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Abstract

Raising children with Attention Deficit Hyperactivity Disorder (ADHD) can be stressful and exhausted. These children need special care and attention from parents to make sure their growth in all aspects such as mental health, patience level and their behaviour. The aim of this study is to determine the factors contributing the stress of parents having children with ADHD. Sample of the study consisted of 175 parents of ADHD children from 36 randomly selected schools which included three different District Education Office of Bangsar/Pudu, Keramat and Sentul, Kuala Lumpur. Binary Logistic Regression is used to identify factors affecting stress of parents having ADHD children. Data analysis revealed that social support and marital status of divorced significantly influenced the parents' stress, while child's age, child's gender, child's comorbid, child's diagnosis, parent's gender, marital status for single and married parents, and parent's financial, did not contribute significantly toward stress among parents having children with ADHD.

Keywords: Attention Deficit Disorder Children, Parenting, Stress, Binary Logistic Regression

Introduction

Attention Deficit Disorder (ADHD) is a neurodevelopmental disorder and it is one of the most common behavioural disorders among children. The Mental Disorders Diagnostic and Statistical Manual (DSM-5) defined ADHD as a repeated pattern of symptoms that can be recognized as inattention and/or hyperactivity-impulsiveness in childhood (Alsalamah, 2018). Attention Deficit Disorder Association (ADDA) reported that ADHD as a relatively common disorder estimated to affect 5% to 10% of children and 3% to 6% of adults globally. Children who are being diagnosed with ADHD will have a repeated trend of signs that can be recognised in childhood, presented as inattention and impulsivity (National Institute of Mental Health, 2019). Although these symptoms might be seen in the early stage of childhood, a review of literature and observational studies of ADHD patients shows that symptoms of ADHD can remain constant into adulthood (Wiener et al., 2019). Having an ADHD child who needs special care can be stressful and exhausted for their parents. Previous studies have shown that parents of ADHD children have encountered more stress than parents of control children (Wiener et al., 2019).

There is a growing need to understand the specific factors that influence stress among parents with ADHD children. The development of stress may be associated with characteristics of parents itself such as gender of parent, marital status, income and social support status. Previous study found that high levels of stress experienced were significantly displayed in mother's domain (Cheesman, 2011; Azeem et al., 2013). Moreover, mother of ADHD children are more psychologically distressed, mainly due to the seriousness of disorders of their ADHD children (Musa and Shafiee, (2007)). Marital status of parent also play important role in influencing parental stress among ADHD parents. Single parents who are having a child with ADHD experienced more stress compared to non-divorced parents (Theule et al., 2011). Babakhanian, et al (2016) indicates that parents with ADHD children have a lower level of family relationship than parents with normal children. Compared to various support organizations and experts, family can be considered the most supportive parents to take care of their child with ADHD (Nomanbhoy and Hawkins (2018)). This study reveals that children with higher parent-child connection quality are much less violent, had low social stress and enhanced self-esteem. Moreover, social support had a huge impact on parental stress (Theule et al., 2011). Russell, Ford, and Russell (2015) reveals that family from a lower socioeconomic status background experienced more stress and have a greater risk of having negative outcomes, such as the unavailability to cure their diagnosed ADHD children and not able to provide a good facility for their children.

Looking into child's domain, the children's characteristics are also considered to have influence that was found to be connected with a greater risk of psychological distress for parents. Children's age could also influence the path and reflection of adult disorder (Muñoz-Silva et al., 2017) and younger children are linked to the increasing mental distress (Azeem et al., 2013). However, the linked between child age and parental stress is usually conflicting (Theule et al., 2011) or could shift between different genders (Sollie et al., 2016). Parents with a son with ADHD would have more stress than a daughter (Hoang, 2015). Furthermore, research has also shown that the gender of children would be able to contribute significantly on the stress of parents. Difficult behaviours exhibited by children with ADHD are considered to be significant parent stressors. These stressors are associated with negative outcomes for children. A comorbid problem is one of the variables that lead to the negative behaviours of the ADHD children. Sollie et al (2016) mention that this relationship is not only explained by the symptoms of ADHD itself but due to the various comorbid problems with children with ADHD such as oppositional defiant disorder. There are few studies highlighting the duration of the specific treatment or diagnosis of the disorder and parental stress. Narkunam et al. (2014) found that the children's contact span had a major impact on parental stress in the cohort of Malaysian parents. Parents who had children and had been in contact with the diagnosis unit for more than two years were are discovered to be more stress compared to the parents who had been in contact with the diagnosis unit for less than two years. In addition Hoang (2015) also states that parents whose children had been diagnosed more than three years of age have higher stress levels than whose children diagnosed less than one year of age. This situation is due to the complication in the development of ADHD that continues to change over time.

Stressed parents tend to neglect their children and might do things out of control. As a consequence, they are gradually seen as colder, more abandoned and far less warm. Simultaneously, this can affect children's growth in all aspects such as mental health, patience level and their behaviour. Therefore, special care should be given to ADHD children because they are unable to verbalize their demands like any other normal person. This condition

impacts their ability to converse and socialize with others and this leaves parents to play a guessing game which results in a high level of stress. Therefore, the aim of this study is to determine the factors that contribute to stress among parents with ADHD children in Kuala Lumpur Malaysia.

Methodology

Data Collection and Instrument

This study is a cross-sectional study that involves a random sample of 175 parents of ADHD children from 36 randomly selected schools in Kuala Lumpur which offered special education program (Program Pendidikan Khas). The sample was selected from population of 321 parents from 87 schools in Kuala Lumpur which included three selected District Education Offices (PPD); Bangsar/Pudu, Keramat and Sentul. After receiving approval and response from Ministry of Education Malaysia and State Education Department of Wilayah Persekutuan Kuala Lumpur, a survey was carried out to respondent to collect data on demographic background of respondents, background of ADHD child and perceived of stress. The demographic background of respondents consisted of eight questions which were gender, marital status, income, social support, while background of child consisted of four questions: child's age, child's gender, child's comorbid and child's diagnosis duration. Stress level of respondents is measured using Parenting Stress Scale (PSS) questionnaire by Berry & Jones (1995). For this questionnaire, perceived stress level of parents can be classified according to the percentage of total score, which falls into having stress and vice versa as stated in PSS. The stress scale indicates that if the total percentage falls below 60%, subjects will be considered as not having stress and those with over 60% will be considered as stress (Berry & Jones, 1995). Respondents were given a period in range of one week to complete the survey.

The data analysis was conducted using IBM Statistical Package for Social Science (SPSS) Version 20 and it was carried out to determine descriptive statistics and perceived of stress. The binary logistic regression analysis was conducted with reporting the odds ratio to find out the important factors that influence stress among parents of ADHD children.

Binary Logistic Regression

To explore the association between parental stress and important factors, a set of logistic regression model is fitted. Since the dependent variable of interest has two possible dichotomous outcomes, a binary response variable with values 1 and 0 can be represented. Let define the following dichotomous variable for parental stress.

Y = 0 if there is no exist stress

Y = 1 if there is exist stress

Then, the multiple logistic regression with eight independent variables can be written as the equation follows:

$$\text{Logit}(Y) = \log\left(\frac{\pi(x)}{1-\pi(x)}\right) = \beta_0 + \beta_i X_i$$

The probability of the occurrence of the outcome of the interest, Y at value of X can be expressed as:

$$\pi(x) = P(Y = 1 | X = x) = \frac{e^{\beta_0 + \beta_1 X_i}}{1 + e^{\beta_0 + \beta_1 X_i}}$$

Where $\pi(x)$ is the probability of chance that the event stress will exist at specific value of X. the value of β determines the direction of relationship between X and the logit of Y. generally, the higher the β , the higher X values are associated with logits of Y.

Odds ratio represents 'the change in odds' of being in on categories of outcome when the values of independent variable increase by one unit. The logit of the multiple regression with a collection of eight independent variables is given by

$$\text{Logit}[\pi(x)] = \beta_0 + \beta_1 \text{parent's gender} + \beta_2 \text{parent's marital status} + \beta_3 \text{social support} + \beta_4 \text{income} \\ + \beta_5 \text{child's gender} + \beta_6 \text{child's age} + \beta_7 \text{child's comorbid} + \beta_8 \text{child's diagnosis duration}$$

Results and Discussions

Analysis of the data collected starts with descriptive analysis by describing the characteristics of 175 parents of ADHD children. The results of descriptive statistics of characteristic of respondents by gender, marital status, income, status of receive social support, child's age, child's gender, status of child's comorbid and child's diagnosis duration are summarized in Table 1.

It can be seen that female respondents (73.7%) or mother showed high percentage of having stress as compared to male respondents (26.3%). Parents with status married (68.4%) showed highest percentage of stress than single (10.5%) and divorced parent (21.1%). For income of family, parent with income more than RM 3000 (42.1%) showed highest percentage of stress, followed by income less than RM1500 and income from RM1500 – RM3000. Interestingly, parent who received social support (71.1%) tend to show higher percentage of stress then parent who do not received any social support (28.9%). In terms of characteristics of child, it was observed that having 8 year old and male ADHD child, having ADHD child with comorbid and child diagnosis more than 3 years showed high percentages of stress.

Table 1

Descriptive Statistic of the determinant factors and the perceived of stress

Characteristics	Category	Perceived stress	
		Stress	Not stress
Parent's gender	Male	10 (26.3%)	44 (32.1%)
	Female	28 (73.7%)	93 (67.9%)
Marital status	Single	4 (10.5%)	7 (5.1%)
	Married	26 (68.4%)	116 (84.7%)
	Divorced	8 (21.1%)	14 (10.2%)
Parents income	Less than RM1500	14 (36.8%)	36 (26.2%)
	RM1500 – RM3000	8 (21.1%)	44 (32.2%)
	More than RM3000	16 (42.1%)	57 (41.6%)
Social support	Yes	27 (71.1%)	60 (43.8%)
	No	11 (28.9%)	77 (56.2%)
Child's Age	5	0 (0%)	1 (0.7%)
	6	4 (2.9%)	3 (2.2%)
	7	1 (0.7%)	9 (6.6%)
	8	6 (15.8%)	15 (10.9%)
	9	3 (2.2%)	10 (7.3%)
	10	3 (2.2%)	15 (10.9%)
	11	5 (13.2%)	7 (5.1%)
	12	2 (5.3%)	7 (5.1%)
	13	3 (2.2%)	10 (7.3%)
	14	3 (2.2%)	13 (9.5%)
	15	0 (0%)	16 (11.7%)
	16	2 (5.3%)	18 (13.1%)
	17	2 (5.3%)	4 (2.9%)
	18	3 (2.2%)	0 (0%)
	19	0 (0%)	7 (5.1%)
20	1 (0.7%)	2 (1.5%)	
Child's Gender	Male	26 (68.4%)	101 (73.7%)
	Female	12 (31.6%)	36 (26.3%)
Child's Comorbid	Yes	20 (52.6%)	98 (71.5%)
	No	18 (47.4%)	39 (28.5%)
Child's Diagnosis Duration	1-2 years	6 (15.8%)	18 (13.1%)
	3 years and above	32 (84.2%)	119 (86.9%)

Logistic regression was used to determine the factors that influence the parental stress. In this study, eight-predictor logistic model was fitted to the data. The logistic regression analysis was conducted and the result of model evaluation is shown in Table 2. Statistical analyses involved in evaluating the model are Omnibus Tests of Model Coefficients, Hosmer and Lemeshow Test and Cox Snell and Nagelkerke R Square. Perceived stress of respondents is observed as dependent variable to evaluate the model. The Omnibus Test result suggested that the model is a good predictability in the model estimation (p -value = 0.031). Meanwhile the Hosmer and Lemeshow Test of the goodness of fit suggest that the model is a good fit to the data since the p -value=0.16. The R^2 value is used to tell the users approximately how much

variation in the outcome is explained by the model and there is about 14.2% of total variation in perceived stress among parents (dependent variable) that can be explained by independent variables which are parent's gender, marital status, social support, parents' financial, child's age, child's gender, child's diagnosis and child's comorbid. This Nagelkerke R^2 value may be low due to existence of other indicators that not include in this study because of high possibility in respondents' rejection to give the required information such as their psychopathologies.

Table 2

Model Evaluation the logistic regression model

Characteristic	Value
Omnibus Tests of Model Coefficients (p-value)	
Chi-square	16.899
Sig.	0.031
Hosmer and Lemeshow Test :	
Chi-square	11.800
Sig.	0.16
Model Summary:	
Cox & Snell R Square	0.092
Nagelkerke R Square	0.142

The result of logistic regression analysis is shown in Table 3. From the table, there are two significant factors for the multiple logistic regression models. The first factor is child's diagnosis duration (p -value = 0.018) and the second factor is marital status (p -value 0.002). From the results obtained, female parents are observed to be more stressed as compared to male parents and this is supported by previous research as it indicated that mothers tend to have higher stress levels and depression compared to fathers (Azeem et al., 2013). Besides that, it can be seen that married parents are highly stressed compared to single and divorced parents. As for parent's financial, most respondents are identified to be stressed when they earn more than RM 3000 monthly, compared to category of less than RM 1500 and between RM 1500 and RM 3000. This contradicts with a study by Russell et al (2015) which stated that family from a lower socioeconomic background experienced more stress. Besides, most of the respondents who deem to be not stressed are not dealing with any social support problems with their relatives.

A study shows that parents with a male child with ADHD would have more stress than a female child (Hoang, 2015). This is similar with the result obtained in this study where parents are highly stressed when the gender of their children with ADHD are male. Besides, parents are more stressful when their children are at their early age, and this statement is supported by a research conducted by Azeem et al (2013), where the study revealed that younger children are linked to a more increase mental distress.

Table 3

Model summary of the logistic regression analysis

Variable	β	Wald	Sig	Exp (β)
Child's Age	-0.056	1.188	0.276	0.946
Child's gender [Male as reference]				
Female	0.430	0.958	0.328	1.537
Child's Comorbid [Yes as reference]				
No	0.545	1.653	0.199	1.725
Child's Diagnosis Duration [1-2 years as reference]				
3 years and above	0.075	0.018	0.893	1.078
Social Support [Yes as reference]				
No	0.967	4.836	*0.028	2.631
Parent's Gender [Male as reference]				
Female	0.292	0.411	0.522	1.339
Marital Status [Single as reference]				
Married	-0.035	0.002	0.967	0.966
Divorced	-0.883	2.847	*0.092	0.414
Parent's Financial [Less than RM1500 as reference]				
RM1500 – RM3000	0.294	0.409	0.522	1.342
More than RM3000	-0.624	1.447	0.229	0.536
Constant	-1.028	0.991	0.320	0.358

* significant at 5% level

Based on significant factors in Table 3, logistic regression model were as follows

Predicted logit of parent's stress = $-1.028 + 0.967(\text{no social support}) - 0.035(\text{divorced})$

According to the model, the log of the odds of a parent having a stress was positively related to no social support and negatively related to divorced marital status. From Table 2, it was observed that the estimated odds ratio 2.631 indicates those parent who do not received social support is 2.631 times more likely to stress compared to parent who received social support or having problem with relatives. Similarly, the estimated odd ratio 0.414 indicates that parent with status divorced is 41.4% more likely to have stress compared to other status.

Conclusion

This study reveals that the contributing factors toward the stress of parents with ADHD children are social support and marital status of divorced. While the remaining factors such as child's age, child's gender, child's comorbid, child's diagnosis, parent's gender, marital status for single and married parents, and parent's financial, do not have a significant contribution towards parents' stress. In the light of these findings, social support and marital status of parent played a major role in contributing towards stress among parent of ADHD children. It is recommended that parental education programmes, support group should be introduced to parents of ADHD children to help parents to coping with stress in handling their children. There are numerous possibilities that can be implemented for future study such as parent's psychopathology and genetic basis and other location of school in Malaysia.

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