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Research Article

Pain assessment and its associated factors during insertion of the intrauterine device in Primary Health Care

Avaliação da dor e seus fatores associados durante a inserção do dispositivo intrauterino na Atenção Primária à Saúde

Evaluación del dolor y sus factores asociados durante la inserción del dispositivo intrauterino en la Atención Primaria de Salud

Danyella da Silva Barreto[1], Maria Eduarda de Melo Pereira do Rêgo[1], Alexandre José de Melo Neto[1], Rafael Dias Gonçalves[1], Ianna Gil de Farias Morais[1], Gilka Paiva Oliveira Costa[1]

[1]Universidade Federal da Paraíba – João Pessoa (PB), Brazil.

Abstract

Introduction: The insertion of the intrauterine device is an expected competence for the general practitioner. However, this method faces many barriers to be inserted in health centers such as the lack of professionals' training and women's fear of feeling pain. **Objective:** To evaluate the intensity of pain during the intrauterine device insertion procedure performed by general practitioners in health centers in the metropolitan region of João Pessoa and its association with sociodemographic factors, clinical aspects of women, and medical training. **Methods:** This is a cross-sectional and descriptive study, based on data collected from 16 health centers in the cities of Conde, Caaporã, João Pessoa, and Sapé (state of Paraíba, Brazil) from March to October 2019. Data collection was carried out by individual interview with a structured questionnaire and pain was rated by the Visual Analog Scale. Data were analyzed using Mann-Whitney Test and Pearson's Chi-square Test. **Results:** The study included 139 women aged between 14 and 47 years, whose mean pain was 5.5 for those who were menstruating and 4.6 for those who were not. Mild pain was present in 20.1%; moderate pain, in 38%; and intense pain, in 31.7%. Hysterometry above 7cm, history of use of anti-inflammatory drugs during menstruation, and dysmenorrhea were more present in those who reported intense pain ($p<0.001$). Regarding the qualification of the physician who inserts the intrauterine device, there was no statistical significance in the correlation of intense pain with being a resident ($p=0.268$), time since graduation ($p=0.080$), or technical difficulty encountered ($p=0.065$). **Conclusions:** Therefore, pain was mostly considered as moderate, and IUD insertion is a feasible offer and procedure to be taught and implemented in Primary Health Care.

Keywords: Intrauterine device; Pain; Primary health care.

Corresponding author:
Danyella da Silva Barreto
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Resumo

Introdução: A inserção do dispositivo intrauterino é uma competência esperada para o médico generalista. No entanto, esse método encontra muitas barreiras ao ser inserido nas unidades básica de saúde, como a falta de treinamento dos profissionais e o medo que as mulheres têm de sentir dor. **Objetivo:** Avaliar a intensidade da dor durante o procedimento de inserção do dispositivo intrauterino realizado por médicos generalistas em unidades básicas de saúde na região metropolitana de João Pessoa e sua associação com fatores sociodemográficos, aspectos clínicos da mulher e formação médica. **Métodos:** Estudo transversal e descritivo, com dados coletados em 16 unidades básicas de saúde nos municípios de Conde, Caaporã, João Pessoa e Sapé, no intervalo de março a outubro de 2019. A coleta de dados foi realizada por entrevista individual com questionário estruturado, e a dor foi graduada pela escala visual analógica. Os dados foram analisados utilizando-se os testes de Mann-Whitney e χ^2. **Resultados:** Participaram do estudo 139 mulheres com idade mínima de 14 e máxima de 47 anos, cuja média de dor foi de 5,5 para aquelas que estavam menstruadas e de 4,6 para as que não estavam. A dor leve esteve presente em 20,1%, a dor moderada em 38% e dor intensa em 31,7%. Histerometria acima de 7 cm, histórico de uso de anti-inflamatórios na menstruação e de dismenorreia estiveram mais presentes em quem referiu dor intensa (p<0,001). Quanto à qualificação do médico que insere o dispositivo intrauterino, não houve significância estatística na correlação de dor intensa com o fato de ele ser residente (p=0,268), com o tempo de formatura (p=0,080) nem com a dificuldade técnica encontrada (p=0,065). **Conclusões:** A dor foi considerada pela maioria das mulheres como moderada, sendo uma oferta e um procedimento viável de ser ensinado e inserido na Atenção Primária à Saúde.

Palavras-chave: Dispositivos intrauterinos; Dor; Atenção primária à saúde.

Resumen

Introducción: La inserción del dispositivo intrauterino es una competencia esperada por el médico de cabecera. Sin embargo, este método enfrenta muchas barreras para insertarse en las unidades básicas de salud, como la falta de formación de los profesionales y el miedo que tienen las mujeres a sentir dolor. **Objetivo:** Evaluar la intensidad del dolor durante el procedimiento de inserción del dispositivo intrauterino realizado por médicos generales en unidades básicas de salud de la Región Metropolitana João Pessoa y su asociación con factores sociodemográficos, aspectos clínicos de la mujer y formación médica. **Métodos:** Estudio transversal y descriptivo, con base en datos recolectados en 16 unidades básicas de salud en los municipios de Conde, Caaporã, João Pessoa y Sapé en el rango de marzo a octubre de 2019. La recolección de datos se realizó mediante entrevista individual a través de un cuestionario estructurado y el dolor fue graduado por la Escala Visual Analógica. Los datos se analizaron mediante la prueba de Mann Whitney y la prueba de χ^2. **Resultados:** El estudio incluyó a 139 mujeres entre 14 y 47 años, cuyo dolor medio fue de 5,5 para las que estaban menstruando y de 4,6 para las que no. El dolor leve estuvo presente en el 20,1%, dolor moderado en el 38% y "dolor significativo" en el 31,7%. La histerometría por encima de 7 cm, el antecedente de uso de antiinflamatorios durante la menstruación y la dismenorrea fueron más presentes en las que informaron de "dolor significativo" (p<0,001). En cuanto a la calificación del médico que inserta el dispositivo intrauterino, no hubo significación estadística en la correlación del dolor significativo con ser residente (p=0,268), con el tiempo desde egreso (p=0,080) o con la dificultad técnica encontrada (p=0,065). **Conclusión:** Por tanto, el dolor se consideró mayoritariamente como moderado, siendo una oferta y un procedimiento viable para ser enseñado e insertado en la Atención Primaria de Salud.

Palabras clave: Dispositivos intrauterinos; Dolor; Atención primaria de salud.

INTRODUCTION

In Latin America and the Caribbean, 38% of pregnancies have resulted in abortion[1] and, in Brazil, unintended pregnancy is still a social problem that affects up to 65% of women in some regions, despite public policies aimed at guaranteeing reproductive rights.[2] Unintended pregnancy can lead to abortion under unsafe conditions and poor health care during prenatal care, which are important causes of maternal mortality and two of the priorities in the national policy on comprehensive health care for women's health.[3] Hence, reproductive planning actions are really necessary to guarantee access to the several contraceptive methods, which contemplate various intentions and needs.

The copper intrauterine device (IUD) is available in the Brazilian Unified Health System (SUS) and has proven to be a good contraceptive option due to the lack of regular supply of other contraceptive methods, the forgetting to take contraceptive pills, contraindications of hormonal methods, and the high continuity rate, with an average of 80% in one year.[4] Despite its benefits, in a study conducted in three Brazilian capitals, only 1.7% of the investigated women were using IUD at the time of the interview,[5]

and one of the main factors found for this low percentage of use was the lack of training of physicians and nurses, bureaucracy/excess of tests for the procedure, and the myths/fears that exist regarding the procedure and its regular use.[6]

Another aspect that hinders the search for IUD in Primary Health Care (PHC) is the fear of intense pain during the procedure,[7] which may discourage women from seeking long-term contraceptive methods. Taking this into consideration, we must be aware of the knowledge gaps associated with pain for better counseling and expanding the offer of IUD insertion in PHC. Pain predictors related to both women and the type of IUD inserted have been studied,[8] but it is also necessary to deepen the association with other factors related to medical education and the place of insertion.

IUD is among the contraceptive methods that should be offered and included in PHC;[9] however, its procedure in health centers (*Unidades Básicas de Saúde* – UBS) is little studied and documented in Brazil. In view of the fears and myths of women and health professionals, it is necessary to foster research that deepens the knowledge of the procedures for inserting IUD at UBS so that its offer can be demystified and expanded.

Therefore, we aim to evaluate the intensity of pain during the IUD insertion procedure performed by general practitioners at UBS in the metropolitan region of João Pessoa and its association with sociodemographic factors, clinical aspects of women, and medical training.

METHODS

This is a cross-sectional, exploratory, and descriptive study conducted with data collected from 16 UBS in the municipalities of Conde, Caaporã, João Pessoa, and Sapé, in the state of Paraíba, Brazil, from March to October 2019, regarding the IUD insertion procedure.

The study population consists of all women who had an IUD inserted at these UBS during the aforementioned period, with reproductive age between ten and 49 years, with no prior sample calculation of this population. A total of 139 women composed the sample, with eligibility criteria from the World Health Organization (WHO)[4] for the use of IUD and who agreed to participate in the research. Patients with cognitive impairment, severe psychiatric illnesses, neurological alterations, or sequelae that impair information collection were not selected for the research.

The 16 UBS selected for team training and for undertaking the research were not defined in a probabilistic way, and were primarily chosen because they had residents of Family and Community Medicine (RFCM) or physicians linked to the More Doctors Program (*Programa Mais Médicos* – PMM) from municipalities interested in training their teams for IUD insertion. The training was conducted by professors and preceptors from the Family and Community Medicine (FCM) residency at Universidade Federal da Paraíba in partnership with the municipalities.

After training, the team began to offer the procedure, and the interested women were first seen for clinical evaluation and clarification on the method and the research. In view of the maintenance of women's interest, a date was scheduled for the procedure, when they would underwent a new evaluation to rule out the possibility of pregnancy (by menstruation or pregnancy test), clarify doubts, sign the term of consent regarding adverse effects and the risks of the method, and the informed consent form of the research. Then, they were clinically evaluated and the IUD was inserted shortly after.

Data collection was performed by individual interview, with a structured and non-validated questionnaire, applied immediately after the IUD insertion by one of the members of the team involved in

the procedure: physicians, nurses, or students. Data, such as age, parity, marital status, level of education, contribution to household income, menstrual cycle, history of dysmenorrhea, use of anti-inflammatory drugs for women, pain, among others, were collected. In addition, data on the professionals who performed the procedure were collected, such as information about their medical training and the difficulties reported by them, to be correlated with the pain reported by the women.

Data from the forms filled out in the interviews were entered by the students linked to the research, recorded, and organized in an Excel spreadsheet with subsequent export for statistical analysis in the Statistical Package for the Social Sciences (SPSS) software, version 20.0. Initially, the frequency of the data for each question was analyzed in search of anomalous answers. When conflicting answers were found, the interview forms were consulted to review the data.

After this phase of data verification, the variables were prepared for analysis. Dichotomous questions were used according to data collection, and there was no need for modification.

This assessment of pain at the insertion of IUD was performed using the Visual Analog Scale (VAS). For analysis and classification purposes, this variable produced another two. In the first, an ordinal variable was constructed for pain, which considered no pain (0), mild pain (1–3), moderate pain (4–6), and intense pain (≥7). In the second, dichotomous in nature, the pain scores ≥7 (high pain score) or <7 (low pain score) were adopted. The value 7 was chosen based on a research conducted in 2018, in which the value was established for being considered clinically significant.[10]

Statistical analysis was descriptively performed, with observation of frequency and measures of central tendency (mean, mode, and median), as well as inferential analysis, using the Pearson's Chi-square (χ^2) and Mann-Whitney tests. To this end, the dichotomous variable on intense pain was considered as an outcome variable, and the others were taken as predictors for the search for associations.

The project was submitted to the Research Ethics Committee of the Medical Sciences Center of Universidade Federal da Paraíba (UFPB) and approved according to Opinion No. 3.239.798. The participants signed an informed consent form and were informed that they could withdraw their name at any time. The collected information was kept confidential and anonymous. Anonymized data will be available upon request from the corresponding author and presentation of a research project with approval by the ethics committee. The population did not participate in the planning or conduct of the research. The study did not receive external funding.

RESULTS

Characterization of the sample

A total of 139 women participated in the study, aged between 14 and 47 years and an average of 26 years, among whom 80 (57.6%) came from the capital and 59 (42.4%), from the metropolitan region of João Pessoa; 98 (70%) were in stable relationships and 82 (59.7%) held a high school degree; 74 (54%) contributed to household income and 122 (87.8%) had one or more children.

We performed an analysis of the women's profile and the pain score, but there was no statistical correlation between intense pain and several characteristics analyzed, such as place of origin (p=0.536), marital status (p=0.429), level of education (p=0.636), contribution to household income (p=0.645), and nulliparity (p=0.368) (Table 1).

Table 1. Profile of women participating in the research and association with intense pain.

	Total (n=139) Median or n (%)	Intense pain – YES (n=44) Median or n (%)	Intense pain — NO (n=95) Median or n (%)	p-value
Age (years)	26.0	26.0	26.0	0.822[1]
Place of origin				
Capital	80 (57.6)	27 (61.4)	53 (55.8)	0.536[2]
Metropolitan Region	59 (42.4)	17 (38.6)	42 (44.2)	
Marital status				
In a relationship	98 (70.5)	33 (75)	65 (68.4)	0.429[2]
Single	41 (29.5)	11 (25)	30 (31.6)	
Level of education				
Some high school	56 (40.3)	19 (43.2)	37 (38.9)	0.636[2]
High school	83 (59.7)	25 (56.8)	58 (61.1)	
Family income				
Contributes	75 (54.0)	25 (56.8)	50 (52.6)	0.645[2]
Dependent	64 (46.0)	19 (43.2)	45 (47.4)	
Parity				
Nulliparous	17 (12.2)	7 (15.9)	10 (10.5)	0.368[2]
One or more children	122 (87.8)	37 (84.1)	85 (89.5)	
Hysterometry				
<7.5 cm	71 (51.1)	13 (29.5)	58 (61.1)	**0.001**[2]
≥7.5 cm	68 (48.9)	31 (70.5)	37 (38.9)	
History of dysmenorrhea				
Yes	82 (59)	35 (79.5)	47 (49.5)	**0.001**[2]
No	57 (41)	9 (20.5)	48 (50.5)	
History of NSAID use during menstruation				
Yes	18 (12.9)	12 (27.3)	6 (6.3)	**0.001**[2]
No	121 (87.1)	32 (70.7)	89 (93.7)	
History of analgesic use during menstruation				
Yes	28 (20.1)	13 (29.5)	15 (15.8)	0.060[2]
No	111 (79.9)	31 (70.5)	80 (84.2)	
Menstruated				
Yes	15 (10.8)	6 (13.6)	9 (9.5)	0.462[2]
No	124 (89.2)	38 (86.4)	86 (90.5)	

[1]Mann-Whitney test; [2]Pearson's Chi-square (χ^2) test.

Pain ranged from 0 to 10 and was present in most patients, but 13 (9.4%) reported no pain manifestation (Figure 1). On the day of IUD insertion, only 15 (10.8%) women were menstruating. The mean pain score was 5.5 in menstruating patients and 4.6 in patients who were not menstruating, which classifies it as moderate, with an intense pain level present in 44 (31.7%) women. There was no statistical difference in pain score between having menstruation or not during the procedure.

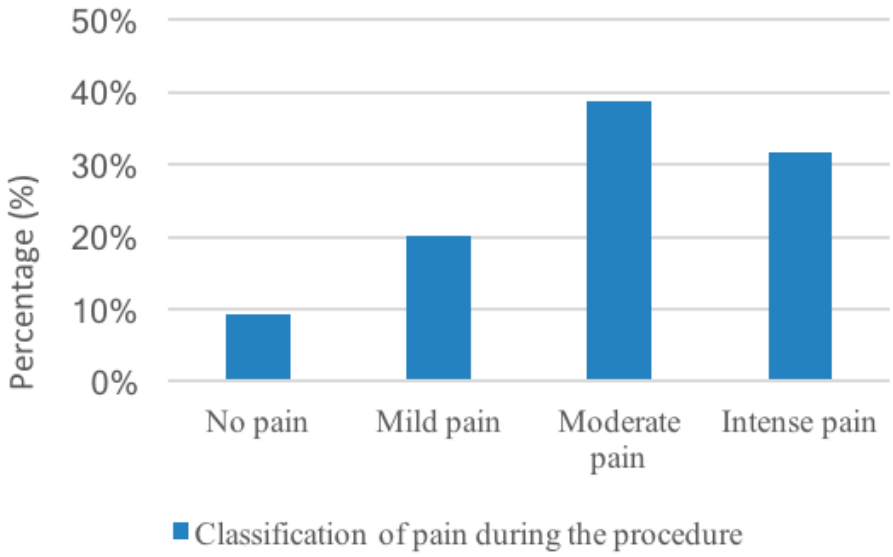

Figure 1. Descriptive analysis of pain intensity according to the Visual Analog Scale.

Clinical aspects

In the description of women's clinical characteristics, we found aspects that correlated with the presence of pain. The average hysterometry was 7.4 cm and, in 68 (48.9%) participants, the measurement was greater than or equal to 7.5 cm. Thus, women with intense pain are more associated (1.8 times) with hysterometry above 7.5 cm, when compared with the pain-free group (p=0.001).

The history of dysmenorrhea was present in 82 (59%) women. In this group, there was evidence of a correlation between intense pain and a positive history of dysmenorrhea (p=0.001). The intense pain group was 1.6 times more associated with women with dysmenorrhea compared with the pain-free group. Of the women who used non-hormonal anti-inflammatory drugs (NSAIDs) in the last three menstrual cycles, the group with intense pain was 4.5 times more associated with the use of NSAIDs during menstruation when compared with the pain-free group (p=0.001). When evaluating the use of analgesics during menstruation, statistical significance was not maintained (p=0.060); however, the intense pain group was more associated with women who used analgesics during menstruation.

Characteristics of physicians who inserted the intrauterine device

The RFCM inserted 60 (43.2%) IUDs, and the others, a group consisting of specialists in FCM or general practitioners, performed 79 (56.8%) procedures (Table 2). Among the physicians, 72 (51.8%) had worked in the profession for two years or more, and 34 (24.8%) reported technical difficulties at the time of the procedure.

Regarding the qualification of the physician who inserts the IUD, there was no statistical significance in the correlation of intense pain with being a resident (p=0.268), time since graduation (p=0.080), or technical difficulty encountered (p=0.065). The mean pain of women with whom the physicians reported difficulty was 6.1, and that of women with whom there was no difficulty reported by the professionals was 5. There was no correlation between intense pain and technical difficulty (p=0.065).

Table 2. Profile of physicians participating in the research and correlation with intense pain.

	Total (n=139) (%)	Intense pain – YES (n=44) (%)	Intense pain – NO (n=95) (%)	p-value
Participating physicians				
Resident physician				
Yes	60 (43.2)	22 (50.0)	38 (40)	0.268[2]
No	79 (56.8)	22 (50.0)	57 (60)	
Time since graduation				
Up to 2 years	67 (48.2)	26 (59.1)	41 (41.2)	0.080[2]
>2 years	75 (51.8)	18 (40.9)	54 (56.8)	
Technical difficulty				
Yes	34 (24.8)	15 (34.9)	19 (20.2)	0.065[2]
No	103 (75.2)	28 (65.1)	75 (79.8)	

In addition to pain symptoms, other complaints were investigated seeking to have a broader view of immediate adverse effects during insertion, and these unpleasant symptoms were reported by 32 (21.05%) women (Figure 2). Among them, the patients reported nausea, vomiting, dizziness, sweating, and tremor. As the most prevalent symptomatology, nine (28%) had sweating and six (19%) had dizziness. Pallor or fainting were also investigated, but there were no reports of these symptoms.

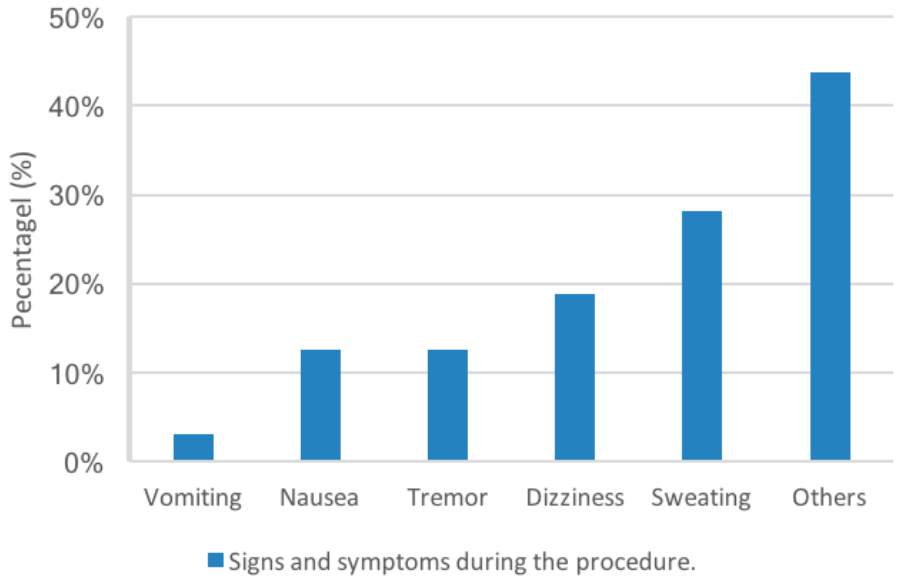

Figure 2. Signs and symptoms, other than pain, during the procedure.

DISCUSSION

Women had an average age of 26 years, and most were primiparous. Nulliparous women were small in number, both because of the lower demand[11] and because of possible misinformation of the FCM physicians regarding safety of IUD in nulliparous women.[12]

The mean pain score during IUD insertion was 4.6 in patients who were not menstruating, which classifies the mean pain as moderate. In the literature, in a report of a procedure performed in a reproductive planning clinic, pain was 4, also considered moderate. There is a similarity between pain reported in a secondary care outpatient clinic and in primary health care, as is the case of the present study.[10,13]

Pain assessment during gynecological procedures has varied according to more subjective aspects, such as anxiety before the procedure and the time between the procedure and pain assessment,[10,13] and there is no relationship between menstruation and ease of inserting the IUD. Nonetheless, it is common in clinical practice for professionals to refuse to insert the IUD in women who are not menstruating, claiming greater difficulty and pain during the procedure. In our analysis, most women were not menstruating and, among them, the mean pain was compatible with moderate pain; hence, there was no association between pain and being menstruated at the time of the procedure. Our result is compatible with another study whose authors evaluated pain and difficulty predictors, and there was no correlation of these aspects with menstrual history.[13] Thus, the absence of menstruation cannot be an impediment to inserting IUD and expanding its access in PHC.

Parity has been addressed in the literature, as well as dysmenorrhea, as an important risk factor for increased difficulty during the insertion of IUD, higher IUD expulsion rates, and greater pain during the procedure.[12,14,15] Higher pain levels were present in women with lower parity or absence of vaginal delivery and in technically more difficult procedures, but when multivariate analysis was performed, parity had no statistical significance, only remaining the association with anxiety and pain anticipation.[16] In the results of this research, there was no association between pain and nulliparity when comparing these women with those with one or more children.

We identified an association between dysmenorrhea and intense pain during the IUD insertion procedure at the UBS, as dysmenorrhea has been pointed out in the literature as one of the main factors predisposing to intense pain in the insertions performed in secondary care services, whether in multiparous or nulliparous women.[17,18]

The recurrent use of NSAIDs during the menstrual period is related to intense pain during the IUD insertion. Overall, women who use more NSAIDs are those who experience more pain during menstruation and probably have dysmenorrhea that is difficult to control with analgesics. Therefore, it is essential to question, during the screening of women able to have IUD inserted, about the recurrent use of anti-inflammatory drugs in menstrual cycles and, based on this, to establish their highest risk of intense pain during the procedure.

To date, there is no concrete evidence to support the use of analgesia methods that facilitate the insertion. Some formulations of lidocaine, glycerin trinitrate (gel), ibuprofen, naproxen, and tramadol were effective in reducing pain, but in specific groups of women.[19-23] Therefore, the pain support provided may be offered both in an outpatient clinic of specialized network and in PHC, and cannot constitute a barrier to expanding access at UBS.

The average size of the uterus was 7.4 cm, and above-average hysterometry was associated with greater pain during device insertion. However, this result contrasts with the literature, according to which uterine length shorter than the median (6.4 cm) was associated with difficult insertion. As a result, insertion difficulties decreased with each increasing millimeter in the total length of the uterus, but only dysmenorrhea was a predictor factor.[10,13]

Regarding the professionals, there was no relevant correlation between pain score and having a medical residency or time since graduation. This generates debate about the feasibility of IUD insertion by the general practitioner and professionals at different times of training, and this procedure in PHC is a

feasible method for newly-graduated resident physicians, regardless of residency, provided that they are well supervised in the training.

We found no correlation between technical difficulty and intense pain. For some scholars, the technical difficulty during IUD insertion has been evaluated as a risk factor for cases of intense pain in both nulliparous and multiparous women,[16] but in a multivariate analysis, only anxiety and pain anticipation had statistical power.[10]

Finally, data found on PHC, when compared with results of specialized services, reflect the feasibility of offering the method in PHC outpatient clinics. The provision at this level of care favors women's access to long-term contraceptive methods, considering that there are limitations in the assistance to secondary care, as verified in investigations conducted in a gynecology outpatient clinic, in which it was reported that only 16.1% of adolescents interested in inserting IUD returned to the outpatient clinic and 56.7% reported not returning due to social barriers.[24,25]

As study limitations, we mention the non-probabilistic choice of the UBS that participated in the research, as the collection was restricted to some municipalities in Paraíba, and the absence of variables, such as pre-insertion anxiety, reported in the literature as a predictor of pain. Furthermore, those who performed the procedure also participated in the collection and there are few variables about the physicians that allow a more detailed correlation to be made. Nevertheless, given the methodological limitations of our study and the absence of calculations of the magnitude of the associations found, we understand that further investigations are necessary, with greater methodological rigor to confirm and characterize the associations verified in this study.

CONCLUSION

Pain was considered moderate by most women and was associated with a previous history of dysmenorrhea, use of NSAIDs during menstruation, and hysterometry above 7.5 cm. There was no correlation between intense pain and the menstrual cycle or nulliparity, nor was there any association with the fact that the physician had medical residency, the time since graduation, or their difficulty in inserting the device.

All in all, we conclude that these are findings that reinforce the feasibility of inserting the IUD in PHC, in addition to discussing an aspect feared by women, which is pain during the procedure. Defining the predictors of pain in the IUD insertion is an important task to qualify the training of PHC professionals and, consequently, to expand the access of women to IUD.

CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTIONS

DSB: Conceptualization, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. MEMPR: Conceptualization, Data Curation, Formal Analysis, Writing – original draft. AJMN: Conceptualization, Formal Analysis, Writing – review & editing. RDG: Conceptualization, Data Curation, Writing – original draft. IGFM: Conceptualization, Data Curation, Writing – review & editing. GPOC: Formal analysis, Writing – review & editing.

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