

# Subdermal Contraceptive Implants: Profile of Acceptors in a Tertiary Hospital in Southern Nigeria

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**Abstract:** *Background:* Subdermal contraceptive implants provide safe, effective, convenient, long term reversible fertility regulation, and because of their numerous non-contraceptive benefits are particularly suitable for women in developing countries. This study determines the socio-demographic characteristics of acceptors of subdermal implants, the timing of their use and their complications at the University of Uyo Teaching Hospital, Uyo.

*Materials and Methods:* The record cards of all clients that accepted subdermal contraceptive implants over a four year period were reviewed.

*Results:* There were a total of 1057 new contraceptive acceptors out of which 197 (18.6%) accepted contraceptive implants. The modal age group of the clients was 30-34 years (38.0%). One hundred and fifty six patients (79.2%) were multiparous, 97.5% of the patients had attained secondary level of education while 92.4% were Christians. About 56.9% of the clients preferred to use implants to space child births, most of the implants were inserted during the first week of the menstrual period, and majority (78.2%) of the clients obtained their information concerning implants from clinic personnel. The most common complication was abnormal vaginal bleeding.

*Conclusion:* contraceptive implants are very effective contraceptive methods that are mostly accepted and used by young, educated parous women who mostly preferred to space births. There is also a high continuation rate among acceptors so increasing availability of implants in family planning units nationwide could increase the number of women who utilize this method of contraception.

**Keywords:** Contraceptive implants, Acceptors, Uyo.

## INTRODUCTION

Subdermal contraceptive implant development began at the population council laboratories in New York in 1966 and was made possible by the discovery of silicone and its bio-compatibility in the human body [1]. Implants provide safe, very effective, convenient, long term but reversible fertility regulation [2]. Once they are inserted, they require little user compliance or motivation, with prompt return of fertility immediately after removal of the implants [1]. Though provider dependent, their use is private and discrete and allows for sexual spontaneity [3].

Subdermal implants reduce the risk of ectopic pregnancy and pelvic inflammatory disease; they improve dysmenorrhoea and are devoid of oestrogenic side effects hence they can be used by breastfeeding mothers and other women who have contraindications to oestrogen use [3]. In addition, they have been documented to reduce the frequency and severity of sickle cell crisis making them suitable for use by patients with sickle cell anaemia [4]. They are inserted subdermally in the non-dominant upper arm by a trained provider. After the production of the first

generation implant norplant was stopped due to reported difficulties with insertion and removal and its use discontinued in most countries [5], the two commonly used and available contraceptive implants currently are Jadelle and Implanon.

Jadelle (formerly known as Norplant 2) is developed by the Population council and manufactured by Bayer Schering Pharma in Finland [5]. It consists of 2 thin flexible rods, each 43millimeters long and 2.5 millimetres wide consisting of a dimethylsiloxane/methylvinylsiloxane copolymer core enclosed in thin walled silicon tubing (Figure 1). Each implant contains 75milligrams



**Figure 1:** Jadelle Implants.

(mg) of the progestogen, levonorgestrel [5]. The calculated mean daily *in vivo* release of levonorgestrel is about 100 microgram (ug)/day a month followed by a decline and stabilization at 24 months to about 30ug/day [5]. It is one of the most highly effective

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contraceptive methods with a Pearl index of 0.2 pregnancies/100 women years and is effective for 5 years [5,7]. Its mechanisms of action include inhibition of ovulation (in 45%-85% of menstrual cycles), thickening of the cervical mucous and suppression of endometrial growth.

Implanon is a single rod contraceptive implant developed by Organon Pharmaceutical Company with its headquarters in Roseland, New Jersey and was launched in 1998 [7]. It is 40mm in length and 2mm in width consisting of an ethylene vinylacetate copolymer core containing 68mg of the progestogen, etonogestrel [6] (Figure 2). Implanon is effective for 3 years, although its contraceptive effect may last for up to 4 years [7]. It is silicon free and releases about 60-70ug of etonogestrel initially reducing to 25-30ug at the end of the third year. It prevents ovulation as its primary mechanism of action in most cycles [5]. Implanon also increases the viscosity of cervical mucous and alters the endometrial lining contributing to its contraceptive efficacy. It requires no post insertion follow up and is not visible after insertion.



**Figure 2:** Implanon Implant.

There are few studies that focus on contraceptive implants in Nigeria and since the establishment of the family planning unit of the University of Uyo Teaching Hospital and the introduction of contraceptive implants into the unit (Jadelle in 2009 and implanon in 2011), to the best of the knowledge of the authors, there has never been any study on contraceptive implants in the center. This study was designed to determine the socio-demographic characteristics of acceptors of subdermal implants, the timing of their use and their complications in our center.

## MATERIALS AND METHODS

This study was conducted at the maternity unit of the University of Uyo Teaching Hospital. The university of Uyo Teaching hospital, a newly established Federal Teaching Hospital is located in Uyo, the capital of Akwa

Ibom State in the Niger Delta region of Nigeria. The state has a population of over 4 million people, is made up of 31 local Government areas and is currently the highest oil and gas producing state in the country. Along with English, the other major tribes are Ibibio, Annang, Eket and Oron. The major occupations of the people are farming, fishing, trading and crafts making.

The registration numbers of all clients that accepted contraceptive implants between 1st January 2009 and 31<sup>st</sup> December 2012 were obtained from the family planning register. The record cards of the clients were then retrieved through their registration numbers and studied. Information abstracted included the socio-demographic characteristics of the clients, sources of referral, type of implant inserted, previous history of contraceptive use, reasons for accepting implants and complications experienced by the clients. The data were analysed using frequency count and percentages.

## RESULTS

During the period of the study there were a total of 1057 new contraceptive acceptors out of which 197 (18.6%) accepted contraceptive implants. One hundred and seventy eight (90.3%) of the patients accepted jadelle while 19 (9.6%) accepted implanon.

The patients' ages ranged from 17 to 50 with modal age group of 30-34 years (38.0%). One hundred and fifty six patients (79.2%) were multigravida, 97.5% of the patients had attained secondary level of education, 92.4% were Christians while traders, civil servants and professionals constituted 66.0% of the patients in the study population (Table 1).

Sixty nine (35.0%) clients did not desire any more children, One hundred and twelve (56.9%) clients wanted to space their child births, while 8.1% of the clients were not certain why they wanted to use the contraceptive method.

Seventy one (38.0%) clients discontinued other contraceptive methods prior to initiating implants. Twenty three (11.7%) had used injectable methods of contraception previously, 22 (11.2%) discontinued oral contraceptive pills, 20 (10.1%) clients changed from intrauterine contraceptive devices, 3 (1.5%) were using barrier methods, while 1(0.5%) client changed from norplant implants she had inserted previously.

Most of the implants were inserted during the first 5-7 days of the menstrual cycle and there were no postabortal or puerperal insertions.

**Table 1: Sociodemographic Characteristics of the Clients**

| Variable                 | No (%)     |
|--------------------------|------------|
| <b>Age (years)</b>       |            |
| 15-19                    | 7 (3.6)    |
| 20-24                    | 14 (8.9)   |
| 25-29                    | 49 (24.9)  |
| 30-34                    | 72 (38.1)  |
| 35-39                    | 39 (14.7)  |
| 40-44                    | 11 (5.6)   |
| 44                       | 4 (2.0)    |
| Not recorded             | 1 (0.5)    |
| <b>Educational level</b> |            |
| Primary                  | 19 (9.6)   |
| Secondary                | 173 (87.8) |
| Tertiary                 | 3 (1.5)    |
| None                     | 2 (0.5)    |
| <b>Parity</b>            |            |
| Po                       | 8 (4.1)    |
| P1-4                     | 151 (76.6) |
| ≥ P5                     | 36 (18.3)  |
| Not recorded             | 2 (1.0)    |
| <b>Occupation</b>        |            |
| Trader                   | 59 (30.1)  |
| Civil servant            | 50 (23.4)  |
| Unemployed               | 16 (8.1)   |
| Professional             | 21 (10.7)  |
| Famer                    | 10 (5.1)   |
| Hairdresser              | 8 (4.1)    |
| Missionary               | 8 (4.1)    |
| House wife               | 6 (3.0)    |
| Student                  | 4 (2.0)    |
| Not recorded             | 4 (2.0)    |

The majority (78.2%) of the clients obtained information concerning the contraceptive method from clinic personnel, 13.2% obtained theirs from friends/relatives, while 1.5% of the clients got their information concerning implants from the print media (Table 2).

Complications occurred in 5.1% of the clients. The most common complication was abnormal vaginal bleeding in 1.5% of the clients, while dyspareunia, mucoid vaginal discharge, vomiting, abdominal pain,

headache and chest pain were the other complications that occurred in 0.5% each of the clients respectively (Table 3). There were no accidental pregnancies recorded. Only two (1.02%) women discontinued implants during the period of the study.

**Table 2: Sources of Information on Contraception**

| Source                  | No (%)     |
|-------------------------|------------|
| Clinic personnel        | 154 (78.2) |
| Friends/relatives       | 26 (13.2)  |
| Radio                   | 7 (3.6)    |
| Community Health worker | 5 (2.5)    |
| Print media             | 3 (1.5)    |
| Not recorded            | 2 (1.0)    |

**Table 3: Complications**

| Complication               | No (%)  |
|----------------------------|---------|
| Irregular vaginal bleeding | 4 (2.0) |
| Dyspareunia                | 1 (0.5) |
| Mucoid vaginal discharge   | 1 (0.5) |
| Vomiting                   | 1 (0.5) |
| Abdominal pains            | 1 (0.5) |
| Headache                   | 1 (0.5) |
| Chest pain                 | 1 (0.5) |

## DISCUSSION

Jadelle and Implanon have fewer rods which makes them easier to insert and remove than older contraceptive implants. However, the number of women who accepted and used this method during the study period was quite small. This may be due to the fact that implants were only recently introduced in the state. This finding is however similar to what was obtained in Jos, Nigeria where in spite of the fact that implants were introduced there over 2 decades earlier, the acceptance rate was relatively low [8]. The number of clients that accepted Jadelle were more due to its earlier introduction and hence availability in the family planning unit.

In spite of the over 25 years of development, refinement and introduction of implants in family planning programs around the world, the level of contraceptive implant use is reportedly low worldwide with an estimated use of only 0.2% [5]. The highest barrier to implant use is reported to be the high cost of

the method in addition to shortage of implants and equipments for insertion [5]. Program cost of training and retraining providers with insertion and removal skills and the time involved in insertion and removal also contribute to the high cost of implants [9]. The relatively high cost of implants has prevented widespread provision of implants in resource poor countries [10].

More than one third of the clients in this study were in their early thirties, most were multiparous and had at least secondary level education. This is similar to what was documented from a research conducted in Jos Nigeria [8] where the average age of women who accepted implanon was 32.4 years and in Malaysia [11], where the mean age of Implanon users was 34.7 years.

In contrast to results from some studies [6,11] where there were no adolescent acceptors, 3.5% of the clients in this study population were adolescents. In our environment, adolescents have been shown to be at very high risk of unintended pregnancies, unsafe abortion and all its adverse consequences including death [12]. Nigerian adolescents often use ineffective and unconventional methods of contraception, which they obtain from patent medicine dealers and other non medical sources [13]. Notwithstanding, adolescents have been shown to be an ideal population for the use of implants, and the contraceptive CHOICE project [14] showed good acceptance and continuation rates among adolescents.

About a third of the patients preferred to use implants to limit family size. This is not surprising as due to cultural and religious reasons many women are very skeptical about using permanent contraceptive methods of contraception in Nigeria [15]. The fact that over half of the women preferred to space births with implants suggests that the method is highly acceptable to our women for short term contraceptive purposes in our environment.

More than two thirds of the clients obtained their information about implants from the clinic personnel. This is similar to results obtained from research in other Nigerian centers [16-17] and may explain the low rate of use of modern contraceptive methods in general and implants in particularly in Nigeria [18]. The contribution from other non medically related sources such as the print and electronic media were very low, and none of the clients obtained information from the internet, despite the wealth of information that are available from

that source in modern times. In Nigeria, apart from medical personnel, there is very low knowledge of contraceptive implants among the general populace [19] as contraceptive methods are hardly discussed in vehicles of information including the print and electronic media.

Complications were recorded in 5.1% of the clients and out of these 2.0% had irregular vaginal bleeding which has been recognized as be the most common side effect of contraceptive implants and also their greatest drawback [5,7]. About 50-60% of implant users have been documented to report irregular vaginal bleeding patterns during the first year of use [20]; however spontaneous resolution is generally observed in subsequent years of usage. Preinsertion counseling about menstrual disturbances therefore is important prior to insertion of implants and this has been shown to increase continuation rates because the known advantages far outweigh the nuisance effects [21]. Other common side effects reported to follow insertion of implants include insertion complications, weight gain, ovarian cysts, acne and headaches [3]. Similarly, these also resolve with continued usage [7].

There were no accidental pregnancies recorded in this study. This is similar to what obtains in some other studies [8,11] and is a reflection of the high effectiveness of this method of contraception. Jadelle has a failure rate of 0.2% [5], while implanon is reported to be the most effective long acting reversible method of contraception available with a failure rate of only 0.05% which makes it more effective than female sterilization [3].

There was a high continuation rate as only 1.02% of the women discontinued the method. Studies have shown that women who use implants tend to be satisfied with the method and continuation rates remain high [22]. A recent Cochrane review found that the majority who used contraceptive implants continued with the method on a long term basis [5].

Nexplanon, a single rod subdermal implant containing 68mg of etonogestrel has been developed. It is almost identical to implanon except that it has 15mg of barium sulphate added to its core [23]. In addition, it also has a redesigned preloaded applicator for easier insertion. Nexplanon was developed to eliminate the problem of non-insertion and localization of implanon by changing the inserter device and making the rod radiopaque [23]. Nexplanon is widely available in the developed world and has even

replaced implanon in some countries. However, its availability in Nigeria and other developing countries is being eagerly awaited.

In conclusion, contraceptive implants are very effective contraceptive methods that are mostly accepted and used by young, educated parous women who mostly preferred to space births. There is also a high continuation rate among acceptors so increasing availability of implants in family planning units nationwide could increase the number of women who utilize this method of contraception.

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