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Emotional and Behavioural Problems among Adolescent Off-springs of Mothers with Depression

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ABSTRACT

Maternal depression has been linked to the development of adolescents' emotional and behavioural problems. The main objective of this study was to determine the association between maternal depressive disorders and externalizing and internalizing problems among their adolescent children. This was a cross-sectional, comparison study of 35 mothers with depression and their adolescents, matched with 35 healthy mothers and their adolescents as controls. The mothers completed Quick Inventory Depressive Symptomatology (QIDS) for assessment of current depression. The emotional and behavioural problems in the adolescents were assessed independently by the mothers and their adolescents off-springs using Child Behavioral Checklist (CBCL) and Youth Self-Report (YSR), respectively. SPSS version 12.0 was used for statistical analysis. The findings showed that adolescents who have mothers with depressive disorders had significantly higher scores of externalizing (mean difference = 4.686 $\pm$ 10.887, p = 0.016) and total emotional and behavioural problems (mean difference = 10.171 $\pm$ 23.007, p = 0.013) than controls. The cases also scored higher than the controls in the following CBCL syndrome scales: aggressive behaviour (mean difference = 3.200 $\pm$ 6.773, p = 0.008), social problem (mean difference = 1.286 $\pm$ 2.865, p = 0.012), and attention problem (mean difference = 1.543 $\pm$ 4.435, p = 0.047). Mothers with depressive disorders reported that their adolescents have greater emotional and behavioural problems than the controls. The findings suggested a need for preventive strategies to curb problematic behaviour focusing on this vulnerable group.

Keywords: Maternal depression, adolescent, Child Behavioural Checklist (CBCL), Youth Self-Report (YSR), emotional, behavioural

INTRODUCTION

Children of depressed mothers are at risk of developing psychiatric problems, which include internalizing and externalizing disorders[1-3]. Internalizing behaviour refers to the problems affecting the child's internal psychological environment such as withdrawn, anxious, and depressed behaviours. On the other hand, externalizing behaviour refers to the child's outward behaviour such as disruptive, hyperactive, and aggressive behaviours[4].

There has been evidence showing the relationship between maternal depression and negative child outcomes such as emotional and behavioural problems[5] across developmental stages of childhood and adolescence. Studies of children of depressed mothers have found consistent evidence linking maternal depression to impairment in both socio-emotional and instrumental functioning of the child[4,6,7-9].

A study of 337 depressed mothers reported significantly more depressive symptoms among their adolescents' off-springs. Past depression severity and the presence of a recent episode are important risk factors of depressive symptoms in their children[10]. In addition, children of mothers with depression are at risk of developing antisocial behaviour[11] and psychiatric disorders[12].

A study of 155 depressed mothers and their children found a significant improvement in the externalizing behaviour of the children after the depressive episode remitted[13], implicating the significant impact of maternal depression on the mental health of the children. Maternal depression has also been associated with a significant

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risk of developing depressive disorders and disruptive disorders in both adopted and non-adopted adolescents. Mothers' depressive illness is an environmental liability for having major depression and disruptive disorders among adolescents. On the contrary, the same study did not find significant risk of psychopathology in adolescents to be associated with paternal depression[14].

Children exposed to maternal depression during the first ten years of their life were at risk of developing depression in adolescence period[15]. Given that women are most often the primary caregiver, maternal depression is more likely to interrupt with parenting and care-giving leading to negative outcomes in the children.

Despite its significance, local studies still lag behind in this area of research. Furthermore, the cultural differences between Malaysian societies and the West may yield a different finding. Hence, this study aimed to determine the association between maternal depression and the emotional and behavioural problems of their adolescents' off-springs. The results revealed the extent of the association between mothers with depression and their children's mental health. This is particularly useful to identify adolescents who are at risk of emotional and/or behavioural problems for effective preventive strategies.

MATERIALS AND METHODS

Study design, Setting and Sample

This is a cross-sectional study of adolescent off-springs of mothers with depression (cases), and they were compared to the adolescent off-springs of mothers without depression (controls). This study was conducted at Universiti Kebangsaan Malaysia Medical Centre (UKMMC), a teaching and general hospital that serves as one of the main referral centres in the Federal Territory of Kuala Lumpur. The adolescents off-springs of mothers who were diagnosed with depression were recruited through their mothers who were receiving treatment at psychiatry outpatient clinic at UKMMC, while adolescent off-springs of mothers without depression were recruited through their mothers who were receiving primary care treatment for conditions other than depression at the UKMMC Primer Clinic Bandar Tasik Selatan (refer to Figure 1). In cases where there were more than one adolescent off-spring, one of the off-springs would be randomly selected to participate. The cases and controls were matched in terms of age, race, marital status, number of children and socio-economic status, such as education level and employment status.

Meanwhile, the inclusion criteria for mothers were those who: 1) had at least one biological adolescent child; 2) were diagnosed to have major depressive disorder based on Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria made by the treating psychiatrist and in remission; defined as having Quick Inventory of Depressive Symptomatology (QIDS-SR) score of less than 11; 3) were able to speak and understand either Bahasa Malaysia (BM) or English, and 4) consented to participate. However, mothers with other psychiatric disorders such as psychosis, substance abuse and psychotic depression were excluded from the study.

The inclusion criteria for the adolescent off-springs were: 1) adolescents who have stayed with their biological mothers for approximately more than 50% of his or her life, 2) aged between 11-18 year old, 3) able to understand Bahasa Malaysia or English, and 4) consented to participate. Nonetheless, adolescents with mental retardation were excluded from the study.

Data Collection

Data were collected over the three month period, and the whole study took a year to be completed. Data collection was done during clinic days, i.e. Monday to Friday by five of the co-authors who were medical students at the time of the study.

Mothers who consecutively attended either the psychiatric clinic or primary care clinic during the study period and fulfilled the selection criteria were informed about the study and invited to participate. Those who consented were asked to complete the Sociodemographic form, and were screened for depression using QIDS-SR. Diagnosis of major depressive disorder was obtained from the patient's medical record as determined by the treating psychiatrist based on the DSM-IV[16] criteria. The mothers were then asked to complete the Child Behaviour Checklist (CBCL 6-18), whereas their adolescent off-springs were asked to complete the Youth Self-Report (YSR). Adolescents who were not present at either one of the clinics with their mothers were given the questionnaires through their mothers and asked to return the completed questionnaires through mail.

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Measures

All the questionnaires used in this study are self-administered. Both the BM and English versions were used. The translated BM versions have not been validated in Malaysia, which is a major limitation in this study.

Quick Inventory of Depressive Symptomatology (QIDS-SR)

The QIDS-SR questionnaire is a 16-item inventory to evaluate the current status of depression. It is a self-report questionnaire, designed by Dr John Rush, to assess all the clinical domains used to make diagnosis of MDD based on *DSM-IV-TR* criteria, and thus, a good clinical tool to measure depression. It is well-studied in patients with MDD[17] and had good psychometric properties such as strong internal consistencies and concurrent validity[18]. A total score of 5 or less is defined as depression in remission, 6-10 as mild depression, 11-15 as moderate depression, 16-20 as severe and ≥21 as very severe depression.

Child Behaviour Checklist (CBCL 6-18) and Youth Self-Report (YSR)

For the assessment of the adolescents' externalizing and internalizing syndromes, the CBCL questionnaire and YSR questionnaire were used. CBCL and YSR are self-reported questionnaires, designed by Dr Thomas Achenbach, to measure emotional and behavioural problems among children and adolescents. Both had been widely used locally and worldwide and were thus suitable for use in this study. Both the questionnaires had also been translated into BM. CBCL is a 113-item questionnaire assessing behavioural and emotional symptoms in the children to be completed by the parent, while YSR is a CBCL equivalent, which is self-reported by the adolescents.

The CBCL is a 113-item questionnaire describing specific behavioural and emotional problems in adolescents. Parents rate their adolescents for how true each item is now or within the past six months using Likert scale ranging from 0 (not true), 1 (somewhat or sometimes true) and 2 (very true or often true). It comprises of eight behavioural domains including withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour and aggressive behaviour. In addition, it also has internalizing behaviour scale (i.e., anxious/ depressed, withdrawn/ depressed and somatic complaints subscales), externalizing behaviour scale (i.e., aggressive behaviour, social problem, attention problem subscales) and total problem scale which measures all items except for items 2 and 4 (i.e., allergy and asthma)[19]. For the purpose of this study, the mean scores of the internalizing and externalizing subscales were analysed. Both the English and the translated BM versions were used in this study.

YSR is a self-rated questionnaire derived from CBCL and designed for use with adolescents between the ages of 11 and 18. It consists of 112 items that measure eight syndrome scale, namely, withdrawn, somatic complaints, anxiety and depression, social problems, thought problems, attention problems, aggressive behaviour, and delinquent behaviours. Similarly, it also has internalizing behaviour scale (i.e., Withdrawn, Somatic Complaints, and Anxious/ Depressed sub-scales), externalizing behaviour scale (i.e. Delinquent and Aggressive Behaviour sub-scales) and total problem scale which includes all the eight syndrome scales. An adolescent selects his or her response using a Likert scale of 0 (not true), 1 (somewhat or sometimes true) to 2 (very true or often true)[20]. In this study, the mean scores of the internalizing and externalizing sub-scales were also analysed. Both the English and the translated BM versions were used in this study.

Ethics Approval

This study was approved by the UKM Ethics committee. Active consent was obtained from mothers while their adolescent off-springs filled assent form if they agreed to participate. The adolescents who were found to have significant behavioural and emotional problems were offered to be referred to the Child and Adolescent Psychiatry Clinic for further assessment.

Statistical Analysis

Paired T-test was used to compare the mean scores of internalizing, externalizing, total problem and all other components (Anxious/Depressed, Withdrawn/Dependent, Somatic Complaints, Rule-breaking Behaviour, Aggressive Behaviour, Social Problems, Thought Problem, Attention Problems, and Obsessive Problems) between the cases and controls. Meanwhile, the demographic components were analyzed to find out the association with internalizing, externalizing and total problems among the children using one-way ANOVA, linear regression and student t-test.

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RESULTS

Of the 145 mothers who fulfilled the inclusion criteria, 15 were excluded because they had acute depressive episode (n = 9) and comorbid psychiatric diagnoses (n = 6). Fourteen mothers did not consent and 43 others were excluded because they did not have children within the required age range. Two pairs of cases were further excluded due to substantial missing data. A total of 35 mothers, with major depressive disorder and their adolescent off-springs (18 girls and 17 boys; mean age = 14.09; SD = 3.48), and 35 mothers without depression and their adolescents off-springs (23 girls and 12 boys; mean age = 14.31; SD = 3.03) were finally recruited in the study. The study flow is illustrated in Figure 1.

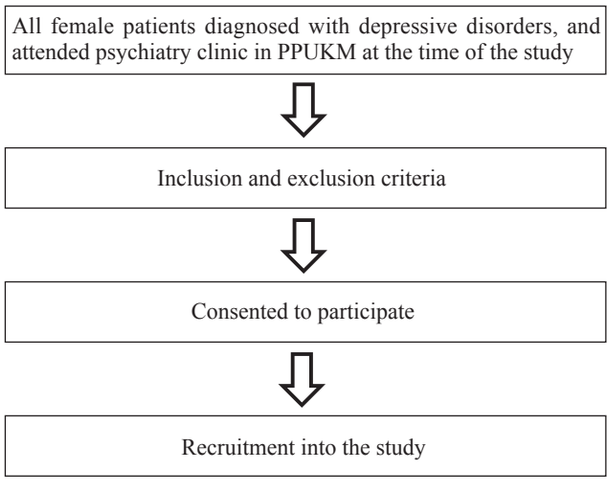

Figure 1. A flow chart depicting recruitment of the participants

There were no significant differences between the cases and controls in terms of the socio-demographic factors such as mean age, race, number of children, mean age of children, marital status, education level and total monthly income (Table 1). In terms of the CBCL scores, only gender, i.e. boys were found to have significantly greater externalizing scores (p = 0.004) and total problem scores (p = 0.018) compared to girls. There was no significant difference in other socio-demographic factors.

Table 1. Demographic variables of cases and controls

Demographic factors	Case (n = 35)	Control (n = 35)	P value
Age (Mean + SD)	14.06 (3.46)	14.18 (3.25)	0.770
Gender (%)			
Male	17 (48.6)	12 (34.3)	0.151
Female	18 (51.4)	23 (65.7)	
Race			
Malay	18 (51.4)	26 (74.3)	0.243
Chinese	12 (34.3)	7 (2.0)	
Indian	3 (8.6)	2 (5.7)	
Others	2 (5.7)	0 (0)	
Level of education			
Master	2 (5.7)	2 (5.7)	0.073
Degree	8 (22.9)	2 (5.7)	
Diploma	8 (22.9)	3 (8.6)	
Secondary school	15 (42.9)	25 (71.4)	
Primary school	2 (5.7)	3 (8.6)	

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Table 1. *Continued*

Demographic factors	Case (n = 35)	Control (n = 35)	P value
Occupation of mothers			
Unemployed	19 (52.8)	18 (50)	0.811
Employed	16 (44.4)	18 (50)	
Marital status			
Married	27 (77.1)	32 (91.4)	0.378
Divorced	3 (8.6)	1 (2.9)	
Single mother	4 (11.4)	2 (5.7)	
Separated	1 (2.9)	0 (0)	
Total income (Mean ± SD)	6133.31 (6676.22)	3493.95 (2781.32)	0.374
No. of children (Mean ± SD)	3.20 (1.61)	3.80 (1.66)	0.552

$p < 0.05$*

Adolescents off-springs of mothers with diagnosis of major depressive disorder had significantly higher externalizing scores (mean difference = 4.686 ± 10.887, p = 0.016) and total problem scores (mean difference = 10.171 ± 23.007; p = 0.013), as shown in Table 2. There were significantly higher scores in aggressive behaviour (mean difference = 3.200 ± 6.773, p = 0.008), social problem (mean difference = 1.286 ± 2.865, p = 0.012), and attention problem (mean difference = 1.543 ± 4.435, p = 0.047) of the CBCL among adolescents of mothers diagnosed with depressive disorders (see Table 3).

However, there was no significant difference in the YSR scores between adolescents of mothers with depressive disorders compared to adolescents of mothers without depressive disorders (see Table 4). A further analysis showed that CBCL and YSR scores had strong correlation in externalizing scores (p = 0.001, r = 0.637) but weak correlations in internalizing scores (r = 0.380, p = 0.670) and total problem scores (r = 0.495, p = 0.014).

Table 2. Paired differences of case-control in major components in CBCL

Case-control	Mean-D ± SD	t	p
Internalizing	1.714 ± 8.567	1.184	0.245
Externalizing	4.686 ± 10.887	2.546	0.016*
Total problem	10.171 ± 23.007	2.616	0.013*

$p < 0.05$*

Table 3. Paired differences case-control of minor component in CBCL

Case-control	Mean-D	Std. Deviation	T	p
Anxiety Depress	0.457	5.484	0.493	0.625
Withdrawal Dependent	0.971	3.129	1.836	0.075
Somatic Complaint	0.286	3.015	0.561	0.579
Rule-Breaking	1.486	5.316	1.654	0.107
Aggressive Behaviour	3.200	6.773	2.795	0.008*
Social Problem	1.286	2.865	2.655	0.012*
Thought Problem	-0.114	3.151	-0.215	0.831
Attention Problem	1.543	4.435	2.058	0.047*
Other Problems	1.057	3.289	1.901	0.066

$p < 0.05$*

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Table 4. Paired differences of case-control in major components in YSR

Case	Mean-D ± SD	T	p
Internalizing	-3.750 ± 8.487	-1.531	0.154
Externalizing	-0.750 ± 8.895	-0.292	0.776
Total problem	-8.083 ± 30.378	-0.922	0.376

$p < 0.05$*

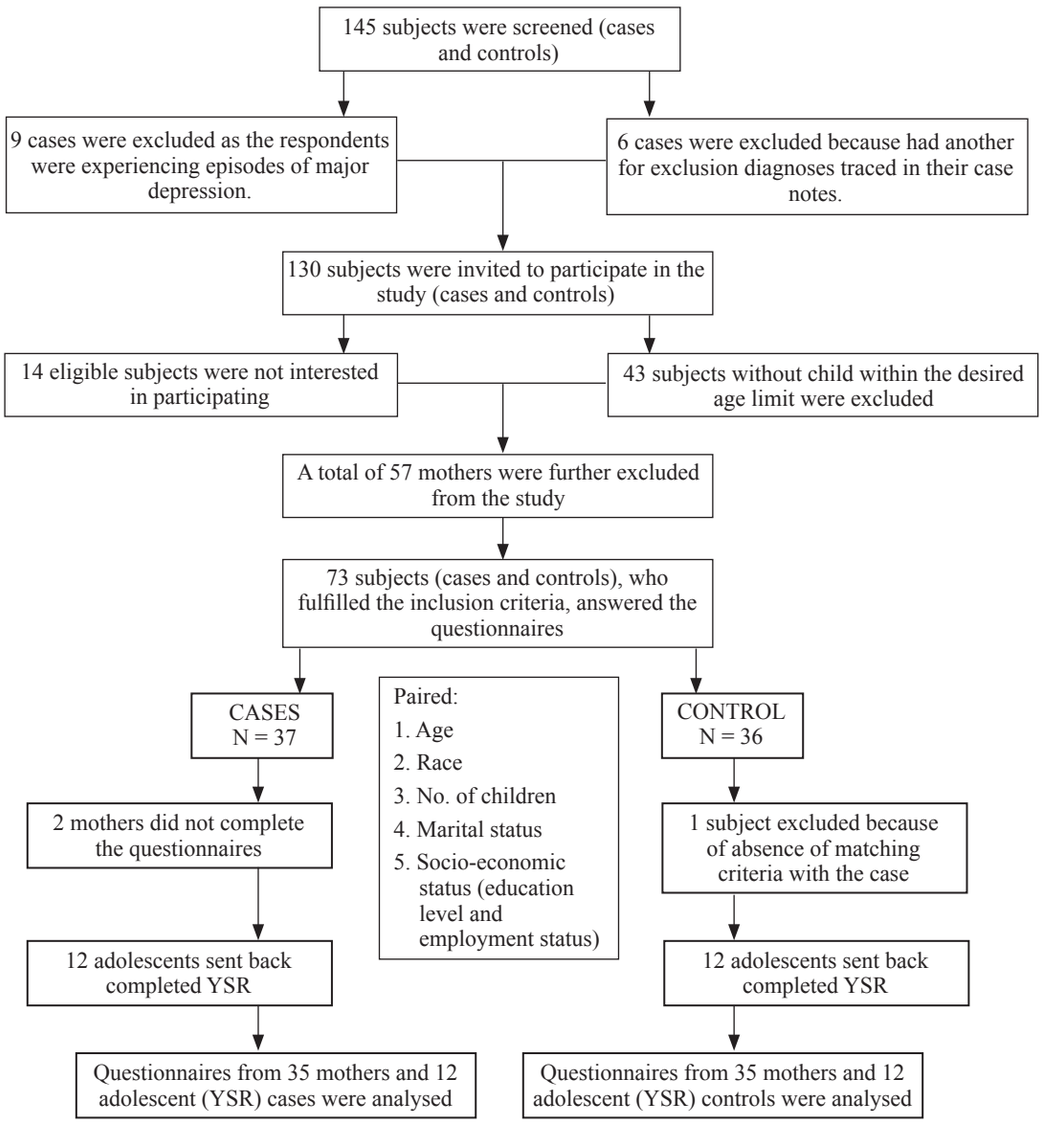

Figure 2. Flow chart of the study

DISCUSSION

Mothers reported significant differences between the externalizing behaviour scores and the total problem scores between cases and controls. Adolescents of mothers with depression had significantly more emotional and behavioural problems, as measured by CBCL compared to adolescents of non-depressed mothers. The association between maternal depression and problematic behaviour in their children had been well established[21-23]. A previous study found that maternal depression was significantly related to both internalizing and externalizing behaviour

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in their off-springs[23-24]. Interestingly, only externalizing components such as aggressive behaviour, social and attention problems were found significant in this study. It was possible that mothers who reported the behaviour of their children probably failed to notice the presence of underlying internalizing syndrome but only identified the overt externalizing behaviour resulting in an underestimation of internalizing syndrome. By nature, externalizing behaviour is readily noticeable and observable as compared to internalizing behaviour.

Emotional functioning of the mothers as the primary caregivers commonly affects their parenting behaviour. Depressed mothers are less positive and are more negative[25] in their interaction with their adolescent off-springs, leading to externalizing symptoms. Maternal depression is associated with parenting behaviour mostly in the domain of negative behaviour, and it is strongly associated with irritability and hostility towards the child[26]. Depressive symptoms in the mothers directly affect parenting behaviour resulting in externalizing behaviour mediated through poor parenting.

The significant components of externalizing behaviour in the adolescents include aggressive behaviour, social problems and attention problem. Depressed mothers maybe irritable, agitated, and aggressive such the behaviors that may be modelled by their children who learned to cope through aggression. Meanwhile, the impaired interaction between mothers and adolescents may result in poor social skills due to the lack of modelling of the prosocial behaviour.

Interestingly, adolescents reported no significant difference in their behaviour as measured by YSR despite the strong correlation between CBCL and YSR in terms of externalizing scores ($p = 0.001$, $r = 0.637$). However, the reliability of adolescents' self-report has been questioned. They may have difficulty in detecting and thus reporting their behaviour particularly the problematic behaviour. They may also be reluctant to report problematic behaviour for fear of being stigmatized and discriminated. On the other hand, depressed mothers may be over-reporting their children's behavioural problem. A study found that mothers who were acutely depressed or in relapse have the tendency to report higher problematic behaviour in their children[27].

This study has several limitations. Firstly, the small sample size may not be a representative of the normal population. Secondly, the information relied on self-report questionnaires, which may affect the reliability. Reliability can also be improved by collecting information from other close informants such as teachers and fathers.

Given the limitations, these findings need very careful interpretation. Nevertheless, the issues are significant enough to raise certain concerns. Adolescents of depressed mothers are at higher risk of developing emotional and behavioural problem, and thus, the need to prevent and treat depression more cautiously. There is a need for proper assessment and evaluation in their children in order to detect emotional and behavioural problems in them.

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