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Papaya-based pelvic trainers: a low-cost innovative model for IUD insertion training

Modelos de simulação pélvica com mamões: uma abordagem inovadora e acessível para o treinamento de inserção de dispositivo intrauterino

Modelos de simulación pélvica com papayas: um enfoque inovador y accesible para el entrenamiento en la inserción de dispositivos intrauternos

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Abstract

Problem: The copper intrauterine device (IUD) is one of the most effective contraceptive strategies. It is a long-acting reversible method, whose effect lasts for 12 years and does not depend on the woman's action to guarantee its effectiveness. However, despite being widely distributed by the Unified Health System, there is low adherence to it; the choice of contraceptive methods with efficacy conditioned on their perfect use is more prevalent. There are several barriers to this situation, one of which is the reduced offer of the contraceptive insertion by family health teams. Therefore, expanding access to effective family planning through the development and implementation of multiplier training workshops for IUD insertion, with low operational costs and easily reproducible, was the strategy adopted. **Methods:** Two steps were carried out. First, a theoretical explanation was made covering the characteristics of contraceptive methods and the approach to family planning based on the Patient-Centered Clinical Method. Then, the procedure technique was demonstrated in videos and subsequently applied to the pelvic simulation model with papayas. **Results:** The acquisition of skills and competencies was assessed subjectively, with feedback from participants reporting confidence in implementing and executing IUD insertion, and objectively, with the actual inclusion of this procedure in their routines in primary care units. **Conclusions:** It is understood that the lack of qualified professionals to offer and insert the copper IUD contributes to the low prevalence of use of the method in Brazil, which is around 2%. The training in papayas represents a low-cost and effective way to train doctors and nurses, allowing the replication of this experience and, consequently, more people having easier access to effective and safe methods of contraception.

Keywords: Intrauterine devices; Family practice; Primary health care; Reproductive rights; Education, continuing.

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Resumo

Problema: O dispositivo intrauterino (DIU) de cobre é uma das estratégias contraceptivas mais eficazes. Trata-se de um método reversível de longa duração, com validade de 12 anos, e que não depende da ação da mulher para garantia da eficácia. Porém, apesar de ser amplamente distribuído pelo Sistema Único de Saúde, há baixa adesão a ele; a escolha por métodos anticoncepcionais com eficácia condicionada ao seu uso perfeito é mais prevalente. Constatam-se diversas barreiras para esse quadro, como a reduzida oferta para inserção do contraceptivo por parte das equipes de saúde da família. Portanto, ampliar o acesso a um planejamento familiar eficaz por meio do desenvolvimento e da realização de oficinas de formação de multiplicadores para inserção de DIU, com baixo custo operacional e facilmente reproduzível, foi a estratégia adotada. **Método:** Oficina realizada em duas etapas. Primeiramente, fez-se uma explanação teórica abarcando as características dos métodos anticoncepcionais e a abordagem do planejamento familiar baseada no método clínico centrado na pessoa. Na segunda etapa, a técnica do procedimento foi demonstrada em vídeos, sendo aplicada posteriormente no modelo de simulação pélvica com mamões. **Resultados:** A aquisição de habilidades e competências foi avaliada de maneira subjetiva, com *feedback* dos participantes relatando segurança para implementar a inserção de DIU, e objetiva, com a inclusão desse procedimento em sua rotina nas unidades básicas de saúde. **Conclusão:** Entende-se que a falta de profissionais qualificados para a oferta e inserção do DIU de cobre contribui com a baixa prevalência de uso do método no Brasil, que gira em torno de 2%. O treinamento em mamões representa uma maneira pouco custosa e bastante efetiva para a capacitação de médicos e enfermeiros, permitindo a multiplicação dessa experiência e, consequentemente, que mais pessoas tenham acesso facilitado a métodos eficazes e seguros de contracepção.

Palavras-chave: Dispositivos intrauterinos; Medicina de família e comunidade; Atenção primária à saúde; Direitos sexuais e reprodutivos; Educação continuada.

Resumen

Problema: El dispositivo intrauterino de cobre (DIU) es una de las estrategias anticonceptivas más efectivas. Es un método reversible de larga duración, cuyo efecto se prolonga por un período de doce años y no depende de la acción de la mujer para garantizar su eficacia. Pero a pesar de ser ampliamente distribuido por el Sistema Único de Salud, existe baja adherencia al mismo; prevalece la elección de métodos anticonceptivos cuya eficacia está condicionada a su perfecto uso. Existen varias barreras para esta situación, una de las cuales es la reducida oferta de inserción de este anticonceptivo por parte de los equipos de salud de la familia. Por lo tanto, la estrategia adoptada fue ampliar el acceso a una planificación familiar efectiva a través del desarrollo y realización de talleres de capacitación multiplicadora para la inserción del DIU, con bajos costos operativos y fácilmente reproducibles. **Método:** Se realizaron dos etapas. En primer lugar, se realizó una explicación teórica que abarca las características de los métodos anticonceptivos y el abordaje de la planificación familiar basado en el Método Clínico Centrado en la Persona. En la segunda etapa se demostró en videos la técnica del procedimiento, para luego ser aplicada al modelo de simulación pélvica con papayas. **Resultados:** La adquisición de habilidades y competencias fue evaluada subjetivamente, con reportando los participantes confianza en la implementación y ejecución de la inserción del DIU, y objetivamente, con la inclusión real de este procedimiento en sus rutinas en las Unidades Básicas de Salud. **Conclusión:** Se entiende que la falta de profesionales calificados para ofrecer e insertar el DIU de cobre contribuye para la baja prevalencia de uso del método en Brasil, que ronda el 2%. La capacitación en papayas representa una forma efectiva y de bajo costo de capacitar a médicos y enfermeros, permitiendo replicar esta experiencia y, en consecuencia, que más personas tengan más fácil acceso a métodos anticonceptivos efectivos y seguros.

Palabras-clave: Dispositivos intrauterinos; Medicina familiar y comunitaria; Atención primaria de salud; Derechos sexuales y reproductivos; Educación continua.

INTRODUCTION

An unintended pregnancy is one that was not planned by the woman or that occurred before she would have liked. Unplanned pregnancies are among the main public health problems today, especially for adolescents and families in situations of greater social vulnerability.[1] Every year, approximately 121 million unintended pregnancies occur worldwide. In Brazil, 67 out of every thousand women between the ages of 10 and 49 experience an unplanned pregnancy each year, despite 63% of women using some form of modern contraception.[2] These data highlight a significant gap in family planning care in Brazil, which affects mostly Black women and those with less education and lower incomes,[3] contributing to the continuation of the cycle of social inequities.

The Unified Health System (SUS) offers a variety of contraceptive methods to allow women to choose whether and when they want to become pregnant. The vast majority of women, however, use contraceptive methods whose effectiveness depends on their perfect use. Therefore, many pregnancies occur due to

method error, rather than actual method failure.[4] For this reason, the importance of long-acting reversible contraceptives (LARC) is recognized for the consolidation of family planning policies. These methods work for three years or longer and do not depend on the woman's intervention to ensure effectiveness.[5]

The copper intrauterine device (IUD) is a contraceptive method classified as LARC, currently lasting 12 years,[6,7] and is among the safest available, with 99.6% efficacy.[5] Despite this, it remains a little-used option in Brazil, where several barriers are cited to explain this phenomenon. Among them are popular beliefs that are inconsistent with scientific evidence, such as the method's unsuitability for nulliparous women and the association of the IUD with cancer and an increased risk of pelvic inflammatory disease and ectopic pregnancy. The lack of knowledge among professionals about the IUD and its insertion technique also contributes to the low prevalence of this method's use.[8,9]

Among the United Nations (UN) Sustainable Development Goals (SDGs) are to "ensure universal access to sexual and reproductive health care services, including family planning, information and education, and the integration of reproductive health into national strategies and programs, by 2030."[10] In line with this goal, since 2022, through a partnership between the Brazilian Ministry of Health, the UN Population Fund, and Reprolatina, Brazil has been part of a regional strategy to expand access to IUDs. Accordingly, referral centers were created, two in Pernambuco and two in Rondônia, to train new IUD inserters in a scaling strategy. In Pernambuco, the ACS Maria Rita Family Health Unit and Agamenon Magalhães Hospital, both in Recife, are part of the project, and in Rondônia, the Dr. Ary Pinheiro Base Hospital and the Women's Health Referral Center in Porto Velho.[11]

A group of preceptors and residents from the Recife Health Department's Family and Community Medicine Residency Program and faculty from the University of Pernambuco School of Medical Sciences, in line with their training, developed a workshop for IUD insertion facilitators using inexpensive and accessible models: papayas. Therefore, this experience report sought to describe the systematization of the IUD insertion facilitator workshop based on an inexpensive, accessible, and widely reproducible model, following the SQUIRE 2.0 guidelines.[12]

The workshop was designed to enable doctors, nurses and medical and nursing students to develop the following skills:

- Contraceptive counseling, considering all methods available through SUS (Unified Health System) and their eligibility;
- Appropriate communication for IUD pre-insertion counseling and offering, based on the person-centered clinical method (PCCM);[13]
- IUD insertion using papaya models;
- Ability to address the main issues that lead women to discontinue IUD use.

METHODS

To achieve its objectives, the workshop was divided into three stages. The first includes a theoretical explanation, the second consists in role-playing to demonstrate clinical communication, and the third includes practical experience.

The theoretical stage, lasting approximately one hour, suggests addressing the UN SDGs, presenting the characteristics of contraceptive methods available through SUS for free choice.[14] The use of any method should not be imposed. This workshop emphasizes the need to promote the autonomy of women and families in choosing the method that best suits their wishes, desires, and aspirations.

Next, preparation for IUD insertion is discussed, considering the materials and tests required for the procedure, as well as a checklist for ruling out pregnancy without the need for pregnancy tests. Contraindications to the method are also highlighted at this stage, such as IUD insertion within four to six weeks after childbirth or abortion, and if the device is not inserted immediately after these procedures, there are signs consistent with cervicitis and suspected pregnancy.[14]

According to current scientific evidence, pelvic ultrasound, cervical cytology or colposcopy, or vaginal secretion culture are not necessary before the procedure. Pap smears and sexually transmitted infection tests should be offered opportunistically, but waiting for their results should not delay the procedure. There is also no need for a pregnancy test if the woman answers yes to any of the criteria presented in Chart 1. If the answer is no to all questions, a pregnancy test should be done or the patient should wait until the next menstrual period.[14]

Chart 1. Pregnancy exclusion checklist.

Did you have a baby less than six months ago and are breastfeeding exclusively or almost exclusively and have not had a period since?
Have you not had sex since your last period or birth?
Have you had a baby in the last four weeks?
Did your last period start in the last seven days (or the last 12 days if you had a copper IUD inserted)?
Have you had a miscarriage or abortion in the last seven days (or the last 12 days if you had a copper IUD inserted)?
Are you using a reliable and safe method of contraception correctly?

IUD: intrauterine device.

Source: adapted from the Pan American Health Organization.[14]

The materials required for IUD insertion are: a hysterometer, Pozzi forceps, Cheron forceps, long blunt scissors, and a vaginal speculum. These instruments can be autoclavable or disposable. Gauze, procedure or sterile gloves, depending on the technique used to handle the IUD, antiseptic solution (chlorhexidine or povidone-iodine), and a spotlight are also used. Regarding the latter, the team recommends a head-mounted light, which provides the provider with a wider field of vision.

The next step, expected to last about half an hour, consists in modeling pre-insertion clinical communication, with role-playing with one of the workshop participants playing the role of the health care professional and the other playing the role of the woman undergoing the procedure. Here, it is recommended to explain the IUD's mode of action, its effectiveness and duration of use, possible side effects, the need for a 30-day review, and follow-up recommendations. Furthermore, it is suggested to clarify the steps of the procedure itself, warning the woman about moments when she will experience pain and reassuring her about communication during the procedure. It is also important that the participant sign the informed consent form, as this is an invasive procedure,.

The practical phase, expected to last one hour, begins with a video produced by Reprolatina describing all the steps of the procedure, from the bimanual uterine examination, through speculum insertion, cleaning the vaginal canal and cervix, cervical clamping, hysterometry, and IUD insertion. Two techniques for handling the IUD are suggested: the first, using sterile gloves, and the second, placing the IUD in the inserter without removing it from its casing, using procedure gloves. In the authors' opinion, the second technique reduces procedure time and makes it easier to perform without the need for assistants, reducing the number of people in the room and, consequently, the woman's discomfort.

Next, workshop participants are invited to practice IUD insertion with papayas. Preparing the papayas involves choosing the fruit that is not yet ripe, as it is firmer, but not completely green, to allow for a certain

softness. A small slice is cut from the base, past the peduncle (the point where the fruit connects to the tree), to simulate the cervix and allow for insertion of the hysterometer and IUD. On the opposite side of the papaya, near its apex, a window is made to remove some of the seeds, fitting the cut piece back in. The entire insertion technique is then performed on the papaya, and at the end, the placement of the IUD can be visualized by opening the bottom slice. Figure 1 illustrates the method.

Figure 1. Simulation of intrauterine device insertion in papaya.

At this stage, it is recommended that participants be divided into small groups of up to three people per complete IUD insertion kit, including Cheron forceps, Pozzi forceps, hysterometer, and scissors, as well as the IUD and its inserter. It is also recommended that participants have the IUD casing so that participants can practice inserting the device into the inserter. Ideally, each participant should have their own papaya, but it is possible for a pair to share one papaya. A plausible model is to divide the participants into groups of six, each with two complete kits, monitored by a professional already qualified to insert the IUD. At this stage, if there are people in the workshop who already insert IUDs, they can be invited to receive training as facilitators, accompanying the workshop team, so that those in training can be prepared to conduct the workshop later.

Finally, after the practical session, 30 minutes should be reserved for discussion of the practice and any questions that arise after the training. It is recommended to conduct a space assessment, focusing on competency development and addressing the acquisition of skills and attitudes subjectively, with feedback from participants.

RESULTS AND DISCUSSION

It is understood that the lack of qualified professionals to provide and insert copper IUDs contributes to the low prevalence of use of the method in Brazil, which is around 2%.[8] Therefore, to increase the availability of the method, it is important that more professionals be trained in IUD insertion and also to train other professionals.

Training, however, must respect women's bodies to avoid repeating historical violence against women's bodies, as occurred when the IUD was first introduced. In the 1960s, the IUD was used for body and birth control by poor, Indigenous, and Black women, often forcibly or coercively, in countries such as China, Indonesia, Vietnam, Mexico, the United States, among others.[15,16] Therefore, before performing IUD insertion, it is important to master the technique, which involves observing qualified professionals and training on models.

Ideally, training should be done on pelvic models. These, however, are expensive and difficult to transport. Training on papayas, because the fruit is shaped like a uterus, represents an inexpensive and effective method of training, which can be conducted with both medical professionals and nursing graduates and students as well.

The authors have already taught the workshop described in this study to approximately 150 people, with a diverse audience: a mixed group of physicians and students at the Brazilian Congress of Family and Community Medicine (CBMFC) in Fortaleza, Ceará; a group of residents from the residency program to which the authors belong; and a group composed solely of medical students from a family and community medicine league at a university in Recife.

At this point, it is important to emphasize that the workshop should have different approaches depending on the target audience. Groups composed of students require more time for theory and greater need for detailed information about existing contraceptive methods, their characteristics, side effects, and eligibility criteria. They also present more questions about communication based on the PCCM. Therefore, multipliers should be mindful of adjusting the workshop time. Skill acquisition is assessed subjectively, with feedback from participants reporting their confidence in implementing the IUD in their primary care units and performing the procedure. It is also assessed objectively, after participants actually implement the device insertion into their routine.

Students from the academic league, for example, performed IUD insertion activities in healthcare settings under the supervision of professionals trained in the procedure. To monitor the workshop's outcomes, the workshop organizers asked participants to provide feedback on their experience. Although this evaluation was not formally structured, reports indicated that the students felt more confident performing the procedure on patients.

The students reported confidence in conducting health education activities with patients, addressing topics related to sexual and reproductive rights, with an emphasis on the IUD as a contraceptive method. They also highlighted that using papayas as a pelvic model contributed to the development of fundamental skills for performing the procedure, such as measuring the uterine fundus and inserting the device, as the fruit's texture closely replicates the tactile sensation of the actual procedure.

Another indicator that the workshop contributed to the development of skills related to IUD management was the feedback from some professionals who participated in the activity at the CBMFC. They mentioned having incorporated contraceptive provision into their professional practice. Furthermore, some of these professionals have begun organizing initiatives such as community outreach in the municipalities where they work, such as the municipality of Paulista, located in the metropolitan region of Recife.[17,18]

Because the use of papayas is easily reproducible in various contexts, an increase in IUD insertion training is expected, and consequently, an increase in the availability of the method in primary health care. It is important to emphasize once again that the goal is not to replicate old policies of controlling the bodies of Black women and those with less education and lower income, but rather to enable more people to choose if and when they want to experience pregnancy.

It is essential to share this experience so that it can be replicated and improved by as many professionals as possible, allowing more people to have easier access to effective and safe methods of contraception. It is understood that, for this to occur, institutional encouragement and support are necessary, whether from the residency program or from higher authorities, such as the municipal Health Department or the Ministry of Health itself. Work should also be done to develop low-cost simulators that provide greater accuracy to the anatomical landmarks of the female reproductive system without making the costs prohibitive for institutions.

CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTIONS

MOLM: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. RCFS: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. MAS: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. ABTFS: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing.

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