

Omega 3 during pregnancy and impacts on postpartum depression: a narrative review

Ômega 3 na gestação e os impactos na depressão pós-parto: uma revisão narrativa

Omega 3 durante el embarazo e impactos en la depresión postparto: una revisión narrativa

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RESUMO

Objetivo: Evidenciar através de uma revisão integrativa os resultados clínicos atuais do impacto do consumo de ômega 3 frente a depressão pós-parto. **Método:** Revisão integrativa da literatura realizada no período de Fevereiro a Julho de 2023 nas bases de dados Pubmed, LILACS, Medline e Scielo. **Resultados:** Foi realizada uma busca pelos descritores em saúde determinados e foram selecionadas 5 produções científicas que atenderam os critérios de inclusão. De modo geral, os trabalhos mostraram relações com a saúde do bebê e da mãe. No bebê, observou-se aumento do crescimento intrauterino, maior resposta do sistema nervoso central, melhor desenvolvimento neural, de retina, imunológico, cognitivo e físico. Já na saúde materna, observou-se aumento no processo antiinflamatório, melhor resposta imune, melhora no efeito neurotrófico do cérebro, aumento do metabolismo, melhora hormonal, menor risco cardiovascular, menores distúrbios neurológicos (incluindo a depressão) e distúrbios visuais. **Conclusão:** Mais estudos são necessários para elucidar os benefícios da suplementação de ômega-3 em gestantes no pós-parto.

Descritores: Depressão; Pós-Parto; Ômega-3.

ABSTRACT

Objective: To show, through an integrative review, the current clinical results of the impact of omega 3 consumption on postpartum depression. **Method:** Integrative literature review carried out from February to July 2023 in the Pubmed, LILACS, Medline and Scielo databases. **Results:** A search was performed for specific health descriptors and 5 scientific productions that met the inclusion criteria were selected. In general, the studies showed relationships with the health of the baby and the mother. In the baby, there was an increase in intrauterine growth, greater response of the central nervous system, better neural, retinal, immunological, cognitive and physical development. In maternal health, there was an increase in the anti-inflammatory process, better immune response, improvement in the neurotrophic effect of the brain, increased metabolism, hormonal improvement, lower cardiovascular risk, lesser neurological disorders (including depression) and visual disturbances. **Conclusion:** More studies are needed to elucidate the benefits of omega-3 supplementation in postpartum pregnant women.

Descriptors: Depression; Postpartum; Omega-3.

RESUMEN

Objetivo: Mostrar, a través de una revisión integradora, los resultados clínicos actuales del impacto del consumo de omega 3 en la depresión posparto. **Método:** Revisión integrativa de la literatura realizada de febrero a julio de 2023 en las bases de datos Pubmed, LILACS, Medline y Scielo. **Resultados:** Se realizó una búsqueda de determinados descriptores de salud y se seleccionaron 5 producciones científicas que cumplían con los criterios de inclusión. En general, los estudios mostraron relaciones con la salud del bebé y de la madre. En el bebé hubo un aumento del crecimiento intrauterino, mayor respuesta del sistema nervioso central, mejor desarrollo neural, retiniano, inmunológico, cognitivo y físico. En salud materna, hubo aumento del proceso antiinflamatorio, mejor respuesta inmunológica, mejora del efecto neurotrófico del cerebro, aumento del metabolismo, mejora hormonal, menor riesgo cardiovascular, menos trastornos neurológicos (incluyendo depresión) y alteraciones visuales. **Conclusión:** Se necesitan más estudios para dilucidar los beneficios de la suplementación con omega-3 en mujeres embarazadas posparto.

Descritores: Depresión; Posparto; Omega-3.

Introduction

Depression is a psychological condition that affects a number of factors such as appetite, mood, sleep, self-esteem, etc. These symptoms can last for hours, days, or weeks¹. In postpartum depression, on the other hand, there are numerous consequences regarding the bond between the mother and the baby, especially with regard to the affective aspect. It can affect the social, affective and cognitive development of the child, as well as prolonged sequelae throughout life².

Still in this context, Araújo et al.³ explains that pregnancy requires coping with this important event, such as physical and psychosocial changes. It is a period that generates new demands and requires new forms of adaptation. These changes are related to metabolic and hormonal rhythms and the process of accepting a new body image. These changes lead to consequences in the formation of family ties between all members, especially the newborn.

During pregnancy, it is often common for depressive episodes to occur in women at some risk.⁴ This period is marked by being a time of immune stimulation, anti-inflammatory and neurotrophic effects⁵. In addition, pregnancy increases the risk of omega 3 deficiency, which plays an important role in this psychological condition. In addition to having a great importance in fetal formation and development⁶.

Long-chain polyunsaturated fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), are used in diverse populations at different stages of life and health conditions due to their beneficial effects⁷. These fatty acids cannot be synthesized by our body, and therefore, need to be supplemented or consumed by the diet⁵.

Studies indicate that, in adults, omega-3 has several benefits compared to antidepressant effects in patients with depression⁶. In addition, it also has an anti-inflammatory consequence that is also related to depression⁸, in addition to a role of neuroprotection and mood stabilization⁹.

Based on this, this article aimed to evaluate the impact of omega-3 consumption on postpartum symptoms.

Method

The research was conducted through a narrative review of the literature of the last ten years. Data collection took place during the months of February and June 2023, investigating articles that reported omega 3 supplementation in pregnant women.

The literature review was delimited by clinical studies that addressed variables related to omega 3 supplementation, isolated or not, in pregnant women and the subsequent evaluation of postpartum depression symptoms and other markers. The study disregarded articles that evaluated animals and did not exclude other associated supplements.

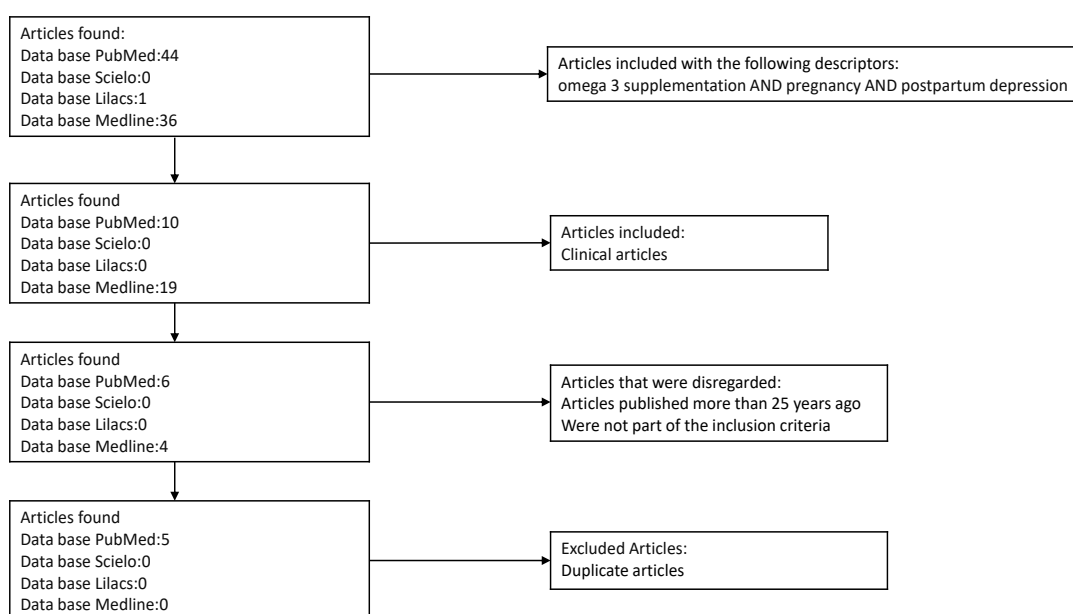
The descriptors used for this research were: omega 3 supplementation and pregnancy and postpartum depression. The databases searched were: Pubmed, Lilacs, Medline and Scielo, in English.

The first search resulted in 81 articles, of which 44 were in Pubmed, 1 in Lilacs, 36 in Medline and 0 in Scielo. After filtering by type of article, being

eligible only the research clinicians, it resulted in a total of 29 articles, 10 in Pubmed, 0 in Lilacs, 19 in Medline and 0 in Scielo, year of publication. The final filtering was done through filtering by year, considering all articles published in the last 25 years.

All papers were read in full to be eligible according to their methodologies and objectives. The reading of the manuscript titles and their final selection were performed by the pairs. After reading the articles in full, 19 studies were disregarded because they did not apply the methodology studied. In the end, 5 articles were eligible for the study, because four of them were published on both sites.

Figure 1-Flowchart of selection of publications for narrative review. 2023.



Results and Discussion

Six articles were identified in this narrative review, interpreted and reduced by comparing the data exposed in the investigation of the theoretical framework, according to Chart 1.

Chart 1- Distribution of the articles found according to the search. 2023.

Authors	Sample	Groups	Supplementation beginning	Scale applied	Results
Vaz et al., 2017	89 pregnant women	1.08 g EPA and 0.72 g DHA or placebo	22-24 weeks	Edinburgh Postnatal Depression Scale	The supplementation groups did not differ in EPDS scores
Souza e Santos, 2022	60 pregnant women	DHA(1440mg/d) or soybean oil placebo	22-24 weeks	Edinburgh Postnatal Depression Scale	The supplementation groups did not differ in EPDS scores.

Doornbos et al., 2008	119 pregnant women	DHA (220mg) or DHA + arachidonic acid (220mg each)	16 weeks pregnant	Edinburgh Postnatal Depression Scale	The supplementation groups did not differ in mean EPDS scores or changes in EPDS scores
Makrides et al., 2010	2399 pregnant women	DHA (800mg/d) or vegetable oil placebo without DHA	Less than 21 weeks gestation	Edinburgh Postnatal Depression Scale	The percentage of women with high levels of depressive symptoms during the first 6 months postpartum did not differ between DHA and control
Mozurkewich et al., 2013	118 pregnant women at risk of depression	EPA (1060 mg EPA and 274 mg DHA), DHA-rich fish oil (900 mg DHA and 180 mg EPA), or soybean oil placebo	12–20 weeks	Inventário de Depressão de Beck (BDI)	There was no difference between the groups in BDI scores or other depression endpoints

The studies evaluated in this review were conducted in a large number of women, with different dosages applied. This review may be important to elucidate the use of omega-3 supplementation to reduce symptoms of postpartum depression.

The study by Vaz et al.¹⁰, evidenced a study conducted in a public health care center in the city of Rio de Janeiro, Brazil, where 89 women were recruited. The recruitment of pregnant women was selected through some inclusion criteria, which were: Period of gestation between 5th and 13th week, being aged between 20 and 40 years, not having any associated chronic disease (except obesity), such as hypertension and diabetes, living in the area covered by the study; and intend to continue prenatal care at the public health center. The results presented were that in pregnant women at risk of developing Postpartum Depression (PPD), daily supplementation of 1.8 g of n-3 per day (1.08 g of EPA and 0.72 g of DHA) had no significant effect on mean depression scores and the occurrence of major depression symptoms during pregnancy and early postpartum. Despite the significant increase in serum EPA levels, this change did not affect postpartum depression scale scores.

In the study by Souza and Santos¹¹, conducted at the Hospital das Clínicas of the Federal University of Minas Gerais, Brazil, 60 pregnant women were sampled, separated into two groups, a placebo group, which consumed olive oil, and another control group, which consumed a dose of 1440 mg/day of DHA. The participants were between 22 and 24 weeks pregnant, and symptoms of depression at different stages of pregnancy were assessed using the Edinburgh Postnatal Depression Scale. The results showed a small reduction in the

depression scale, both in the placebo group and in the control group, which does not bring a significant result to indicate the effectiveness of omega-3. Despite this, the control group obtained a decrease in the score earlier than the placebo group, which may indicate a possible benefit of supplementation of this nutrient in the antenatal period.

Doornbos et al.¹² brought in their study, conducted in the Netherlands, where 182 women were evaluated, however, only 119 remained until the end of the research for complications in pregnancy, or other reasons. The symptoms of depression were assessed using the Edinburgh Postnatal Depression Scale. All participants received a supplementation of vitamins and minerals before the beginning of the research, after which they were separated into three groups, placebo group (n = 36) which consumed soybean oil, DHA group (n = 42), and DHA + AA (n = 41). Where doses of 220 mg/day of DHA and also DHA+AA were administered. The results presented demonstrate that supplementation with the dosage used did not present significant results in improving the symptoms of depression, requiring a higher dosage and also the administration of EPA in parallel, because EPA is one of the main nutrients in the fight against depression.

Makrides et al.¹³, conducted their study in five maternity hospitals in Australia, applying it to 2399 women, who were less than 21 weeks pregnant. Also excluded were pregnant women who were already supplementing DHA, and if the baby had any abnormality, if the pregnant woman had any abnormality with the contraindication of omega-3, if she had an anticoagulant therapy, if she had a history of alcoholism or drug addiction, if she was participating in some other study, or if English was not the primary language. The participants were separated into two groups, the control group, which provided a dosage of 800 mg/day of DHA and 100 mg/day of EPA, and the placebo group, which provided capsules with vegetable oil without DHA, and were not genetically modified. Symptoms of depression were assessed using the Edinburgh Postnatal Depression Scale. In the end, there were no differences between the control group and the placebo group. It was only noted that women with a previous diagnosis of depression more commonly presented symptoms of depression, but did not differ between both groups.

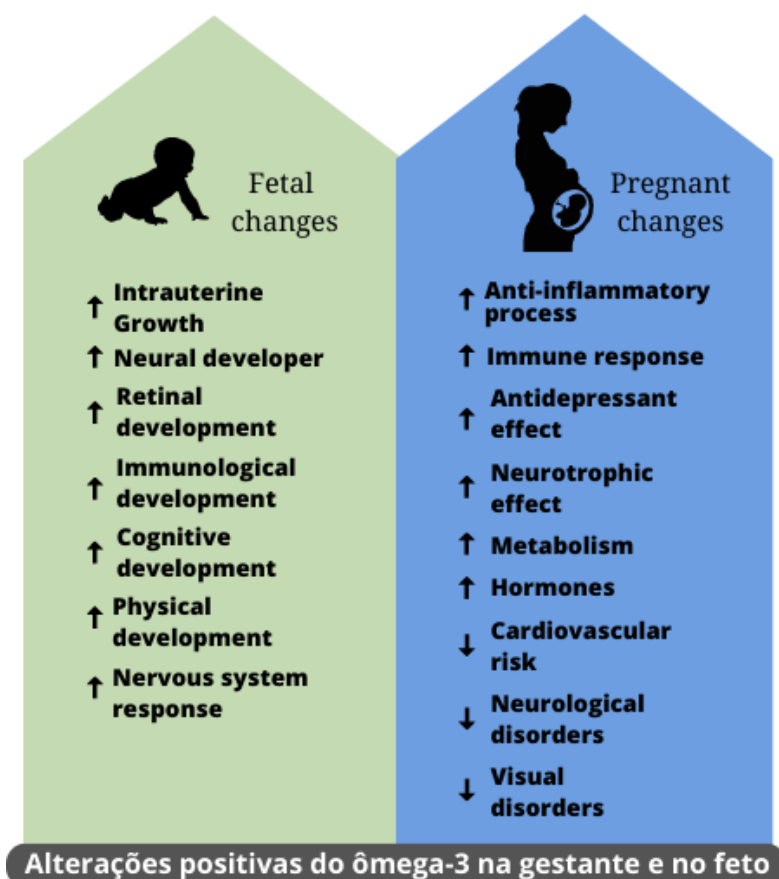
In the study by Mozurkewich et al.¹⁴, conducted with 126 pregnant women less than 20 weeks gestation from antenatal clinics in two health systems in Ann Arbor, Michigan, and surrounding communities. The pregnant women were selected according to some inclusion criteria, such as: History of major depressive disorder; History of postpartum depression; score between 9 and 19 according to the Edinburgh Postnatal Depression Scale. In addition, participants who already consumed omega-3 supplementation, or who ingested some antidepressant or psychiatric medication, in addition to anticoagulant medications, and also participants who consumed two meals with fish per week were excluded. Pregnant women diagnosed with a psychiatric condition were also excluded. The pregnant women were divided into three groups, being provided a formula rich in EPA (1060 mg) and DHA (274 mg) for the control group 1, one rich in DHA (900 mg) and EPA (180 mg) for the control group 2 or a placebo group, consuming soybean oil. The results found in the study showed that there were no benefits to EPA or DHA supplementation in relation to postpartum depression symptoms, and the results also suggest that DHA levels

at weeks 34 to 36 of pregnancy may be associated with the level of depressive symptoms in mothers.

We can summarize the findings in the articles evaluated in this review and other studies that showed health effects of omega-3 supplementation in pregnancy, the information was incorporated in Figure 1.

In general, the studies showed relationships with the health of the baby and the mother. In the baby, there was increased intrauterine growth, greater response of the central nervous system, better neural, retina, immune, cognitive and physical development. In maternal health, there was an increase in the anti-inflammatory process, better immune response, improvement in the neurotrophic effect of the brain, increased metabolism, hormonal improvement, lower cardiovascular risk, lower neurological disorders (including depression) and visual disturbances.^{15,16,17,18}

Figure 1 - Effects of omega-3 supplementation on pregnancy in the fetus and in the mother. 2023.



Conclusion

With the scientific findings it can be concluded that omega-3 supplementation, consumed in the form of EPA or DHA, and also in different doses did not show significant results in combating the symptoms of postpartum depression. In addition, it was noticed that women who had previously had

symptoms of depression had these symptoms more frequently despite supplementation.

More studies are needed to elucidate the impacts of omega-3 supplementation in postpartum pregnant women.

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