PREDICTORS OF MATERNAL PSYCHOLOGICAL DISTRESS AMONG MOTHERS OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

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DECLARATION

I hereby declare that the work produced in this dissertation is my own effort except for summaries and quotations that have been duly acknowledged.

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CERTIFICATION

I hereby certify that to the best of my knowledge, this dissertation produced is the original work of the candidate, Dr Charlotte Marie A/P Ambrose Alexander (P-UM0043/14).

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LIST OF ABBREVIATIONS

%	=	Percentage
Δ	=	Precision
ADHD	=	Attention Deficit Hyperactivity Disorder
CGAS	=	Children's Global Assessment Scale
CI	=	Confidence interval
DASS-21	=	Depression Anxiety Stress Scale - 21
DSM-5	=	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
HADS	=	Hospital Anxiety Depression Scale
HUSM	=	Hospital Universiti Sains Malaysia
IQR	=	Interquartile range
MSPSS	=	Multidimensional Scale of Perceived Social Support
N	=	Population sample
n	=	Sample size
p	=	Proportion based on previous study
R^2	=	Coefficient of determination
SD	=	Standard deviation
SPSS	=	Statistical Package for Social Sciences Software
VIF	=	Variance Inflation Factor

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ABSTRAK

FAKTOR RAMALAN TEKANAN PSIKOLOGI IBU DALAM KALANGAN IBU YANG MEMPUNYAI ANAK DENGAN MASALAH HIPERAKTIF DAN KURANG DAYA TUMPUAN

Latarbelakang: Persatuan Psikiatri Amerika menganggarkan sebanyak empat sehingga enam peratus kanak-kanak mengalami masalah hiperaktif dan kurang daya tumpuan (*Attention Deficit Hyperactivity Disorder – ADHD*). Mengikut laporan statistik yang dikeluarkan oleh Institut Kesihatan Umum Malaysia, sebanyak 3.8 peratus kanak-kanak di Kelantan juga mengalami masalah yang serupa. Masalah perhubungan dua hala antara ibu dan anak ADHD boleh menimbulkan pelbagai konflik. Antara masalah yang dikenalpasti adalah tekanan, kemurungan dan kegelisahan. Terdapat kekurangan kajian berkaitan masalah ini dalam kalangan masyarakat tempatan. Di samping itu, peranan sokongan sosial terhadap ibu-ibu yang mempunyai anak ADHD kurang diketahui.

Objektif: Tujuan kajian ini adalah untuk mengenalpasti kewujudan tekanan psikologi dalam kalangan ibu yang mempunyai anak ADHD, serta mengenalpasti faktor-faktor ramalan yang menyumbang kepada berlakunya tekanan psikologi.

Metodologi: Ini adalah kajian keratan rentas yang melibatkan 100 orang ibu yang mempunyai anak ADHD yang menerima rawatan di klinik psikiatri kanak-kanak di Hospital Universiti Sains Malaysia, Kelantan dari 1hb November 2016 sehingga 30hb Jun 2017. Kanak-kanak ini didiagnos mengalami ADHD mengikut kriteria DSM-5 dan berusia antara 2 hingga 18 tahun. Para ibu yang memenuhi kriteria yang ditetapkan dan bersetuju menyertai kajian diberi borang soal selidik mengenai maklumat sosio-demografik dan klinikal, serta dua borang soal selidik iaitu ‘Depression Anxiety Stress Scale 21’ dan ‘Multidimensional Scale of Perceived Social Support’. Borang kaji selidik

‘Children’s Global Assessment Scale’ digunakan untuk penilaian tahap keterukan gejala ADHD.

Keputusan: Para ibu didapati mengalami tekanan psikologi di mana 53% mengalami gejala kemurungan, 54% mengalami gejala keresahan dan 39% mengalami tekanan. Tahap keterukan gejala ADHD didapati mempengaruhi ketiga-tiga domain tekanan psikologi dengan nilai $p<0.001$. Sokongan sosial daripada keluarga turut menjadi faktor ramalan tekanan psikologi, dengan nilai $p<0.001$dalam domain kemurungan, kegelisahan dan tekanan. Faktor ramalan lain yang menyebabkan kemurungan para ibu adalah kumpulan etnik ($p=0.036$) dan ketiadaan penjaga lain ($p=0.006$).

Kesimpulan: Kajian ini mengenalpasti kewujudan tekanan psikologi dalam kalangan ibu yang mempunyai anak ADHD di HUSM, Kelantan, di mana gejala kemurungan dan gejala kegelisahan mencatatkan tahap tekanan psikologi tertinggi. Tahap keterukan gejala ADHD, sokongan sosial daripada keluarga, kumpulan etnik dan ketiadaan penjaga lain merupakan faktor ramalan untuk tekanan psikologi dalam kalangan ibu. Kajian ini menyarankan perlunya saringan tekanan psikologi dalam kalangan ibu yang mempunyai anak ADHD, serta lebih kajian dijalankan berkaitan sokongan sosial terhadap para ibu.

Kata kunci: faktor ramalan, tekanan psikologi, ibu, masalah hiperaktif dan kurang daya tumpuan

ABSTRACT

PREDICTORS OF MATERNAL PSYCHOLOGICAL DISTRESS AMONG MOTHERS OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

Background: The American Psychiatric Association estimates a prevalence of four to six percent of the population of children to suffer from Attention Deficit Hyperactivity Disorder (ADHD). According to the National Institute of Public Health, a prevalence of 3.8% of Kelantan population of children suffer from disorders of hyperactivity. The difficult bidirectional interaction between parent and child create many conflicts. The occurrence of maternal stress, depressive and anxiety symptoms have been identified, with limited exploration of this reservoir of distress in the local population. Little is known about the role of social support among mothers of ADHD children.

Objectives: This study aims to identify the presence of psychological distress among mothers of ADHD children, and to determine predictors of maternal psychological distress.

Methods: This is a cross-sectional study that involved 100 mothers of ADHD children whose children attended outpatient child psychiatry clinic follow-up at Hospital Universiti Sains Malaysia, Kelantan, from 1st November 2016 until 30th June 2017. These children were clinically diagnosed to have ADHD according to the DSM-5 criteria and ranged between the ages of 2 to 18 years. All mothers who fulfilled selection criteria, and granted consent were provided with a socio-demographic and clinical information form, and two self-report questionnaires, namely Depression Anxiety and Stress Scale 21 and Multidimensional Scale of Perceived Social Support. A clinician-rated Children's Global Assessment Scale was used to assess severity of ADHD.

Results: A spectrum of maternal psychological distress was identified, whereby 53% of mothers reported depressive symptoms, 54% of mothers experienced anxiety symptoms and 39% of mothers reported stress symptoms. ADHD symptoms severity was significantly associated with all three psychological domains, with $p<0.001$ respectively. Similarly, perceived social support from family represented a significant predictor of overall maternal psychological distress, with $p<0.001$ in all three domains of depression, anxiety and stress. Other factors associated with depressive symptoms include race ($p=0.036$) and absence of other caretakers ($p=0.006$).

Conclusion: This study identified overall maternal psychological distress among mothers of ADHD children in a local setting in Kelantan with depressive and anxiety symptoms recording the highest level. ADHD symptom severity, perceived social support from family, absence of other caretakers and race were identified as predictors of maternal psychological distress. This study suggests the need for psychological distress screening among mothers of ADHD children. More research should be garnered about the protective role of social support among these mothers.

Keywords: predictors, psychological distress, mothers, Attention Deficit Hyperactivity Disorder

CHAPTER 1: INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a common condition among children and adolescents. It is often one of the reasons children are labelled as disruptive and unmanageable in classrooms, overwhelming their peers and teachers in school. Thus, this results a need for their parents and their caregivers to seek assessment and treatment. It is a condition more commonly seen in boys than in girls (Ministry of Health, 2008). In accordance to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), this disorder is characterised by features of inattention with or without features of hyperactivity and impulsivity whereby the presentation of features may be either predominantly inattentive features, predominantly hyperactive features or a combination of both groups of features (American Psychiatric Association, 2013). This condition is also commonly associated with other psychiatric comorbidities such as autism spectrum disorder, conduct problems, learning disabilities, oppositional defiant disorders, antisocial behaviour and substance abuse (Musa and Shafiee, 2007).

The American Psychiatric Association estimated a prevalence of 4 to 6% of the population of children to suffer from this condition, with a prevalence of 3.8% of Kelantan population of children suffering from disorders of hyperactivity (Ministry of Health, 2008; Insititute for Public Health, 2015). Meanwhile, the National Health and Morbidity Survey denoted an overall prevalence of 12.1% of mental health problems among children (Insititute for Public Health, 2015). ADHD does not only constitute of inattentive and/or hyperactivity features, but its characteristics extend to cause significant impact on the child's quality of life, academic performance, social interaction and

inadvertently, occupational functioning in the future. A developmental framework has been suggested that described the development and progression of this disorder as a result of multiple interactive factors that consisted of biological and environmental factors (Margari *et al.*, 2013).

The impairments of this disorder also create significant impact among parents of ADHD children. Difficult parent-child interaction and the level of ADHD symptom severity create many conflicts for both child and parent. Mothers of ADHD children have an impaired sense of parenting ability and competence as compared to mothers with non-affected children (Modesto-Lowe *et al.*, 2008). Such lack of confidence and competence may affect parenting style, the quality of parent-child communication and child upbringing.

Such negative impacts of the child's disorder have been seen to affect the psychological wellbeing of parents (Musa and Shafiee, 2007; Margari *et al.*, 2013). The impairment of psychological wellbeing result in the disruption of quality of life and the occurrences of psychopathology in the parent. Evidences such as the occurrence of stress, depressive and anxiety symptoms have been proven in several studies, especially in mothers of ADHD children as they spend more time in provision of child care (Musa and Shafiee, 2007; Psychogiou *et al.*, 2007; Durukan *et al.*, 2008; Narkunam *et al.*, 2014). The severity of symptoms of ADHD illness in the child contributes to a reciprocal relationship to parental psychopathology, thus optimising psychological wellbeing may improve the management of ADHD children. There are previous studies regarding psychological wellbeing of parents of ADHD children, however studies in the local setting in Malaysia are limited.

Socio-demographic factors of the individual parent also may predispose to poor psychological wellbeing thus more research to identify modifiable factors are important. Another domain that affects the occurrences of parental psychopathology includes the availability of support from their surroundings. The lack of care and ignorance from the extended family members and relatives, spouse and also their immediate environment may result in increment of stress of the parent (Lange *et al.*, 2005; Theule *et al.*, 2011). However, there is little exploration to date pertaining the relationship of this factor with psychological distress.

This study aims to determine the level of depressive symptoms, anxiety symptoms and stress as components of maternal psychological distress among mothers of ADHD children in a local setting in Kelantan, whose children were receiving child psychiatry treatment at Hospital Universiti Sains Malaysia. Another important aim in this study was to explore the socio-demographic, ADHD clinical profile and social support factors to identify the predictors of stress, anxiety and depressive symptoms among these group of mothers. The findings from this study will aid in understanding the psychological distress among mothers of ADHD children in the local setting, and contribute to the tailoring of targeted interventions for these parents. The psychological wellbeing of parents are important as the maintenance of good quality of life of parents are vital components to good mental health status which will be essential in the provision of optimal care in overall management of ADHD children.

CHAPTER 2: LITERATURE REVIEW

2.1 Maternal psychological distress in mothers of ADHD children

Psychological distress is a collective terminology that is used to represent symptoms that reflect the presence of impaired level of wellbeing due to experiences and life events that have created a negative impact on an individual. The psychological distress referred in this study consists of the presence of stress, depression and anxiety. The terminology 'psychological distress' can be defined as a state of emotional suffering consisting of symptoms of anxiety and symptoms of depression (Mirowsky and Ross, 2002). The defining concept of psychological distress is described to encompasses the context of stress, distress and strain (Ridner, 2004). These symptoms represent the presence of disruption in one's realm of psychological wellbeing, which will inadvertently affect the quality of life of an individual.

The presence of a child with Attention Deficit Hyperactivity Disorder (ADHD) influences the unique bidirectional relationship between parent and child. Available literatures have explored the impact of the ADHD child unto the parent, which can be summarised to have been viewed in two different paradigms. The first paradigm of impact of ADHD of the child unto the bidirectional relationship between mother and child curtailed the underlying constrain of this disorder per se which influenced the basic development of parent-child interaction. The second paradigm viewed the consequential emergence of maternal psychopathology, a resultant of the initial paradigm, and its impact unto the existing parent-child relationship.

The presence of an ADHD child result in the increase need for parental involvement. The higher level of involvement consume more time and effort, resulting in less commitment in other domains of the parent's life which consist of care and attention to their other children, their spouse, their marital relationship and work. There is increase need for direction and order of the child, increase need for support and encouragement to the child's positive behaviour, and more punishments and reprimands as an effect of ADHD, resulting in a reciprocal relationship which affects both the child and the parent. Such two-way relationships are prone to the development of conflicts, thus predisposing to more stress to the parent and child. This conceptual framework contribute to the increase in parental stress and the development of parental psychopathology (Theule *et al.*, 2013).

An ideal parent-child relationship denotes the presence of optimal sensitive parenting style, in order to cultivate the development of a child who masters good self-regulation skills. The presence of overt challenging behaviour of the child which have been described to be intrusive, stress provoking and disruptive creates an impact on the existing parenting style adopted, as mothers become less responsive and more punitive in methods of interaction, as they face difficulties to synchronise their responses to the child's behaviour. This results in the development of poorly regulated behaviour in these children, which in consequence, escalates the difficulties of developing an ideal and sensitive parent-child relationship (Margari *et al.*, 2013). Such impacts on parents of ADHD children, result in repellent parenting behaviour which consists of less affection, less empathy, more critical and more controlling behaviour towards their children, which then imposes more stress on the ADHD child (Deault, 2010).

The subsequent paradigm highlighted by available literature narrated the resultant negative effects that arose from the dysfunctional mother-child interaction. The dysfunctional reciprocal interaction between parent and child created the presence of low self-esteem, sense of lack of parental competence, perceived lack of ability in managing their children, marital discord and family dysfunction, negative interpersonal styles, increased parental expressed emotions, communication constrain, parental distress and eventual development of parental psychopathology (Shur-Fen Gau, 2007; Deault, 2010; Finzi-Dottan *et al.*, 2011). The occurrence of parental stress occurs early in the onset of the child's illness, and persist in view of the chronic and disabling nature of the illness regardless of the age of the child and symptom severity of the illness (Narkunam *et al.*, 2014). Such ongoing parental stress predispose a higher vulnerability for the development of parental psychopathology such as depression and anxiety disorders (Steijn *et al.*, 2014). The externalised aggressive behaviour of the child result in significant impact on mothers who spend more time in provision of care to the child compared to any other family member. The presence of marital discord is also too significant to ignore, among these mothers (Wymbs *et al.*, 2008b).

The first paradigm of impact of ADHD unto the parent-child relationship create a realm for a subsequent paradigm of impact of negative consequences from this dysfunctional relationship, which in turn, exerts its own derogatory effect unto the existing parent child relationship. The impact of negative parent-child relationship was evident in a study which followed a large sample of children, who reported the presence of depressive symptoms as a result of being raised by parents who were controlling, less affectionate and power assertive. Such control and power assertion by the parents spurred as negative displays of parenting styles which were a result of underlying parental depression

following the impact of raising an ADHD child (Gerdes *et al.*, 2007a). The study emphasized the role of parental depression as a predictor of relationship quality, contributing evidence to the second paradigm of ADHD impact. The presence of parental psychopathology, namely maternal depression have been isolated as an independent predictor for the development of behavioural and conduct problems in their ADHD children, as reported in a longitudinal study, which explored the consequences of parental psychopathology on the course of ADHD of the child (Deault, 2010).

The presence of maternal depressive symptoms in mothers of ADHD children reflect a higher psychological impact as compared to mothers of normal children. In turn, the presence of maternal distress, influence parent-reported behavioural problems in the ADHD child (Gartstein *et al.*, 2009). This is also in keeping with the depressed mother's tendency to develop negative perceptions and cognitions pertaining the child's behaviour. The Depression-Distortion hypothesis, popularised by Richters (1992), identified the tendency of depressed mothers to view their ADHD children's behaviour in a negative perspective, with the preponderance to negatively over-report their child's behaviour. The biased perception of the psychologically distressed mother results in retaliated aggression from the ADHD child, which inadvertently results in the construct of a more stringent parenting style (Richters, 1992). This highlights the indirect complex impact of maternal psychopathology unto the already existing parent-child relationship.

There are available studies which have reported the outcome of depression and anxiety. A study on 59 mothers reported that 17.9% of mothers with ADHD children suffered from major depression and 20.5% of mothers suffered from minor depression (Durukan

et al., 2008). Another study highlighted significant Beck Depression Inventory and Beck Anxiety Scale scores which were reported higher among mothers with ADHD children compared to healthy controls (Durukan *et al.*, 2008). Such findings were also consistent in different countries. A study conducted in a Brazilian university revealed greater rates of depression and anxiety among mothers of ADHD children (Segenreich *et al.*, 2009).

Another study conducted explored regarding ADHD and parental psychological distress established 21% of mothers experienced depression, whereas 24% of mothers experienced parenting stress (Harrison and Sofronoff, 2002). In keeping with this, a study which recruited mothers of ADHD children from the child psychiatric services in the Republic of Ireland explored the impact of externalising behaviour in ADHD children unto maternal psychological distress. Twenty two mothers of ADHD boys who participated in the study, reported increased stress and lower quality of life, in comparison to mothers of healthy children (Lange *et al.*, 2005). The impact of the behaviour of ADHD children on the stress domain of maternal psychological distress have been very conclusive in Western literature. Studies have elucidated the presence of increased maternal stress in the presence of worsening behavioural problems of the ADHD child, which resulted in negative impact of the overall maternal psychological distress and mother-child relationship (Theule *et al.*, 2011; Yousefia *et al.*, 2011).

Western literature have identified and conceptualised the impact of ADHD on maternal psychological distress and family functioning. However, similar evidences of ADHD impact are available in a more constrained and limited scope in the Asian continent. It was highlighted that similar findings were also recorded in the south central Asian

regions, in a study conducted in an Iranian university by Ganizadeh, who established that the mood disorder was the most common of psychiatry morbidities among parents of ADHD children whereby the rate of depression was 48.1% among mothers. A similar study conducted in another Iranian university reported 30% of mothers of ADHD children suffered from depression (Soltanifer *et al.*, 2009). In closer geographical location to Malaysia, a Taiwanese study which explored the impact of 375 ADHD children on their mothers, identified the presence of increased maternal depressive symptoms and anxiety symptoms indicating heightened psychological distress in comparison with mothers of non-ADHD children, and presence of less affectionate parenting styles, with effect sizes ranging from 0.43 to 0.69 (Shur-Fen Gau, 2007).

Limited local studies are available to highlight the presence of such distress in the local setup in Malaysia. A study conducted in a local university reported that 63% of mothers of ADHD children suffered from depression, whereas 80% of mothers of ADHD children suffered from anxiety which record much higher rates in comparison with previous studies (Musa and Shafiee, 2007). A separate study which was conducted in the local population established high proportion of stress among parents of ADHD children, with a result of 73% of parents experiencing significant stress (Narkunam *et al.*, 2014).

The presence of morbidities such as mood disorders, anxiety disorders, conduct disorders and substance abuse are common among first degree relatives of ADHD children. There are considerable increase in affective disorders and anxiety among female relatives of ADHD children especially mothers (Steijn *et al.*, 2014). The higher likelihood of negative perceptions and distorted cognitions in mothers of ADHD children result in higher

reporting of distress from these group of parents, and indirectly increase the preponderance for these group of caretakers to be more vulnerable to psychological distress in comparison to their male counterparts (Theule *et al.*, 2013).

The available studies of presence of depression in fathers of ADHD children have conflicting results as some studies discovered no difference in depression when compared to a control group, whereas some studies denoted increased rates of paternal depression (Margari *et al.*, 2013). This can be explained as presence of ADHD children create an overall impact on their family functioning in which there is more stress, social isolation of family, marital disharmony and sense of parental ineptitude (Musa and Shafiee, 2007). However, in view of more involvement in daily provision of care to the child, the exposure to the negative effects of ADHD result in more pronounced maternal psychopathology than paternal distress, resulting in higher maternal levels of anxiety, depression, sleep disturbances, somatic symptoms, reduction in self-esteem and incompetence (Psychogiou *et al.*, 2007; Durukan *et al.*, 2008).

2.2 Impact of socio-demographic variables on maternal psychological distress

There are many different socio-demographic factors that constitute the uniqueness of an individual. These factors describe the social and demography profile of an individual, which may serve as vulnerability or protective factors for individuals towards the attainment of psychiatric morbidities. Among the variety of socio-demographic factors include age of parent and child, the number of children, sex of ADHD children, educational level, marital status, employment status, income, presence of main caretaker

of the ADHD child, presence of other caretakers of the ADHD child and presence of family history of psychiatry illness (Crosier *et al.*, 2007; Margari *et al.*, 2013; Theule *et al.*, 2013; Narkunam *et al.*, 2014).

Available literature have divulged in several socio-demographic characteristics of parents with ADHD children, which have been identified as relevant to the development of maternal psychological distress which include age of parent, the number of children, education, marital status, employment, income, presence of caretakers of the ADHD child and presence of family history of psychiatry illness, as summarised in Figure 3.1. The presence of research divulging in parental psychological distress, have narrowed most postulations and hypothesis to mothers as being the most affected parent in the reciprocal relationship between parent and child. It has been identified that the presence of maternal psychological distress was a by-product of poor mother-child interaction. This psychological distress, in turn, created a significant impact unto the ADHD child's overall developmental psychopathology, as it contributed to the development of progressive comorbidities in the ADHD child such as the presence of oppositional defiant disorder, conduct disorder and antisocial personality disorder (Lifford *et al.*, 2008).

It was also prevalent that mothers, instead of fathers, demonstrated more persistent pattern of development of psychopathology, with some results demonstrating no paternal depression in association with the care of an ADHD child (Theule *et al.*, 2011). Fathers were more prone to the development of conflict between their interaction with the ADHD child, but such conflict did not contribute to the development of paternal depression or other psychopathology (Psychogiou *et al.*, 2007; Theule *et al.*, 2013).

Another important aspect of socio-demographic characteristics of the mother which created significant impact to the development of maternal psychological distress was the marital status and relationship with spouse. The presence of an ADHD child, created significant stress and disruption in the normal functioning environment of the family, as parents would have to navigate different ways to respond to the child, which include making exceptions and exclusions of their other children, sacrifices of personal space, and the development of marital conflicts. The association of marital conflict and the ADHD child were interpreted in several ways. The presence of an ADHD child exerts direct burden unto the parental relationship as it triggers more disagreement and communication problems between the parents. On the opposite spectrum, it can also be viewed that marital conflicts and the presence of ADHD are a reflection of the underlying shared genetic vulnerability of the family to distress (Margari *et al.*, 2013; Theule *et al.*, 2013). Nevertheless, the presence of marital conflict and dissatisfaction have not been a consistent outcome in all studies(Wymbs *et al.*, 2008a).

The impact of marital status on the mother of ADHD children remain a cautious interpretation. The lack of evidence in marital dissatisfaction among these parents, may be an incorrect reflection as divorced parents of ADHD children are usually not represented in these studies of marital satisfaction (Harrison and Sofronoff, 2002; Wymbs *et al.*, 2008b). The dissolution of the constitution of marriage results in the presence of divorced spouses and single mothers. The presence of single mothers, have been identified to represent a characteristic that increases the vulnerability of the parent to the development of psychological distress, such as depression (Crosier *et al.*, 2007).

The presence of burden of caring for an ADHD child was speculated with available literature highlighting the role of socioeconomic status of the family, to the development of parental psychological distress. The role of economy in the family of ADHD children have been evident as presence of low socioeconomic status, hence higher economic burden to the mother, increased the vulnerability of mothers reporting heightened experience of stress (Solem *et al.*, 2011). The presence of low socioeconomic status, exposes these mothers to more extra-familial vulnerabilities and non-conduciveness, which in turn heightens the overall stress experienced. The impact of low socioeconomic status on to the mother of an ADHD child, can be compounded more by the presence of neighbourhood poverty. The presence of low socioeconomic status in the neighbourhood, exposes the mother to the presence of adverse physical environment, hence exposing her to more distress as she has to incorporate greater efforts to provide a positive quality environment to raise her ADHD child (Theule *et al.*, 2011; Russell *et al.*, 2016).

The presence of working mothers with ADHD children, are at an unavoidable risk of impairment of occupational functioning, due to the overall direct and indirect impact of raising an ADHD child. The impairment of occupational functioning is evident as the presence of an ADHD child affects the mother's work status and productivity (Hakkaart-van Roijen *et al.*, 2007). Some caregivers have resorted to changing their work status in order to provide leverage to care for their ADHD child, whereas many other mothers reported reduction in number of working hours. An impairment of occupational functioning was evident with a documented average loss of 0.8 days of work with decreased work productivity for an average of 2.4 days in a month (Coghill *et al.*, 2008).

It has been explored that among parents of children with behavioural problems, which include ADHD children, the level of parental stress was identified to be higher in parents who possessed lower education background (Gupta, 2007; Solem *et al.*, 2011). Maternal education was identified to be a significant predictor of determining the interaction between mother and child, which would include better organization of activities and resources to meet goals effectively in their daily interaction. In addition, maternal education which has been identified as an important indicator of socioeconomic status in an individual as it contributes to the obtainment of higher income correlated with the development of behaviour and cognition of the child (Solem *et al.*, 2011).

Narkunam *et al.* (2014) conducted a local study in Kuala Lumpur which highlighted significant associations between parental stress and certain socio-demographic factors. It was discovered that the ethnicity of a parent influenced parental stress whereby non-Malay parents were identified to be more distressed, reflecting an element of different believes, acceptance and level of tolerance to the disorder in different cultural upbringing. Employment also played a significant role in predisposing mothers to increase parental stress as they were still the main care provider for the child. The impact of the presence of other caretaker could not be established as no significant association was obtained when this factor was investigated. Married parents also seem to be predisposed to more parental stress as a result of poorer communication and more conflicts resulting in less marital harmony and satisfaction (Narkunam *et al.*, 2014). The available local data explored the association between socio-demographic factors with the development of stress, but there is little exploration and paucity of information pertaining the impact of socio-demographic variables on the development of other components of psychological distress such as depression and anxiety among these parents in Malaysia.

2.3 Impact of the ADHD clinical profile on mothers of ADHD children

Besides the role of socio-demographic factors, the many components of the clinical profile of ADHD also create an impact and influence on the development of such maternal psychopathology. Clinical variables that are of importance in the ADHD clinical profile include the age of the ADHD child, age of onset of illness, the duration of illness, the treatment duration, type and nature of treatment received, the disease symptom severity, presence of comorbid illness and the nature of the ADHD spectrum per se which include inattentive subtype of ADHD and combined ADHD subtype, as summarised in Figure 3.1 (Harpin, 2005; Musa and Shafiee, 2007; Psychogiou *et al.*, 2007; Margari *et al.*, 2013; Narkunam *et al.*, 2014; Steijn *et al.*, 2014).

An important characteristic of the ADHD child which have significantly resulted in consequential attribution to the development of maternal psychological distress is the age of the ADHD child. There have been evidence that older ADHD children are reported to be more compliant and receptive to parental instructions, as compared to younger children. Research has proven that children within the younger age group have resulted in increased psychological distress among their caregivers (Theule *et al.*, 2013). The increment of parental stress which is more explicit in the caregiving of preschool age of ADHD children, have been seen to be a result of defective and strenuous parent-child interaction during that developmental age of the child (Yousefia *et al.*, 2011; Margari *et al.*, 2013)

On the contrary, a recent study identified a non-significant association between age of the ADHD child and parental stress, citing that age did not directly contribute distress to the caregiver (Steijn *et al.*, 2014). It can be understood that the impact of ADHD on the parent changes in accordance to the developmental psychopathology of the illness as the ADHD spectrum contributes to different impacts on caregiver distress at different age milestones; from the impact of noncompliance to instructions during the preschool age; to the impact of poor academic achievements and lack of social engagement from the community with the ADHD child during the primary school years; to the development of peer issues and social misconduct during the adolescent years (Harpin, 2005).

Another important characteristic in the clinical profile of ADHD children which raised interest in its association with the development of maternal psychopathology is the role of sex of the ADHD child. The impact of ADHD in terms of the disruptive externalised behaviour and internalised behaviour portrayed by these boys and girls, contributed to the onset and persistence of psychopathology in their caregivers. Research have documented evidences that both male and female ADHD children posed similar detrimental effects unto the development of their parental psychological distress (Theule *et al.*, 2013; Steijn *et al.*, 2014).

The severity of the symptoms and behaviour of an ADHD child have been stipulated to increase the level of maternal depression. It has also been reported that the presence of poor parental control coupled with the presence of such difficult behaviour in the child result in higher levels of depression among mothers (Deault, 2010; Pimentel *et al.*, 2011). An overseas study conducted identified child behaviour characteristics to represent a

strong predictor of psychological distress among parents. The externalising behaviour of a child which included deviant and aggressive behaviour promoted more depression, anxiety and distress among mothers (Duchovic *et al.*, 2009). Mothers also responded with increasing stress to certain characteristics of the child such as depressed child, anxious child or withdrawn child. It was important to assess symptom severity of ADHD, as higher severity resulted in poorer psychological health in parents (Harrison and Sofronoff, 2002; Musa and Shafiee, 2007; Narkunam *et al.*, 2014).

The treatment of the ADHD child include the availability of pharmacotherapy and non-pharmacotherapy options. Medication that have been made known through evidence-based research include stimulant medications such as Methylphenidate and non-stimulant medications such as Atomoxetine. Non-pharmacotherapy treatments such as occupational therapy and speech therapy have also played a role in the therapeutic improvement of behavioural issues and learning disorders that accompany the hyperactivity and inattention of the ADHD child. Research has resonated a preference for combination of treatment to be a more holistic management plan for an ADHD child (Coghill *et al.*, 2008).

The duration of ADHD treatment received is of importance as longer duration of treatment reflected the ongoing problems and chronicity of the illness which will inadvertently affect their caretakers, resulting in the development of depression, anxiety and stress among parents (Narkunam *et al.*, 2014). However, it is interesting to denote that while one may consider parents to have higher levels of stress with children on medication as it signifies a greater severity of illness, some studies have reported that

children with and without medication had similar effects on their relationship with their parents (Coghill *et al.*, 2008). A local study denoted similar levels of stress regardless on the type of medication or therapy received (Narkunam *et al.*, 2014).

Another component of the ADHD clinical profile which promotes an impact on the psychological health of parents especially mothers, is the subtype of the ADHD spectrum the child is diagnosed with. The DSM-5 have categorized ADHD into several subtypes based on its involvement of symptoms. Mothers of children who suffer from a combined subtype of ADHD which consists of both hyperactivity and inattention would experience more distress and more prone to poor maternal mental health, as compared to mothers of ADHD children with only inattentive symptoms (Steijn *et al.*, 2014). Similarly, a local study reported that parents with ADHD children of combined subtype experienced more stress as compared to parents of ADHD children with inattentive type (Narkunam *et al.*, 2014). However, there is lack of data regarding the effect of each ADHD subtype and occurrence of depression and anxiety among mothers of these children. In view of the presence of varying levels of impact which the different clinical variables have on parents of ADHD children, it is important in investigating such associations in a local setup to help obtain a more comprehensive outlook and management for both child and parent.

2.4 Role of perceived social support of mothers of ADHD children

Social support is an element often disregarded as important or substantial as other biological factors when related to the physical or psychological health of an individual. However, since the mid-1970s, the element of social support has become more

pronounced in its impact on the overall health of an individual, securing a direct relationship between its sufficiency and the physical and psychological well-being of the individual. There are many definitions that explain the comprehensive significance of social support. The term social support was defined to consist of an understanding that there is an exchange of resources between two individuals, of which both parties agree that such exchange is for the benefit and well-being of the recipient (Shumaker and Brownell, 1984).

The impact of social support to an individual is apparent when the mechanics of how social support function is understood. There are several domains in which social support operates which has been argued and put forth by many authors. Among the domains in which it operates include the suggested two pathways of social support, namely the main effect model and the stress-buffering effect model. The direct effect of support provides support to the individual regardless of the level of stress experienced whereas other opinions have suggested that social support dissipates a buffering effect to alleviate the level of stress experienced (Thoits, 2011).

Another paradigm of thought regarding the manner in which social support operates includes the focus of social support in the maintenance of good health and recovery of illness. The positive and protective factors of social support helps improve an individual's confidence and self-esteem thus indirectly increasing one's biological defence mechanism to fight disease. This has been evident in research which have proven the effect of good social support in mitigation of psychological distress. The presence of good social support increases psychological resilience, which in turn reduces the dysregulation

of the hypothalamic-pituitary axis and cortisol release in response to stress experienced in the individual (Lovell *et al.*, 2012). Another domain that explains the manner in which social support operates is the nature of the social support received. It has been suggested that social support functions similar as an assistance to coping, whereby the support received helps an individual alter the situation, alter the meaning of the situation or alter their responses to the source of stress (Solem *et al.*, 2011).

Social support can be summated either subjectively or objectively. Zimet *et al.* (1990) who developed the self-report instrument of Multidimensional Scale of Perceived Social Support described that a subjectively perceived measurement of social support is a better predictor of psychological outcome compared to an objectively measured support. Literature have identified that the level of social support is inversely related to psychiatry morbidities such as depression and anxiety (Lakey and Orehek, 2011). Social support include support from spouse or a significant other, support from family and support from friends, as summarised in Figure 3.1. With regards to the presence of the ADHD child, the social support from these three domains are of utmost relevance to mothers of these children.

It has been highlighted in literature that poor family support and poor support from friends are evident among families of children with ADHD (Lange *et al.*, 2005). Support from the individual's spouse or significant other also plays a protective role in the development of psychological distress, as single mothers have been reported to face more psychological adversities in the absence of this domain of social support (Theule *et al.*, 2011).

Parents of ADHD children live in a social network with limited or poor support from the social support system which exist around them. This is evident as the presence of frequently reported marital conflicts and marital dissatisfaction indirectly reflected on lack of support from spouses, which may predispose parents to more psychological distress as parents who have ADHD children depend on their spouse for help and support in raising these children (Wymbs *et al.*, 2008a; Margari *et al.*, 2013; Steijn *et al.*, 2014). Parents who have children with ADHD who pose disruptive behaviours have reported a less conducive family environment which consisted of less support and thus resulted in more stress and poorer coping abilities. Lack of social support was described as parents experienced rejection from other family members in providing help to care for their children, and experienced lack of invitations to social functions due to their children's disruptive behaviour (Harpin, 2005; Solem *et al.*, 2011). It is important that social support be emphasized and optimised as the lower the level of perceived social support, the higher the burden experienced by parents of ADHD children, thus increasing their vulnerability to negative outcomes such as stress, depression, anxiety, substance abuse and alcohol consumption (Margari *et al.*, 2013; Steinhausen *et al.*, 2013).

The impact of perceived social support onto mothers of ADHD children is an important aspect of management of ADHD. The impact of ADHD unto the child, the parents, the family functioning and the physical environment of the household and neighbourhood resonates concern for ideal protective factors to be mobilised for these caregivers of ADHD children in hope of prevention of caregiver distress (Lovell *et al.*, 2012).

The role of social support among mothers have garnered interest and research. The focus on perceived social support of mothers, rather than fathers, are in keeping with the presence of gender difference in obtainment of social support networks. Women are known to obtain lesser social support networks as compared to men, hence increasing the evidence of distress and psychopathology in these group of individuals. This is in keeping with the conceptual framework than women tend to develop more emotionally intimate relationships, utilise more social supports in stressful situations from their children, friends and extended family in comparison to men who mainly depend on their immediate spouse, and women's tendency to emanate social support to others resulting in an imbalance obtainment and provision of social support for them (Thoits, 2011). Mothers who cared for mentally ill children, reported increased need of emotional and informational modes of social support and attempted the use of more community resources and social support services (Scharer *et al.*, 2009; Solem *et al.*, 2011). In addition, the presence of structured social support interventions improved the dyadic relationship between mother and child (Scharer *et al.*, 2009).

In understanding the concept of social support with relevance and context to culture, the differences in reported perceived social support among individuals from different continents are more understood. The Western population of individuals adopt an individualistic culture, of which these individuals view their models of self as independent with its own unique attributes. The Asian population have been conceptualised to adopt a more collectivistic culture, of which Asian individuals view their models of self to be interdependent with their community, and view personal goals as secondary whereas group goals to be of utmost priority (Kim *et al.*, 2008). This records an understanding that individuals in the West adopt a more independent relationship with

others, whereas in many parts of Asia, individuals resort to a more interdependent form of relationships which are less voluntary.

Such differences in culture in different continents explain the perception of social support received. Individuals with an individualistic culture, are seen to be more proactive in asking for support during stressful situations, as they prioritise individual well-being. On the opposite spectrum, individuals from the collectivistic culture are less proactive and more reluctant in seeking support as they prioritise group goals and attempt to avoid negative consequences of seeking support such as being criticised, and render their personal problems to be a hindrance and a burden to the community which should have been solved independently (Kim *et al.,* 2008). Such concepts have been proven in research whereby Asian individuals have been seen to view the act of seeking help and support in distressing situations in a more negative aspect as compared to their Western counterparts (Chu *et al.,* 2008).

A better perspective on the nature social support affects individuals of different culture can be comprehended by viewing the manner of support use to be either explicit use of social support or implicit use of social support. The explicit use of social support are more representative of the culture in Western countries of which individuals openly elicit support in congruence to the distress experienced. The Asian individuals adopt a more implicit use of social support, by obtaining emotional comfort from their community without the direct use of these networks, via indirect ways such as reminding themselves of the support available and seeking reassurance of the existence of such support

networks. The presence of such implicit use of social support are more correctly identified as perceived social support of the individual (Kim *et al.*, 2008).

In a study conducted in China among maternal caregivers of children with learning disorders, it was reported that mothers perceived lower levels of support, namely instrumental support, emotional support and informational support. The mothers reported lower emotional support from their social networks, as learning disabilities were less acceptable in the Chinese culture, which rendered the families to become more socially isolated. These mothers depended on social support from their spouses and also reported higher support received from their families, in compensation to the lack of support received from friends. These Asian mothers also reported lower support received from their professional alliances such as teachers and doctors, as these groups failed to identify their role in provision of support to these mothers alongside their formal role of provision of management for the affected child (Wang and Michaels, 2009).

The role and impact of perceived social support in parents of ADHD children have been investigated and established in the Western countries, but evidence of such associations are lacking in the local population and needs to be investigated further so as to enable the development of an effective support system for these parents.