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**Title: From poverty to depression to inflammation: a literature review**

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**Background:** Depression is the most commonly presented psychiatric disorder<sup>1</sup>. People with low socioeconomic status are more likely to experience depression compared to those with higher socioeconomic status<sup>2</sup>. Recent studies have revealed that people experiencing depression symptoms have a greater vulnerability to infections<sup>3</sup>. Also, it has been shown in recent studies that there is a correlation between irregular cytokine levels and an uncontrolled inflammatory response<sup>4</sup>.

**Objective:** The present review addresses the relationship between the immune system response and depression. In addition to the relationship between depression and low socioeconomic status.

**Method:** We searched PubMed for relevant studies describing the relationship between inflammatory response, depression, and low-income. Our literature survey was limited to peer-reviewed articles, written in English and published from 1990 until August 2022.

**Results:** Different studies confirmed that psychological stress causes an alteration in the level of cytokines in multiple mechanisms<sup>4,5</sup>. Hypothalamus-pituitary-adrenal axis (HPA) is a significant immunoregulatory pathway that is activated in a variety of stress circumstances, including psychological stress<sup>6,7</sup>. Chronic psychological stress results in glucocorticoid resistance due to overactivity of the HPA axis. As a result, the inflammatory response is not appropriately managed<sup>4</sup>. (Table1) explains the changes in the level of cytokines<sup>8</sup>.

Contrastingly, antidepressant treatment may restore normal cytokine production and decrease the risk of abnormal inflammatory response<sup>9</sup>.

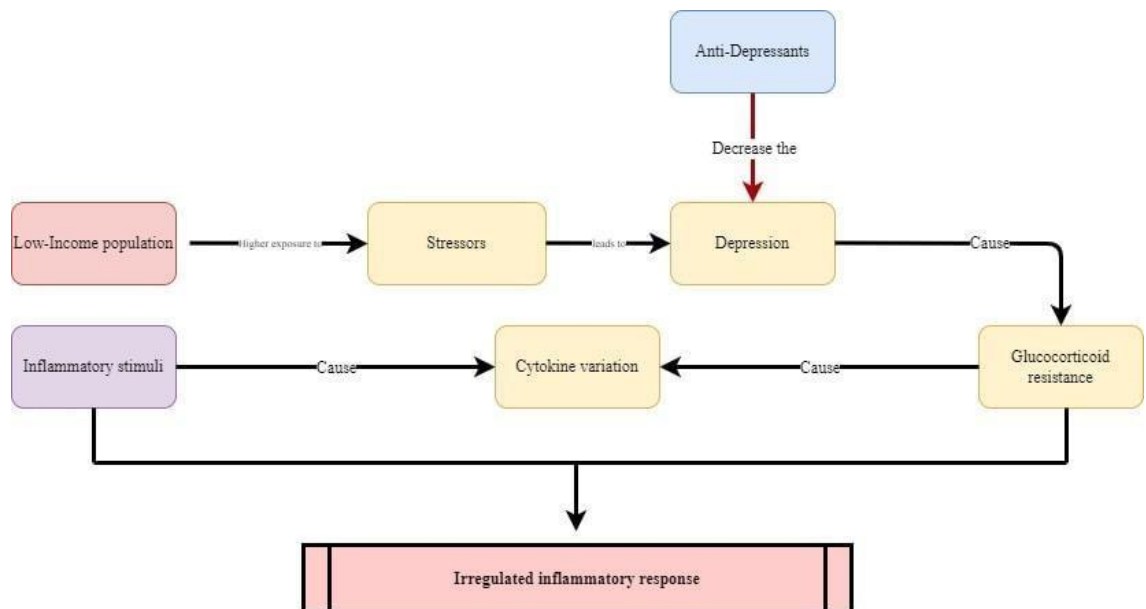


The role in depression	Type of cytokine
Elevation	IL-2, IL-5, IL-6, IL-10, IL-12, IL-13, IL-17A, IL-18, sIL-2 receptor, STNFR2 and TNF
Reduction	IL-4
Variation in the findings among studies	CCL2, IFN-gamma, IL-1beta, IL-1RA and IL-8 /CXCL8

**Table 1** : Explains the role of each cytokine in depression, regarding to Köhler, C. A (2017) Meta analysis.

IL: Interlukin, sIL-2: Serum Solubil interleukin 2, STNFR: Soluble tumor necrosis factor receptors, TNF: Tumor necrosis factor, CCL2: chemokine (C-C motif) ligand 2, IFN: Interferon, IL-1RA: Interlukin 1 receptor antagonist, CXCL8: C-X-C Motif Chemokine Ligand 8.

**Conclusion:** More attention should be given to the low-middle income population and their limited access to psychiatric services as they have a higher chance of experiencing mental health disorders. Depression, which is one of the most common mental health illnesses, increases the incidence of infectious diseases. Moreover, it affects the inflammatory response. Due to the shortage of clinical trials on this subject, we recommend doing more studies to identify these clinical aspects.



**Keywords:** depression, inflammation, income, socioeconomic status, literature review.