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IMPLANON AND RE- PRODUCTIVE HEALTH: EFFECTS ON MENS- TRUAL CYCLES, FERTI- LITY AND VASCULAR COMPLICATIONS

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Abstract: INTRODUCTION: Implanon is a long-acting contraceptive method that has become popular due to its effectiveness and ease of use. However, its acceptance and continued use are often influenced by side effects, such as changes in menstrual cycles, concerns about fertility and potential vascular complications. Existing literature suggests that these factors can significantly impact the reproductive health of women who use this method. **OBJECTIVES:** The objectives of this systematic review include: (1) Evaluating the effects of Implanon on the menstrual cycles of female users; (2) Investigating the relationship between Implanon use and fertility after implant removal; (3) Analyzing the vascular complications associated with Implanon use; (4) Identifying the factors that contribute to discontinuation of Implanon use; and (5) Proposing evidence-based recommendations for clinical practice and public health policy. **METHODOLOGY:** The systematic review was conducted using databases such as PubMed, Lilacs, VHL and Google Scholar. Relevant studies addressing the effects of Implanon on menstrual cycles, fertility and vascular complications were selected. The analysis included cohort studies, cross-sectional studies and previous reviews, focusing on quantitative and qualitative data. The quality of the studies was assessed using established criteria, and the data was synthesized to identify patterns and gaps in the literature. **RESULTS:** The results indicated that Implanon users often report menstrual changes, such as irregular bleeding and amenorrhea, which are the main reasons for discontinuing the method. Most women regain fertility quickly after implant removal, but the perception that the method can affect fertility in the long term persists. Vascular complications, although rare, have been identified as a significant risk, especially in women with predisposing factors. **CONCLUSION:** Although Implanon is an effective contraceptive method, its acceptance and continuity depend on factors

related to users' reproductive health. Adequate education and counseling are essential to reduce early discontinuation and improve the experience of use, especially through clear information about side effects, reversibility of fertility and possible risks. Evidence-based strategies can improve user satisfaction and reproductive health outcomes for women who opt for long-acting contraceptive methods.

Keywords: "Implanon", "menstrual cycles", "fertility and vascular complications".

INTRODUCTION

Implanon, a subdermal implant that releases etonogestrel, has been shown to be effective in preventing pregnancy, with a clinical failure rate of less than 1%. However, its acceptance and continued use are often influenced by side effects, including menstrual disorders and vascular complications, which can impact on the reproductive health of users.^{1,2}

The effects of Implanon on menstrual cycles are varied and often reported as one of the main reasons for discontinuing use. Studies indicate that users may experience changes in their menstrual pattern, such as irregular bleeding or amenorrhea, which can be uncomfortable and lead to discontinuation of the method. Understanding these effects is crucial, as menstrual regularity is an important indicator of reproductive health and can influence women's decision whether or not to continue using Implanon. In addition, the lack of adequate information about what to expect in terms of side effects can contribute to early discontinuation of the method, highlighting the need for more effective pre-insertion counseling.^{1,2,3,4,6}

Fertility after Implanon removal is another relevant aspect to consider. Although Implanon is a reversible method, the perception of its effectiveness and anxiety about future fertility can influence women's decision to use it. Studies show that most women regain fertility quickly after implant removal, but misinfor-

mation and fear of complications can lead to hesitation in use. In addition, the relationship between the use of Implanon and the occurrence of vascular complications, such as deep vein thrombosis and pulmonary embolism, is a growing concern in medical literature. Although the incidence of such events is considered low, the association between the use of hormonal contraceptives and vascular complications should be carefully monitored, especially in populations with risk factors.^{1,3,5,8,9}

The proposed systematic review aims to compile and analyze the existing literature on the effects of Implanon on menstrual cycles, fertility and vascular complications, with the aim of providing a comprehensive, evidence-based overview of the impact of this contraceptive method on women's reproductive health. Analysis of the available data will make it possible to identify gaps in current knowledge and suggest directions for future research, as well as informing clinical practices that can improve the acceptance and continued use of Implanon among women.

The importance of proper counseling and health education cannot be underestimated, as understanding the effects of Implanon can help women make informed decisions about their reproductive health. In addition, identifying factors that contribute to discontinuation of use can lead to the development of more effective interventions aimed at increasing adherence to long-acting contraceptive methods and, consequently, improving reproductive health outcomes.^{7,9}

This systematic review article on Implanon proposes five main objectives to assess its impact on reproductive health. Firstly, it examines the menstrual changes that the use of Implanon can cause, such as irregular bleeding, influencing the continuity of the method. Secondly, it investigates the recovery of fertility after implant removal. The third objective is to assess the risks of vascular complications, although rare, such as thrombosis. It then

explores the factors that lead to early discontinuation of the method. Finally, it proposes recommendations for clinical practice aimed at increasing acceptance and satisfaction with the use of Implanon.

METHODOLOGY

This systematic review on Implanon was developed according to the PRISMA methodology (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) and focuses on the implications for reproductive health, with an emphasis on the effects on menstrual cycles, fertility and vascular complications associated with its use. The first step in carrying out the review was to formulate specific research questions, which addressed topics such as: "What are the effects of Implanon on the menstrual cycles of female users?" and "How does the use of Implanon impact fertility and is it associated with vascular complications?". The definition of strict inclusion and exclusion criteria was essential to ensure that only relevant studies were considered. These criteria covered the type of study (clinical trials, observational studies and previous reviews), the target population (women of childbearing age using Implanon) and the publication interval, which covered the period from 2012 to 2023. After defining the research questions and the inclusion and exclusion criteria, a systematic literature search was carried out in relevant electronic databases such as PubMed and Scopus. Standardized descriptors and keywords related to Implanon, menstrual cycles, fertility and vascular complications were used. The search was meticulously documented, including the search strategies used and the databases consulted, in order to guarantee the transparency and reproducibility of the process. After the search, the results were filtered according to the established criteria, involving reading the titles and abstracts of the articles identified, followed by a full re-

ading of the articles that met the inclusion criteria. The studies were selected by at least two independent reviewers in order to minimize selection bias. In the event of discrepancies, a third reviewer was consulted to resolve the inconsistencies. Once the selection of studies was complete, the relevant data was extracted from each article included in the review, using a standardized form which included information such as author, year of publication, type of study, population characteristics, interventions carried out and main results. This stage was crucial for data synthesis and subsequent analysis. The analysis of the data collected included both qualitative and quantitative syntheses, depending on the nature of the studies included. For studies with homogeneous results, a meta-analysis was carried out, allowing the data to be statistically combined. For those with heterogeneous results, a narrative synthesis was chosen, highlighting the main trends and patterns observed in the literature. In addition, the implications of the results for clinical practice and future research in the area of Implanon and reproductive health were discussed, with special attention to the management of patients using this contraceptive method and emphasizing the knowledge gaps that still need to be addressed.

RESULTS

The studies reviewed indicate that the use of Implanon is often associated with significant menstrual changes. Menstrual irregularity is a common side effect, with approximately 6.7% of users reporting frequent bleeding episodes and 17.7% experiencing prolonged bleeding. In addition, many users report unpredictable episodes of spotting, which can be a source of discomfort and concern. Amenorrhea, or absence of menstruation, is also frequently observed, leading some women to discontinue use of the implant due to dissatisfaction with the menstrual experience.^{11,17}

The literature suggests that the experience of irregular bleeding can negatively impact the acceptance of Implanon, contributing to high discontinuation rates. For example, a study carried out in Ethiopia revealed that women who reported abnormal bleeding were significantly more likely to discontinue using Implanon. The lack of adequate counseling on what to expect in terms of menstrual side effects can exacerbate this situation, resulting in a negative perception of the contraceptive method.^{4,11}

With regard to fertility, most studies indicate that recovery of reproductive capacity occurs quickly after Implanon removal. The literature indicates that fertility can be restored within two weeks of implant removal. However, the perception that fertility may be affected in the long term may discourage some women from using the method. Anxiety about future fertility is a factor that can influence the decision whether or not to use Implanon, especially among women who want to become pregnant in the near future.^{15,19}

In addition, misinformation about the reversibility of Implanon can contribute to hesitation in its use. Studies have shown that women who received adequate information about the rapid recovery of fertility after implant removal were more likely to continue using the method. Therefore, education and counseling are crucial to ensure that users understand the effects of Implanon on fertility.⁵

Vascular complications associated with the use of Implanon, although rare, are a significant concern. Studies indicate that the use of hormonal contraceptives, including Implanon, may be associated with an increased risk of deep vein thrombosis and pulmonary embolism. The literature suggests that women with pre-existing risk factors, such as obesity or a family history of thromboembolic diseases, should be carefully evaluated before starting to use Implanon.⁸

In addition, a lack of awareness about the signs and symptoms of vascular complications can lead to late diagnosis and, consequently, adverse outcomes. The need for adequate medical follow-up and ongoing education about the risks associated with the use of Implanon is fundamental to minimizing these risks. The systematic review highlights the importance of informing users about the possibility of vascular complications and the need to seek immediate medical attention in the event of suggestive symptoms.¹⁵

Discontinuation of Implanon use is a recurring theme in the literature, with factors such as menstrual side effects, lack of information and dissatisfaction with the health service often cited as reasons for discontinuing the method. One study revealed that up to 65% of users discontinued using Implanon before the end of the recommended three-year period, with the majority citing the experience of abnormal bleeding as a determining factor.⁴

Lack of adequate counseling and negative perceptions of side effects were also identified as significant barriers to continuing to use Implanon. Women who did not receive clear information about what to expect in terms of side effects were more likely to discontinue use of the implant. Therefore, implementing education and counseling programs that address women's concerns can be an effective strategy to increase acceptance and continuity of use of Implanon.⁴

Based on the results of the systematic review, it is clear that education and counseling are essential to improve acceptance and continuity of use of Implanon. Health professionals should be trained to provide clear and comprehensive information about the side effects, the reversibility of fertility and the potential risks associated with the use of the implant. In addition, creating a supportive environment where users feel comfortable discussing their concerns can contribute to a better experience with Implanon.¹²

The systematic review also suggests the need for continuous monitoring of Implanon users, especially those with risk factors for vascular complications. Early detection of problems can improve health outcomes and increase women's confidence in long-term contraceptive methods. Ultimately, promoting effective communication between health professionals and users is key to ensuring that women can make informed decisions about their reproductive health. Finally, image 1 illustrates the screening process for selecting the articles included in the review.

DISCUSSION

The effects of Implanon on menstrual cycles are one of the most discussed aspects in the literature. Menstrual irregularity, including unpredictable bleeding and amenorrhea, is often reported as a significant side effect. Studies indicate that up to 60% of users may experience menstrual changes, which can negatively impact acceptance of the method. Lack of adequate counseling on what to expect in terms of menstrual side effects can lead to a negative perception of Implanon, resulting in early discontinuation. This suggests that educating users about possible side effects and normalizing irregular menstrual experiences are crucial to improving satisfaction and continuity of Implanon use.^{4,7}

In addition, the literature highlights that the experience of abnormal bleeding may be associated with socio-cultural factors, such as the pressure to maintain a regular menstrual cycle. Misinformation about the nature of side effects can lead to social stigma and dissatisfaction with the method, which reinforces the need for educational campaigns that address these aspects. Thus, the implementation of counseling programs that prepare users for the possible changes in their menstrual cycles can be an effective strategy to increase the acceptance of Implanon.^{5,9}

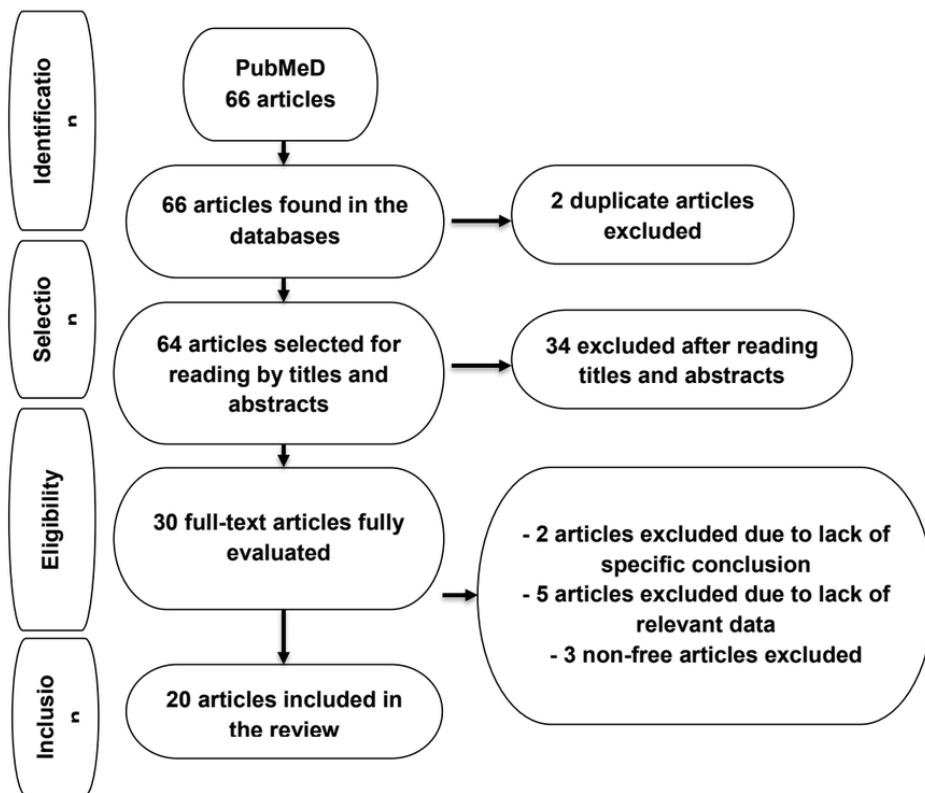


Image 1: Screening process for the selection of articles included in the review.

The issue of fertility after Implanon removal is another critical point discussed in the literature. Most studies indicate that fertility is quickly restored after implant removal, with many women managing to get pregnant within months. However, anxiety about the recovery of fertility can influence the decision to use Implanon, especially among women who wish to become pregnant in the near future. The lack of accurate information about the reversibility of the method can lead to hesitation in using it, which highlights the importance of proper counseling before the implant is inserted.^{15,16}

In addition, the perception that Implanon can affect fertility in the long term can be exacerbated by negative experiences with side effects, such as irregular bleeding. It is therefore essential that healthcare professionals provide clear information about the rapid recovery of fertility after Implanon removal, helping to dispel fears and anxieties that may prevent the use of the method.⁵

Vascular complications, although rare, are a significant concern associated with the use of Implanon. The literature suggests that the use of hormonal contraceptives, including Implanon, may be associated with an increased risk of deep vein thrombosis and pulmonary embolism. Although the incidence of such events is considered to be low, the identification of risk factors, such as a family history of thromboembolic diseases, is crucial when assessing candidates for the use of Implanon. Lack of awareness about the signs and symptoms of vascular complications can lead to late diagnosis and adverse outcomes, reinforcing the need for ongoing education for female users.^{10,14}

The systematic review also highlights the importance of proper medical follow-up for Implanon users, especially those with risk factors for vascular complications. Early detection of problems can improve health outcomes and increase women's confidence in long-term contraceptive methods. Therefore,

promoting effective communication between health professionals and users is key to ensuring that women can make informed decisions about their reproductive health.¹²

Discontinuing the use of Implanon is a recurring theme in the literature, with factors such as menstrual side effects, lack of information and dissatisfaction with the health service being frequently cited as reasons for discontinuing the method. The systematic review reveals that up to 34% of users discontinued using Implanon before the end of the recommended three-year period, with the majority citing the experience of abnormal bleeding as a determining factor. Lack of adequate counseling and negative perceptions of side effects were also identified as significant barriers to continued use of Implanon.^{19,20}

Implementing education and counseling programs that address users' concerns can be an effective strategy to increase acceptance and continuity of Implanon use. The literature suggests that women who receive adequate information about the side effects and reversibility of the method are more likely to continue using Implanon. Therefore, training healthcare professionals to provide quality counseling and creating a supportive environment where users feel comfortable discussing their concerns are essential to improving the experience with Implanon.¹²

Based on the results of the systematic review, it is clear that education and counseling are essential to improve acceptance and continuity of use of Implanon. Health professionals should be trained to provide clear and comprehensive information about the side effects, the reversibility of fertility and the potential risks associated with the use of the implant. In addition, creating a supportive environment where users feel comfortable discussing their concerns can contribute to a better experience with Implanon.^{13,16,18}

The systematic review also suggests the need for continuous monitoring of Implanon users, especially those with risk factors for vascular complications. Early detection of problems can improve health outcomes and increase women's confidence in long-term contraceptive methods. Ultimately, promoting effective communication between health professionals and users is key to ensuring that women can make informed decisions about their reproductive health.

CONCLUSION

The systematic review on Implanon, a long-acting contraceptive method, highlighted its impact on women's reproductive health, addressing aspects such as menstrual cycles, fertility and possible vascular complications. It was observed that menstrual side effects, especially irregular bleeding and amenorrhea, often lead to the discontinuation of Implanon, with dropout rates of up to 48% of users due to these symptoms. Lack of adequate guidance on these changes can increase dissatisfaction, underlining the importance of prior medical advice. With regard to fertility, studies indicate that most women recover their reproductive capacity quickly after removing the device, usually in around two weeks. However, the misconception that Implanon affects fertility in the long term still generates hesitation, especially among women who plan to become pregnant soon, which underscores the need to clarify the reversibility of the method. Although rare, vascular complications such as deep vein thrombosis and pulmonary embolism also require attention, and it is essential to assess thrombotic risks and make users aware of warning signs. Socio-cultural factors and the quality of communication with health professionals significantly affect continuity of use, indicating that a supportive environment and open dialog can facilitate adherence to the method.

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