Norplant* as a contraceptive device in Enugu, Eastern Nigeria

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Abstract

This paper is an evaluation of acceptability and use-experience with the contraceptive device Norplant at the University of Nigeria Teaching Hospital, Enugu, Eastern Nigeria. Over a period of 36 months, 173 women (8% of the clinic population) accepted the implant. Use of Norplant was concentrated among high-parity women, and the proportion of Norplant users was highest among women aged 30–34 years. Comparing Norplant and IUD users, we found Norplant users to be significantly less highly educated with <1% of Norplant users having tertiary education compared to 25% of new IUD users. The continuation rate with Norplant was 89% at three years, suggesting this method has the potential for improving the low contraceptive prevalence in this region.

Introduction

Contraceptive use in sub-Saharan Africa is low by international standards [1], and Nigeria has one of the lowest contraceptive prevalence rates in Africa, currently at 6% [2]. The Nigeria Fertility Survey [3] reports that only 46% of Nigerian women know of a family planning method. The health hazards associated with high parity are well known. Maternal morbidity and mortality are very high in Nigeria [4] and the reproductive health of women can only be enhanced if they are provided with an opportunity to plan their reproductive lives. Safe provision of various contraceptive methods is crucial.

*Norplant is the registered trademark of the Population Council for subdermal contraceptive implants
methods to the general population is crucial to the enhancement of women’s reproductive and general health. Norplant as a family planning device is relatively new in Nigeria, having been introduced into clinical practice at the University of Nigeria Teaching Hospital (UNTH) Enugu in 1992. The family planning clinic of the hospital has been in operation since 1973, offering the IUD, depot norethisterone enanthate, oral contraception, vaginal foam, condom and tubal ligation. We evaluated the acceptability of Norplant in this community to assess its potential value to couples in the region and country at large.

The UNTH is located in Enugu, the political and population center of the Igbos of Eastern Nigeria. In consonance with its recently promulgated national population policy [5], the federal government of Nigeria, in 1993, designated UNTH as the headquarters for the eastern zone of its tertiary reproductive health center project. The program’s functions are aimed at population activities including fertility, sexually transmitted diseases (STDs), and acquired immunodeficiency syndrome (AIDS) control, as well as maternal health. The activities of this center cover all of Eastern Nigeria with a population of about 20 million people. The responsibilities of the tertiary center include the training of personnel and supervision of services in the general hospitals and primary health centers within the zone. UNTH is well suited for evaluation of Norplant’s likely acceptability in the region and for appropriate dissemination of information and skill regarding Norplant.

Methodology

The aim of this study was to describe women who are using Norplant as a family planning measure in Enugu, Eastern Nigeria, and to examine how these women differ from women using the IUD. A 3-year retrospective cross-sectional review of Norplant users was carried out from June 1992 to May 1995 and compared the Norplant users with women using the IUD for family planning during the same period. The IUD was chosen for comparison because it is provider-dependent, as is Norplant, and is the method used by the largest segment of family planning attendees. It is a well-known method and, therefore, does not elicit fears often associated with new products.

At the family planning clinics, groups of patients were given a well-balanced presentation of the different methods of contraception by nurses. Those who accepted were then seen by doctors and questioned about age, parity, educational status, first informants on Norplant, and primary reason for using the implant. Individual client counselling was provided by doctors and Norplant acceptors were informed about the benefits and side-effects of the implant. The acceptors were given an opportunity to ask questions and were told to report to the clinic immediately if they observed any problems including infection, migration of the implant, menstrual irregularity or pregnancy. They were also told to report for removal of the implant immediately after the five-year duration had expired. Informed consent was obtained from Norplant acceptors and they were physically examined to rule out medical contraindications before insertion. Norplant, consisting of sets of six levonorgestrel-
releasing silastic capsules, was inserted by doctors in the upper arm. Follow-up visits were arranged at 1-, 3- and 6-monthly intervals for the first 12 months, and subsequently every 12 months unless there were complications. A total of 173 women accepted Norplant during the 3-year period, while 1298 women chose the IUD. Sociodemographic characteristics of Norplant and IUD acceptors were compared, as well as their sources of information about Norplant and their primary reason for choosing it. Based on a total of 4266 woman-months of use accumulated over three years, complications and discontinuation rates were also obtained and subsequently analyzed.

Training of physicians and nurses to provide Norplant was conducted annually at a national level and at 6-monthly intervals at the regional centers. Twelve consultant gynecologists and 20 resident gynecologists at the teaching hospital were trained in the proper technique of insertion and removal of the implant. Physicians in peripheral centers who are interested in family planning are encouraged to attend the training sessions conducted at the center. Each training session lasts 2 weeks and accommodates five physicians and five nurses. Efforts are made to provide enough removal cases to serve the training needs. Doctors and nurses are trained in proper counselling techniques which will help the clients make an informed choice of contraceptive method.

Physicians and nurses who have been trained to provide Norplant both within and outside the teaching hospital commend its use. This will help to expand the use of the implant outside Enugu. The major constraint to its use in Enugu and its environment is the very limited supply from the donor agencies.

Statistical methods

All data were analyzed using SAS statistical software version 6.1 (SAS Institute Inc., Cary, NC) [6]. The statistical evaluation of categorical data was based on Pearson’s $\chi^2$ test. Continuous and ordinal data were evaluated using t-tests and Wilcoxon’s rank sum statistic, respectively. Results were presented as the mean($\pm$SD); $p$-levels of <0.05 were considered significant.

Results

Types of contraceptive methods accepted at the clinic and percentage distribution

Table 1 shows the types of contraceptive methods accepted by all clients visiting the family planning clinic at UNTH from June 1992 to May 1995. The IUD was accepted by the largest percentage of women (63%), with the oral contraceptive pill and sterilization by tubal ligation being the least acceptable (1% each). Norplant was the method of choice for 8% of the women.
Age distribution of Norplant and IUD acceptors

The age ranges of both the Norplant and IUD acceptors were symmetrical in distribution (Figure 1). The mean age of Norplant acceptors was 33.9 ± 5.0 and that of IUD users 32.5 ± 5.9 years (p < 0.5). Most notably, acceptors of IUDs were more likely to be <35 years (62% were <35 years, 38% ≥35 years) while acceptors of Norplant represented a more balanced distribution of the reproductive age of women (51% were <35 years, 49% ≥35 years, p < 0.05). There were no Norplant users below the age of 20 or above 49 years.

Table 1. Distribution of contraceptive methods accepted by clients at UNTH from June 1992 to May 1995

<table>
<thead>
<tr>
<th>Contraceptive method</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUD</td>
<td>1298</td>
<td>62.8</td>
</tr>
<tr>
<td>Depot injection*</td>
<td>368</td>
<td>17.8</td>
</tr>
<tr>
<td>Norplant</td>
<td>173</td>
<td>8.4</td>
</tr>
<tr>
<td>Foam</td>
<td>119</td>
<td>5.8</td>
</tr>
<tr>
<td>Condom</td>
<td>52</td>
<td>2.5</td>
</tr>
<tr>
<td>Oral</td>
<td>29</td>
<td>1.4</td>
</tr>
<tr>
<td>Tubal sterilization</td>
<td>28</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>2067</td>
<td>100</td>
</tr>
</tbody>
</table>

*Two-monthly injection of norethisterone enanthate

Figure 1. Comparison of age distribution in years of Norplant and IUD acceptors. Norplant users (n = 173), IUD users (n = 1298)
Parity distribution of Norplant and IUD acceptors

The parity distributions of Norplant and IUD acceptors is shown graphically in Figure 2. The mean parity of Norplant acceptors was $6.4 \pm 1.9$ and that of IUD acceptors was $5.5 \pm 2.8$ ($p < 0.05$). Eighty percent of Norplant acceptors had 5 or more children, while only 67% of IUD users were parity 5 and above. Parity 0–2 comprised only 0.7% of Norplant acceptors but 11% of IUD users. All Norplant acceptors had delivered one or more babies whereas 3 IUD users were nulliparous.

![Figure 2](image)

**Figure 2.** A comparison of parity distribution between Norplant and IUD acceptors. Norplant users ($n = 173$), IUD users ($n = 1298$)

Educational status

Figure 3 illustrates the disparity in educational status among Norplant and IUD acceptors. Less than 1% of Norplant acceptors had tertiary education while 25% of IUD users were from this high educational group. Twenty-four percent of Norplant acceptors had no formal education, a similar proportion being found among IUD acceptors. Likewise 41% of Norplant acceptors and 40% of IUD acceptors had attended elementary school. There was a disparity among the proportion of Norplant and IUD acceptors with secondary education: 34% of Norplant acceptors had secondary education compared to 11% of IUD acceptors. When controlling for age, there remained a significant difference in educational attainment between Norplant and IUD users with Norplant users having lower educational attainment. The difference in educational status between Norplant and IUD users was sustained ($p < 0.05$).
Additional features of Norplant acceptors

Source of initial information about Norplant among acceptors

One hundred and forty-three Norplant acceptors responded to the question about where they first heard of Norplant. Table 2 indicates that nurses were the most significant source of initial information about the method (61%). The mass media (comprising print and electronic media) provided information for 12%, spouses for 11% and doctors for 8%.

Primary reason for accepting Norplant

Eighty-three Norplant acceptors responded to the question about what was the primary reason for choosing Norplant to limit their family size. The principal reasons for accepting Norplant as a contraceptive measure are listed in Table 3. Seventy percent of respondents felt that they had achieved the desired family size. Economic considerations were cited by another 21%, while declining health was given as a reason by 8%.
Table 2. Source of initial information about Norplant among acceptors at UNTH from June 1992 to May 1995

<table>
<thead>
<tr>
<th>Informant</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>87</td>
<td>60.8</td>
</tr>
<tr>
<td>TV, radio or newspaper</td>
<td>17</td>
<td>11.9</td>
</tr>
<tr>
<td>Spouse</td>
<td>15</td>
<td>10.5</td>
</tr>
<tr>
<td>Doctor</td>
<td>11</td>
<td>7.7</td>
</tr>
<tr>
<td>Other Norplant acceptor</td>
<td>10</td>
<td>7.0</td>
</tr>
<tr>
<td>Field worker</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>143</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3. Primary reason for limiting family size among Norplant acceptors at UNTH from June 1992 to May 1995

<table>
<thead>
<tr>
<th>Primary reason</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desired family size completed</td>
<td>58</td>
<td>69.9</td>
</tr>
<tr>
<td>Economic conditions</td>
<td>17</td>
<td>20.5</td>
</tr>
<tr>
<td>Health</td>
<td>7</td>
<td>8.4</td>
</tr>
<tr>
<td>Does not know</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4. Reasons for removal of Norplant among 173 acceptors at UNTH from June 1992 to May 1995

<table>
<thead>
<tr>
<th>Complication</th>
<th>No. of removals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menorrhagia</td>
<td>6</td>
</tr>
<tr>
<td>Irregular menses</td>
<td>5</td>
</tr>
<tr>
<td>Amenorrhea</td>
<td>1</td>
</tr>
<tr>
<td>Dermatitis at site of insertion</td>
<td>1</td>
</tr>
<tr>
<td>Raised blood pressure</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
</tr>
</tbody>
</table>
Norplant removal and continuation rates

Table 4 shows why Norplant had to be discontinued by 12 of the 173 acceptors. Abnormality of menstruation was responsible for the highest number of removals (10 of 12). Amenorrhea, dermatitis at site of insertion and raised blood pressure were each responsible for one removal. Menorrhagia was the most common complaint [6], followed by irregular menses [3]. The continuation rates of Norplant use among the women were 99.4% at 3 months, 98.1% at 6 months, 94.5% at 12 months, 92.5% at 24 months and 88.7% at 36 months.

Discussion

This study shows that Norplant acceptors in Enugu, Eastern Nigeria tended to be older, of higher parity, and less highly educated than IUD acceptors from the same community. The IUD acceptors were mostly less than 35 years of age while Norplant acceptors demonstrated a more even spread across the reproductive age of women. The age distribution of Norplant acceptors differs among different studies. The mean age ranges from 24.8 years in Brasil to 32.5 years in Egypt [7,8]. Consistent with our findings, the mean age of IUD users was lower than that of Norplant users in the Brasilian and Egyptian studies, 24.5 and 31.9 years, respectively.

Few women accepted Norplant before delivery of three of more children, while 10% of IUD acceptors had 0-2 children. Norplant acceptors were likely to be high-parity women, with 80% being parity 5 and above. The significant difference in the mean parities of the Norplant and IUD users reinforces our finding that use of Norplant was principally to limit family size. Similar to our data, the majority of the women (93%) in the study from Egypt chose Norplant when they had attained their desired family size [7]. In the report from San Francisco, USA [9], as many as 38% of Norplant acceptors chose the device to limit their family size [10]. The mean parity of Norplant acceptors varies from 2.3 in the Dominican Republic where it is mostly used for birth spacing to 5.9 in Egypt where it was chosen mainly to limit family size [8,9]. In our study the mean parity was 6.4 and association between high parity and Norplant acceptors is consistent with the reason for choosing the implant. Educational status of the women was an important factor determining their acceptance of Norplant. Women with the highest education were not represented among new Norplant acceptors in contrast to IUD acceptors. Women with tertiary education may be more likely to have access to information on Norplant from the international media. Some of the reservations expressed about the implant by the media [10] such as the possibility of migration may make women initially wary of embracing its use. In a report from San Francisco, USA [10], 10% of Norplant acceptors had a college degree.

Educational status is known to influence reproductive behavior [11]. Educated women are more likely to use contraceptives in Nigeria [12] and in this case women with secondary education were more willing to accept Norplant than the IUD. Ruminjo et al. [13] reported that Norplant acceptors in Nairobi, Kenya had achieved a higher educational status than acceptors of female voluntary surgical contraception.
by minilaparotomy (secondary or university education, 64% vs. 36.5%). Possibly the women with higher education were more willing to try more modern methods of contraception.

Most Norplant acceptors traced their source of information regarding the device to nurses, probably because at the UNTH family planning clinic, nurses hold counselling sessions every morning for family planning attendees. The mass media also played an important role in promoting awareness of Norplant in the community, being the second greatest source of information on the device. In a study in San Francisco, USA [10], the media played a similar role and was the second main source of information on the device after the family planning clinic. Doctors provided information that led to acceptance of Norplant in only 8% of cases. Clinicians and government officials in some developing countries, such as Indonesia and Thailand, have occasionally been charged with coercing women to accept and keep the implant [14,15]. This does not appear to be the case in Eastern Nigeria. This healthy beginning augurs well for its introduction to a larger segment of the Nigerian population in the future.

The continuation rate of 95% at one year noted in this study is comparable to 95% in Chile and 94% in China [16]. A lower level (80%) in Scandinavia and a high of 99% in Sri Lanka have also been reported [16]. The continuation rate of a contraceptive device varies from country to country and depends upon individual acceptor characteristics such as age, parity and education [17,18]. For a device such as Norplant requiring clinical cooperation for removal, the accessibility and quality of service can have an important impact on the continuation rate. For this reason, at the UNTH, training of doctors in the proper technique for insertion and removal of Norplant is emphasized and patients are advised to report to the clinic if they have any complications. Menstrual irregularity led to most of the discontinuations in this study, and has been reported to be the most frequent and significant complaint in other settings [19]. Reports from other studies [20,21] have cited medical conditions including headache, excessive weight gain and cardiovascular problems as significant complaints leading to discontinuation of the implants. This was not the case in this study, as only one woman ceased to use Norplant because she developed hypertension while on the implant. The absence of these medical conditions as reasons for discontinuation may result from adequate selection of cases and counselling received by the clients. Nigeria’s total fertility rate of 6 [2] is one of the highest in Africa, and the fertility rate of the locality studied may be higher than the overall national rate. Tradition, in some parts of Eastern Nigeria, honors women who deliver 9 or more children in their lifetime. At the occasion of the 9th birth, a goat is slaughtered to celebrate what is called the ‘ewu ukwu’ [22] ceremony (roughly translated as ‘goat for pelvis’). Strong belief in reincarnation in the local community includes a common fear that sterilization will lead to sterility when a woman or man returns in the ‘next life’. Thus Norplant, which is long-acting and reversible, may have a special appeal among women who want to limit family size, but who fear ‘after life’ consequences of sterilization. The choice of Norplant by many women as an alternative to sterilization has also been reported from the UK [23]. Long-acting methods such as Norplant may, therefore, be fulfilling an unmet need for contraception in this community.
Results from this study show that Norplant is safe and acceptable to a small sector of Nigerian women, characterized by high parity, older age, and moderate (but not high) educational status. Norplant appears to have made an impact among family planning clients at the university teaching hospital because within 3 years of its inception, 8% of the women had accepted it as their family planning method. The acceptance rate has remained constant within this period. It is possible that introduction of Norplant into our family planning practice will attract high-parity women who are averse to sterilization. Sexually transmitted diseases are thought to be highly prevalent in Nigeria and Africa, as are many other communicable diseases [24]. This may make Norplant a more appropriate contraceptive method than the IUD for clients with a high risk of acquiring sexually transmitted diseases such as teenagers and sex workers. The introduction of a safe and acceptable family planning method will go a long way to increase the currently low contraceptive prevalence in the country. This will consequently improve the general health and socioeconomic status of the country.

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References


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Resumé
Le présent exposé consiste en une évaluation effectuée à l’hôpital universitaire d’Enugu au Nigéria occidental en ce qui concerne l’acceptabilité et l’expérience en matière d’utilisation du dispositif contraceptif Norplant. Au cours d’une période de trente six mois, cent soixante treize femmes (représentant huit pour cent de la population de la clinique) ont accepté de porter les implants. L’utilisation de Norplant prédominait chez des mères de familles nombreuses et la proportion d’utilisatrices de Norplant était la plus élevée chez les femmes de 30 à 34 ans. La comparaison entre utilisatrices de Norplant et de DIU a fait ressortir que les premières étaient beaucoup moins instruites: moins d’un pour cent des utilisatrices de Norplant avaient conclu l’éducation du niveau tertiaire, comparées à 25 pour cent pour les utilisatrices de DIU. Le taux de poursuite du port des implants étaient de 89% au terme de trois ans, donnant à penser que cette méthode est susceptible d’améliorer le faible recours à la contraception dans cette région.

Resumen
Este trabajo es una evaluación de la aceptabilidad y la experiencia en el uso del dispositivo anticonceptivo Norplant en el Hospital Escuela de la Universidad de Nigeria, Enugu, región oriental de Nigeria. Durante un periodo de treinta y seis meses, ciento setenta y tres mujeres (que representaban el 8% de la población clínica) aceptaron el implante. El uso de Norplant se concentró entre las mujeres de alta paridad y las proporciones de usuarias de Norplant señalaron el nivel máximo entre mujeres de 30 a 34 años de edad. Al compararse las aceptadoras de Norplant y de DIU, se determinó que las usuarias de Norplant tenían un nivel de educación significativamente menor: menos del 1% de las aceptadoras de Norplant había concluido la educación terciaria, en comparación con el 25% de las nuevas usuarias de DIU. La tasa de continuación con Norplant era del 89% al cabo de tres años, lo cual sugiere que este método tiene el potencial de mejorar la baja frecuencia de anticonceptivos en esta región.