Original Article

A 5-Year Clinical Evaluation of Subdermal Implants Among Abakaliki Acceptors

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ABSTRACT

Background: The family planning clinic of the Federal Teaching Hospital, Abakaliki in Ebonyi State, obtains its clients from the postnatal clinic, the general outpatient department, specialist clinics, and referrals from the primary, secondary, and private health centers in the state. **Aim:** To evaluate subdermal implants use in Abakaliki, Nigeria, for acceptance rate, efficacy, and complications. **Materials and Methods:** A descriptive retrospective study that was carried out in the family planning unit of the Federal Teaching Hospital, Abakaliki, Nigeria, between January 1, 2009, and December 31, 2013. The records of the clients from the family planning clinic and their case files from the medical record units were studied. Sociodemographic characteristics, side effects, discontinuation, and reasons for discontinuation were extracted and fed into the computer using Epi Info program (2008) of the Centers for Disease Control and Prevention Atlanta USA version 3.5.1 and analyzed. **Results:** Of 1737 contraceptive acceptors, 554 clients accepted subdermal implants giving a rate of 31.9%. The mean (standard deviation) for age and parity was 32.9 (5.2) years and 4.9 (2.2) years, respectively. Sixty-nine clients discontinued the method giving a discontinuation rate of 69/554 (12.5%) over the 5-year period. The most common reason for discontinuation was the desire to get pregnant 47/69 (68.1%). Seventeen clients out of 554 (3.1%) had side effects or complications. Menstrual disturbances were the most common side effect. **Conclusion:** Subdermal implants are very effective and safe with high acceptance and continuation rate in Abakaliki.

KEY WORDS: Contraception, family planning, subdermal implants

INTRODUCTION

Subdermal contraceptive implant research and development began in 1996 at the Population Council Laboratories in New York with the discovery of a biocompatibility of silicone in the human body, which later resulted in the development of Norplant and Norplant 2 (Jadelle) by the Population Council.[1,2] Progestin-releasing subdermal implants are used worldwide by many women. It is also increasingly accepted as a method of contraception in the less developed countries like ours. It is a long-term, efficacious, and easily reversible contraceptive with few adverse effects that pose no risk to the health of the users.[3,4] Common types of subdermal implants include the levonorgestrel-releasing (6 and 2 rods) implants both licensed for 5 years and the etonogestrel-releasing single rod implant. The women on contraceptive implants do not require ongoing effort for long-term and effective use, it is independent of coitus, very effective with a reported typical use pregnancy rate of 0.05% and fertility returns immediately on discontinuation.[5,6]

The modes of action include interference with cervical mucus making it thick and difficult for sperm penetration hence preventing fertilization,[7,8] prevention of ovulation by altering the hypothalamo-pituitary-ovarian axis,[9,10] and may also interfere with endometrial development.[10,11] The side effects of progestin-releasing contraceptive implants include changes in the menstrual pattern (amenorrhea, frequent and prolonged menstruation), gastrointestinal difficulties, headaches, acne,

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breast pain, vaginitis, and weight gain.[6,12] These are mainly the complaints of the implant user, and the overall reported bleeding or spotting was lower than in the normal menstrual period. Complications related to insertion include pain, slight bleeding, and hematoma, and breakage that may occur during removal. The contraceptive choice project showed that in the absence of financial, knowledge, health care provider, or logistical barriers, the rate of initiation of long-acting reversible contraceptives was higher than any other contraceptive method.[13] Subdermal contraceptive implants, especially the 2 rods levonorgestrel-releasing type is a method that is gaining increasing acceptance in the family planning unit of the Federal Teaching Hospital, Abakaliki. The status of subdermal implants at Abakaliki in terms of knowledge and usage, however, has not been evaluated since the inception of the unit. Thus this review is aimed at evaluating the use, acceptance, efficacy, and complications of subdermal implants in the Federal Teaching Hospital, Abakaliki, South-east Nigeria.

MATERIALS AND METHODS

Setting

The family planning unit of the Federal Teaching Hospital, Abakaliki in Ebonyi State, Nigeria was established in 2012 following the merger between Ebonyi State University Teaching Hospital and Federal Medical Center both in Abakaliki. Prior to the merger, both hospitals were running their family planning clinics. The hospital is a tertiary institution that also offers secondary care to women within Ebonyi and its environs. The family planning clinic obtains its clients from the postnatal clinic, the general outpatient department, specialist clinics, and referrals from the primary, secondary, and private health centers in the state.

Design

This is a retrospective descriptive study that was carried out in the family planning clinic of the Federal Teaching Hospital, Abakaliki. Data were collected from the records in the family planning unit as well as from medical records of users from January 1, 2009 to December 31, 2013. Information extracted includes age, parity, religion, educational status, marital status, occupation, side effects, and the reason for discontinuation. The information obtained was recorded and the coded data were fed into the computer using Epi Info program (2008) of Centers for Disease Control and Prevention Atlanta, Georgia, USA version 3.5.1. and analysis was done. Simple percentages, Chi-square test, and univariate analysis were done and the $P < 0.05$ was considered significant. Ethical approval for the study was obtained from the Hospital Ethical Committee.

Sample size calculation

The prevalence of 20% reported for Nigeria from a previous study was chosen to calculate the minimum sample size for the study as no such studies have been done in Ebonyi State. The required sample size was calculated using the following formula:

$n = Z^2 P (1- P)/d^2$

n = Minimum sample size required

Z = A number relating to the degree of confidence. For the value of confidence of 95%, $Z = 1.96$

P = Expected prevalence or proportion from a similar study, for Nigeria is 20%

d = The maximum tolerable error for study which is 5%

Thus the estimated minimum sample size was 246, but we examined a total of 554 records.

RESULTS

During the study period, a total of 1737 clients were using one method of contraception or the other out of which 554 clients accepted subdermal implants [Table 1]. This gives an uptake rate of 31.9%. Acceptance of contraception, however, remained low compared to the number of deliveries during the period under review [Figure 1]. One hundred and twenty-four (22.4%) of the 554 implant

Table 1: Yearly distribution of methods in Federal Teaching Hospital, Abakaliki 2009-2013

Methods	2009	2010	2011	2012	2013	Total
Oral contraceptive pills	2	16	12	20	23	73
Injectables	78	46	63	273	290	750
IUCD	50	40	23	52	67	232
Condoms	-	2	4	35	63	104
Implants	30	50	40	154	280	554
BTL	-	6	-	5	13	24
Total	160	160	142	539	736	1737

IUCD=Intrauterine contraceptive device, BTL=Bilateral tubal ligation

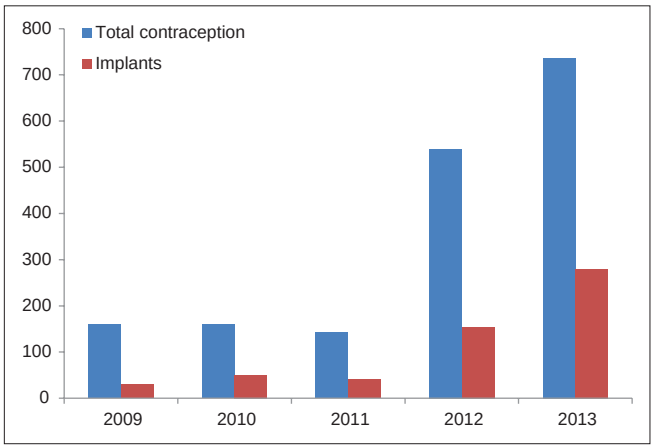

Figure 1: Yearly acceptance of contraception and subdermal implants

users accepted 3-keto-desogestrel releasing implant while 429/554 (77.4%) used the 2 rods levonorgestrel-releasing implant.

The mean age in the study was 32.9 (5.2) years, the minimum age was 17 years, and maximum age was 48 years. The majority of the clients, 333/554 (60.1%), were aged between 30 and 39 years. Mean parity in the study was 4.9 (2.2) and ranged between para 0 and para 13. The majority of the clients (56.1%) were para 5 and above. Five-hundred clients 500/554 (90.3%) had a tertiary education (colleges of education, polytechnics, and universities) while 469/554 (84.7%) were civil servants, 535/554 (96.6%) were married while 532/554 (96.0%) were Christians [Table 2].

Table 3 shows that 17 clients out of 554 (3.1%) had side effects or complications with menstrual disturbances (amenorrhea - 58.8%, irregular menstruation - 23.5%, prolonged menstruation - 5.9%) as the leading complication. Sixty-nine clients (12.5%) discontinued the method with the most common reason for discontinuation as desire for pregnancy 47/69 (68.1%). About 14.5% (10/69) discontinued for unspecified reason, 8/69 (11.6%) discontinued because of side effects while 5.8% (4/69) was due for replacement. Figure 2 and Table 4 shows parity as the only variable with statistically significant relationship with discontinuation ($P = 0.01$, confidence interval = 84.4–90.1%).

Table 2: Sociodemographic characteristics of subdermal implant acceptors

Variables	*n*=554 (%)
Age (in years)	
≤19	1 (0.2)
20-29	151 (27.3)
30-39	333 (60.1)
≥40	69 (12.5)
Parity	
0	4 (0.7)
1-4	239 (43.2)
≥5	311 (56.1)
Educational status	
None/primary	16 (2.9)
Secondary	38 (6.9)
Tertiary	500 (90.2)
Occupation	
Civil servant	469 (84.7)
Farmer	20 (3.6)
House wife	8 (1.4)
Students	34 (6.1)
Trader	23 (4.2)
Marital status	
Married	535 (96.6)
Single	9 (1.6)
Widow	10 (1.8)
Religion	
Christian	532 (96.0)
Islam	7 (1.3)
Others	15 (2.7)

DISCUSSION

The acceptance rate of subdermal implants in the study was 31.9%. This is higher than 20%[14] reported for Nigeria but much lower than 93.7% reported in Ilorin.[15] There was no new acceptor of the 6 rods levonorgestrel implant during the period under review but in a study in Port Harcourt the acceptance rate was 5.2%.[16] The reason was because the 6 rods levonorgestrel implants were not available. About 22.4% of the clients used 3-keto-desogestrel implant that is lower than that reported in Jos with a high continuation rate of 98.3%.[17] The reason for this lower implants acceptance may be due to the fact that the major acceptors of contraception are the educated civil servants while the bulk of women of reproductive age in the state were the uneducated farmers. The majority of these women have poor knowledge of contraception and believe in large family size. This problem of poor knowledge and low acceptance of methods of contraception has reduced as a result of increased community awareness outreaches by the hospital

Table 3: Complications or side effects of subdermal implants

Complications	*n*=17 (%)
Amenorrhea	10 (58.8)
Irregular menstruation	4 (23.5)
Prolonged menstruation	1 (5.9)
Weight gain	2 (11.8)

Table 4: Effect of sociodemographic characteristics on discontinuation of subdermal implants

Characteristics	Usage		χ^2	*P*	95% CI
	Continued	Discontinued			
Age (in years)					
≤19	1	0	1.59	0.66	55.9-64.2
20-29	128	23			
30-39	295	38			
≥40	61	8			
Parity					
0	4	0	35.14	0.01	51.2-59.6
1-4	194	45			
≥5	287	24			
Educational status					
None/primary	14	2	1.94	0.38	87.4-92.5
Secondary	36	2			
Tertiary	435	65			
Occupation					
Civil servant	412	57	5.41	0.25	81.3-87.5
Student	26	8			
Trader	21	2			
Farmer	18	2			
House wife	8	0			
Marital status					
Married	469	66	4.11	0.13	94.6-97.9
Single	9	0			
Widow	7	3			
Religion					
Christianity	465	67	1.02	0.60	94.0-97.4
Islam	7	0			
Others	13	2			

CI=Confidence interval

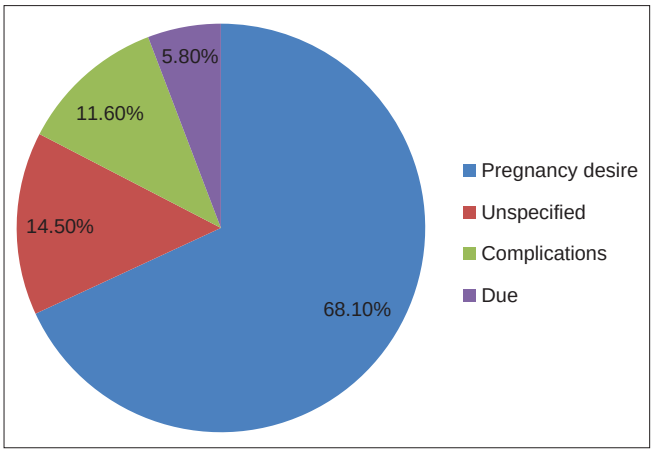

Figure 2: Reasons for discontinuation

and the state government's Mother and Child Care Initiative. This was shown by increased acceptance of family planning methods in the last 2 years of the 5 years period reviewed.

The mean age in the study was 32.9 ± 5.2 years. This is similar to 32.1 years reported by a study in Jos.[17] The majority of the clients (60.1%) were aged between 30 and 39 years. This age range of common usage may be due to early marriage and completion of family size around this age bracket. The mean parity in the study was 4.9 ± 2.2 years. This mean parity is higher than the mean parity of 3.6 reported in a study in Jos.[17] The majority of the clients were multiparous showing that there may be fear of the effects of implants on future reproduction among the people. The bulk of the clients were married, educated, and Christian civil servants. The educated women are more likely to be aware and accept contraception. The study was also conducted in a Christian dominated South-eastern Nigeria hence the predominance of Christians.

Seventeen clients (3.1%) had side effects or complications in the study demonstrating the safety of the method. Menstrual disturbance was the most common side effect noted in the study. This is similar to the report of a similar study in Jos.[17] Sixty-nine clients (12.5%) discontinued the method during the 5 year period reviewed and the major reason for discontinuation was a desire for pregnancy. The majority of the clients, however, used the method for 2 or more years. Univariate analysis showed that only parity had statistically significant relationship with discontinuation. This correlation with parity is understandable as young, married clients with low parity and desirous of further pregnancy are more likely to discontinue the method. No accidental pregnancy (method failure) was recorded during the 5 years reviewed demonstrating the efficacy of the method.

The data presented in this study may not be representative of the community acceptance rate for subdermal implants. Another limitation of the study was poor follow-up and documentation of vital information.

A prospective study in the future with proper follow-up, documentation, and incorporation of the rural communities may overcome these challenges.

CONCLUSION

The subdermal implants contraceptive method is safe and efficacious with high acceptance and continuation rates in Abakaliki. Intensive health education and awareness rallies among the rural populace will improve the acceptance, usage, and health of the women.

Acknowledgment

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Conflicts of interest

There are no conflicts of interest.

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