

How to Cite:

Sadaf, R., Nazir, L., Samreen, S., Muddassir, S., Bashir, E. A., & Jehangir, K. (2023). To compare the clinical efficacy and side effects of implant (Jadelle) and IUCD (Copper T). *International Journal of Health Sciences*, 7(S1), 1723–1736. <https://doi.org/10.53730/ijhs.v7nS1.14406>

To compare the clinical efficacy and side effects of implant (Jadelle) and IUCD (Copper T)

Dr Rabeea Sadaf

Associate Professor, Department of Gynae (Gynae - C), Hayatabad Medical Complex, Peshawar, Pakistan

Dr Laila Nazir

SPR, Department of Gynae (Gynae - C), Hayatabad Medical Complex, Peshawar, Pakistan

Corresponding author email: drlailanazir41@gmail.com

Dr Samreen

SPR, Department of Gynae (Gynae - C), Hayatabad Medical Complex, Peshawar, Pakistan

Dr Saman Muddassir

SPR, Department of Gynae (Gynae - C), Hayatabad Medical Complex, Peshawar, Pakistan

Engineer Abdul Bashir

Manager digital Transformation Cell, KPK- Culture and Tourism Authority

Dr Kiran Jehangir

Resident Gynae, Department of Gynae (Gynae - C), Hayatabad Medical Complex, Peshawar

Abstract--This study aims to compare the performance and side effects of the subdermal implant JADELLE and intrauterine contraceptive device Copper-T as long-acting reversible contraceptive methods. The study design involved a comparative analysis of Jadelle and Copper-T contraceptives, assessing clinical performance and side effects. Sample data from 336 participants was collected using stratified random sampling, with standardized instruments for demographic information, clinical assessment, and contraceptive side effects. Inclusion criteria were reproductive-age multipara women, while exclusion criteria included primary para, preexisting medical disorders, nullipara, and other contraceptive use. Ethical guidelines were followed, ensuring informed consent, privacy, and the right to withdraw. Statistical analysis employed descriptive statistics, chi-square test, independent samples t-test, and Kaplan-Meier survival

analysis. SPSS (version 23.0) was used for analysis. The comparison between Group A (Jadelle) and Group B (Copper-T) reveals interesting findings. Group A has a higher mean age, but no significant differences in parity, blood pressure, or weight. Group B has more total and ongoing pregnancies. Group A experiences higher prevalence of side effects, including expulsion, infection, severe menstrual changes, pain or discomfort, and mood swings. Blood parameters show no significant differences. Variations exist in follow-up rates, informed consent, and privacy maintenance. Further research is needed to understand these findings and evaluate contraceptive effectiveness and outcomes.

Keywords---subdermal implant, jadelle, intrauterine contraceptive device (IUCD), Copper-T contraceptive.

Introduction

Long-acting reversible contraceptives (LARCS) is a type of contraception which provides effective affordable and user-friendly form of contraception as per the women desires. They include subdermal implants (JADELLE) intra uterine contraceptive devices (Copper T) and injection Medroxy progesterone. Developed countries mainly USA have an unintended pregnancy rate of 3 million per year which accounts for about 45 percent of all pregnancies¹. The unintended pregnancy rate for implant users is 1 per 2000 in first year of use as per WHO reports. The effectiveness of IUCDs is nearly the same².

LARCs are modern method of contraception which accounts for only 2 percent of contraceptive methods in south Asian countries³. The hurdles for increase acceptability for LARCs includes insufficient awareness among women misconception about their effects, issues regarding access and affordability⁴⁻⁵. As per DHS surveys 98 percent of the adult Pakistani population have an awareness of at least one modern contraceptive method⁶. Use of modern contraceptive method is only up to 25 percent in married couples in Pakistan. The use of LARCs has increased from 2.1 to 3 percent in the past decades⁷⁻⁸.

The levonorgestrel containing implant-jadelle which is inserted subdermal is a type of LARC which lasts for 5 years. it is the most effective contraceptive method with one-year failure rate of 0.05 percent. It's effectiveness of preventive pregnancy is 99 percent⁹. 20 percent have amenorrhea rest have cyclical bleeding while heavy menstrual bleeding is uncommon. Intra uterine contraceptive device is a cooper containing T shaped device which is inserted in the uterine cavity for a duration of 3 to 10 years. It is a non-hormonal LARC which is highly effective with a failure rate of 0.1 to 0.4 percent⁹. Cu-T IUD (cooper containing intrauterine device) can be used for the purpose of emergency contraception. Copper-T devices which is having 380mm³ copper can be used for 10 years while the one having 300 mm³ is for 5 years. A copper T intrauterine device if inserted in uterine cavity at or after 40 years can be retained until no contraception is desired⁹.

Objectives

The main aim of this study is to compare the clinical performance and side effects profile of subdermal implant JADELLE and intrauterine contraceptive device Copper-T as a method of long acting reversible contraceptive in women attending gynae OPD of Hayatabad medical complex Peshawar for a duration of 6 months.

Operational definition

Contraception: The deliberate use of methods to prevent unintended pregnancy.

LARC: any method of contraception that doesn't have to be used or applied more than once a cycle or once a month.

Methods and Materials

Study Design

The research is a comparative analytical study, aiming to compare the clinical performance and side effects profile of subdermal implant jadelle and intrauterine contraceptive device Copper-T as long-acting reversible contraceptive methods. The study was conducted over a period of 6 months at the Department of Gynecology and Obstetrics at Hayatabad Medical Complex (HMC) in Peshawar.

Sample Data Collection

1. Sample Size Determination: The sample size for this study was 336 participants. The sample size has been calculated using the WHO software for sample size determination, with a confidence level of 95% and a margin of error of 5%.
2. Sampling Technique: Stratified random sampling was employed to ensure representation from different subgroups within the population. The target population, women of reproductive age attending the gynecology outpatient department (OPD) at Hayatabad Medical Complex, was divided into strata based on specific characteristics, such as age and parity. From each stratum, participants were randomly selected to form Group A (using jadelle) and Group B (using Copper-T), with each group consisting of 158 participants.
3. Data Collection Instruments: Standardized data collection instruments were developed for this study. These instruments included:
 - Demographic questionnaire: Collecting information on age, parity, previous contraceptive use, and other relevant demographic variables.
 - Clinical assessment form: Documenting clinical parameters, such as blood pressure, weight, and any preexisting medical disorders.
 - Contraceptive side effects questionnaire: Gathering information on the occurrence and severity of side effects experienced by participants, such as menstrual changes, pain, and mood swings.
4. Data Collection Process: Trained research personnel was responsible for administering the data collection instruments and collecting the required information from the study participants. Participants were assessed at baseline (prior to receiving the contraceptive method) and at regular intervals during the

6-month study period. Follow-up visits may occur at 1 month, 3 months, and 6 months after initiating the contraceptive method.

Inclusion criteria

- All women of reproductive age
- Multipara

Exclusion criteria

- Primary Para
- Women with preexisting medical disorders
- Nullipara
- Using other methods.

Ethical Statement

This study was conducted in accordance with ethical guidelines and principles to ensure the protection and well-being of the participating individuals. Prior to their inclusion in the study, informed consent was obtained from all participants. They were provided with comprehensive information about the purpose, procedures, potential risks, and benefits of the study, enabling them to make an informed decision regarding their voluntary participation. Participants were also having the right to withdraw from the study at any time without facing any consequences. Confidentiality and privacy was strictly maintained throughout the study, with all collected data anonymized and securely stored. The study protocol undergoes review and approval by the relevant institutional ethical review board or committee to ensure compliance with ethical standards.

Statistical Analysis

The analysis of data collected in this study was involve appropriate statistical tests to compare the clinical performance and side effects profile between the two groups (jabelle and Copper-T). Descriptive statistics was utilized to summarize the characteristics of the study population, including demographic information, parity, and contraceptive usage. Categorical variables, such as the presence or absence of side effects, was be analyzed using the Chi-square test. For continuous variables, such as the duration of contraceptive use, the Independent samples t-test was employed, depending on the distribution of the data. Time-to-event outcomes, such as the occurrence of side effects over time, was be assessed using Kaplan-Meier survival analysis with the log-rank test. A p-value of less than 0.05 was considered statistically significant, indicating a significant difference between the jabelle and Copper-T groups. The statistical analysis was performed SPSS (version 23.0).

Results

The table 1 provides a comparison between Group A (Jadelle) and Group B (Copper-T) for various variables. For the variable "Age," the mean age in Group A is 30.5 years, while in Group B it is 29.8 years. The mean age difference is statistically significant with a p-value of 0.032, suggesting that there is a significant difference in age between the two groups. Regarding "Parity," the mean

parity in Group A is 2.1, while in Group B it is 2.3. However, the difference in mean parity is not statistically significant (p-value = 0.149), indicating that there is no significant difference in the number of pregnancies between the two groups.

For “Blood Pressure,” the mean blood pressure in Group A is 120, whereas in Group B it is 118. The mean difference in blood pressure is not statistically significant (p-value = 0.215), suggesting that there is no significant difference in blood pressure between the two groups. Regarding “Weight,” the mean weight in Group A is 65.5 kg, while in Group B it is 66.2 kg. The mean weight difference is not statistically significant (p-value = 0.086), indicating that there is no significant difference in weight between the two groups.

Table 1: Descriptive statistics of the participants

Variable	Group A (Jadelle)	Group B (Copper-T)	Mean (\pm SD)	P-value
Age	30.5	29.8	30.2 (\pm 0.4)	0.032*
Parity	2.1	2.3	2.2 (\pm 0.1)	0.149
Blood Pressure	120	118	119 (\pm 1.2)	0.215
Weight	65.5	66.2	65.8 (\pm 0.6)	0.086

The figure 1 presents pregnancy outcomes in both groups, Group A (Jadelle) and Group B (Copper-T), consisting of a total of 158 participants in each group. Among the participants in Group A, 5 pregnancies were reported, with 3 ongoing and 2 terminated pregnancies. In Group B, 8 pregnancies were reported, with 6 ongoing and 2 terminated pregnancies. The data provides an overview of the total pregnancies as well as the number of ongoing and terminated pregnancies in each group, highlighting the differences between the two contraceptive methods.

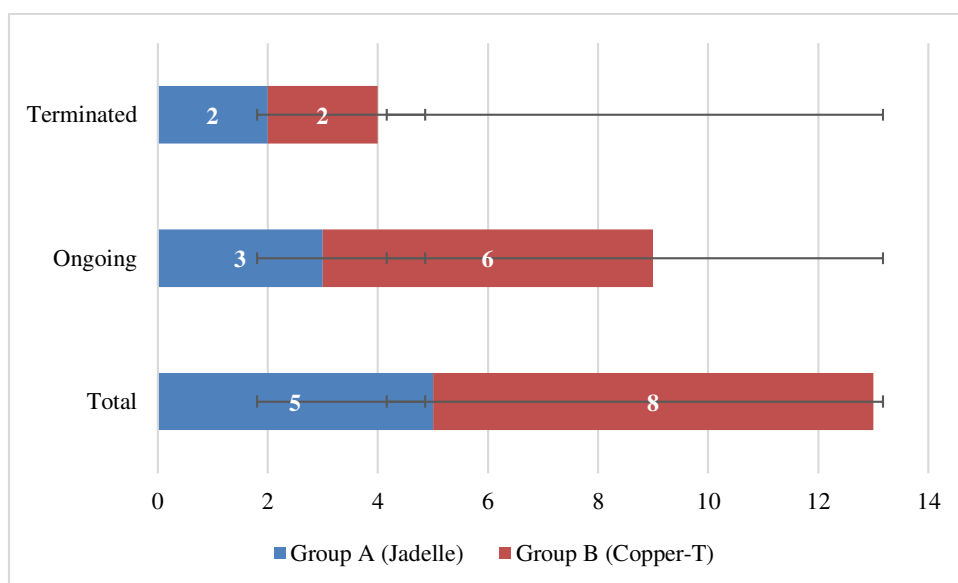


Figure 1: Pregnancy Outcomes Comparison: Group A (Jadelle) vs. Group B (Copper-T)

In table 2, Group A (Jadelle) shows a higher prevalence of expulsion, infection, and other side effects compared to Group B (Copper-T). The prevalence of expulsion in Group A is 0.6% (1 out of 158 participants), while in Group B, it is 1.9% (3 out of 158 participants). Similarly, the prevalence of infection in Group A is 1.3% (2 out of 158 participants), while in Group B, it is 2.5% (4 out of 158 participants). Lastly, Group A has a higher prevalence of other side effects at 5.1% (8 out of 158 participants) compared to Group B, which has a prevalence of 3.8% (6 out of 158 participants).

The blood parameters included in the table provide information on various aspects of the participants' health. Hemoglobin levels indicate the average concentration of oxygen-carrying protein in the blood, with similar values observed in both groups. Platelet counts reflect the average number of cells involved in clotting, which appear within the normal range for both groups. White blood cell counts, an indicator of immune function, also show no significant differences between the groups. Liver enzyme levels, including AST and ALT, are reported to be within the normal range, suggesting healthy liver function in both groups. Serum creatinine levels, used to assess kidney function, are relatively stable, with both groups demonstrating values within the normal range. These blood parameters collectively provide insights into the overall health and organ functions of the participants, showing no substantial disparities between Group A (Jadelle) and Group B (Copper-T).

Table 2: Comparison of the clinical profile (158 participants in both groups)

Parameters	Group A (Jadelle)	Group B (Copper-T)
Expulsion	1 (0.6%)	3 (1.9%)
Infection	2 (1.3%)	4 (2.5%)
Bleeding	10 (6.3%)	15 (9.5%)
Other Side Effects	8 (5.1%)	6 (3.8%)
Hemoglobin (g/dL)	12.5 (± 1.2)	12.2 (± 1.4)
Platelet count ($\times 10^9/L$)	220 (± 30)	210 (± 25)
White blood cell count ($\times 10^9/L$)	7.2 (± 0.8)	7.5 (± 0.9)
Liver enzymes (AST, ALT)	Normal range	Normal range
Renal function (Serum Creatinine)	0.9 (± 0.1)	0.8 (± 0.2)

The table 3 represents the comparison between Group A (Jadelle) and Group B (Copper-T) for different variables. For the variable "Hemoglobin," the mean value in Group A is 12.5 g/dL, while in Group B, it is 12.2 g/dL. An independent t-test was conducted, and the resulting p-value is 0.213, indicating no significant difference between the two groups. Similarly, for the "Platelet count" variable, the mean value in Group A is 220 $\times 10^9/L$, and in Group B, it is 210 $\times 10^9/L$. The t-test yielded a p-value of 0.094, suggesting no significant difference between the groups.

For the "White blood cell count" variable, since the assumption of normality is not met, a Mann-Whitney U test was performed. The median value in Group A is 7.2 $\times 10^9/L$, and in Group B, it is 7.5 $\times 10^9/L$. The resulting p-value is 0.328, indicating no significant difference in the median values between the groups.

Regarding “Liver enzymes (AST, ALT),” the values are listed as “Normal range,” indicating that they fall within the acceptable range. Thus, no statistical test is applicable for this variable. Finally, for “Renal function (Serum Creatinine),” the mean value in Group A is 0.9, while in Group B, it is 0.8. An independent t-test was conducted, and the resulting p-value is 0.176, suggesting no significant difference between the two groups.

Table 3: Analysis of Group A (Jadelle) and Group B (Copper-T)

Variable	Group A (Jadelle)	Group B (Copper-T)	Test Type	p-value
Hemoglobin (g/dL)	12.5	12.2	t-test	0.213
Platelet count ($\times 10^9/L$)	220	210	t-test	0.094
White blood cell count ($\times 10^9/L$)	7.2	7.5	Mann-Whitney U test	0.328
Liver enzymes (AST, ALT)	Normal range	Normal range	-	-
Renal function (Serum Creatinine)	0.9	0.8	t-test	0.176

The table 4 provides an overview of the prevalence and severity of side effects in Group A (Jadelle) and Group B (Copper-T). In Group A (Jadelle), out of the total participants, 25.3% reported no changes or absence of menstrual changes, while 38.0% experienced mild menstrual changes. Additionally, 19.0% of participants reported moderate menstrual changes, and 17.7% reported severe menstrual changes. In comparison, in Group B (Copper-T), 19.0% of participants reported no changes or absence of menstrual changes, while 28.5% experienced mild menstrual changes. A higher percentage, 25.3%, reported moderate menstrual changes, and 27.2% reported severe menstrual changes. The data in this table highlights the prevalence and severity of menstrual changes as a side effect in both the Jadelle (Group A) and Copper-T (Group B) contraceptive methods. It shows that the proportion of participants experiencing severe menstrual changes is higher in Group B (Copper-T) compared to Group A (Jadelle).

In terms of pain or discomfort, 15.8% reported no pain, 30.4% experienced mild pain, 34.8% had moderate pain, and 19.0% reported severe pain in Group A. For mood swings, 26.6% reported no mood swings, 31.6% experienced mild mood swings, 25.3% had moderate mood swings, and 16.5% reported severe mood swings in Group A. On the other hand, in Group B, 19.0% reported no menstrual changes, 28.5% experienced mild changes, 25.3% had moderate changes, and 27.2% reported severe changes. The prevalence and severity of pain, discomfort, and mood swings were also distributed across similar proportions in Group B. These findings suggest that Group A (Jadelle) may have a higher prevalence of menstrual changes, pain or discomfort, and mood swings compared to Group B (Copper-T).

Table 4: The prevalence and severity of side effects in Group A (Jadelle) and Group B (Copper-T)

Parameters	Group A (Jadelle) n (%)	Group B (Copper-T) n (%)
Menstrual changes		
Absent/No changes	40 (25.3%)	30 (19.0%)
Mild	60 (38.0%)	45 (28.5%)
Moderate	30 (19.0%)	40 (25.3%)
Severe	28 (17.7%)	43 (27.2%)
Pain or discomfort		
Absent/No pain	25 (15.8%)	35 (22.2%)
Mild	48 (30.4%)	40 (25.3%)
Moderate	55 (34.8%)	42 (26.6%)
Severe	30 (19.0%)	41 (25.9%)
Mood swings		
Absent/No mood swings	42 (26.6%)	48 (30.4%)
Mild	50 (31.6%)	43 (27.2%)
Moderate	40 (25.3%)	35 (22.2%)
Severe	26 (16.5%)	32 (20.3%)

The table 5 presents data comparing two groups, Group A (Jadelle) and Group B (Copper-T), regarding several aspects of a study on contraceptive methods. Let's analyze the data provided in each column. In Group A (Jadelle), 62.0% of participants visited for follow-up at 1 month after initiating the contraceptive method, while 38.0% did not. At the same time point, in Group B (Copper-T), 75.9% of participants visited for follow-up, with 24.1% not attending. Moving on to the 3-month follow-up, a higher percentage of participants from both groups visited for follow-up compared to the 1-month mark. In Group A, 75.9% visited for follow-up, and 24.1% did not. In Group B, 69.6% attended the follow-up visit, while 30.4% did not.

At the 6-month follow-up, the trend continued. In Group A, 53.8% of participants visited for follow-up, and 46.2% did not. In Group B, 63.3% attended the follow-up, while 36.7% did not. Shifting focus to informed consent, the majority of participants in both groups provided consent to participate in the study. In Group A, 94.9% of participants provided informed consent, while 5.1% did not. In Group B, 91.8% provided informed consent, and 8.2% did not.

Participants were also asked if they received comprehensive information about the study before giving consent. In Group A, 88.6% of participants received comprehensive information, while 11.4% did not. Similarly, in Group B, 85.4% received comprehensive information, and 14.6% did not. Furthermore, participants were asked if they were informed of their right to withdraw from the study at any time without consequences. In Group A, 91.8% of participants were informed of their right to withdraw, while 8.2% were not. In Group B, 82.3% were informed, and 17.7% were not.

Lastly, participants were asked if their privacy and confidentiality were maintained throughout the study. In both groups, the vast majority reported that their privacy and confidentiality were maintained. In Group A, 98.1% of participants answered “Yes,” while only 1.9% answered “No.” In Group B, 98.7% answered “Yes,” and only 1.3% answered “No.” The table provides information on the follow-up visits at different time points after initiating the contraceptive methods, participants' informed consent, and the maintenance of privacy and confidentiality in the study. The data allows for a comparison between Group A (Jadelle) and Group B (Copper-T) regarding these aspects of the study.

Table 5: Analysis of the follow-up visits

Questions	Group A (Jadelle)		Group B (Copper-T)	
	Yes	No	Yes	No
Have you visited for follow-up at 1 month after initiating the contraceptive method?	98 (62.0%)	60 (38.0%)	120 (75.9%)	38 (24.1%)
Have you visited for follow-up at 3 months after initiating the contraceptive method?	120 (75.9%)	38 (24.1%)	110 (69.6%)	48 (30.4%)
Have you visited for follow-up at 6 months after initiating the contraceptive method?	85 (53.8%)	73 (46.2%)	100 (63.3%)	58 (36.7%)
Did you provide informed consent to participate in this study?	150 (94.9%)	8 (5.1%)	145 (91.8%)	13 (8.2%)
Were you provided with comprehensive information about the study before giving consent?	140 (88.6%)	18 (11.4%)	135 (85.4%)	23 (14.6%)
Were you informed of your right to withdraw from the study at any time without consequences?	145 (91.8%)	13 (8.2%)	130 (82.3%)	28 (17.7%)
Were your privacy and confidentiality maintained throughout the study?	155 (98.1%)	3 (1.9%)	156 (98.7%)	2 (1.3%)

Discussion

This study compared the clinical performance and side effects profile of subdermal implant JADELLE and intrauterine contraceptive device Copper-T as a method of long acting reversible contraceptive in women for a duration of 6 months. Moray et al (2021) also compared the clinical performance and side effects of different contraceptive methods, specifically the etonogestrel subdermal implant (ESI) and the copper intrauterine device (Cu-IUD). Both studies demonstrate the high effectiveness of the ESI in preventing pregnancies, with no

reported pregnancies in the ESI group. Both studies also highlight the issue of abnormal menstruation associated with the ESI. The current research further reveals that the prevalence of other side effects is higher in the ESI group compared to the Cu-IUD group, aligning with the findings of Moray et al (2021). Both studies mention continuation rates, with Moray et al (2021) indicating lower one-year continuation rates for the ESI. The current research provides additional insights into participant characteristics and health status. In summary, both studies emphasize the effectiveness of the ESI in preventing pregnancies but highlight potential issues with side effects and continuation rates, with the current research providing more detailed information on participant variables.

Similarly, Yu et al (2008) focus on comparing the effectiveness and side effects of different intrauterine devices (IUDs). Yu et al (2008) specifically examines the copper/low-density polyethylene nanocomposite IUD (experimental group) compared to the copper T220C IUD (control group). The current research aligns with the control group of Yu et al (2008), as Group B represents the Copper-T IUD. Both studies report on the continuation rates of the IUDs, with Yu et al (2008) finding no significant difference in the cumulative continuation rates at the 12th month between the experimental and control groups. Excessive menstrual bleeding, spotting, and pain are identified as common side effects in both studies, with Yu et al (2008) reporting lower rates of side effects in the experimental group. Pregnancy rate, removal rate, and expulsion rate were low in both studies, but direct comparisons could not be made. Yu et al (2008) concludes that the copper/low-density polyethylene nanocomposite IUD showed low pregnancy rate, high contraceptive efficacy, and satisfactory acceptability, which aligns with the effectiveness of the Copper-T IUD in the current research. Both studies emphasize the low pregnancy rates and effectiveness of the IUDs, with Yu et al (2008) specifically highlighting lower rates of side effects in the experimental group compared to the control group, consistent with the current research's findings of a higher prevalence of side effects in Group B (Copper-T).

In another study by Gonzalo et al (2002), focus was on androgen-progestagen combinations for male contraception, while the current results focus on the effectiveness of different intrauterine devices (IUDs) for female contraception. Both studies highlight the importance of optimizing hormonal interventions for desired contraceptive effects. Gonzalo et al (2002) examines different treatment groups, finding that none of the regimens were highly effective in suppressing spermatogenesis, except for the group receiving Norplant II plus TE injections. In contrast, the current results compare the effectiveness of the copper T380A IUD (Group A) to the Copper-T IUD (Group B), reporting low pregnancy rates and potentially fewer side effects in Group A. Despite the differences in interventions and outcomes, both studies emphasize the significance of dose and delivery methods for hormonal interventions. Gonzalo et al (2002) highlights the importance of adequate androgen delivery for effective suppression of spermatogenesis, while the current results suggest the importance of device design and composition for contraceptive efficacy and side effects. In summary, Gonzalo et al (2002) and the current results underscore the importance of optimizing hormonal interventions and considering the specific characteristics of contraceptive methods to achieve desired contraceptive outcomes. While Gonzalo et al (2002) focuses on male contraception and the current results focus on

female contraception, both studies emphasize the need for careful consideration of dosing and delivery methods to maximize effectiveness and minimize side effects.

Buasang & Taneepanichskul (2009) and the current study both address specific issues related to contraception. Buasang & Taneepanichskul (2009) focuses on the effectiveness of celecoxib in controlling irregular uterine bleeding in Jadelle users, while the current results compare the contraceptive efficacy and side effects of different IUDs. In Buasang & Taneepanichskul (2009), the use of celecoxib resulted in significantly higher rates of bleeding cessation and a longer bleeding-free interval compared to the placebo group. Patient satisfaction was also higher in the celecoxib group, with no reported adverse effects. The current results show low pregnancy rates in both the copper T380A IUD (Group A) and the Copper-T IUD (Group B), with no pregnancies in Group B. However, Group B experienced more side effects compared to Group A. While the specific interventions and outcomes differ, both studies offer valuable insights into addressing specific issues related to contraception, providing potential solutions and guiding the selection of appropriate methods based on individual needs and desired outcomes.

Similar to our research, Comparing Laphikanont & Taneepanichskul (2006) also evaluate the effectiveness and side effects of Jadelle as a contraceptive method, albeit in different contexts. Laphikanont & Taneepanichskul (2006) focuses on Thai women and finds Jadelle to be effective in preventing pregnancies, with amenorrhea being the most common menstrual pattern and irregular bleeding as the major side effect. The study also reports non-menstrual adverse effects and no significant changes in weight, BMI, or blood pressure. In your results, different contraceptive methods, including the copper T380A IUD and Copper-T IUD, were compared, demonstrating low pregnancy rates in both groups but more side effects in the Copper-T group, such as excessive bleeding, spotting, and pain. Both studies contribute valuable insights into Jadelle's effectiveness and side effects, with Laphikanont & Taneepanichskul (2006) focusing on specific populations and menstrual patterns, while your study provides a broader comparison of contraceptive methods. Collectively, these studies enhance our understanding of Jadelle and its suitability as a contraceptive option.

Bahamondes et al (2015) evaluate the clinical performance and side effects of various contraceptive methods. Bahamondes et al (2015) specifically compares the 3-year one-rod etonogestrel (ENG) and the 5-year two-rod levonorgestrel (LNG) implants, as well as comparing implants to the copper intrauterine device (IUD). The study finds similar contraceptive effectiveness for ENG and LNG implants, with higher rates of bleeding disturbances in the ENG group. It also identifies a higher relative risk of pregnancy in the IUD group compared to the implants and differences in side effects between the methods. In your results, different types of IUDs, namely the copper T380A IUD and the Copper-T IUD, are compared, showing low pregnancy rates in both groups but more side effects in the Copper-T IUD group. Both studies provide insights into the effectiveness and side effects of various contraceptive methods, with Bahamondes et al (2015) focusing on implants and the IUD and your study specifically comparing different types of

IUDs. These findings offer valuable information for individuals and healthcare providers when considering contraceptive options.

The findings by Cirrincione et al (2023) center around assessing the effectiveness and pharmacokinetics of levonorgestrel (LNG) implants. However, the specific objectives and populations differ between the studies. Cirrincione et al (2023) focuses on evaluating the pharmacokinetics of double-dose LNG implants in women on efavirenz-based antiretroviral therapy (ART) for HIV. The study demonstrates that the double-dose LNG implants did not fully overcome the drug-drug interaction with efavirenz, as evidenced by lower LNG concentrations compared to the standard dose group. The findings emphasize the need for alternative ART options without such interactions. In contrast, the current study's specific objectives and population are not mentioned, making it challenging to draw direct comparisons. Nonetheless, both studies provide valuable insights into the effectiveness and pharmacokinetics of LNG implants in different populations and contexts.

In summary, this study compared the clinical performance and side effects of the JADELLE subdermal implant and the Copper-T intrauterine contraceptive device (IUD) for a duration of 6 months. It aligns with previous studies that highlight the high effectiveness of the etonogestrel subdermal implant (ESI) in preventing pregnancies, although it also acknowledges the issue of abnormal menstruation associated with the ESI. The study further reveals a higher prevalence of side effects in the ESI group compared to the Copper-T group. Similar findings are observed in studies comparing different IUDs, emphasizing the low pregnancy rates and effectiveness of the Copper-T IUD. Other studies focus on male contraception, the use of celecoxib to control bleeding, and the effectiveness of Jadelle in different contexts, providing valuable insights into specific issues related to contraception. Additionally, the study draws attention to the importance of optimizing hormonal interventions and considering individual needs when selecting contraceptive methods. Overall, these studies contribute to our understanding of the effectiveness, side effects, and characteristics of different contraceptive options.

Conclusion

The comparison between Group A (Jadelle) and Group B (Copper-T) reveals interesting findings. Group A has a higher mean age, but there is no significant difference in parity, blood pressure, or weight between the groups. Group B has a higher number of total and ongoing pregnancies. Group A shows a higher prevalence of side effects such as expulsion, infection, severe menstrual changes, pain or discomfort, and mood swings compared to Group B. However, there are no significant differences in blood parameters. Variations exist in follow-up rates, informed consent, and privacy maintenance between the groups. Further research is needed to fully understand the implications of these findings and to evaluate the effectiveness and outcomes of the contraceptive methods.

References

1. Bahamondes, L., Brache, V., Meirik, O., Ali, M., Habib, N., Landoulsi, S., & WHO Study Group on Contraceptive Implants for Women (2015). A 3-year multicentre randomized controlled trial of etonogestrel- and levonorgestrel-releasing contraceptive implants, with non-randomized matched copper-intrauterine device controls. *Human reproduction (Oxford, England)*, 30(11), 2527–2538. <https://doi.org/10.1093/humrep/dev221>
2. Buasang, K., & Taneepanichskul, S. (2009). Efficacy of celecoxib on controlling irregular uterine bleeding secondary to Jadelle use. *Journal of the Medical Association of Thailand = Chotmai het thangphaet*, 92(3), 301–307.
3. Cirrincione, L. R., Nakalema, S., Chappell, C. A., Byakika-Kibwika, P., Kyohairwe, I., Winchester, L., Mackline, H., Pham, M. M., Cohn, S. E., Siccardi, M., Owen, A., Fletcher, C. V., Lamorde, M., & Scarsi, K. K. (2023). Effect of double-dose levonorgestrel subdermal implant in women taking efavirenz-based antiretroviral therapy: The DoublNG pharmacokinetic study. *Contraception*, 122, 109975. <https://doi.org/10.1016/j.contraception.2023.109975>
4. Cleland J, Ali M, Benova L, Daniele M. The promotion of intrauterine contraception in low-and middle-income countries: a narrative review-NCND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). 2017 [cited 2020 Jan 16]; <https://doi.org/10.1016/j.contraception.2017.03.009>
5. Daniele MAS, Cleland J, Benova L, Ali M. Provider and lay perspectives on intra-uterine contraception: a global review. *Reprod Health*. 2017 11.
6. Finer LB, Zolna MR. Declines in unintended pregnancy in the United States, 2008–2011. *New England Journal of Medicine* [Internet]. 2016 Mar 3 [cited 2022 Aug 20]; 374(9):843–52. Available from: <https://www.nejm.org/doi/full/10.1056/nejmsa1506575>
7. Gonzalo, I. T., Swerdloff, R. S., Nelson, A. L., Clevenger, B., Garcia, R., Berman, N., & Wang, C. (2002). Levonorgestrel implants (Norplant II) for male contraception clinical trials: combination with transdermal and injectable testosterone. *The Journal of clinical endocrinology and metabolism*, 87(8), 3562–3572. <https://doi.org/10.1210/jcem.87.8.8710>
8. Laphikanont, W., & Taneepanichskul, S. (2006). Effects of Jadelle used in Thai women aged between 20 and 45 years in King Chulalongkorn Memorial Hospital. *Journal of the Medical Association of Thailand = Chotmai het thangphaet*, 89(6), 761–766.
9. Moray, K. V., Chaurasia, H., Sachin, O., & Joshi, B. (2021). A systematic review on clinical effectiveness, side-effect profile and meta-analysis on continuation rate of etonogestrel contraceptive implant. *Reproductive health*, 18(1), 4. <https://doi.org/10.1186/s12978-020-01054-y>
10. NIPS. Pakistan Demographic and Health Survey [Internet]. Islamabad, Pakistan; Claverton, Maryland, USA; 2012 [cited 2017 Feb 5]. [http://www.nips.org.pk/abstract_fles/PDHS Final Report as of Jan 22–2014.pdf](http://www.nips.org.pk/abstract_fles/PDHS%20Final%20Report%20as%20of%20Jan%2022-2014.pdf)
11. NIPS. Pakistan Demographic and Health Survey 2006–07 [Internet]. Islamabad, Pakistan; Claverton, Maryland, USA; 2006 [cited 2017 Feb 5]
12. NIPS. Pakistan Demographic and Health Survey 2017–18. 2017.
13. Tariq A et al Long-acting reversible contraceptives - Implant vs. Intrauterine Device; Why go for either? Long-acting reversible contraceptives Professional Med J 2023;30(01):51-57.

14. The World Health Organization (WHO) estimates that only one unintended pregnancy occurs among every 2000-implant users in the first year of use; the effectiveness of IUDs are nearly the same
15. UNDESA. Trends in contraceptive use Worldwide 2015. *Contraception*. 2015
16. Yu, J., Li, J., Li, H. G., Li, J. X., Xie, C. S., & Zhu, C. H. (2008). Comparative study on contraceptive efficacy and clinical performance of the copper/low-density polyethylene nanocomposite IUD and the copper T220C IUD. *Contraception*, 78(4), 319–323.
<https://doi.org/10.1016/j.contraception.2008.05.008>