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Systematic Literature Review: How Can Early Life Stress and Depression be Inherited?

Farra Dwi Susilo Wardhani [a], I Gusti Ayu Agung Noviekayati [b] *

[a,b] University of 17 August 1945 Surabaya, Surabaya, 60118, East Java, Indonesia

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ABSTRACT

Stress and depression in early life are very important topics to be studied in depth. The combination of medical and psychological sciences is one of the educational efforts to increase awareness of oneself and others about the symptoms of depression that attack. Triggering factors from various aspects are also explained in this article. Symptoms that are shown neuropsychologically are also a topic of research. The research method uses a Systematic Literature Review (SLR) which aims to examine in depth for research and biopsychology. Researchers find articles through several trusted platforms so that the data presented can be explained scientifically.

Keywords: Stress, Depression, SEM Activation, HPA Axis, Genitas, Systematic Literature Review

1. Introduction

Depression is one of the pathologies that contributes the most to pain and decreased productivity in a country. The impact caused by individuals with depression results in decreased health conditions and has a greater impact when compared to other chronic diseases such as asthma and diabetes (Moussavi et al., 2007) . Data shows that public understanding and awareness of pathophysiology is still very limited (Contrada & Baum, 2011)so that identifying environmental and genetic factors that influence the rise and fall of stress disorders, including depression, is very important today (Contrada & Baum, 2011). In recent years, attention to the relationship between stress and depression has begun to increase (Heim et al., 2006). Stress actively causes disruption to the homeostatic process which cumulatively results in damage to the body and brain. Individuals with genetically vulnerable conditions are more likely to experience depression and environmental factors contribute two-thirds to the cause of depressive disorders in individuals (Contrada & Baum, 2011). Furthermore, (Heim et al., 2006)mentions the cumulative causes of depression caused by life stress such as stress when early in life. The author aims to explain several important points, first, explaining the relationship between neurotransmitter and neurohormonal systems that modulate the response to stress involving depression as a form of pathophysiology. Neurotransmitters themselves are chemicals that function as chemical messages in the brain that function for the communication process between nerve cells. Second, the author explains the impact of conditions in early life that have the potential to trigger depression later on. Third, the author describes the interaction of genetic and environmental factors as the main mediators of the risk of depression.

The many forms of stress and one of them is interoceptive stress stimuli which directly cause disruption to the body's physiological homeostasis such as physical injury, pain, bleeding, and infection and among physical disease stressors such as myocardial infarction, stroke, and cancer are considered related to the development of depression (Godding et al., 1995; Guo et al., 2006; McDaniel et al., 1995; Whyte & Mulsant, 2002). Homeostasis itself is a self-regulation process in organisms with the aim of maintaining internal stability so that they are able to respond to external changes, for example when the skin is injured, a healing process will occur and another example is when the mechanism in the individual maintains blood sugar levels. However, it should be remembered that individuals with these disorders are not a guarantee that they will experience depression. When an individual is in a situation and there is a stimulus that becomes a stressor, physiological changes occur in the individual to maximize energy so as to obtain safe results. Once an individual has identified a stressor stimulus, the body automatically activates two related systems, namely the Sympathoadrenal Medulla System (SAM) and the Hypothalamus-Pituitary-Adrenal (HPA) axis.

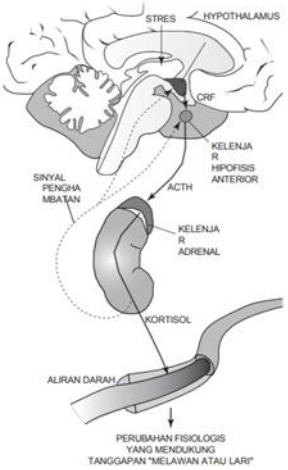

Fig. 1 (HPA axis)

Activation of the SAM system will result in the release of catecholamines from the sympathetic nerve terminals and from the adrenal medulla, the system then produces a number of rapid physiological responses. Activation of the SAM system then triggers the 'fight or flight' response and the system occurs in a short time (Contrada & Baum, 2011). Furthermore, the body will activate the HPA axis which activation synergizes with the SAM system response. HPA activation takes a long time but also lasts longer, even up to hours. The peak of this system is a neuropeptide which is a factor in the release of corticotropin (CRF) and is also known as corticotropin-releasing hormone (CRH). After the two hormones are released, they are then distributed throughout the central nervous system (CNS) which functions as an important mediator of the stress response (Contrada & Baum, 2011). One of the factors in the release of corticotropin is an amino acid of 41 acids (Saffran et al., 1955).

HPA axis activation is a key component of an individual's response to stress and stress plays a major role in the occurrence of mood disorders and anxiety and it is one of the systems that is widely studied in the scientific study of mental disorders in general (Contrada & Baum, 2011). Observations related to depression and psychiatric symptoms are other psychiatric symptoms that are widely studied in the literature in patients diagnosed with Cushing's syndrome or Addison's disease. Cushing's syndrome is a medical condition that occurs when the body has excess cortisol hormone over a long period of time. Cushing's syndrome shows several symptoms such as obesity in certain areas including the chest, face, and neck; individuals also often feel tired; even patients with a diagnosis of Cushing's syndrome often experience skin disease. In contrast, Addison's disease is a rare medical condition when the hormones cortisol and aldosterone are unable to be produced by the adrenal glands in sufficient quantities or in other words when the body lacks these two hormones. Symptoms of patients with Addison's disease experience fatigue; significant weight loss, and low blood pressure (Carpenter et al., 1971; Contrada & Baum, 2011; Gibbons & McHugh, 1962; Sachar et al., 1970)

HPA activation that occurs in individuals with depressive disorders is indicated by several behaviors such as the individual's body experiencing increased plasma cortisol concentrations, namely the level of cortisol hormone in the blood. Cortisol in the human body is a hormone produced by the adrenal glands and functions as a regulator of metabolism, controlling the immune system, and managing the body's response to stress. Another symptom that occurs is the concentration of free cortisol in urine for 24 hours, which is known through examination using medical equipment that is able to diagnose and help monitor diseases related to an imbalance of cortisol hormones in the body (Contrada & Baum, 2011).

Freud, as the inventor of the theory of psychoanalysis in the field of psychology, said that there is a link between stressful events and the emergence of psychopathology. The concept was then developed with a basis in biology and medical science by Selye and became his initial work. Selye also conducted in-depth studies on other topics such as the relationship between stress and disease and emotions that occur in individuals. This is a strong reason for the importance of studying neurotransmitters that work and relate to individual behavior in the study of biopsychology. Furthermore, Harlow explored the influence of the importance of the early life environment on individual behavior, both the physical environment and the social environment.

The first five years of life are a determinant of individual development because there are so many developmental milestones that need to be achieved. The reason is that the level of child abuse and neglect reaches endemic proportions, which indicates that many of these cases occur (Contrada & Baum, 2011). The National Center for Child Abuse and Neglect reports that there have been more than 1.5 million cases recorded as cases of child abuse. Most cases of child neglect, 700,000 of which involve cases of physical violence, emotional violence, and sexual violence (sexual harassment). This figure is certainly a very fantastic amount. It is hoped that this writing can become a preference so as to help minimize the occurrence of similar cases in the future.

Furthermore, (Contrada & Baum, 2011)explained about the condition of stress and depression in early life related to HPA activation. Women with depressive disorders caused by a history of being victims of prepubertal sexual abuse have increased HPA activity. Individuals who experience traumatic events early in life trigger a more sensitive response to the presence of stressors so that when the traumatic event is re-exposed, individuals tend to hyperactively respond to the event, leading to signs of more severe depressive episode symptoms. Individual responses to stress conditions

caused by early life traumatic events are related to the severity, duration, and onset of the event. So that individuals with early life trauma that they consider severe over a long period of time affect the individual's response to stress experienced later in life.

Depressive disorders can affect individuals even though there is no stress trigger, but several conflicts experienced continuously often have the potential to trigger severe disorders. Of all the traumatic events with high pressure, one-third of them are not causal with depression. This is known from individuals with major depressive disorders often deliberately expose themselves to high-risk situations. A diagnosis of major depressive disorder is given to individuals with a very depressed mood or to individuals with anhedonia, an inability to feel pleasure. The specific group of depressive disorders is predicted by the level of distress in previous life events (Contrada & Baum, 2011).

The description shows that the role of the environment (parenting by children towards children) has a direct effect on the development and set point of the stress axis. Depression is very easy to inherit even the level of gene compatibility that can be passed on to children is 30% - 40% (Contrada & Baum, 2011). The development of major depressive disorder focuses on the complex interactions between genetics and parenting and further shows that depression is not the result of a single gene (Contrada & Baum, 2011). The Serotonin Transporter (SERT) gene interacts and is directly related to early life conflicts and has been shown to influence the vulnerability of depressive disorders in individuals (Contrada & Baum, 2011). Serotonin is one of the main monoamine neurotransmitters that plays a role in the pathogenesis of depression. An important point in writing this journal is that SERT polymorphism increases vulnerability to depression only if there is a traumatic early life event . Thus, awareness is needed for each individual to create a physical and social environment with a high level of comfort so as to prevent vulnerability to depression in themselves and the people around them.

2. Methods

This study uses the Systematic Literature Review (SLR) method. Systematic Literature Review or systematic literature review is a research method that involves several processes including collecting, evaluating, and presenting literature results systematically (Febry et al., 2022; Nursalam, 2020). Research using the systematic literature review method is often used in the field of medical science studies. The advantage of this method is that research can carry out systematic identification according to predetermined steps so that it can produce research with the latest novelty (Triandini et al., 2019). Another purpose of research using this model is to answer researcher questions in depth based on scientific evidence (Maharani & Bernard, 2018). The systematic literature review research method has several models and one of them is PRISMA. The PRISMA model is carried out through several stages, namely identification, screening, feasibility, and analysis for drawing conclusions (Kelompok, 2018). The Prisma model requires researchers to formulate inclusion and exclusion criteria for the scientific references used.

Table 1 – Inclusion and Exclusion Criteria

Criteria	Description
Inclusion	1. Scientific articles with a novelty range of 2019 – 2024
	2. In the form of a scientific journal published nationally and internationally
	3. In the form of a book that cites scientific research
	4. Indexed articles or from trusted sources
	5. In accordance with the keywords relevant to the research, namely, stress and depression, SAM system, HPA axis, genetics
Exclusion	1. Articles published before 2019
	2. Articles in the form of final assignments (thesis, dissertation, practical report)
	3. Unindexed articles or unreliable sources
	4. Article not available in full or fullpaper

After the researcher formulated the inclusion and exclusion criteria, the researcher continued with the stages of the PRISMA model.

Table 2 – PRISMA Model Study Table

Process	Results	The next step
Identification	Researchers obtained a total of 64 journal articles from *Google Scholar* (57) and Research Gate (7).	(12) articles were discarded after the researcher identified a suitable title and abstract (N = 52)
Filtering	Researchers screened articles according to inclusion and exclusion criteria (22)	(6) articles are ignored again because they do not meet the new year criteria.

Eligibility	Articles that meet research criteria (16)	Articles were ignored because they came from less reliable sources (N = 4) and were final assignments (2)
Drawing Conclusions	Articles that meet the research criteria (N = 10)	1. Articles range of novelty 2020 – 2024 2. According to inclusion criteria 3. Comes from a trusted source 4. There are appropriate keywords

3. Results and Discussion

Based on the results of the analysis, it was found that stress and depression are related to SAM activity and the HPA axis. Furthermore, stress and depression that occur due to early life events have the potential to be inherited through genetics. A more complete explanation is presented in the following systematic literature review table

Table 2 – PRISMA Model Study Results Table

Author, Year of Publication	Title	Abstract (Research Content)
(M. Hasanah, 2019)	Stress and Its Solutions in Psychological and Islamic Perspectives	This article discusses stress and how to deal with stress.
(Emira et al., 2024)	Traumatic Experiences as a Cause of Acute Psychotic Disorders	The response to this traumatic experience in some cases can continue for a longer period of time and interfere with daily life due to the imbalance of neurotransmitters, a person continues to remember the event. This is at risk for psychotic disorders.
(Munirah et al., 2024)	Literature Study: Social Media Use as a Risk Factor for Depression	The pathophysiology of depression occurs due to an imbalance of the neurotransmitters serotonin, norepinephrine and dopamine in the brain. The etiology of depression can be caused by a combination of several factors, including biological, psychological and social factors. Clinical manifestations of depression can be found in symptoms such as loss of interest and energy, decreased concentration, decreased self-confidence, feeling guilty or useless, pessimism, sleep disturbances and desires to harm oneself or commit suicide. These conditions can be prevented by limiting use and doing positive activities.
(Z. Hasanah et al., 2019)	Risk Factors for Antenatal Depression in Jagir and Tanah Kali Kedinding Community Health Centers, Surabaya	Objective: to find out the prevalence and analyze the risk factors (biological, psychological and social) of pregnant women who experience antenatal depression at the health center of Jagir and Tanah Kali Kedinding Surabaya.
(Rosyanti et al., 2017)	Description of Anxiety Levels and Cortisol Hormone Levels in Postpartum Women	Some evidence suggests that postpartum depression symptoms are associated with increased cortisol levels. Objective: to analyze the description of anxiety levels and cortisol hormone levels in postpartum mothers.
(Lalita et al., 2023)	Combination of Aromatherapy and Back Massage on Maternal Depressive Symptoms Postpartum	Objective: to analyze the effectiveness of aromatherapy and back massage treatments on maternal depressive symptoms postpartum.
(Idealistiana et al., 2021)	Postpartum Depression Prevention: Review and Recommendations	Babies can suffer from impaired cognitive performance, executive function, intelligence, and language development. Postpartum depression has long-term impacts on the mother's mental health and on the physical, cognitive, and social development of children.

		Preventive measures can be taken according to the recommendations in this article. It is highly recommended to do postpartum depression screening as a prevention of depression.
(Omega & Herman, 2024)	Handling Depression Through Spiritual Dimension In Bandung City	By understanding the influence of the spiritual dimension in overcoming depression, it is hoped that a more holistic and effective approach can be developed in helping individuals overcome depressive symptoms and rebuild their psychological well-being. This research is also expected to increase public awareness, especially Christians, about the importance of approaching depression in an inclusive and comprehensive manner. Thus, further efforts can be directed at increasing access to mental health services and appropriate support for individuals experiencing depression.
(Zakariya et al., 2021)	Literature Review: Correlation of Plasma Malondialdehyde Levels with Depression in the Elderly	Many factors can cause depression, one of which is oxidative stress which is characterized by increased levels of malondialdehyde (mda). This literature review aims to analyze the correlation between mda levels and depression in the elderly.
(Sitaresmi & Suherman, 2024)	The Impact of Domestic Violence on Child Growth	The impact of domestic violence on children includes physical, psychological, and social aspects. Children exposed to domestic violence experience trauma, developmental disorders, and mental health problems such as anxiety and depression. In addition, they are at high risk of experiencing violence in the future, both as victims and perpetrators.

Stress is considered as the body's response when faced with external demands and pressures that exceed the individual's capacity to complete these demands (M. Hasanah, 2019). Unexpected events that are considered as conflicts often trigger shocks to the mental state so that these events are considered traumatic events (Emira et al., 2024). These events can be related to physical injuries or emotional violence experienced by the individual and these events have the potential to become traumatic events in the future. The response to traumatic experiences that occur over a long period of time to interfere with daily life causes neurotransmitters to remember this and when not treated immediately will continue to become psychotic problems (Emira et al., 2024).

Depressive disorders are classified as one of the pathophysiological disorders caused by an imbalance in the neurotransmitter processes of serotonin, norepinephrine and dopamine in the brain (Munirah et al., 2024). The etiology of depression is also caused by a combination of various aspects such as biology, psychology, and social (Munirah et al., 2024). In accordance with what was conveyed by previous researchers, changes in lifestyle are needed to anticipate and psychological therapy and drugs to overcome depressive disorders that occur (Munirah et al., 2024). In more detail, (Anggraeni & Saudia, 2021)explain that symptoms of depression in individuals are characterized by increasing cortisol levels. Depressive disorders that occur in postpartum mothers have the potential to reduce depressive symptoms in children, especially the behavior of mothers who experience depressive symptoms triggers low parenting according to the baby's needs (Lalita et al., 2023; Veri et al., 2024).

Depression disorders which are considered a global problem certainly indicate that the situation is increasingly worrying. Various underlying factors certainly the main goal is still the handling that must be done as early as possible (Omega & Herman, 2024; Zakariya et al., 2021). Proper and careful handling is considered to be one of the effective preventive measures against more serious impacts. Awareness of families who have relatives with depression disorders is needed because the role of the closest social environment is one of the supporting aspects of the recovery of the individual's condition. Conversely, when the family provides a situation full of violence, it will worsen the condition, especially if exposed to vulnerable age groups such as children (Sitaresmi & Suherman, 2024).

4. Conclusion

Stress in individuals can be caused by various factors, both due to social problems and the individual's inability to complete demands from outside the individual. There have been many media that help explain the symptoms of stress through neuropsychological explanations so that treatment efforts need to be made so that they do not continue to depressive disorders. Parents with depressive disorders are a group that is genetically susceptible to passing on depression to children. Prevention is certainly a better effort before depression attacks, but if an individual has been diagnosed with depression, treatment and awareness of help from the social environment remains the best solution.

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References

Anggraeni, N. P. D. A., & Saudia, B. E. P. (2021). Gambaran Tingkat Kecemasan dan Kadar Hormon Kortisol Ibu Nifas. *Jurnal Bidan Cerdas*, *3*(2), 55–63. https://doi.org/10.33860/jbc.v3i2.420

Carpenter, W. T., Bunney, W. E., & Jr. (1971). Adrenal cortical activity in depressive illness. *American Journal of Psychiatry*, *128*(1), 31–40.

Contrada, R. J., & Baum, A. (2011). *The Handbook of Stress Science: Biology, Psychology, and Health*. Springer Publishing Company.

Emira, A. S., Zulaikha, A., Ilmu, B., Jiwa, K., Sakit, R., Daerah, U., Meutia, C., Utara, A., Meunasah, J. H., Cunda, U., & Lhokseumawe, A. (2024). Pengalaman Traumatis Sebagai Penyebab Gangguan Jiwa Psikotik Akut. *Jurnal Publikasi Ilmu Psikologi*, *2*(3), 103–111. https://doi.org/10.61132/observasi.v2i3.409

Febry, O., Santi, D. E., & Muhid, A. (2022). Pendekatan Pembelajaran Heutagogy Untuk Meningkatkan Kreativitas Siswa: Systematic Literature Review. *Lectura : Jurnal Pendidikan*, *13*(2), 206–220. https://doi.org/10.31849/lectura.v13i2.10532

Gibbons, J., & McHugh, P. R. (1962). Plasma cortisol in depressive illness. *Journal of Psychiatric Research*, *1*, 162–171.

Godding, P. R., McAnulty, R. D., Wittrock, D. A., Britt, D. M., & Khansur, T. (1995). Predictors of depression among male cancer patients. *Journal of Nervous & Mental Disease*, *183*(2), 95–98.

Guo, Y., Musselman, D. L., Manatuga, A. K., Gilles, N., Lawson, K. C., & Porter, M. R. (2006). The diagnosis of major depression in patients with cancer: A comparative approach. *Psychosomatics*, *47*, 376–384.

Hasanah, M. (2019). Stres dan solusinya dalam perspektif psikologi dan islam. *Jurnal Ummul Qura*, *XIII*(1), 104–116. http://ejournal.insud.ac.id/index.php/UQ/article/download/50/44

Hasanah, Z., Joewono, H. T., & Muhdi, N. (2019). Faktor Risiko Depresi Antenatal Di Puskesmas Jagir Dan Tanah Kali Kedinding Surabaya. *Jurnal Keperawatan Muhammadiyah*, *4*(2). https://doi.org/10.30651/jkm.v4i2.3105

Heim, C., Bremner, J. D., & Nemeroff, C. B. (2006). Trauma spectrum disorders. In Totowa (Ed.), *Principles of molecular medicine* (In M. S. R, pp. 1203–1210). Humana Press.

Idealistiana, L., Anggaraeni, N., & et al. (2021). Jurnal pengabdian masyarakat dalam kebidanan. *Antara Pengmas*, *4*(1), 19–24. http://www.ojs.abdinusantara.ac.id/index.php/abdimaskeb/article/view/549/489

Kelompok, B. (2018). JURNAL BIMBINGAN DAN KONSELING | Jurnal Bimbingan dan Konseling: Kajian dan Aplikasi. *Jurnal Bimbingan Dan Konseling Ar-Rahman*, *10*(2), 35–39. https://doi.org/10.31602/jbkr.v10i2.16960

Lalita, E. M., Adam, Y., Donsu, A., Kuhu, F., Manueke, I., Kebidanan, J., & Kesehatan Kementerian Kesehatan Manado, P. (2023). Kombinasi aromaterapi dan back massage terhadap maternal depressive symptoms postpartum. *JIDAN (Jurnal Ilmiah Bidan)*, *10*(2), 68–76. https://ejurnal.poltekkes-manado.ac.id/index.php/jidan/article/view/1924

Maharani, S., & Bernard, M. (2018). Analisis hubungan resiliensi matematik terhadap kemampuan pemecahan masalah siswa pada materi lingkaran. *Jurnal Pembelajaran Matematika Inovatif*, *1*(5), 819–826. https://doi.org/https://ejournal.unesa.ac.id/index.php/jurnal-bk-unesa/article/view/45339

McDaniel, J. S., Musselman, D. L., Porter, M. R., Reed, D. A., & Nemeroff, C. B. (1995). Depression in patients with cancer: Diagnosis, biology, and treatment. *Archives of General Psychiatry*, *52*(2), 89–99.

Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., & Ustun, B. (2007). Depression, chronic diseases, and decrements in health: Results from the World Health Surveys. *Lancet*, *370*, 851–858.

Munirah, I., Utami, H. N., Rahma, J., Mukhlisatunnafsi, L., & Adni, A. (2024). Studi Literatur: Penggunaan Media Sosial Sebagai Faktor Risiko Terjadinya Depresi. *JMH: Jurnal Medika Hutami*, *05*(02), 3842–3853. http://jurnalmedikahutama.com

Nursalam. (2020). *Pedoman penyusunan literature dan systematic review*. Universitas Airlangga.

Omega, Y. P., & Herman, S. (2024). Penanganan Depresi melalui Dimensi Rohani di Kota Bandung. *Fidei: Jurnal Teologi Sistematika Dan Praktika*, *7*(1), 1–20. https://doi.org/10.34081/fidei.v7i1.488

Rosyanti, L., Usman, R. D., Hadi, I., & Syahrianti, S. (2017). Kajian Teoritis Hubungan antara Depresi dengan Sistem Neuroimun. *Health Information : Jurnal Penelitian*, *9*(2), 78–97. https://doi.org/10.36990/hijp.v9i2.104

Sachar, E. J., Hellman, L., Fukushima, D. K., & Gallaghr, T. P. (1970). Cortisol production in depressive illness: A clinical and biochemical clarification. *Archives of General Psychiatry*, *23*, 289–298.

Saffran, M., Schally, A. V, & Benfey, B. G. (1955). Stimulation of the release of corticotropin from the adenohypophysis by a neruhypophysial factor. *Endocrinology*, *57*, 439–444.

Sitaresmi, A. R., & Suherman, A. (2024). Pengaruh KDRT Terhadap Pertumbuhan Anak. *Jurnal Kajian Hukum Dan Kebijakan Publik*, *2*(1), 314–322.

Veri, N., Lajuna, L., Poltekkes, K., & Aceh, K. (2024). Pencegahan depresi postpartum : Review dan rekomendasi Preventing postpartum depression : Review and recommendation. *Kemenkes Poltekkes Aceh*, *4*(2), 345–358.

Whyte, E. M., & Mulsant, B. H. (2002). Post stroke depression: Epidemiology, pathophysiology, and biological treatment. *Biological Psychiatry*, *52*, 253–264.

Zakariya, Y. A., Fakhrurrazy, & Fujiati. (2021). Literature Review: Korelasi Kadar Malondialdehid Plasma Dengan Depresi Pada Lanjut Usia. *Homeostasis*, *4*(3), 805–814.