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ROLE OF ANTENATAL MATERNAL PSYCHOLOGICAL FACTORS IN THE GENESIS OF CHILDHOOD NEURODEVELOPMENTAL DISORDERS

[1]P. Keerthena, [2*]V. Winston Vargheese, [3]S.T. Gopukumar

[1]PG Scholar, Department of Homoeopathic, Materia Medica, Sarada Krishna Homoeopathic Medical College (Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai), Kulasekharam, Tamil Nadu, India, Email Id: prabhakarkeerthina4@gmail.com
[2*]Department of Homoeopathic, Materia Medica, Sarada Krishna Homoeopathic Medical College (Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai), Kulasekharam, Tamil Nadu, India, Email Id: drwinstonv@gmail.com
[3]Nanobioinformatics Unit, Department of General Surgery, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, Tamil Nadu, India, Email Id: gopukumar@live.com, Orcid Id: https://orcid.org/0000-0001-8160-2414

ABSTRACT
Pregnancy is a critical physiological and emotional period that influences both the mother's health and the child's neurodevelopmental well-being. The current study examined the correlation between the mental state of mothers during the antenatal period and the subsequent emergence of neurodevelopmental disorders in their offspring. Thirty mothers of children diagnosed with neurodevelopmental disorders, such as Attention Deficit Disorder with Intellectual Disability (ADD+IDD), Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Global Developmental Delay (GDD), and Mental Retardation (MR), were recruited from the Learning Disability Outpatient Department of SKHMC. Data were gathered utilizing a pre-structured antenatal mental state assessment questionnaire subsequent to acquiring informed consent. The mothers' mental states during various trimesters were documented and examined. The results showed that the most common emotional states during pregnancy were anger, fear, sadness, depression, anxiety, and holding back emotions. These adverse emotional states exhibited a persistent correlation with neurodevelopmental outcomes in the progeny. Mothers of children with ADD+IDD primarily experienced fear and sadness; those with ADHD displayed anger, depression, and emotional suppression; while mothers of children with ASD and GDD predominantly exhibited depression and anxiety-related states. The study underscores that antenatal psychological distress can negatively impact fetal neurodevelopment, resulting in enduring behavioral and cognitive deficits. From a homeopathic standpoint, these findings underscore the importance of comprehending the mother's mental and emotional condition during pregnancy as a crucial element of case assessment and prescription. It is very important to find out about neurodevelopmental disorders in children as soon as possible, give them emotional support, and manage their pregnancy in a holistic way.

KEYWORDS: Dermatology, Homoeopathy, Ringworm, Tinea corporis

INTRODUCTION

Pregnancy is a distinctive physiological and psychological stage in a woman's life marked by significant hormonal, emotional, and social transformations. Although the antenatal period is frequently regarded as a time of joy and anticipation, increasing evidence indicates that up to 20% of women endure varying levels of psychological distress, encompassing anxiety, fear, sadness, or depression during this phase. These maternal emotional states are pertinent to the mother's health and may also significantly impact the developing fetus via intricate neuroendocrine and biochemical mechanisms [1-4].

The idea of fetal programming shows that what a mother goes through and is exposed to while pregnant can have long-term effects on the child's brain, thinking, and behavior. Stress and emotional disturbances in pregnant women activate the hypothalamic-pituitary-adrenal (HPA) axis, leading to increased levels of cortisol and catecholamines. These hormonal changes can cross the placental barrier and impact the structural and functional development of the fetal brain, especially in areas like the hippocampus, amygdala, and prefrontal cortex [5-7]. As a result, children born to mothers who underwent significant antenatal stress are at a heightened risk of developing neurodevelopmental disorders (NDDs) including Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Specific Learning Disability (SLD), Global Developmental Delay (GDD), and Intellectual Disability (ID) [8].

Numerous studies have validated the association between maternal psychological distress during gestation and negative cognitive, emotional, and behavioral outcomes in offspring. Maternal anxiety, fear, emotional suppression, and grief during pregnancy have been associated with behavioral disorders and delayed developmental milestones in offspring. Moreover, domestic conflicts, insufficient social support, or traumatic experiences during pregnancy exacerbate maternal stress, indirectly affecting fetal neurodevelopment [9-15].

From a homeopathic point of view, the mother's mental and emotional state is seen as a key cause that affects both her own health and the health of her child. Samuel Hahnemann's Organon of Medicine (Aphorism 5) says that a doctor must find both the exciting and fundamental causes of disease, which can include mental and emotional factors [16-20]. Homoeopathy, as a holistic approach, acknowledges the significance of the mother's mental state during gestation, as it influences the entirety of symptoms and facilitates the selection of a personalized similimum. Comprehending and managing maternal emotional states during the antenatal period is essential for preventing and treating neurodevelopmental disorders in children [21-25].

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional observational study was conducted at the Learning Disability Outpatient Department (OPD) of Sarada Krishna Homeopathic Medical College and Hospital (SKHMC) to assess the mental state of mothers during their antenatal period and its influence on the neurodevelopment of their children. The study sought to identify significant emotional patterns displayed by mothers during pregnancy whose offspring were subsequently diagnosed with neurodevelopmental disorders (NDDs).

Study Population

Thirty mothers of children with different neurodevelopmental disorders took part in the study. These disorders included Attention Deficit Disorder with Intellectual Disability (ADD+IDD), Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Global Developmental Delay (GDD), and Mental Retardation (MR). The participants were chosen via random sampling from individuals visiting the Learning Disability Outpatient Department.

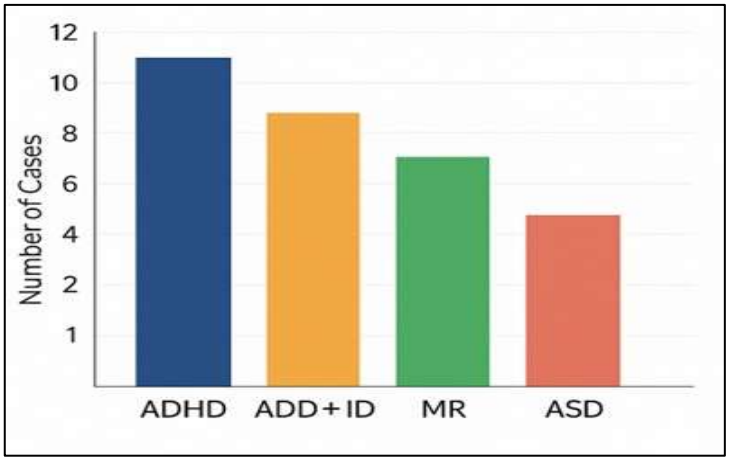

Figure 1: Diagnostic distribution

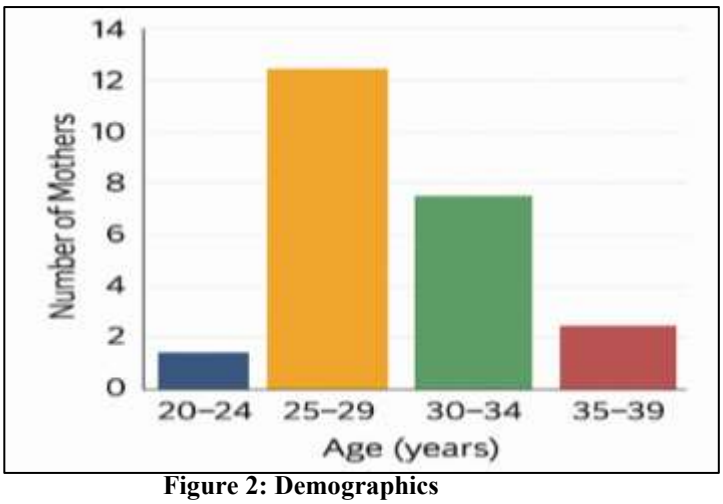

Figure 2: Demographics

INCLUSION AND EXCLUSION CRITERIA

Inclusion Criteria

Mothers of children who have been clinically diagnosed with neurodevelopmental disorders. Mothers whose antenatal period transpired within the preceding 10 years before data collection. This study included individuals who were willing to provide informed consent and participate in the research.

Exclusion Criteria

Mothers giving birth to children with congenital anomalies not associated with neurodevelopmental factors.

Mothers of children with neurodevelopmental disorders resulting from birth injuries or perinatal asphyxia. This study excluded mothers diagnosed with psychiatric or severe psychological disorders prior to or during pregnancy.

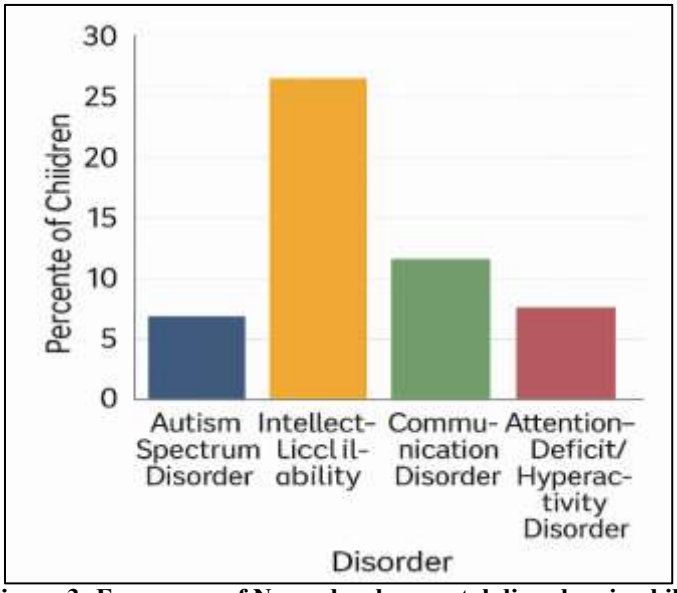

Figure 3: Frequency of Neurodevelopmental disorders in children

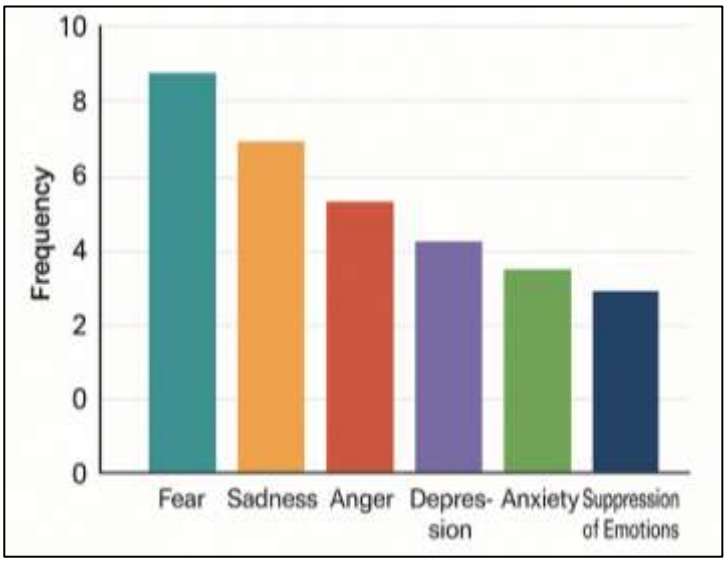

Figure 4: Predominant Maternal Mental States during the First Trimester

DATA COLLECTION

Each participant was apprised of the study's objective, and written informed consent was secured prior to participation. A pre-designed antenatal mental state assessment questionnaire was employed to assess the emotional and psychological well-being of mothers throughout each trimester of pregnancy. The questionnaire encompassed emotional domains including fear, anxiety, anger, depression, grief, sadness, emotional suppression, nervousness, and various other affective responses. Trained investigators gave the questionnaire to mothers and helped them remember and talk about their emotional experiences during pregnancy. Data were gathered via in-person interviews conducted in the participant's preferred language to guarantee understanding and the reliability of responses. A master chart was made from the data from each mother so that it could be analyzed.

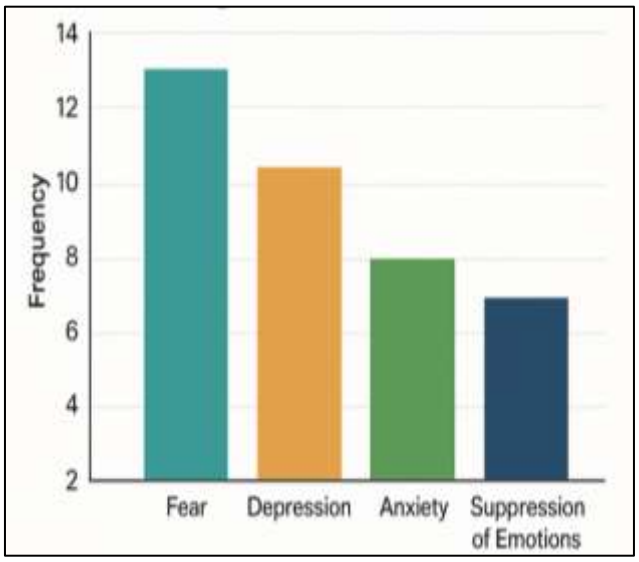

Figure 5: Predominant Maternal Mental States during the Third Trimester

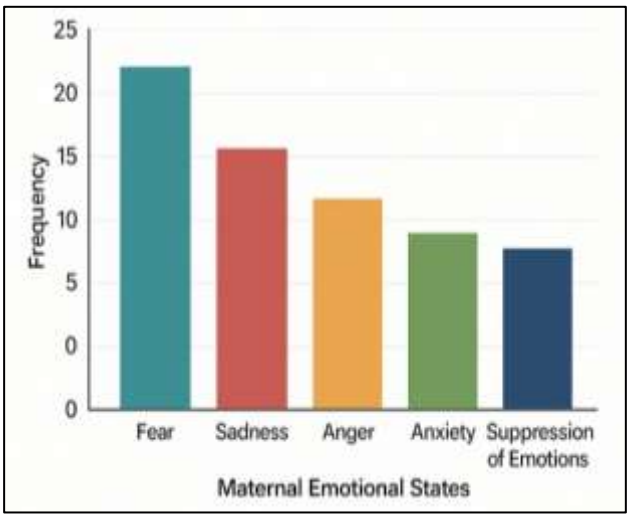

Figure 6: Comparative Analysis of Maternal Emotional States across All Trimesters

Analyzing Data

The gathered data were organized into tables and analyzed quantitatively to determine the frequency and significance of particular emotional states displayed during each trimester. The relationship between maternal mental states and the specific neurodevelopmental disorder in the child was analyzed descriptively. We made graphs and tables to show how distributions change with age, diagnosis, trimester-wise mental state changes, and job history. Statistical analysis centered on descriptive frequency distributions to underscore persistent emotional patterns.

Ethical Considerations

Before the study started, the Institutional Ethics Committee of SKHMC gave its ethical approval. Participants were guaranteed confidentiality and informed of their right to withdraw from the study at any point without consequence. The research complied with the ethical standards established in the Declaration of Helsinki for human studies.

Homoeopathic Significance

According to homoeopathic philosophy, a lot of attention was paid to finding the emotional and mental states that might be the main causes (miasmatic or dynamic influences) of the child's disease. The results were analyzed both statistically and holistically, incorporating the principles of mental causation as articulated by Hahnemann in Aphorism 5 of the Organon of Medicine.

RESULTS

Demographic Characteristics of Participants

The study included 30 mothers whose children had been diagnosed with neurodevelopmental disorders (NDDs). The ages of the kids showed that 2 (6.7%) were 0–2 years old, 23 (76.7%) were 2–4 years old, and 5 (16.6%) were older than 4 years old. The sex distribution revealed that 18 (60%) were male and 12 (40%) were female, suggesting a greater incidence of NDDs among male children. Most of the mothers (14 cases,

46.7%) were between the ages of 26 and 30. The next most common age group was 20 to 25 years old (9 cases, 30%), followed by 31 to 35 years old (5 cases, 16.7%), and 36 to 40 years old (2 cases, 6.6%). Most of them were stay-at-home moms (90%), but a few worked as teachers (6.7%) or accountants (3.3%).

Distribution of Neurodevelopmental Disorders

An analysis of the diagnostic distribution among the children indicated that Attention Deficit Hyperactivity Disorder (ADHD) was the most common, identified in eleven cases (36.7%). After that, there were seven cases (23.3%) of Attention Deficit Disorder with Intellectual Disability (ADD + IDD), six cases (20%) of Mental Retardation (MR), five cases (16.7%) of Autism Spectrum Disorder (ASD), and one case (3.3%) of Global Developmental Delay (GDD). The results indicate that hyperactivity and attention-related challenges constituted the predominant diagnostic cluster within the study sample.

Trimester-Wise Distribution of Maternal Mental States

An assessment of the psychological and emotional conditions of mothers throughout each trimester of pregnancy indicated specific patterns associated with the neurodevelopmental disorders diagnosed in their offspring.

In the first trimester, mothers of children with ADD + IDD mainly said they felt scared and sad. On the other hand, mothers of children who were later diagnosed with ADHD often felt angry, depressed, unhappy, scared, sad, and unable to express their feelings. Mothers of children with MR exhibited sadness, anger, and emotional instability, whereas mothers of children diagnosed with ASD demonstrated significant depression and emotional instability. A single mother of a child with GDD reported experiencing depression and sadness during early pregnancy. In the first trimester, fear, sadness, and depression were the most common emotional states.

The same emotional patterns continued in the second trimester. Mothers of children with ADD and IDD primarily expressed feelings of sadness and fear, with occasional instances of depression and hatred. Fear, anger, and suppressing feelings were the main problems for mothers of children with ADHD. Anxiety, grief, and restlessness were the main problems for mothers of children with MR and GDD. Depression continued to be the primary concern among mothers of children with ASD.

By the third trimester, emotional distress increased. Mothers of children with ADD and IDD exhibited fear, sadness, anxiety regarding the future, and feelings of hatred, whereas mothers of children with ADHD demonstrated anger, fear, grief, insomnia, and emotional suppression. In cases of MR, sadness, depression, and insomnia were the most common feelings. In cases of ASD, mothers again said that depression was the most common feeling. The mother of the GDD child felt anxious, scared, insulted, and sad.

Analysis across all trimesters indicated that anger, fear, sadness, depression, anxiety, and emotional suppression were the most consistently recurring mental states. These emotions manifested with varying intensities among nearly all participants, suggesting that prolonged psychological stress during pregnancy may significantly contribute to negative neurodevelopmental outcomes. The enduring presence of these adverse emotions throughout gestational stages underscores the cumulative influence of maternal distress on fetal neurological development. The overall pattern shows that there is a strong link between a mother's emotional problems during pregnancy and her child's neurodevelopmental disorders. Chronic exposure to stress, fear, sadness, or depression during gestation may lead to modifications in hypothalamic–pituitary–adrenal (HPA) axis activity, resulting in increased cortisol levels that traverse the placental barrier and disrupt fetal brain development. These physiological alterations manifest clinically as cognitive and behavioral anomalies in the child. From a homeopathic perspective, these emotional states signify essential dynamic forces that could influence the constitutional predispositions of the progeny. The results underscore the significance of prioritizing maternal mental health during pregnancy, highlighting early emotional support, counseling, and comprehensive management as preventive strategies against neurodevelopmental disorders.

DISCUSSION

This study sought to investigate the correlation between maternal mental health during the antenatal period and the prevalence of neurodevelopmental disorders (NDDs) in offspring, while also emphasizing the homeopathic perspective on mental and emotional factors during pregnancy. The results indicated that emotional disturbances, including fear, sadness, anger, depression, anxiety, and emotional suppression, were the predominant states experienced during pregnancy by mothers whose children were subsequently diagnosed with ADHD, ADD+IDD, ASD, GDD, and MR. These observations corroborate the increasing evidence suggesting that maternal psychological stress during gestation significantly impacts fetal brain development and subsequent neurobehavioral outcomes [26].

Numerous studies have established that prenatal maternal stress, anxiety, and depression negatively impact fetal neurological development. Dayan et al. (2015) conducted research that highlighted how stress encountered during early pregnancy modifies fetal neuroendocrine function and heightens susceptibility to emotional and cognitive impairments in progeny. In the same way, O'Connor et al. (2003) and Talge et al. (2007) showed that when a mother is anxious during pregnancy, her children are more likely to have behavioral problems like attention deficit, hyperactivity, and emotional instability. These findings align with the present study, in which mothers of children diagnosed with ADHD reported anger, depression, and

emotional suppression as the predominant mental states [27].

Animal models provide additional evidence for these correlations. Research conducted by Muddler et al. (2002) and Monique Vallée et al. (1997) demonstrated that chronic maternal stress during gestation leads to hypersecretion of corticosterone and interferes with hippocampal neurogenesis, producing enduring behavioral and cognitive changes in progeny. In this study, mothers who endured prolonged fear, sadness, and anxiety had children displaying neurodevelopmental delays, learning impairments, and behavioral irregularities, suggesting a comparable mechanism of stress-induced neuroendocrine dysregulation [28].
Maternal emotional stress during pregnancy stimulates the hypothalamic–pituitary–adrenal (HPA) axis, resulting in increased secretion of cortisol and catecholamines. These stress hormones can penetrate the placental barrier and directly influence the developing fetal brain, particularly in essential areas such as the amygdala, hippocampus, and prefrontal cortex. The changed hormonal environment in the womb affects the growth of synapses, the connections between neurons, and the control of behavior. Increased glucocorticoid exposure is recognized to downregulate glucocorticoid receptors in the fetal brain, disrupt feedback inhibition, and enhance hyper-reactivity of the stress response system in the postnatal period. As a result, these children may exhibit hyperactivity, attentional deficits, or emotional dysregulation—all characteristic symptoms of neurodevelopmental disorders such as ADHD, ASD, and MR [29-31].
In the present study, mothers exhibiting chronic fear, depression, and emotional suppression frequently had children diagnosed with ADHD and ASD, thereby corroborating the theory that sustained maternal distress induces neurobiological changes that predispose offspring to behavioral and cognitive deficits. These results underscore the importance of psychological well-being during pregnancy as a crucial factor for healthy fetal neurodevelopment. Homoeopathy, as a comprehensive medical system, underscores the significance of psychological and emotional elements in the etiology and management of disease. Samuel Hahnemann's Organon of Medicine (Aphorism 5) asserts the necessity of identifying both the exciting cause and the fundamental causes of disease, which frequently exist within the emotional and psychological realms. The current study corroborates this principle, illustrating that maternal mental state disturbances during gestation can affect the child's constitutional disposition.
From a homeopathic perspective, repressed emotions, enduring grief, and unresolved anxiety serve as dynamic factors that may modify the vital force and predispose progeny to chronic disease manifestations, including neurodevelopmental disorders. Consequently, comprehending the maternal emotional environment is essential in the processes of case-taking and remedy selection. Homeopathic remedies like Ignatia amara, Natrum muriaticum, Pulsatilla, and Sepia are traditionally used for conditions where repressed grief, fear, or hormonal imbalance are prevalent, mirroring the emotional patterns identified in this study. The study emphasizes the necessity for thorough antenatal counseling and emotional support as essential components of maternal healthcare. Regular evaluation of the mother's mental health during pregnancy can help identify individuals susceptible to stress-related fetal impacts. Adding psychological counseling, stress management strategies, and personalized homeopathic treatments may alleviate emotional distress, thus fostering improved neurodevelopmental outcomes.
Homoeopathic practitioners should also pay close attention to a child's antenatal history when treating neurodevelopmental conditions. Comprehending the mother's psychological and emotional condition during pregnancy enhances case analysis and facilitates the identification of hereditary vulnerabilities and miasmatic influences that may lead to chronic neurological disorders in children.

CONCLUSION

The current study illustrates a substantial correlation between the mental state of mothers during the antenatal period and the subsequent emergence of neurodevelopmental disorders (NDDs) in their offspring. Emotional disturbances, including fear, sadness, anger, anxiety, depression, and emotional suppression, were prevalent throughout pregnancy, particularly among mothers whose children were subsequently diagnosed with ADHD, ADD+IDD, ASD, GDD, or MR. These findings support the hypothesis that maternal psychological stress and emotional instability during gestation can negatively affect fetal neurodevelopment via neuroendocrine and epigenetic mechanisms.
From a homeopathic standpoint, this study reinforces the principle that the mental and emotional state of the mother serves as a crucial dynamic factor that can influence the constitutional and behavioral traits of the offspring. Consequently, antenatal emotional well-being must be acknowledged as a critical preventive area in both clinical and homeopathic practice. Early identification and rectification of maternal emotional dysregulation may constitute a pivotal approach in diminishing the prevalence of neurodevelopmental disorders in children.

CONFLICT OF INTEREST

The author declares no conflict of interest related to this study.

RESEARCH ETHICS AND PATIENT CONSENT

The author of this manuscript was the treating clinician and the Informed consent was obtained from all patients included in this study. Each patient agreed to the publication of their anonymized case details and

images for academic and research purposes.

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