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O BENEFÍCIO DA ATIVIDADE/EXERCÍCIO FÍSICO REGULAR NA GESTAÇÃO DE ALTO RISCO: UMA REVISÃO BIBLIOMÉTRICA

The benefits of regular physical activity/exercise in high-risk pregnancies: a bibliometric review

Los beneficios de la actividad física/ejercicio regular en el embarazo de alto riesgo: una revisión bibliométrica

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RESUMO

Objetivo: quantificar e analisar as principais características da produção científica sobre o benefício da atividade/ exercício físico durante a gestação de alto risco entre os anos de 2013 e 2023. **Método:** trata-se de um estudo quantitativo, do tipo bibliométrico, cuja proposta principal é analisar a produção científica através da observação quantitativa das publicações, desenvolvendo indicadores estatísticos confiáveis para determinada temática estudada. **Resultados:** foram analisados 316 artigos. Observou-se que o maior número de publicações sobre o tema foram realizadas no ano de 2022 com 51 (16,13%) artigos, seguido do ano de 2021 com 38 (12%) artigos e 2020 com 37 (11,7%) artigos publicados, o que corresponde a uma taxa de crescimento anual de publicação de 4,62%. **Conclusão:** os estudos precisam continuar sendo desenvolvidos para que as recomendações sejam constantemente atualizadas e contribuindo para a qualidade de vida materno infantil.

DESCRITORES: Atividade física; Exercício; Gravidez de alto risco.

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ABSTRACT

Objective: to quantify and analyze the main characteristics of scientific production on the benefits of physical activity/exercise during high-risk pregnancies between 2013 and 2023. **Method:** this is a quantitative bibliometric study, the main purpose of which is to analyze scientific production through the quantitative observation of publications, developing reliable statistical indicators for a given subject. **Results:** 316 articles were analyzed. It was observed that the largest number of publications on the subject were made in 2022 with 51 (16.13%) articles, followed by 2021 with 38 (12%) articles and 2020 with 37 (11.7%) articles published, which corresponds to an annual publication growth rate of 4.62%. pregnancies over the years. **Conclusion:** studies need to continue to be developed so that recommendations are constantly updated and contribute to maternal and child quality of life.

DESCRIPTORS: Physical activity; Exercise; High-risk pregnancy

RESUMEN

Objetivo: cuantificar y analizar las principales características de la producción científica sobre los beneficios de la actividad física/ejercicio durante los embarazos de alto riesgo entre 2013 y 2023. **Metodo:** se trata de un estudio bibliométrico cuantitativo, cuyo objetivo principal es analizar la producción científica a través de la observación cuantitativa de las publicaciones, desarrollando indicadores estadísticos fiables para un tema determinado. **Resultados:** se analizaron 316 artículos. Se observó que el mayor número de publicaciones sobre el tema se realizó en 2022 con 51 (16,13%) artículos, seguido de 2021 con 38 (12%) artículos y 2020 con 37 (11,7%) artículos publicados, lo que corresponde a una tasa de crecimiento anual de publicación de 4,62%. **Conclusión:** es necesario continuar desarrollando estudios para que las recomendaciones sean constantemente actualizadas y contribuyan para la calidad de vida materna e infantil.

DESCRIPTORES: Actividad física; Ejercicio; Embarazo de alto riesgo.

INTRODUCTION

The practice of regular physical exercise in the lives of the general population has been increasingly studied by researchers from a wide range of fields and its long-term benefits continue to be proven. The WHO[1] states in one of its guidelines that regular physical activity is a key protective factor for the prevention and control of non-communicable diseases (NCDs), such as cardiovascular diseases, type 2 diabetes and various types of cancer.

In addition, it can be inferred from various studies that the benefits are not only physical. The WHO guidelines[1] emphasize that physical activity also benefits mental health, including the prevention of cognitive decline, symptoms of depression, anxiety and general well-being, as well as improving social interactivity. Therefore, the sooner the habit of regular physical activity is established in individuals' lives, the greater the benefits will be in terms of long-term quality of life.

With this in mind, we need to define the difference between the terms "physical activity" and "exercise". The WHO[1] defines physical activity as any bodily movement produced by the skeletal muscles that requires energy expenditure - including physical activities practiced during work, play, household chores, travel and leisure activities - while exercise, which is a subcategory of physical activity, is something planned, structured, repetitive and aimed at improving or maintaining one or more components of physical fitness.

With regard to women during pregnancy, in 1985, the American College of Obstetricians and Gynecologists - ACOG[2] published for the first time a guideline with recommendations on physical activity during pregnancy, which, despite having been updated over the years, was responsible for highlighting the importance of practicing physical activity and exercise during pregnancy.

This guideline is important because, although rest has long been recommended for women in the gestational period, recent studies[2] have suggested that regular physical exercise during a healthy pregnancy, for at least 30 minutes a day, can promote numerous fetal and maternal benefits, including the prevention and control of gestational diabetes, excessive weight gain, a reduction in complaints of back pain and positive effects on maternal mental health and quality of life, in addition to there being no evidence of adverse outcomes for the fetus and/or newborn.

Women with high-risk pregnancies - those in which the life or health of the mother and/or the fetus and/or the newborn are more likely to be affected by some unfavorable pregnancy event than those in the average population - can and should also be adept at physical exercise and, consequently, enjoy the benefits listed above, but they need to pay more attention to the type of activity they do.

In pregnant women, it is important that there is a more critical indication of exercise, as there are multiple hormonal, physiological and biomechanical changes, such as an increase in blood volume and heart rate, weight gain and a shift in the center of mass.[4] However, it is important to maintain these changes that occur during the pregnancy period, so that the woman can keep her routine activities and her health under control during and after pregnancy.

Quality of life in relation to health can help prevent weight gain, given that obesity and the comorbidities associated with obesity are major health problems worldwide, including women of childbearing age.[5] Although there is no consensus on the prescription of physical exercise, avoiding sedentary or inactive habits helps prevent the development of overweight and its associated consequences.

Raising awareness of the benefits of a healthier lifestyle during and after pregnancy should be addressed systematically in prenatal care, a particularly propitious time for intervention by health professionals, as Nascimento6 points out in one of his discussions on the subject. During prenatal care, these pregnant women create a bond and, consequently, greater trust in the team's work, which allows for routine exams, frequent returns and comprehensive supervision of their health, providing more favorable maternal and fetal outcomes.

According to the ACOG,[2] it is rare for all types of physical activity to be contraindicated; however, the health team that cares for women with high-risk pregnancies, as well as those with normal risk, needs to carry out specialized and individualized monitoring of their state of health in order to make pertinent recommendations about regular physical exercise.

Given that bibliometric studies detail and break down information in texts in order to facilitate researchers in their searches, this study becomes an important contribution to the academic community in the area studied. In addition to being able to demonstrate and analyze the developments made over the years on the subject, it contributes to strengthening and underpinning new research.

Given the above, and understanding the topic as an opportunity

to deepen theory and gather data for scientific and practical discussions for the nursing team, this study aims to quantify and analyze the main characteristics of scientific production on the benefit of physical activity/exercise during high-risk pregnancy between 2013 and 2023. In order to fulfill the proposed objective, bibliometric techniques will be applied to identify the main characteristics of production in scientific journals on the subject in vogue.

METHOD

This is a quantitative bibliometric study, whose main purpose is to analyze scientific production through the quantitative observation of publications, developing reliable statistical indicators for a given subject.[7] This methodology is widely used to examine existing literature, identify trends, patterns and research gaps, as well as providing an overview of the current state of knowledge in a specific field.

Bibliometric studies are based on three basic laws: Bradford's Law (referring to the journals with the most publications on a given topic); Lotka's Law (based on the authors who produce the most on a given area of knowledge) and Zipf's Law (representing the relationship and frequency between the words in the text, relating them to the main approaches guiding the topic).[8]

In order to construct the research question: "What are the characteristics of scientific productions on the benefits of regular physical exercise in high-risk pregnancies?", we opted to use the PICo strategy (P: Patient, I: Intervention, Co: Context), considering the following components: pregnant women as the population; regular physical exercise as the intervention; and women in high-risk pregnancies as the context. Each component of the PICo strategy allowed the index of descriptors registered in the DeCS (Health Sciences Descriptors) to be consulted, from which the following were selected: Physical Activity, Exercise and High Risk Pregnancy exhausting the possibility of options for the elaboration of the search strategy to be mediated from the operators.
operators "AND" and "OR".

Data was collected in September 2023 by consulting the SCOPUS portal, PubMED and Web of Science. The texts were selected using a combination of English descriptors, based on the best result obtained in the databases: Physical Activity AND Exercise AND High-risk Pregnancy.

The inclusion criteria were: full articles with free access, written in Portuguese and English, published between 2013 and 2023. The historical cut-off was defined taking into account that, although the first publication was in 1985, there are constant updates on the subject, so the most recent productions that most closely resemble the current reality will be analyzed. The exclusion criteria used were: any text whose type of publication was not an article and did not present the proposed theme.
The data collection stage resulted in a sample of 1609 publications which were manually screened in terms of title, abstract, time of publication, type of document and language. 384 articles were found which met the inclusion criteria. In terms of databases, 128 (34.78%) articles belonged to PubMed, 19 (5.16%) to Scopus and 237 (64.4%) to Web of Science.

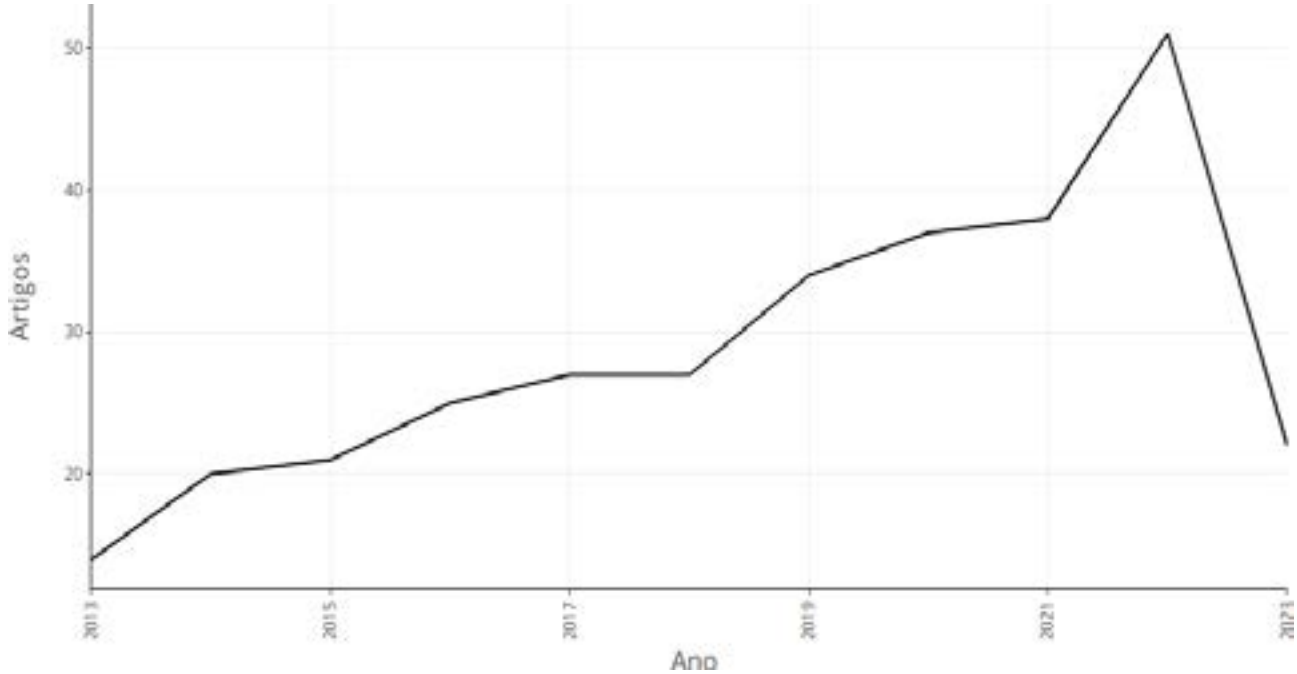
Once the inclusion and exclusion criteria had been met, the resulting documents from each database were exported with as much information as possible to the RStudio software, where the results were merged and the 68 duplicate texts were identified and eliminated, resulting in 316 articles corresponding to the corpus. For analysis, the results were exported to the Biblioshiny program, a graphical interface contained in the Bibliometrix open source bibliometric tool which is accessed by the RStudio software, in order to statistically evaluate the variables and obtain a better visualization of the parameters studied.

Due to the use of data freely available for consultation and the non-involvement of human beings in relation to data collection, there is no need for submission and appreciation by the Research Ethics Committee (CEP) - CONEP system, as explained in CONEP resolution 466/2012.

RESULTS

This study analyzed 316 articles. It was observed that the largest number of publications on the subject were made in 2022 with 51 (16.13%) articles, followed by 2021 with 38 (12%) articles and 2020 with 37 (11.7%) published articles, which corresponds to an annual publication growth rate of 4.62%, as can be seen in Graph 1 below.

Graph 1- Annual production of selected publications



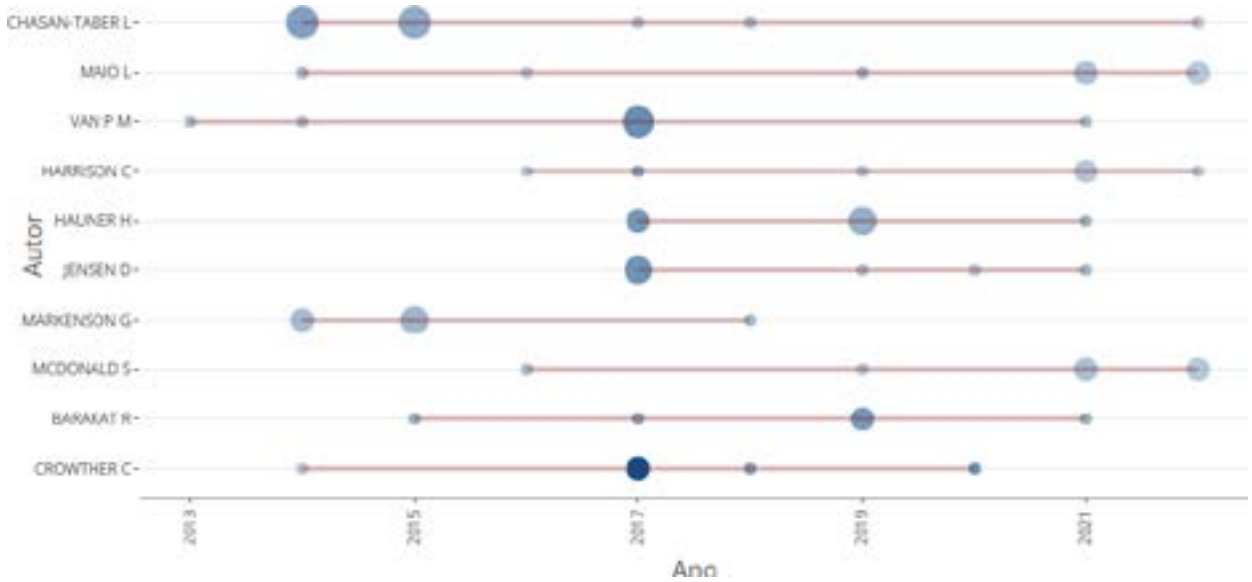
Source: Biblioshiny, 2023.

As for the type of document, 194 (61.39%) articles were found, 58 (18.35%) journal articles, 4 (1.26%) periodical articles, 59 (18.67%) reviews and 1 (0.3%) study guide.

With regard to the prevalent journals and in order to comply with Bradford's Law, the prevalence of BMC Pregnancy and Childbirth was identified with 31 (9.81%) publications, followed by Revista Nacional de Pesquisa Ambiental and Revista Saúde Pública with 19 (6%) publications and Revista Nutrientes with 13 (4.1%) publications. Regarding the Zones, 9 (5.7%) journals are in Zone 1, 45 (28.66%) journals in Zone 2 and 103 (65.6%) journals in Zone 3.

In order to comply with Lotka's Law, it was observed that the most prevalent author on the subject over the 10 years studied was Lisa Chasan-Taber with 11 (3.48%) articles, followed by Linda E. May with 7 (2.2%) articles and Mireille N. M. van Poppel with 7 (2.2%) articles. In addition, the year in which the main authors produced the most was 2017, with a total of 17 (5.37%) articles. Data shown in the graph below.

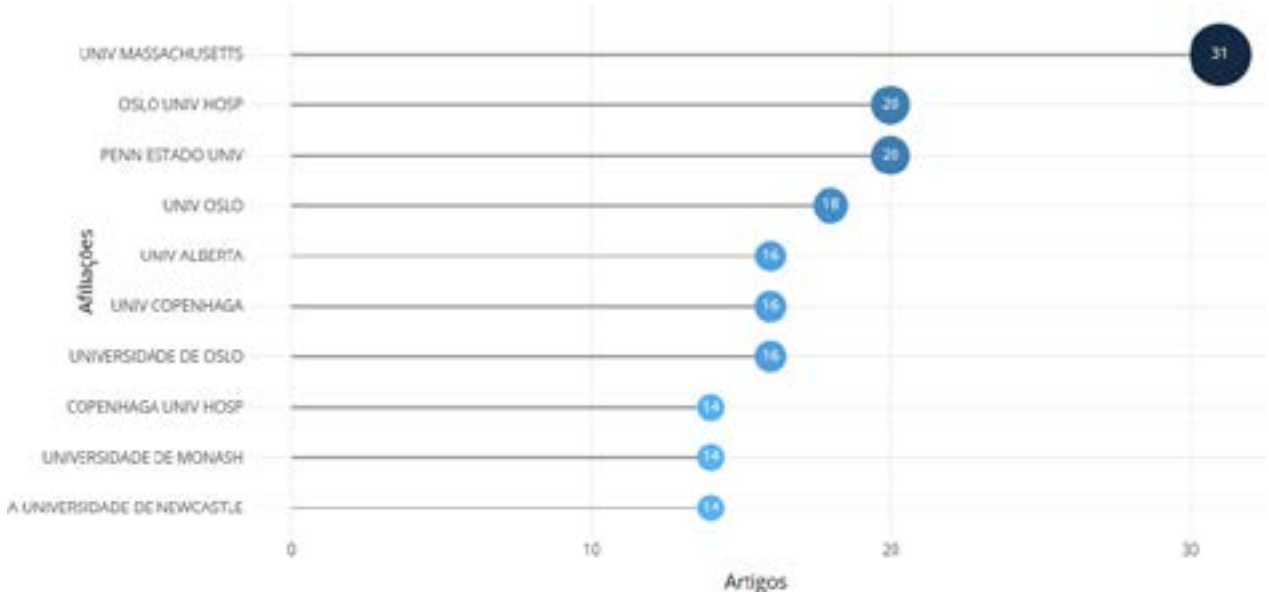
Graph 2 - Production of the top 10 authors over time



Source: Biblioshiny, 2023

Among the institutions with the most publications on the subject, the University of Massachusetts stood out with 31 (9.8%) publications, followed by Oslo University Hospital with 20 (6.3%) publications and Pennsylvania State University also with 20 (6.3%) publications.See the graph below:

Graph 3 - Top 10 institutions publishing on the subject



Source: Biblioshiny, 2023

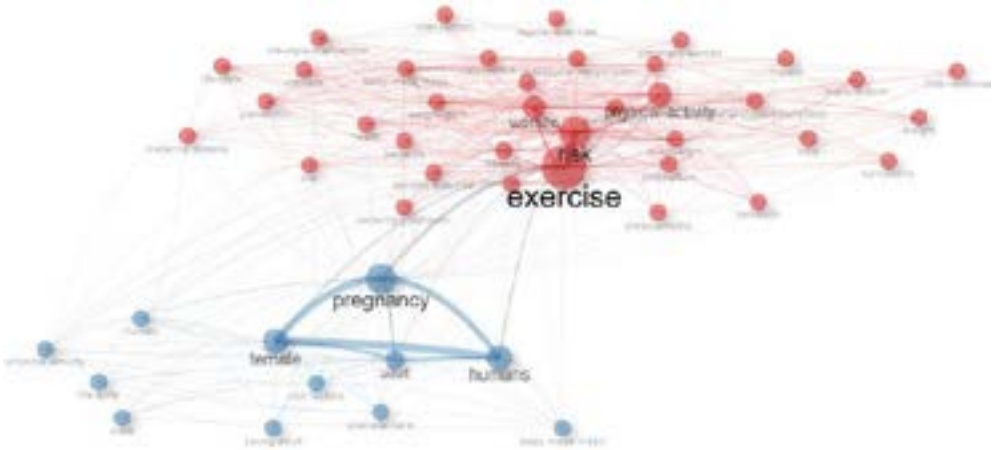
In order to comply with Zipf's Law, by combining the articles' keywords, it was identified that the words with the highest incidence in the texts were "exercise" with 153 occurrences, followed by "risk" with 104 occurrences and "pregnancy" with 101. The relationship is illustrated in Figure 1.

Figure 1 - WorldCloud with the most cited words in the texts

Source: Biblioshiny, 2023

In addition, the co-occurrence network identified that the words exercise, risk and physical activity were the most used by the authors during their textual descriptions. These words are directly related to the proposed topic, since regular physical activity/exercise contributes to a good prognosis and health maintenance in high-risk pregnancies. See the co-occurrence image:

Figure 2 - Co-occurrence of authors' keywords



Source: Biblioshiny, 2023

DISCUSSION

When analyzing the results, it was possible to see that there has been an increase in publications on the practice of physical activity and exercise in high-risk pregnancies over the years. As the maternal-fetal benefits have been proven and publicized, the topic has become more visible and has gained global proportions.

It has been seen that the country that has published the most on the subject is the USA which, coincidentally, is also one of the countries with the highest obesity rate in the world, as shown by the Trust for America's Health[9] which obtained a prevalence rate in the country of 42.4%. These data, although conflicting, show that the problem is being identified and that there is interest in changing lifestyles and, consequently, improving the health of the population, especially pregnant women.

On the other hand, it is clear from the research data that no satisfactory results were found from studies and publications on the subject in Brazil, which may be related to the lack of government incentives to carry them out. Data from the Institute for Applied Economic Research (IPEA)[10] in 2017 shows that while in the US 90% of government funding for research is geared towards the country's development, in Brazil this figure is only 30%.

In view of this, there is a phenomenon called "brain drain", which can be defined by the emigration of qualified professionals to developed countries. The departure of these professionals signals the incapacity of national political systems, or the dominance of other countries that exert great attraction over young people with high goals of professional self-fulfillment.[11] This has a negative impact on the production of Brazilian research and, consequently, on the development of studies in universities, which are directly affected.

Despite the budgetary difficulties between countries, there is a

worldwide consensus that sport should be encouraged during pregnancy so that it becomes a habit and not just an obligation, since ideally the activities should continue into the puerperium. In the postpartum period, a return to physical activity is associated with a reduced risk of depression, improved emotional well-being and physical fitness and reduced postpartum weight gain, with a faster return to pre-pregnancy weight.[12]

In 2020, there were publications by the American College of Obstetrics and Gynecology,[2] and the WHO,[1] recommending 150 minutes of moderate physical activity per week during pregnancy and the postpartum period, due to the growing evidence demonstrating improved prognosis for mother and fetus due to physical exercise. However, the reality of the majority of the pregnant population is that they tend to be sedentary, often due to lack of information, laziness or even fear, given that the metabolic and physiological changes that occur during this period are quite intense, such as weight gain and a change in the point of gravity that results in progressive lordosis and, consequently, an increase in the strength of the joints and spine, favoring low back pain.[2]

In studies published in the Revista Latino Americana de Enfermagem,13 where the relationship between physical activity and gestational trimesters was observed, the time spent practicing activities gradually decreased throughout gestation, as well as their intensity, which in the 1st and 2nd trimesters, most of the time was dedicated to moderate physical activity, while in the 3rd trimester walking was the most common practice.

Although an upper level of safe exercise intensity has not been established, women who exercised regularly before pregnancy and who had healthy pregnancies without complications should be able to participate in high-intensity exercise programs, such as running and aerobics, without adverse effects.[2] It is also important to stress that in order to improve the quality of maternal and child life, it is necessary to adopt healthy habits such as a diet rich in nutrients and fiber, adequate water intake and the non-use of substances such as cigarettes and alcohol.

Therefore, all the recommendations mentioned above can be achieved through quality prenatal care, which involves a comprehensive and humanized approach to women, since this is the time to welcome, listen to and guide pregnant women in a way that prepares them to experience pregnancy and childbirth in a peaceful and healthy way. Obstetric nurses play an important role in this process by acting carefully, avoiding excesses and making judicious use of the technological resources available to assist women, as well as playing a leading role in reducing maternal and neonatal mortality rates by focusing on the physiology of the pregnancy and puerperium process.[14]

FINAL CONSIDERATIONS

Finally, the research showed that even in high-risk pregnancies, the benefits outweigh the risks in most cases and physical exercise should be encouraged throughout the pregnancy and puerperal period. In addition, the importance of constant updating of recommendations by the professionals who serve this public was raised so that they can provide pertinent guidance during prenatal and puerperal care.

Studies need to continue so that the recommendations are constantly updated and contribute to the quality of maternal and child life. However, there is a lack of government funding for universities, which means that there is a lower rate of new projects being developed, which directly affects the updating of professionals working in the area, as they do not have access to up-to-date studies and information produced nationally.

Research has shown that major countries such as Brazil and Europe are not producing as much on the subject as they used to, confirming that developed and developing countries still need to give more visibility to this subject, which is so important in the pregnancy and postpartum process.

In view of the above, and in order to make it possible to reduce physical inactivity, it is important that all audiences are fully reached, so that we can maintain a healthy society at all ages, genders and times of life. For this to happen, there needs to be a better financial and institutional incentive for studies on the subject in order to obtain new updates, while also contributing to greater recognition of the importance of physical activity/exercise in places where it is little covered.

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