

## REVIEW ARTICLE

# The Impact of Maternal Depression on Children's Behaviour.

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### Abstract

**Introduction:** Maternal depression has become a growing health issue due to its adverse impact on both mother and child. About 1 in every 10 children are being taken care by depressed mothers. The diverse and serious implications of maternal depression on children including cognitive, emotional, behavioural, home safety, health practices, and social adaptation have been elucidated in published literature. However, this study solely focused to address the effect of maternal depression on a child's behavioural domain. **Objective:** To conduct a literature review and determine the impact of maternal depression on children's behaviour. **Methodology:** A literature review was conducted on the published studies regarding maternal depression from 1991 to 2021 and the selection criteria were based on the study objectives. Electronic databases such as PubMed, Science Direct, Up to date, Scopus, and Google Scholar were used to obtain studies on the association of maternal depression and a child's behavioural problems. **Results:** Studies have documented that maternal depression was significantly associated with internalizing and externalizing behavioural problems in children. In terms of the timing, earlier exposure to maternal depression such as postnatal depression leads to the development of internalizing behavioural problems; while externalizing problems were mostly associated with concurrent maternal depressive symptoms. Persistent depression increases the risk of developing behavioural problems, and significant severe clinical maternal depressive symptoms were prevalent among a greater proportion of children developing behavioural problems. **Conclusion:** Findings have shown a notable association between maternal depression and child's behavioural domain. The internalizing and externalizing behavioural problems will not only cause a troubled childhood but will also develop future issues in adolescence and adulthood. Thus, knowledge of these associations would facilitate clinicians to administer early intervention and prevention strategies to mitigate the devastating impact of this serious public health concern.

**Keywords:** *maternal depression, behavioural problems, children, mental health.*

## Introduction

Maternal depression is widely acknowledged as a serious public health problem due to its detrimental short and long-term impacts on both mother and child. Women are more prone to depression with a two-fold increased lifetime risk in comparison to men and every year approximately 10% of the mothers develop depression [1]. The relationship between maternal depression and numerous adverse behavioural and emotional outcomes in children have been reported in countless studies and review articles. Mothers with depression have a three-time increased risk of facing emotionally troubled children, and a 10-fold higher risk of developing poor interpersonal relationship with their children [1].

Studies have identified maternal depression as a critical risk factor for impairment in the caretaking of children, eventually leading to adverse consequences in children's psychological, intellectual, and psychosocial functioning, behaviour, and physical well-being development [2]. Several studies have also identified externalizing and internalizing behavioural problems as main adverse outcomes on children's behavioural domain. However, there were significant variabilities found across the studies. Although there was variability, the association between maternal depression and behavioural problems remains significant. Thus, knowledge of these associations should direct early recognition, and intervention which will play an important role in preventing further devastating outcomes. A study by Wang [3], found that the prevalence of early onset, late onset, and chronic maternal depression was 32.2%, 7.4%, and 13.4%, respectively. A prospective cohort study conducted among women in Malaysia revealed the prevalence of antenatal depression was 13.8% [3]. Meanwhile, another study by Zainal et al. found that the postpartum depression prevalence in a Malaysian hospital setting was around 6.8% [4].

Maternal depression is diagnosed when the mother experiences persistently low or depressive mood, guilt, worthlessness, anhedonia, fatigue, sleep disturbances, appetite changes with or without weight changes, psychomotor agitation or retardation, poor concentration, and suicidal thoughts. According to the "Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition (DSM-5)", the mother must experience five or more symptoms listed above in the presence of a depressed mood or anhedonia, which presents during the same 2-week period that causes significant social or occupational impairment. History of manic and hypomanic episodes, medical condition or substance causing depression also needs to be excluded [5].

## Objectives

### General objectives

- 1) To conduct a literature review and determine the effect of maternal depression on children's behavior.

### Specific objectives

- 1) To review the prevalence of maternal depression in published literature.
- 2) To address the short-term and long-term impact of maternal depression on children's behavior.
- 3) To highlight the critical factors (timing, chronicity, and severity of maternal depressive symptoms) associated with behavioural problems in children.

## Methodology

A literature review was conducted on the published studies regarding maternal depression from 1991 to 2021 and the selection criteria was based on the study objectives. Electronic databases such as PubMed, Science Direct, Scopus and Google Scholar were searched using

the relevant keywords. Type of studies included all primary studies such as Cohort studies and Systematic review on the association of maternal depression and a child's behavioural problems.

## Results

Numerous studies have documented the significant association between maternal depression and its impact on children's behaviours. In a systematic study by Trussel et al. [1] it was mentioned that Woolhouse reported, children whose mothers experienced maternal depression 4 years after birth had an increased risk of developing behavioural problems. This is further supported by Connors in the same systematic study, which stated that behavioural problems were significant among children even when the children were minimally exposed to maternal depression during infancy [6]. In this study, out of 1844 families that were scouted, 1172 had 11-year child's outcome data and after controlling the family demographics data, it showed a notable relationship between early maternal depressive symptoms and child's behavioural problems in the future. This study found that both low-level and significant symptoms of clinical depression in mothers were linked to externalizing and internalizing problems.

In a meta-analytic study by Goodman [7], similar results were reported which stated that maternal depression was significantly related with increased levels of internalizing behavioural problems based on the mother's report as compared to others' reports with  $p$  value less than 0.001. For externalizing problems, results showed a significant association with  $p$  value less than 0.001 between maternal depression and externalizing problems when compared based on maternal reports.

Other study conducted by Alenko [8] revealed that out of 734 participants, 146 of the children reported to meet the emotional and behavioural problems based on parent version of strength and

difficulties Questionnaire (SDQ). Further data analysis revealed that mother's depression was significantly linked to children's emotional and behavioural problems with an adjusted odds ratio of 2.38, 95% confidence interval of 1.55 to 3.66 [8].

In addition, a study by Gjerde [9] reported that all depressive time points in parents were positively and notably associated with children's externalizing and internalizing behavioural issues. However, in this study, only concurrent depressive symptoms in mothers was significantly related to externalizing [estimate = 2.40 (1.56–3.23, 95% CI)] and internalizing [estimate = 2.82 (1.91–3.73, 95% CI)] behavioural problems after sibling comparison. This study also found that with increasing age of children, the impact of concurrent maternal depression on the internalizing problems tends to increase further [10]. The study by Trussel [1], further revealed that mothers with depression who are engaged in negative parenthood are more prone to experiencing children with externalizing and internalizing behavioural problems.

Externalizing and internalizing problems are widely classified under children's behaviours and disorders depending on their response to stressors. Actions in the external world including acting out, antisocial behaviour, hostility, and aggression are characteristics of externalizing behaviours and disorders. On the other hand, processes within the self, such as anxiety, somatization, and depression are characteristics of internalizing behaviours and disorders.

It is important to note that individuals with childhood depression and anxiety are at two-fold risk of suffering from adulthood depression which may also lead to increased risk of other health problems including substance abuse and use, suicidal behaviour and premature death [10]. Meanwhile externalizing problems during childhood is highly associated with early onset of substance abuse [11], alienation from schools and

exclusion from prosocial peers [12]. In addition, multiple studies have also reported that children with maternal depression exposure are highly linked to oppositional defiant behaviour and chronic conduct issues [1].

Oppositional defiant behaviour is a type of behavioural disorder, and children with this type of disorder are usually uncooperative, highly hostile, defiant towards their family, peers, teachers and authorities. On the other hand, chronic conduct issues are characterized by physical aggression towards others ranging from pushing, biting, hitting in childhood to bullying, cruelty and violence in teenage years.

In the systematic review by Trussel et al, [1], a study by Welner also reported similar findings which stated elevated levels of not only depression and internalizing problems but also addressed conduct issues among the offspring of depressed mothers. A longitudinal study by Fihrrer [13], where 75 mothers were recruited and assessed for depressive symptoms when their children reached 4, 12 and 15 months, 4 years, and later when their children became 6 and 8 years old, reported that maternal depression during postnatal years will increase the future vulnerability to develop internalizing problems. This is because the postnatal period is a critical period for the nurturing a safe mother-child interaction and bond which will significantly impact the child's skills on emotional and behavioural regulation. This study also found that externalizing problems are highly related to concurrent symptoms of depression presented in the mother [13].

Above studies were also supported by Bagner [14], which stated that major depressive disorder during postnatal period was highly related to internalizing problems and total problems. This study explained that major depressive disorder during postnatal period could produce significant impact on the children in predicting the development of internalizing problems since this

period is a sensitive period for behavioural development. This study also found that major depressive disorder after first postnatal year was significantly associated with all three problems including externalizing, internalizing and total behavioural problems which was sum of all subscales in child behavioural check list assessment. Interestingly, this study found that the maternal depression exposure timing predicted the internalizing behavioural problems but not the externalizing problems [14]. However, this study could not find the actual mechanism that caused the first year of child's life to be more sensitive due to maternal depression.

Besides that, a study conducted by Claessens [15] revealed that children who had depressed mothers during their kindergarten year but not in their third grade had more externalizing problems compared to children whose mothers were never depressed. Meanwhile children who had mothers with persistent depression in both their kindergarten and third grade years were significantly associated with prominent externalizing and internalizing behavioural problems in comparison to those who have never reported maternal depression [15]. As for the timing of maternal depression, this study found that maternal depression that occurred during the earlier phase of a child's life will have an increased risk of negative impact as compared to maternal depression that occurred in the later stage [15].

However, several studies showed opposite result by stating that depression in early life especially in postnatal period were not associated with child's behavioural problem in the future. Prospective cohort study by Brennan [16] found that postnatal depression was not linked to child's behavioural issues and the study revealed that only moderate symptoms of depression in mothers during 6 months or 5 years were significantly associated with child behavioural issues demonstrated at 5 years old.

Philip [17] also reported similar results and stated that only concurrent depressive symptoms were associated with child's behavioural issues, whereas postnatal depression was strongly associated with subsequent maternal depression but not the behavioural issues. Nevertheless, the sample were not generalizable to general population as the study was conducted at one site only, plus the small sample size and the study findings were based on maternal reports which might be subjected to bias.

Further study by Fanti [18], found that connection between symptoms of depression in mothers and child's internalizing behavioural problems increased over time, on the other hand externalizing behavioural problems reduced from childhood to adolescence. There has been notable consistency in the study findings with other research such as the study by Gilliom [18].

Both studies explained that externalizing behavioural problems such as destructive and aggressive behaviours are commonly used by toddlers to overcome the struggle or conflicts. The externalizing problems reduces and subsides across the preschool and school age period with the progression and maturity of cognitive skills and functions to control and modulate the emotions. On the contrary, the internalizing problems elevate due to cognitive maturation, and allows the child to reflect, recall, and foresee the negative and depressive circumstances. In terms of maternal depression severity, mothers who suffered from major depressive disorder, which is the most severe stage of depression and interferes with their daily functioning are more likely to have children with negative behavioural outcomes since they are not able to pay attention and fully take care of their child as well as due to increased risk of negative parenting.

On the other hand, in terms of chronicity, children whose mother experienced persistent maternal depression are more likely to demonstrate negative behavioural outcomes in comparison to

children whose mothers had a single episode of maternal depression [17]. This is supported by a study conducted by Netsi [19], which revealed that non-persistent postnatal depression is not associated with higher risk of child's behavioural aspect.

In another research conducted by Kingston [20], mothers who had persistent significant clinical depressive symptoms had the highest proportion of children with increased behavioural problems, followed by mothers with moderate clinical depressive symptoms, while lowest behavioural problems were reported among children whose mothers had minimal depressive symptoms. Apart from that, this study also supported the previous studies discussed above that addressed significant associations between maternal depression trajectories and child's physical aggression, hyperactivity, inattention, and separation anxiety symptoms [20].

## **Discussion**

This review has critically highlighted the higher prevalence of behavioural problems in children having clinically depressed mothers, and associated its relationship with maternal depressive symptoms, timing, chronicity, and severity.

Maternal depressive symptoms will increase the risk of maternal negligence and may give rise to negative child - mother interaction and poor parenting. This may attribute to significant depressive symptoms including depressed mood, loss of interest, fatigue, and poor concentration. The maternal negligence indicates that the mother will not pay adequate attention and might ignore the children's emotions and opinions. Negative and improper parenting style represents that the mothers fail to fulfil every basic needs of the children. Both of these issues will eventually cause negative behavioural problems in children including internalizing and externalizing problems as discussed earlier.

The above studies emphasized that maternal depression in earlier child life was associated with higher risk of developing internalizing problems. On the other hand, externalizing problems was related to maternal depression in later childhood life. As explained earlier, this may be because a child's earlier phase of life is an important period that predicts the child's behavioural and developmental outcomes. While maternal depression that occurs during the later childhood period, such as in toddlers, may result in more aggressive behaviour as part of the coping mechanism in children. Chronic or persistent maternal depressive symptoms were significantly little sensitive, and showed not much positive effects and were more disengaged compared to the control group. They also displayed less stimulation to their child, thus explaining the results stated above [21]. Since earlier exposure to maternal depression, and persistent and concurrent maternal depressive symptoms leads to the development of both internalizing and externalizing behavioural problems in children, more emphasis should be given during the postpartum period to avoid long time lapse between referral and psychiatric evaluation of mothers. However, further and specific study method is required to effectively measure the behavioural problems among the affected children as behavioural reports by mothers may be subjected to bias as the depressive mothers were not in the best condition to assess their children.

## **Conclusion and Recommendation**

Documented findings have revealed significant associations between depressive symptoms in the mothers and children's behavioural problems specifically internalizing and externalizing behavioural issues. Majority of the studies found that early maternal depressive symptoms were related to internalizing problems, whereas concurrent depression in mothers were associated with externalizing problems among children. Mothers with persistent and severe clinical maternal depressive symptoms were reported to have increased proportion of children with behavioural problems.

The devastating impact necessitates early maternal depression screening in both Obstetric and Pediatric settings so that the mothers and children can be managed and treated efficiently, thus preventing the later adverse events caused by maternal depression. Implementing comprehensive child assessment for behavioural disorders is highly recommended since it has been well acknowledged that children of depressed mothers are at higher risk of developing behavioural problems. However, more research is required to identify the specific or possible risk factors that contributes to the significant relationship between maternal depression and child's behavioural issues, so that the higher risk groups can be recognized and screened earlier and effectively. At the same time, positive parenting approaches and healthy mother-child interactions should be encouraged in families to overcome the issues related to behavioural disorders among children and its long-term adverse impact.

Author	Study design	Results	Limitations
Trussel et al. 2018	Systematic review	<ul style="list-style-type: none"> <li>• Children with early exposure to depressed mothers who engage in negative parenting had higher risk of developing internalizing and externalizing problem.</li> <li>• Exposure to maternal depression is linked to the development of “children’s observed oppositional behavior” and chronic conduct issues.</li> <li>• Children exposed to maternal depression symptoms 4 years after birth had increased risk of behaviour problems.</li> <li>• Behavioural problems were significant even in the offspring of mothers with minimal depressive symptoms during infancy.</li> <li>• Low levels of positivity in mother-child interactions with the correlation in externalizing problems in children with depressed mothers.</li> </ul>	<ul style="list-style-type: none"> <li>• The optimal performance of girls of depressed mothers may mask psychological problems that were not assessed.</li> <li>• Although an association between postnatal depression and difficulties in boys’ adjustment to school has been found, the mechanisms underlying it have not been determined.</li> <li>• Sample may not be representative of the overall population.</li> </ul>
Goodman et al. 2011	Meta-analytic review	<ul style="list-style-type: none"> <li>• Postpartum depression did not relate to child behaviour, only moderate levels of maternal depressive symptoms at 6 months or 5 years were significantly related to child behaviour at 5 years.</li> <li>• Severity and chronicity of depressive symptoms did relate to child behaviour.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited numbers of studies with data allowing tests of specific moderators.</li> <li>• The analyses did not address the causal process.</li> </ul>
Alenko et al. 2020	Quantitative cross-sectional study	<ul style="list-style-type: none"> <li>• Out of 734 participants, 146 of the children reported to meet emotional and behavioural problems based on parent version of strength and difficulties questionnaire (SDQ).</li> <li>• Data analysis revealed that maternal depression was significantly associated with child emotional and behavioural problems with adjusted odd ratio of 2.38, 95% confidence interval of 1.55 to 3.66</li> </ul>	<ul style="list-style-type: none"> <li>• Since the study focused on maternal related factors of children EBPs, the study did not capture child specific factors such as child abuse and maltreatment that could have occurred and affected the outcome.</li> <li>• Another limitation is due to the cross-sectional nature of the study, the association between different factors and EBP does not imply cause-effect relationship.</li> </ul>
Gjerde et al. 2017	Cohort study	<ul style="list-style-type: none"> <li>• All parental depressive time points were significantly associated with child externalizing and internalizing behavioural problems.</li> <li>• However in this study, after sibling comparison, only concurrent maternal depression remains significantly related with externalizing [estimate = 2.40 (1.56– 3.23, 95% CI)] and internalizing [estimate = 2.82 (1.91–3.73, 95% CI)] behavioural problems.</li> </ul>	<ul style="list-style-type: none"> <li>• The study was based on maternal behavioural report on their children taken at the same time they rated their own depression. The results may be subjected to mother’s bias.</li> </ul>
Fuhrer et al. 2009	Longitudinal study	<ul style="list-style-type: none"> <li>• Maternal depression during postnatal years will increase the later vulnerability to develop internalizing problems as the postnatal period is an important period for development of a secure mother-child interaction and bonding which will give significant impacts on child’s skills on emotional and behavioral regulation.</li> <li>• Externalizing problems are highly related to concurrent symptoms of depression presented by the mother.</li> </ul>	<ul style="list-style-type: none"> <li>• This study was based on a comprehensive, long-term follow up of a low risk socio-economic sample of depressed mothers, thus may decrease the generalisability of the results.</li> </ul>

<b>Bagner et al.2010</b>	Cohort study	<ul style="list-style-type: none"> <li>• The study stated that major depressive disorder during postnatal period was highly related to internalizing problems and total problems.</li> <li>• This study explained that major depressive disorder during postnatal period can give significant impacts to the children in predicting the development of internalizing problems as this period is a sensitive period for behavioral development.</li> <li>• This study also found that major depressive disorder after first postnatal year was significantly associated with all three problems including externalizing, internalizing and total behavioral problems which was sum of all subscales in Child behavioral check list assessment.</li> <li>• This study found that timing of maternal depression predicted the internalizing behavioral problems but not the externalizing problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Children were assessed solely by parent's report that were subject to bias.</li> <li>• Inadequate mother samples that meet the criteria for postpartum depression.</li> </ul>
<b>Claessens et al.2015</b>	Systematic review	<ul style="list-style-type: none"> <li>• Children who had depressed mothers during their kindergarten year but not in their third grade had more externalizing problems as compared to children whose mothers were never depressed.</li> <li>• Children who had mothers with persistent depression in both their kindergarten and third-grade years were significantly associated with externalizing and internalizing behavioral problems relative to children whose mothers never reported maternal depression.</li> <li>• For the timing of maternal depression it was found that maternal depression that occurred in the earlier life of a child will have an increased risk of negative impact on the child as compared to maternal depression that occurred in the later stage.</li> </ul>	
<b>Brennan et al.2000</b>	Prospective cohort study	<ul style="list-style-type: none"> <li>• Postpartum depression did not relate to child behavior, only moderate levels of maternal depressive symptoms at 6 months or 5 years were significantly related to child behavior at 5 years.</li> <li>• Severity and chronicity of depressive symptoms did relate to child behavior.</li> </ul>	<ul style="list-style-type: none"> <li>• Sample may not be generalizable to overall population.</li> <li>• Maternal report of child behaviour which may be subjected to bias.</li> </ul>
<b>Philip et al.1991</b>	Prospective cohort study	<ul style="list-style-type: none"> <li>• This study reported similar results stating that postnatal depression was highly associated with subsequent maternal depression but not the child's behavioral issues and only concurrent depression was related to behavioral child's issues.</li> </ul>	<ul style="list-style-type: none"> <li>• The sample were not generalizable to the general population as the study was conducted in only one place.</li> <li>• The small sample size of the study conducted by Philip et al, and the findings were based on maternal reports which can be subjected to bias.</li> </ul>
<b>Netsi et al.2018</b>	Observational study	<ul style="list-style-type: none"> <li>• Postnatal depression that were not persistent is not associated with higher risk of child's behavioral.</li> </ul>	<ul style="list-style-type: none"> <li>• Only small number of women who met the criteria of persistent and severe postnatal depression.</li> </ul>
<b>Kingston et al.2018</b>	Prospective cohort study	<ul style="list-style-type: none"> <li>• Mothers who had persistent significant clinical depressive symptoms had highest proportion of child with increased behavioral problems, followed by mothers with moderate clinical depressive symptoms and lowest behavioral problems reported among child</li> </ul>	



		<p>whose mothers had minimal symptoms.</p> <ul style="list-style-type: none"> <li>• Significant relationships between maternal depression trajectories and child physical aggression, hyperactivity, inattention and separation anxiety symptoms was found.</li> </ul>	
<b>Walker et al.2020</b>	Prospective cohort study	<ul style="list-style-type: none"> <li>• This study investigated the long-term impact of postpartum maternal anxiety and depression on child and paternal mental health.</li> <li>• Neither maternal anxiety nor depressive symptoms were related to paternal depressive symptoms at child age 11–12 years, while maternal postpartum depressive symptoms, depressive symptoms at 5–6 years, and maternal anxiety at 5–6 years were positively related to paternal anxiety at 11–12 years. However, the effect sizes were small.</li> <li>• Only maternal postpartum depression was positively but weakly associated with more child emotional problems at 11–12 years.</li> </ul>	<ul style="list-style-type: none"> <li>• Selection bias and attrition.</li> <li>• Children should have been preferentially followed up until late adolescence, as the prevalence of affective symptoms increases during adolescence.</li> <li>• The study design did not account for familial confounders such as the contribution of shared genetic risk factors between parents and offspring.</li> </ul>

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