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Cerebral Changes Caused by Social Isolation During the COVID-19 Pandemic

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Introduction: The pandemic caused by the disease covid-19, which began in December from China, sparked major events and created the largest social behavior experiment in human history: the total or partial confinement of billions of individuals worldwide. In view of this scenario, young adults, aged approximately 18 to 30 years, were directly affected by the biopsychosocial effects of the pandemic. Several studies show that different types of stress induce specific adaptive responses, contributing to the development of affective and cognitive disorders that are expressed through the modification of neural circuits. Among them, anxiety is one of the most common clinical implications found in studies associated with depression in this age group. The objective of this work was to relate through a literature review the possible brain changes in young people aged 18 to 30 years, associated with the development of anxiety in this age group due to isolation caused by Covid-19.

Methodology: The methodology was based on PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), Pubmed and ScienceDirect were used for databases and “social isolation” or “confinement” and “anxiety” and “adulthood” and “isolation” and “brain” as descriptors. The criteria used for the selection of articles were: (1) experimental, provided that they were related to cognitive disorders; (2) have been published between 2015 and 2020; (3) in English; (4) review articles; (5) clinicians, with studies aged 18 to 30 years involving depression and anxiety.

Results: The results found in experimental studies show that social isolation has led to: an increase in the sensitivity of glutamatergic receptors (mGlu5); reduction of GABA synapses and decreased mRNA transcription of oxytocin receptors; selective reduction of BDNF; reduction in the excitability of serotonergic neurons and alteration of the mechanisms that modulate the hippocampus. In clinical studies during covid-19 demonstrated that at least one third of young adults reported having clinically elevated levels of depression (43.3%), anxiety (45.4%) and symptoms of post-traumatic stress disorders (31.8%). We know that in the present study the age group involved is related to periods of study and work, requiring favorable conditions to maintain the cognitive (attention, memory), emotional and behavioral aspects appropriate.

Discussion: The results suggest that glutamate, serotonin and GABA, neurotransmitters not only involved in attention, but also in memory and limbic system, present alterations in conditions of social isolation. These changes can cause behavioral changes, increased anxiety, changes in the sleep-wake cycle, and memory. Functional interactions between the hippocampus and cortical areas are extremely important and alterations in these neurotransmitters are associated with abilities decline and memory among them.

Conclusion: Attention, cognitive function, may also be altered due to the decrease in inhibitory control of stimuli that occurs in the brain increasing anxiety in the face of lack of control. Therefore, social isolation in this pandemic may be the cause of increased anxiety in this age group and can cause important brain changes in these individuals.

Keywords: Pandemics; Brain; Anxiety.