demonstrated that girls are more likely to develop internalising disorders, including anxiety disorders (American Academy of Child and Adolescent Psychiatry Practice Parameters 1998). The study confirmed similar findings that girls were more likely to be diagnosed with anxiety disorders ( $\chi^2=6.736$ ;  $df=1$ ;  $p=0.0094$ ) when compared to boys .

Autism Spectrum Disorders (ASD) are often diagnosed in pre-schoolers. In this current study, there was a strong association with abnormal milestones ( $\chi^2=8.246$ ;  $df=1$ ;  $p=0.0041$ ) and specifically speech delay ( $\chi^2=6.925$ ;  $df=1$ ;  $p=0.0085$ ) and ASD. ASD is often identified early because parents most commonly notice speech delay. More often than not, intellectual disability which is coded on Axis II occurs comorbidly with ASD. In the study there was a strong association with mental retardation (ranging from mild to severe mental retardation) ( $\chi^2=36.322$ ;  $df=1$ ;  $p=0.0000$ ). ASD was the third most commonly diagnosed psychiatric diagnosis on Axis I in this current study. In keeping with the literature, boys were most likely to present with ASD ( $p=0.0029$ ; Fischer's exact test) when compared to girls. Several studies show that there are few risks attached to false positive identification of ASD in toddlers, but huge risks attached to postponing diagnoses until 3 or 4 years old, which is when children commonly present again (Vostanis et al. 1994 & Dereu et al. 2012). The literature also suggests that delayed milestones especially speech delay, is associated with ASD. More screening at an earlier age is required for ASD so that interventions and remediation can be implemented early to improve childhood outcomes, as demonstrated by the efficacy of EIBI and autism centres of learning (Magiati, Charman & Howlin 2007).

Oppositional Defiant Disorder (ODD) was the most diagnosed disruptive behavioural disorder in the study (10.1%;  $N=15$ ). Two children were diagnosed with Disruptive Behavioural Disorder-Not Otherwise Specified (DBD-NOS) and only one child was diagnosed with Conduct Disorder (CD). Children who were of the White race were more likely to present with ODD when compared to children of other races in the study ( $p=0.0118$ ; Fischer's exact test). ODD is more prevalent in pre-school children and as the child ages, CD becomes more prevalent (American Academy of Child and Adolescent Psychiatry Practice Parameters 1997). Disruptive Behavioural Disorders are classified as externalizing disorders and are more prevalent in boys compared to girls, as noted in a study of institutionalised children with externalizing disorders (Zeanah et al. 2009). There is limited

research in pre-schoolers and there is limited research on the profile of a pre-schooler with ODD and when exactly the disorder manifests. A larger longitudinal study would be required to clarify disruptive behavioural disorders in pre-schoolers.

Adequate attachment to a primary-caregiver is essential in a developing child. Twenty-five children (16.8%) in the current study were diagnosed with RAD and statistical analysis revealed that girls were more likely to be diagnosed RAD when compared to boys ( $\chi^2=12.176$ ;  $df=1$ ;  $p=0.0005$ ). The DSM-IV-TR (American Psychiatric Association 2000) codes for two types of RAD, the inhibited type and disinhibited but unfortunately in this current study the type of RAD was not specified. Although statistically significant in this study, the results cannot be generalizable to the population because there were few girls ( $N=34$ ) that formed part of the sample. Girls may be more likely to present with RAD because they are the more vulnerable sex and are at higher risk of neglect and abuse. Attachment would be defined as the first and most crucial relationship that a child develops with their primary-caregiver. If a caregiver is nurturing and sensitive to the child's needs, then the child is more likely to form a secure and healthy attachment. Through the child's experience with the caregiver, the child develops expectations about the dependability of the attachment figure to provide security, support and nurturance. The expectations have an impact on how the child experiences and behaves in intimate relationships and this is also related to future social and psychological adaptation. Interference with the process of attachment may lead to subsequent psychopathology (Zeanah, Shaffer & Dozier 2011). If there is impairment in attachment; it may lead to psychopathology in childhood and personality disorders in adulthood. Reactive Attachment Disorder (RAD) often manifests in the pre-school years and if it presents as the disinhibited type, can often be difficult to differentiate from other externalising disorders such as ADHD. One study highlighted the difficulty that clinicians are often faced with; to differentiate RAD from ADHD in pre-school



children (Follan et al. 2011). More studies are required in RAD focusing on pre-schoolers as early identification will lead to early intervention and improved outcomes.

### *Psychological interventions*

The majority of children (83.9%; N=125) had contact with psychological services in the form of intellectual and psychological assessments. Psychological intervention in the form of play therapy and parent counselling were offered. It is to be noted that only formal parent counselling conducted by psychologists was quantified in the study. Although all clinicians conduct informal parent counselling, this was not documented and could not be quantified in this study. Psychological assessments in the form of an intellectual and emotional assessments occurred in 68.5% (102/149) pre-schoolers. Just over half (54.4%; 81/149) the parents of the children were referred for parent counselling. Parent counselling is an essential intervention in improving childhood outcomes especially in disorders of behavioural disturbances, externalizing behaviours and attachment disorders. Only 14.8 % ( 22/149) children were referred for play therapy and this small percentage could be because some of the children in the sample size were either too young, had autism or mental impairment and would not benefit from play therapy.

### *Pharmacological interventions*

Approximately half of the children (46.3%; N=69), required pharmacological intervention. No comparisons could be made to other studies in this regard due to the lack of research in pre-schoolers. The most prescribed medication was Methylphenidate (MPH), a psychostimulant used in the treatment of ADHD but is not registered for use in children 6 years old and under by the FDA. There are many studies that support the efficacy and use of MPH in pre-schoolers and these studies have influenced current practice parameters in pre-schoolers (Kratochvil et al. 2006; Ghuman et al. 2008; Ghuman et al. 2001 & Wigal et al. 2006). Thirty seven children (24.1%) were prescribed MPH for ADHD at a median daily dose of 10mg. The dose is in keeping with practice parameters. Gleason et.al. (2007) reviewed many

studies that set out to establish the mean daily dose for immediate-release MPH and the recommendation was a dose of 7.5mg/day to 30mg/day (Gleason et al. 2007). The American Academy of Child and Adolescent Psychiatry practice parameters recommends MPH at a dose of 1.0mg/kg/day. Unfortunately, in the current study children's weights were not recorded and the mean dose calculated according to mg/kg/day could not be calculated.

Other commonly prescribed medication included Risperidone (22.1%; N=33) and less commonly prescribed medication included Citalopram (6.7%; N=10) and Sodium Valproate (4%; N=6). Risperidone is an atypical antipsychotic that is registered for use in children under the age of 6 years old for the management of disruptive behaviours and psychotic disorders. Olfson (2010) conducted a study that focused on trends of antipsychotic use in young, privately insured children between 2 to 5 years of age (Olfson, et al. 2010). Young children on antipsychotics (1999-2000 vs. 2007) were compared in an attempt to identify a trend. The results showed increasing rates of antipsychotic use. Risperidone was the most prescribed antipsychotic (1999/2001, 73.32% and 2007, 74.34%). Risperidone was used to treat aggression and irritability in a number of disorders e.g. ADHD, disruptive behavioural disorders and ASD. Gleason et.al. (2007) reviewed several studies and a recommended dose for Risperidone ranged from 0.25mg/day to 1.5-2mg/day. In the current study the mean daily dose of prescribed Risperidone was 0.39mg/day. The Risperidone dose was well within the acceptable range showing that the clinicians in the Unit prescribe treatment to pre-schoolers in keeping with practice parameters.

Citalopram is a selective serotonin-reuptake-inhibitor (SSRI) that not registered for use in children under 6 years old but is often used 'off-label' in pre-schoolers for the management of anxiety disorders. The use of Citalopram is preferred because it is a tablet that can be scored and given in small doses to young children. The Unit is government funded and has

limited access to other medications that could also be used. Fluoxetine, another SSRI was also prescribed in only one child and this may be due to the lack of liquid formulations that can be given in small doses to young children. Fluoxetine is the only medication to be approved by the FDA for the treatment of child and adolescent depression, and has been shown to have a larger difference between medication and placebo compared to trials with other antidepressants (American Academy of Child and Adolescent Psychiatry 2007b). Few studies have focused on the use of SSRIs in pre-schoolers. One case study on 4 pre-schoolers found Fluoxetine to be effective in the treatment of OCD at doses of 5mg/day to 20mg/day (Ercan et al. 2012). Sodium Valproate, an anticonvulsant, is registered for use in children 6 years and under for the treatment of Epilepsy and often children development neuropsychiatric symptomatology that would warrant its use in child psychiatry.

#### *Follow-up*

Compliance for follow up of treatment after the psychiatric assessment at the Unit was established. Compliance to follow-ups to the Unit is solely dependent on the primary-caregiver. Sixty-six children (44.3%) followed-up to the Unit and 35 children (23.5%) who were assessed, required no further follow-up. Of concern, is the defaulting rate of 32.2% (N=48); implying that almost a third of the children assessed at the Unit who required follow-up never returned. A study conducted in adult psychiatric outpatients department had a default rate of 15.4% that fell within the average range of 10% to 30% reported in other studies (Pang et al.1996).The study found that the highest defaulters usually had a personality disorder diagnosis in the adult population studied. The defaulting rate at the Unit is higher than expected. Denial of the child's diagnosis by the parents may be a factor contributing to non-compliance. Development of side-effects by the child or distance and time to travel to the Unit may be a factor resulting in the high defaulting rate. Research is warranted to establish why the defaulting rate is so high. There are no studies to explain or corroborate why the defaulting rate is so high in the pre-school age group.

## **5. Limitations**

Although the sample size of pre-schoolers in the study was sizeable, a larger sample size would have been beneficial in making the results more generalizable to a larger pre-school population. There are very few longitudinal studies in the pre-school age group and almost none could be sourced in South Africa and Africa, emphasizing the need for research in the pre-school population. The study was also a retrospective review of file records over a 5 year period (1 January 2006 to 31 December 2010); highly reliant on entries made by others. Due to human error, there was a considerable amount of missing data that had to be accounted for as 'unknown'. Missing data varied in the different clinical records and could not be quantified as an absolute value or percentage but was accounted for when the statistical analysis was conducted. Many details could not be analysed because the study was reliant on records. Files were also missing in some instances making the sample size of the study even smaller. The pre-schoolers were also assessed by different clinicians and there was no use of a uniform diagnostic tool documented in the files as part of the initial assessment. The study was a descriptive retrospective review that focused on multiple variables. The diagnosis of the child was clinically based and this may have resulted in diagnoses being missed in some instances. The population of children referred to the clinical was that of a more affluent class of children, with over-representation of children of White race who have highly educated parents when compared to the rest of South Africa's population, where the Black race is in the majority. The study was based on a unit that serviced an urbanized population and the limitation is the absence of the representation of the rural pre-school population, which may have differing results given the fact that South Africa is a developing country. There may be children of lower socio-economic backgrounds who have psychopathology but have not been referred and as a result the population of pre-schoolers with psychopathology may be in fact higher. It is difficult to generalize the results of this study to the rest of the population.

## **6. Conclusion**

The study highlights the frequency of psychiatric disorders in pre-schoolers and necessitates the need to conduct further research in this vulnerable age group at other clinical sites. The evidence suggests that children 6 years old and under do present with psychopathology and highlights the growing need to provide adequate psychiatric services to improve childhood outcomes. The current study may be viewed as a pilot study for larger audits that cater to children under the age of 6 years old. General psychiatrists and child psychiatrists need to be more aware of the growing population of pre-schoolers who may have possible psychopathology. Education is needed at primary health care level to enable nursing practitioners and general practitioners to adequately screen and identify psychopathology in pre-schoolers early on so that early intervention can be implemented. At primary health care level, there is no tool to monitor a child's emotional and psychological wellbeing and the quality of the relationship between primary-caregiver and child. The Road to Health Card is in use currently to monitor the growth and the physical wellbeing of the child but there is no focus on the child's emotional wellbeing and screening for psychopathology. The omission leads a general belief that a child's emotional and psychological development is not important, but in fact it is and in the end psychopathology is missed to the detriment of the child.

Early intervention for Autism Spectrum Disorders has been shown to show improved outcomes. Externalizing disorders such as ADHD and disruptive behavioural disorders are often managed by general practitioners and paediatricians with high doses of Risperidone for irritable outbursts and aggression, yet research has shown great efficacy with combined correct use of pharmacotherapy and parent training. The lack of knowledge often results in young children being placed on high doses of Risperidone, which is the incorrect medication for ADHD and so are still symptomatic, in addition to developing side effects such as weight gain. The involvement of school teachers, nurse practitioners, and general practitioners is

required to aid in screening of pre-schoolers at risk of psychopathology and appropriate and early referral for intervention is essential. A low socio-economic background seems to be a barrier to obtain appropriate early psychiatric intervention in pre-schoolers in this current study. Studies conducted in a low socio-economic setting may show higher rates of psychiatric disorders in the pre-school population and may be more generalizable to the greater population. This retrospective review heightens the awareness of possible psychopathology in pre-schoolers and as a result should emphasize the need for research, education and development of psychiatric services for very young children.

**7. APPENDIX A:**

**DEMOGRAPHIC DATA:**

AGE	24 – 36 months	37 – 48 months	49 – 60 months	61 -72 months

SEX	MALE	FEMALE

Race	Black	White	Coloured	Indian	Other

Religion	Christian	Muslim	Hindu	Jewish	Other	Unknown

Language	English	Afrikaans	Nguni languages	Sotho languages	OTHER

Year of 1 <sup>st</sup> visit	2006	2007	2008	2009	2010

Area	Jhb CBD and surroundings	East rand	South rand	West rand	North	Other
Name						

Child enrolled in school	Nursery school/ Crèche	Primary school	Unknown

Referral source	Parents	School teacher	Social services	Medical professionals	Speech/OT Therapy	Other

**8. APPENDIX B:**

**DEVELOPMENTAL HISTORY:**

Mode of delivery	NVD	Caesarean section	Forceps	Vacuum	Unknown

Perinatal complications	YES	NO	Description	Unknown

Birth Position	First	Second	Third	Fourth	Youngest	Unknown

Milestones	Normal	Abnormal	Description	Not remembered

Feeding	Breast – fed	Bottle –fed	Unknown

Primary - care giver	Both parents	Mother	Father	Grand- parents	Guardian	Orphaned	Unknown

Family Psychiatric history	NO	YES	Description	Unknown



**9. APPENDIX C:**

**SOCIO – ECONOMIC DATA:**

Parental relationship status	Single Parent	Married	Separated	Divorced	Co – habitation	Remarried	Unknown

Maternal Education	Primary school completed	High school completed	Higher education	Unknown

Paternal Education	Primary school completed	High school completed	Higher education	Unknown

Father employed only	Mother employed only	Both parents employed	Both parents unemployed	Unknown

**10. APPENDIX D:**

**PSYCHIATRIC DIAGNOSES:**

DSM –IV-TR	
ADHD	
Mental retardation with behavioural disturbances	
Conduct disorder	
Oppositional defiant disorders	
Depressive disorder	
Anxiety disorders	
Elimination disorders	
Autism spectrum disorder	
V- code: Bereavement	
V- code: Child Neglect Physical / Sexual Abuse of a Child	
V- code: Academic Problem	
V- code: Parent-Child Relational Problem	
Syndromes	
Other disorders	
No diagnosis	

**INTERVENTIONS**

Intervention	
Pharmacological	
Psychological	
Social services	
Occupational therapy	
Speech therapy	
Other	

Medication		Dosage	Dose Unknown
Risperidone			
Citalopram or other SSRI			
Sodium Valproate or other anti – epileptic drugs			
Methylphenidate			
Other			

Follow –up	
Monthly	
2 Monthly	
6 Monthly	
Yearly	
None	
Defaulted	

**11. APPENDIX E:**

**DATA COLLECTION SHEET:**

<b>DEMOGRAPHIC DATA</b>					
<b>AGE</b>	18 – 36 mths	37 – 48 mths	49 – 60 mths	61 – 72mths	
<b>SEX</b>	MALE	FEMALE			
<b>Race</b>					
<b>Black</b>	White	Coloured	Indian	Other	
<b>RELIGION</b>					Unknown
Christian	Muslim	Hindu	Jewish	Other	
<b>LANGUAGE</b>	English	Afrikaans	Nguni Languages	Sotho Languages	Other
<b>YEAR OF 1<sup>ST</sup> VISIT</b>	2006	2007	2008	2009	2010
<b>AREA</b>					
JHB CBD and surroundings	East Rand	South Rand	West Rand	North	Other
<b>CHILD ENROLLED IN SCHOOL</b>	Nursery school/ crèche	Primary school	Unknown		
<b>REFERRALSOURCE</b>					
Parents	School teacher	Social services	Medical professionals	Speech/ OT therapy	Other
<b>DEVELOPMENTAL HISTORY</b>					
<b>MODE OF DELIVERY</b>	NVD	Caesarean section	Forceps	Vacuum	Unknown
<b>PERINATAL COMPLICATIONS</b>	YES	NO	Description	Unknown	

<b>BIRTH POSITION</b>					
First	Second	Third	Fourth	Youngest	Unknown
<b>MILESTONES</b>	Normal	Abnormal	Description	Not remembered	
<b>FEEDING</b>	Breast –fed	Bottle – fed	Unknown		

<b>PRIMARY –CAREGIVER</b>						
Both parents	Mother	Father	Grandparents	Guardian	Orphaned	Unknown

<b>FAMILY PSYCHIATRIC HISTORY</b>	NO	YES	Description	Unknown

<b>SOCIO – ECONOMIC DATA</b>				
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<b>PARENTAL RELATIONSHIP STATUS</b>						
Single parent	Married	Separated	Divorced	Co – habitation	Remarried	Unknown

<b>MATERNAL EDUCATION</b>	Primary school completed	High school completed	Higher education	Unknown

<b>PATERNAL EDUCATION</b>	Primary school education	High school completed	Higher education	Unknown

Father employed only	Mother employed only	Both parents employed	Both parents unemployed	Unknown

<b>PSYCHIATRIC DIAGNOSIS: DSM –IV TR</b>	
ADHD	
Mental retardation with behavioural disturbances	
Conduct disorder	
Oppositional defiant disorders	

Depressive disorder	
Anxiety disorders	
Elimination disorders	
Autism spectrum disorder	
V- code: Bereavement	
V- code: Child Neglect Physical / Sexual Abuse of a Child	
V- code: Academic Problem	
V- code: Parent-Child Relational Problem	
Syndromes	
Other disorders	
No diagnosis	
Intervention	
Pharmacological	
Psychological	
Social services	
Occupational therapy	
Speech therapy	

Medication		Dosage	Dose Unknown
Risperidone			
Citalopram or other SSRI			
Sodium Valproate or other anti – epileptic drugs			
Methylphenidate			
Other			
Follow –up			
Monthly			
2 Monthly			
6 Monthly			
Yearly			
None			
Defaulted			

**12. APPENDIX F: ETHICS CLEARANCE CERTIFICATE**

**UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG**  
Division of the Deputy Registrar (Research)

**HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)**  
R14/49 Lavinia Deborah Lumu

**CLEARANCE CERTIFICATE** M110909

**PROJECT** A Clinical Audit of Pre-Schoolers Referred for  
Psychiatric Services at the Charlotte Maxeke  
Johannesburg Academic Hospital

**INVESTIGATORS** Lavinia Deborah Lumu.

**DEPARTMENT** Division of Neurosciences/Depart of Pyschiatry

**DATE CONSIDERED** 30/09/2011

**M110909DECISION OF THE COMMITTEE\*** Approved unconditionally

**Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.**

**DATE** 30/09/2011 **CHAIRPERSON**   
(Professor PE Cleaton-Jones)

\*Guidelines for written 'informed consent' attached where applicable  
cc: Supervisor : Dr Lynda Albertyn

**DECLARATION OF INVESTIGATOR(S)**

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.  
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**  
PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

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