

East African Medical Journal Vol. 95 No. 3 March 2018

EXPERIENCE WITH JADELLE CONTRACEPTIVE IMPLANT IN OBESE AND OVERWEIGHT WOMEN IN SOUTH-EASTERN NIGERIA

Bright Chigbu, MBBS, FWACS, FICS, Associate Professor, Dept. of Obstetrics & Gynaecology, Abia State University Teaching Hospital, PMB 7004, Aba, Abia State, Nigeria. Stephen Onwere, MBChB MMed (Obst and Gynae), FICS, Dip Reprod Medicine & Embryology, Professor, Dept. of Obstetrics & Gynaecology, Abia State University Teaching Hospital, P.O.Box 7004, Aba, Abia State, Nigeria. Ada Nwokoro, Registered Staff Nurse Midwife, Ihunanya Specialist Hospital, Ekeakpara, Osisioma Ngwa Local Government Area, Abia State, Nigeria. Obianuju Ezenobi, Registered Staff Nurse Midwife, Ihunanya Specialist Hospital, Ekeakpara, Osisioma Ngwa Local Government Area, Abia State, Nigeria.

Corresponding author: Dr Bright Chigbu, Department of Obstetrics and Gynaecology, Abia State University Teaching Hospital, PMB 7004, Aba, Nigeria. Email. chigbubc@gmail.com

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B. Chigbu, S. Onwere, A. Nwokoro and O. Ezenobi

ABSTRACT

Background: As the worldwide obesity epidemic continues, the Obstetrician-Gynaecologist must discuss contraception with obese women who want to postpone pregnancy. Obesity may affect the efficacy of hormonal contraceptives by altering how they are absorbed, distributed, metabolized or eliminated. There is a paucity of data about the suitability and efficacy of Jadelle and other hormonal contraceptives in overweight and obese women in our locale.

Objective: This study describes the discontinuation, complication and pregnancy rates of Jadelle contraceptive implant in overweight and obese women compared to women of normal BMI.

Design: An observational study.

Setting: The family planning unit of a private hospital in Osisioma Ngwa Local Government Area, Abia State, Nigeria, under the Womens' Health Project of Society for Family Health.

Subject: One hundred and two women of high BMI (64 overweight and 38 obese women) and 153 women of normal BMI who accepted Jadelle contraceptive implant.

Results: There was no statistically significant difference in the continuation ($p = 0.78$) and discontinuation rates ($p = 0.71$) between the high and normal BMI groups. The reasons for discontinuation of Jadelle before the expiration period of 5 years were similar for all BMI groups and they included prolonged and irregular vaginal bleeding and desire for another pregnancy. Side effects were similar and minimal for all BMI groups and mainly prolonged or irregular vaginal bleeding. Pregnancy was confirmed on two women of normal weight and this occurred within the first 2 months of use. Apparently, the women were pregnant at the time of insertion.

Conclusion: Jadelle contraceptive implants are well tolerated and effective in obese and overweight women in South-Eastern Nigeria who desire effective pregnancy prevention for 5 years.

INTRODUCTION

Worldwide, the prevalence of obesity and overweight amongst adults increased by 25 per cent from 1980 to 2013 and is not limited to any income level. [1] The prevalence of obesity is 34% in North Africa and Middle East and 37% in southern sub-Saharan Africa. [1]

Although the likelihood of infertility may be higher in very obese women than in women with normal weight, the risk of unintended pregnancy among obese women is similar to that of women with normal weight, and obese women are at risk of pregnancy-related complications. [2] Providing contraception to obese and overweight women will help them achieve their reproductive health goals.

Jadelle is composed of two thin, flexible silicone rods, each containing 75mg levonorgestrel (a synthetic progestin) and is currently labeled for five years of use. It is a highly cost-effective form of long-acting reversible contraception (LARC) and is of a similar effectiveness as sterilization. [3] There are very few contraindications to the use of implants, and they have an excellent safety profile and no age restrictions making them a choice method for women of any reproductive age. [3] Non contraceptive benefits also exist and include improvements in dysmenorrhoea and endometriosis. [4] The primary mode of action of Jadelle implants and indeed all subdermal implants is to prevent ovulation. Secondary modes of action include prevention of sperm penetration of the cervical mucus and prevention of implantation by thinning the endometrium. [4]

An estimated 214 million women have unmet need for family planning in developing countries and the prevalence of use of implants remains low worldwide. [5] Countries in Africa that have succeeded in raising the prevalence beyond 3% of women of reproductive age (WRA) who are married or in a union are Burkina Faso, Colombia, Ethiopia and Rwanda. [6] The use of Jadelle implants by Nigerian women spans over a decade, [7] but not much has been reported on Jadelle use in obese women in our locale.

Generally, information about efficacy of hormonal contraception in obese women is limited, in part because obese women were excluded from efficacy trials of many familiar methods. Research indicated that overweight and obese women might have a higher risk for failure of hormonal contraceptives. [8] Pharmacokinetic studies have shown that obesity affects drug levels across a range of contraceptive methods but findings vary regarding the impact on the pharmacodynamics. [1,8] Studies have shown differences between obese versus normal weight women using a combined oral contraceptive pill (COC) or a vaginal ring or vaginal patch [8], but ovarian suppression appeared to be similar for obese and non obese women.

There is currently limited available published data on efficacy of progestin-only implants in obese women. Pharmacokinetic studies have demonstrated an inverse relationship between body weight and etonorgestrel serum levels, raising concern that the implant may be less effective in heavier women in the third year of use. [2] Similarly, since serum levonorgestrel (Jadelle)

concentration is inversely related to body weight, women weighing more than 60kg are traditionally made aware of the manufacturer's advice to replace the device early, but there is no direct evidence that early replacement is required. [4] The WHO Medical Eligibility Criteria give obesity as a condition for which there is no restriction of use for the implant. [2, 3, 4]

This study describes the continuation and complication rates of Jadelle contraceptive implants in overweight and obese women compared with women of normal BMI in Southeastern Nigeria. Findings from this study may inform future research and contribute to the existing knowledge of its use in this population.

METHODS

Between January 1, 2008 and December 31, 2016, we followed up on a cross section of women who accepted Jadelle contraceptive implant under the Women's Health Project of Society for Family Health at the family planning unit of a private hospital situated at Osioma Ngwa Local Government Area of Abia State, South-Eastern Nigeria. Eligible clients were identified from the clients' family planning record card in the facility. Clients with medical co-morbidity were excluded from the study. Other exclusion criteria included suspected pregnancy, allergy to levonorgestrel and breastfeeding less than 6 weeks postpartum. All clients attending the facility were counseled by certified nurse family planning providers using the algorithm of balanced counseling strategy. On choosing a method, further counseling was given on the efficacy, duration, and side effects of the chosen method. Overweight and obese women were given the option of removal of Jadelle implants and their change

to new implants after 3-4 years of use. The client's measured weight on the day of insertion of the implant and the measured or self-reported height were used to calculate the BMI. Normal BMI was taken as BMI 18.5 – 24.9; overweight as BMI 25-29.9; and obesity as BMI ≥ 30 .

During the study period only Jadelle® (levonorgestrel 2 x 75 mg implants by Bayer Healthcare Pharmaceuticals, Turku, Finland) was available. Data was analyzed using Epi info version 6. Chi-square test was used for categorical variables with Fisher exact or Yates correction where appropriate and the Student's t-test was used to compare means. Statistical significance was set at $P < 0.05$. During data analysis, clinical differences between the overweight and obese women in the study were not significant, so it was decided to evaluate BMI as a dichotomous variable, normal BMI (≤ 24.9) versus high (i.e. overweight and obese) BMI (≥ 25).

The primary outcome measure was pregnancy after insertion of Jadelle. Other outcome measures included discontinuation rates, reasons for discontinuation, irregular vaginal bleeding or spotting, and satisfaction with Jadelle implants assessed at exit interviews. Ethical approval for the study was given by the Ethics and Research Committee of the Abia State University Teaching Hospital, Aba, Nigeria.

RESULTS

A total of 270 women accepted Jadelle implant during the period of study, however, 15 women were lost to follow up and 255 women were analyzed. Women with normal BMI were 153 (60%) whilst 64 (25%) were overweight and 38 (15%) obese. The demographic and obstetric characteristics of the women were similar and are summarized

in Table 1 while the efficacy and adverse effects of Jadelle on the women is as presented in Table 2. There was no statistically significant difference in the continuation ($p = 0.78$) and discontinuation rates ($p = 0.71$) between the high and normal BMI groups. Side effect was similar and minimal for all the BMI groups and was mainly prolonged or irregular vaginal bleeding. Pregnancy was confirmed on two women of normal BMI and this occurred within the first 2 months of use necessitating removal of the implants in one woman and

medical abortion in the other. Apparently, the women were pregnant at the time of insertion. The reasons for discontinuation of Jadelle before the expiration period of 5 years were similar for all the BMI groups and they included prolonged and irregular vaginal bleeding and desire for another pregnancy.

Satisfaction and acceptability: Ninety percent of women of high BMI and 96% of women of normal BMI were completely satisfied with Jadelle contraceptive implants and would recommend it to others.

Table 1
Participants' characteristics

Variable	Overweight & Obese women N=102	Women with normal BMI N=153	P value
Age (yrs) Mean \pm SD Range	34.5 \pm 5.5 25 - 41	32.1 \pm 4.8 22 - 42	0.84
Parity Mean \pm SD Range	4.1 \pm 0.2 0 - 7	4.2 \pm 0.2 0 - 7	0.99
BMI (at insertion) Mean (kg/m ²) Range	28.9 25 - 31.2	22.4 18 - 24.9	0.31
Educational level			
None	0	0	
Primary education	5(4.9)	5(3.2)	0.76
Secondary education	61(59.5)	113(73.9)	0.35
Tertiary education	36(35.3)	35(22.0)	0.14

Table 2
Efficacy and adverse effects

Outcome	Overweight and obese women N (%)	Women of normal BMI N (%)	Odds Ratio	P value
Pregnancy	0	2(1.3)		
Prolonged/irregular vaginal bleeding	34(33.3)	68(44.4)	1.33(0.80-2.22)	0.29
Discontinuation within 4 years of use	42(41.2)	56(36.6)	0.89(0.54-1.46)	0.71
Continuation up to 5 years	60(58.8)	97(63.4)	1.08(0.70-1.65)	0.78

DISCUSSION

The study confirms that Jadelle contraceptive implants are effective, well tolerated and acceptable in overweight and obese women who do not have medical co-morbidities. There was no record of pregnancy in the overweight and obese women up to the fifth year of use. However, pregnancy was confirmed in two women of normal BMI within two months of use of Jadelle. Further review of their clinical history suggested that these women were pregnant at the time of Jadelle insertion. According to the 2016 Cochrane Review [1, 9] of hormonal contraceptives for contraception in overweight and obese women, multicenter trials on the older six-capsule implant containing levonorgestrel 216mg (Norplant) (now withdrawn) reported an association between higher weight and higher pregnancy rate. Weight groups significantly differed in their fifth-year pregnancy rate. Of the three recorded pregnancies in the levonorgestrel (LNG) two-rod group, all were in women who weighed less than 70 kg. [10] The authors concluded that body weight does not reduce the efficacy of the LNG implant.

In current practice, overweight and obese women are made aware of the manufacturer's

advice to replace the device early, but there is no direct evidence that early replacement is required. Although overweight and obese women in this study were given the option of removal of Jadelle implants and their change to new implants after 3-4 years of use, majority chose to continue their use of Jadelle implant for 5 years and expressed complete satisfaction with the implant. This observation suggests that overweight and obese women may be allowed to use Jadelle contraceptive implants for 5 years.

In this study, participants were chosen based on their BMI. This is because a higher BMI generally reflects more body fat, whereas weight alone indicates total body mass but not whether the person is overweight for a particular height. Studying BMI might therefore inform whether the amount of body fat impacts on the effectiveness of Jadelle contraceptive implants.

This study has some limitations though, which may affect the generalizability of the findings. BMI miscalculation may have occurred as self-reported height was used for convenience in some women. Studies, however, have shown that self-reported height and weight provide a reasonable representation of women's BMIs when categorized. [11] Furthermore, the sample size

of this study was small, and the study did not adjust for potential confounding that may affect BMI.

CONCLUSION AND RECOMMENDATIONS

This study affirms that Jadelle contraceptive implants may be particularly appropriate for overweight and obese women who desire effective pregnancy prevention for 5 years. Since obese women represent a population whose reproductive health is greatly affected by their weight, elucidating the relationship between obesity and contraceptive efficacy should continue to be a focus of future research, and evaluation of new contraceptive methods should proactively include obese women.

ACKNOWLEDGEMENT

We sincerely thank the Society for Family Health for providing us with family planning commodities and consumables at Ihunanya Hospital, a private hospital at Ekeakpara, Osisioma Ngwa Local Government Area, Abia State. The conclusions reached in this study, however, are those of the authors and not of the Society for Family Health. The study was not funded by any organization.

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