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Original Research

Perception about Intrauterine Devices, Prior to and After Placement—Prospective Survey

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Abstract

Background: Intrauterine devices are effective long-lasting contraceptive methods with a high rate of satisfaction among users. This study aimed at determining women's perception of intrauterine contraception, before and after its placement, and assessing the impact of contraceptive counseling on that perception. **Methods**: Descriptive prospective study, carried out through a questionnaire, regarding women who underwent a Family Planning (FP) consultation in a Tertiary Hospital Center, from September 1, 2020 to August 31, 2021. **Results**: 108 women were included in this study. Contraceptive methods used prior to the consultation were mainly hormonal (62%) and barrier (30%). The main reason for choosing the intrauterine device was the advice given by the physician or other health professional (87%). The greatest concern of women regarding this method was the placement process (27%), especially with regard to pain associated with the procedure (50%). 79% of women considered that they were fully clarified prior to device placement. After placement, mean pain intensity was 3.94 (SD = 2.273; Visual Analogue Scale), and it was found to be lower than women's perception prior to placement. 73% thought the process was simpler than expected and 88% would advise the method to other women. All users reported having been informed about possible complications or adverse effects associated with this contraceptive method. **Conclusions**: Results indicate that the choice of long-acting contraception is mainly associated with correct medical advice. Most of the women were clear after family planning consultation, which made the intrauterine device placement easier and less painful than expected.

Keywords: contraceptive methods; family planning; intrauterine devices

1. Introduction

It is estimated that around 30% of pregnancies are unplanned. Long-acting reversible contraceptives (LARC) are methods that allow effective contraception for a long period of time, without the need for user collaboration. According to the ACOG guidelines, they consist of methods administered with a periodicity of more than 12 weeks [1]. LARCs, namely intrauterine devices, may play a broader role in contraception, and their increased use may help reduce unwanted pregnancies [2,3]. Intrauterine devices (IUD) include the copper-containing IUD and the levonorgestrel-releasing intrauterine device (LNG-IUD). There are three types of LNG-IUD: one with 52 mg levonorgestrel (Mirena®/Levosert®), which releases 20 micrograms/day of LNG; one with 19.5 mg levonorgestrel (Kyleena®), which releases 17.5 micrograms/day; and the IUD with 13.5 mg levonorgestrel (Jaydess®), releasing 14 micrograms/day of levonorgestrel [4–7]. The copper device acts mainly as a foreign body, while the LNG-IUD works by releasing hormone locally. The copper device's mechanism of action consists of: cytotoxic inflammatory reaction in the endometrium, by biochemical and morphological alterations induced by copper, sperm and oocyte toxicity and alterations in tubal motility [8]. The LNG-IUD works through the following mechanisms: cervical mucus thickening, inhibition of fertilization by increased production of glycodelin A, glandular atrophy and partial inhibition of follicular development and ovulation [8,9].

They are one of the most effective forms of long-lasting reversible contraception, with failure rates of less than 1%, for both perfect and typical use [10]. IUDs have high acceptability and continuation rates, which are around 70% [11]. ACOG considers the IUD to be a first-line contraception, even in adolescence and in nulliparous women [1,12].

Data on women's perception of the IUD and its placement are limited.

This study's main goal is to determine the perception of women about intrauterine devices, before and after their placement. Its second goal is to verify the impact of contraceptive counseling in this perception about intrauterine devices.

2. Materials and Methods

Descriptive prospective study, carried out through a questionnaire, with women who underwent a Family Planning (FP) consultation at a tertiary hospital, from September 1, 2020 to August 31, 2021.

The inclusion criteria for the study consisted of the desire to have an intrauterine system (IUS) and being able to read Portuguese. The exclusion criterion was not meeting the eligibility criteria for placement of the method, ac-

cording to USA Centers for Disease Control (CDC) guidelines: pregnancy (diagnosed or suspected); uterine malformations; uterine abnormalities with distortion of the cavity; active Pelvic Inflammatory Disease (PID) (and up to 3 months after cure); uterine bleeding of unclear etiology; trophoblast malignant disease; Wilson's disease or copper allergy; breast cancer with positive progestin receptors (up to 5 years) [13].

Women were referred from other maternity consultations or sent from primary care. FP consultation and IUD placement were free. IUDs were placed by a physician.

Those interested in IUD placement were informed about the available types and placement procedure, and the verification of eligibility criteria was carried out. Contraceptive counseling provided by several medical professionals was identical. Insertion of devices followed the manufacturer's specifications. Local analgesia was not administered during the procedure.

Two paper questionnaires were completed on the day of the consultation: prior to and after device placement. Since there are no standardized questionnaires available to determine women's perception of the IUD, specific questionnaires were developed for this study.

Demographic data were obtained through the computer system.

The constitution and manipulation of the database, as well as the statistical analysis, were performed using the SPSS program version 23 (IBM Corp., Armonk, NY, USA). A descriptive analysis of the distribution of patients was carried out, considering various sociodemographic variables. Categorical variables are presented as frequencies and percentages and continuous variables as means and standard deviations or medians and interquartile ranges. The test for normal data distribution was performed using the Shapiro–Wilk test or by analyzing the values of skewness and kurtosis. Paired comparisons were performed with the use of a paired Student's *t*-test or paired-sample test for continuous variables. Categorical variables were compared with the use of Fisher's exact test or the chi-square test, as appropriate. All reported *p* values are two-tailed, with a *p* value of 0.05 indicating statistical significance.

3. Results

A total of 108 women who agreed to answer the questionnaires, were included in this study. Of these, none was excluded, as all of them met the eligibility criteria for IUD placement.

46 LNG-52 (42.6%), 18 LNG-19.5 (16.7%), 37 LNG-13.5 (34.3%) and 7 copper IUDs (6.5%) were placed.

With regard to women's age, the class with the highest number of consultations was 30–34 years (21.3%). The distribution by age groups can be seen in Fig. 1.

The demographic characterization of the sample included in the study can be seen in Table 1.

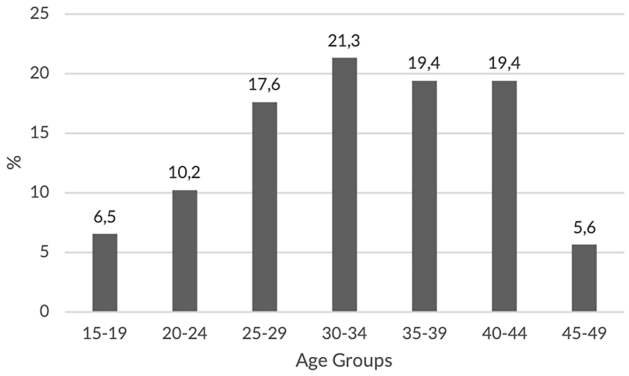

Fig. 1. Distribution of women included in the study by age groups.

93% of the women were Portuguese. Most women were single at the time of the family planning consultation. With regard to the level of education, 41% of women completed secondary education and 35% completed higher education. Unskilled female workers, students and administrative staff are the main categories to use this consultation for IUD placement.

The average parity of this sample was 1.22 (SD 1.113), the majority being multiparous (65.7%) and 12% having three or more children.

The main contraceptive methods used prior to consultation were hormonal (62%) and barrier (29.6%)—Fig. 2. 5% did not use contraception and 3.8% used natural methods (withdrawal or calendar method).

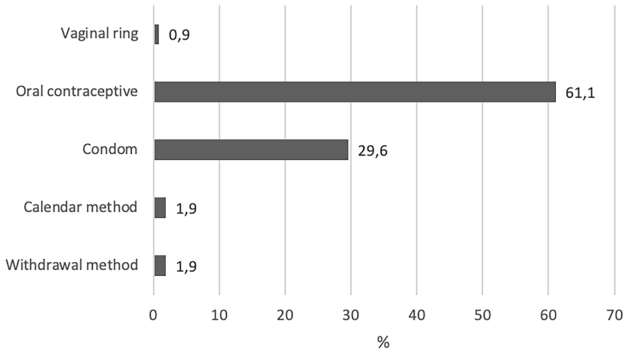

Fig. 2. Contraception used prior to FP consultation.

The first questionnaire was carried out prior to IUD placement. Women responded that the main reason for choosing the intrauterine device was the advice given by the physician or other health professional (87%). In 8.3% of cases, it was due to personal research and in 4.6% to family or friends' advice. Women's main concern regarding this method was the placement process (26.9%). Others reported fear of complications (23.1%), becoming pregnant (18.5%), gaining weight (9.3%) or not adapting to the method (15.7%). 15% of women did not have any concerns

Table 1. Sociodemographic characterization.

Demography	No. (%)
Nationality	
Portuguese	100 (92.6)
Brazilian	4 (3.7)
Angolan	1 (0.9)
Cape-Verdean	1 (0.9)
Venezuelan	1 (0.9)
Chinese	1 (0.9)
Live as a couple	
Yes	67 (62.0)
Marital status	
Single	61 (56.5)
Married	40 (37.0)
Divorced	7 (6.5)
Level of education	
Basic Education – 1st Cycle	2 (1.9)
Basic Education – 2nd Cycle	4 (3.8)
Basic Education – 3rd Cycle	19 (18.3)
Secondary Education	43 (41.3)
Higher Education	36 (34.6)
Profession	
Senior Managers of Public Administration, Managers and Senior Managers of Companies	1 (1.0)
Specialists in Intellectual and Scientific Jobs	11 (10.7)
Intermediate Level Technicians and Workers	10 (9.7)
Administrative Staff, Services and similar	17 (16.5)
Farmers, Workers, Craftsmen and other Skilled Workers	13 (12.6)
Military and Police Forces	1 (1.0)
Unskilled workers	20 (19.4)
Unpaid housework	2 (1.9)
Student	17 (16.5)
Unemployed	11 (10.7)
Parity	
0	37 (34.3)
1	26 (24.1)
2	32 (29.6)
3	11 (10.2)
4	1 (0.9)
5	1 (0.9)

about this contraceptive method. Regarding the placement process, they mainly mentioned fear of pain associated with the procedure (50%) or other associated symptoms, such as nausea or lipothymia (1.9%). 29% were afraid of complications during placement, such as bleeding or infection. 27% had no concerns about the placement process.

They thought that the mean degree of pain associated with the procedure would be 5 (SD 2.187), assessed using a visual analogue scale (VAS).

During the consultation, there were no complications associated with the placement of the device, namely uterine perforation.

The second questionnaire was carried out after IUD placement. After placement, mean pain intensity was 3.94 (SD = 2.273; VAS), and it was found to be lower than the perception of women before placement ($p = 0.002$) (Fig. 3).

99% of users reported that there was enough information about the inserted IUD and adverse effects associated with this contraceptive method. 79% of women considered that they were fully clarified prior to device insertion, regarding the placement method and associated complications. 19.5% thought they were not completely clarified. 73.1% considered that the process was simpler than expected, and 17.6% said that it corresponded to what was

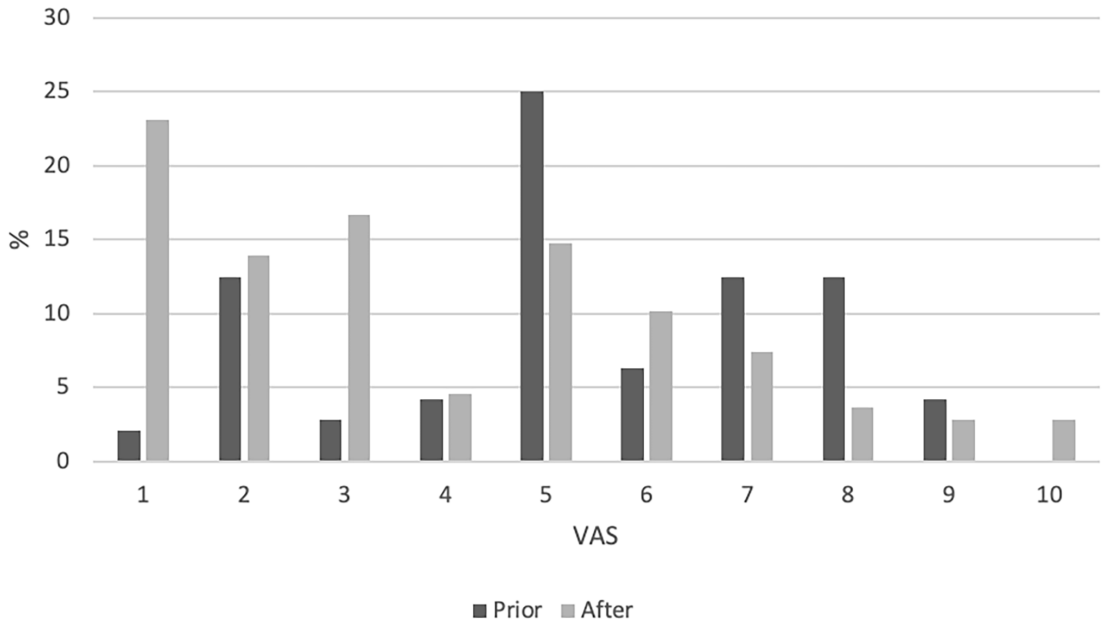

Fig. 3. Pain prior to and after IUS placement.

expected after counseling. Only 8% of the sample considered that the whole procedure was worse than they had expected. 88% would advise the method to other women.

The perception of correct contraceptive counseling was associated with a lower risk of pain (≤5 on VAS) when placing the intrauterine device (p = 0.043, OR 2.720 [1.405–5.265]).

The expectation of high pain (>5 on VAS) before the procedure was associated with higher pain at device placement (≥5 VAS) (p = 0.006; OR 2.431 [1.295–4.566].

4. Discussion

The IUD is one of the preferred LARCs, being used by around 14% of women of reproductive age in Europe [14]. In Portugal, it has a similar rate of use, being used by 12% of women who resort to contraceptive methods [15].

93.5% opted for LNG-IUD versus 6.5% copper IUD. This choice may be associated with the non-contraceptive benefits of levonorgestrel, especially LNG-52: treatment of abnormal uterine bleeding; indicated for women treated with anticoagulants or hemorrhagic diastasis (increases hemoglobin levels and quality of life); dysmenorrhea treatment; treatment/prophylaxis of simple endometrial hyperplasia; treatment of symptoms associated with Endometriosis/Adenomyosis; endometrial protection during estrogen or tamoxifen therapy; it seems to decrease the risk of endometrial, ovarian and colorectal cancers [16,17].

The IUD was chosen mainly by women between 30 and 34 years old. These data do not correspond to the age presented in the last study on contraceptive practices in Portuguese women, which states that the IUD is mainly chosen in the age group between 40 and 49 years old [15]. This may reveal a trend towards an earlier use of this method.

Most of the women included in the study were educated, having completed secondary or higher education. These data are compatible with other studies carried out [15,18].

The IUD continues to be used more often in multiparous women. This fact is often related to medical advice. A study carried out revealed that only 66% of members of the American College of Obstetricians and Gynecologists consider the IUD to be an adequate contraception in nulliparous women [19]. The main barriers mentioned by doctors regarding its use in nulliparous women are: fear of pelvic inflammatory disease, difficulty in insertion and/or concern with fertility [20]. However, a recent review found that insertions are well-tolerated and successful in this group of women [21]. The latest international guidelines state that the IUD is an appropriate method and can be used as a first line in this group of women [1].

Despite all the information available, 5% did not use contraception prior to consultation. Although surprising, this fact is in line with the available literature. 3.8% of women used natural methods (withdrawal or calendar method). This percentage is relatively higher than that reported in the last study carried out in the country (0.7%) [7]. Currently, there are no studies on this topic, but several press articles have referred to this trend in the millennial generation.

In this study, the primary reason for choosing the IUD was the advice given by the physician or other health professional. Correct counseling and high-quality interpersonal communication seem to be associated with better acceptance, satisfaction, and IUD continuation [22].

The vast majority of users considered that there was no lack of information about the inserted IUD, adverse effects,

placement method and associated complications. Actively informing women about the benefits, risks, and frequent adverse effects of IUDs appears to improve consideration and acceptance of the method [23].

The process was simpler or corresponded to what was expected in 91% of cases. This is an important outcome to be mentioned, as we did not find these findings in other studies.

The main concern of women regarding this method was the placement process, especially with regard to the pain associated with the procedure. Pain was significantly less than expected by users. The perception of correct contraceptive counseling was associated with a lower risk of pain when placing the intrauterine device. Detailed medical advice regarding contraceptive methods appears to decrease pain intensity upon IUD placement [24]. The perception of pain is influenced by the patient's relationship with the physician [25–27]. One of the risk factors associated with increased pain intensity with gynecological procedures is the prediction a high level of pain prior to the procedure [28,29]. There is still no explanation for this finding in the literature.

Our IUD placement protocol does not include the administration of analgesics. However, the latest Cochrane review demonstrated modest benefit in reducing pain with topical lidocaine, tramadol, or naproxen *per os*. Ibuprofen, diclofenac and ketorolac did not demonstrate significant pain reduction [30,31]. Although the perception of users about the placement of an intrauterine device was generally quite favorable, the analgesics mentioned above can be a useful approach in improving the results.

The strength of this study is that it is prospective. This reduces possible bias as the data was collected in real time. The results can be considered reliable and representative for our population, providing an opportunity to learn about and improve family planning and increase the use of LARCs.

Its limitation is that all patients are from the central region of the country and this population may not be generalizable to the rest of the country.

5. Conclusions

This study adds information regarding the perception of women about the intrauterine device, prior to and after its placement. To date, as far as we are concerned, there is no similar prospective study.

The choice of an intrauterine device as a contraceptive method is mainly associated with correct medical advice. The majority of women demonstrated to be clear after the family planning appointment. This fact made the procedure less painful than expected.

The process of placing the intrauterine device is simpler than women think before consultation.

Contraceptive counseling plays a major role in acceptance and good tolerance when placing the intrauterine device.

Author Contributions

Conceptualization—AVG, ISS and MCA; methodology—AVG and ISS; software—AVG; validation—AVG ISS and MCA; formal analysis—AVG and ISS; investigation—AVG; resources—AVG; data curation—AVG; writing—original draft preparation—AVG, ISS and MCA; writing—review and editing—AVG, ISS and MCA; visualization—AVG, ISS and MCA; supervision—ISS. All authors have read and agreed to the published version of the manuscript.

Ethics Approval and Consent to Participate

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the 2013 Helsinki Declaration of the World Medical Association(approval number: No 270/CES). The authors declare having followed the protocols in use at their working center regarding patients' data publication. Informed consent was obtained from all subjects involved in the study.

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Conflict of Interest

The authors declare no conflict of interest.

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