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Original Research Article

Assessment of Effectiveness and Side Effects of Subdermal Implant (Implanon Nxt) Among Women Attending Tertiary Care Institute of Western Rajasthan

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Conflict of interest: Nil

Abstract

Background: Subdermal contraceptive implants are among the most effective long-acting reversible contraceptive methods available. Implanon Nxt is a single-rod etonogestrel-releasing implant that provides reliable contraception for up to three years. Despite its high contraceptive efficacy, users may experience certain side effects, particularly menstrual disturbances, which may influence continuation rates.

Objective: To assess the effectiveness and side effects of the subdermal contraceptive implant Implanon Nxt among women attending a tertiary care institute in western Rajasthan.

Materials and Methods: This hospital-based prospective observational study was conducted at Umaid Hospital, Dr. S.N. Medical College, and Jodhpur from January 2025 to December 2025. A total of 368 women of reproductive age who opted for Implanon Nxt insertion were included in the study. Baseline socio-demographic and clinical data were recorded using a pre-designed proforma. Participants were followed to evaluate the effectiveness of the implant and to document any side effects experienced during the study period. Data were analyzed using descriptive statistics and presented as frequencies and percentages.

Results: The majority of participants belonged to the 20–24 years age group (37.8%). Most women were urban residents (76.5%) and housewives (91.2%). Multiparous women constituted 64.2% of the study population. Side effects were reported in 65.7% of participants, with menstrual disturbances being the most common (54.9%), followed by non-menstrual side effects (18.1%). Implant removal was observed in 2.2% of cases, with side effects being the most frequent reason for discontinuation (72.7%).

Conclusion: Implanon Nxt was found to be a highly effective and safe long-acting reversible contraceptive method. Although menstrual disturbances were commonly reported, the overall discontinuation rate was low. Proper counseling regarding expected side effects may improve acceptance and continuation of this contraceptive method.

Keywords: Implanon Nxt, Subdermal implant, Contraception, Side effects.

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Introduction

Family planning is an essential component of reproductive health and plays a significant role in reducing maternal and child morbidity and mortality. Effective contraceptive methods allow women to plan and space pregnancies according to their reproductive intentions. The need for reliable contraception becomes particularly important among women of reproductive age, especially women approaching advanced maternal age, as pregnancies after the age of 35 years are associated with increased obstetric risks. Therefore, the availability of safe and effective contraceptive methods remains an important public health priority [1]. Long-acting reversible contraceptives (LARCs) are considered among the most effective temporary contraceptive methods because they provide prolonged protection with minimal user dependence. Subdermal contraceptive implants are an important form of LARC that release a low dose of progestin hormone into the circulation. The

hormone suppresses ovulation, thickens cervical mucus, and causes endometrial changes, thereby preventing fertilization and implantation [2]. Implanon Nxt is a single-rod etonogestrel-releasing subdermal contraceptive implant that provides effective contraception for up to three years. It is inserted under the skin of the upper arm through a simple outpatient procedure and can be removed whenever pregnancy is desired. Clinical studies have demonstrated that Implanon has a very high contraceptive efficacy with an extremely low failure rate, making it one of the most reliable reversible contraceptive methods available [3].

However, the use of hormonal implants may be associated with certain side effects, particularly changes in menstrual bleeding patterns such as irregular bleeding, spotting, prolonged bleeding, or amenorrhea. These menstrual disturbances are among the most commonly reported reasons for dissatisfaction or discontinuation of the method among some users [4].

In addition to contraceptive benefits, hormonal implants may provide several non-contraceptive advantages, including reduction in dysmenorrhea and improvement in menstrual regulation. International guidelines have also recognized the safety and suitability of contraceptive implants for a wide range of women with minimal contraindications [5–7].

Materials and Methods

This hospital-based prospective observational study was conducted at Umaid Hospital, Dr. S.N. Medical College, Jodhpur, a tertiary care institute in western Rajasthan. The study was carried out over a period of one year from January 2025 to December 2025. The objective of the study was to assess the effectiveness and side effects of the subdermal contraceptive implant Implanon Nxt among women attending the family planning services of the hospital. Women who delivered by cesarean section or normal vaginal delivery were also counseled in the postnatal ward regarding contraceptive options, apart from counseling provided in the family planning department.

Study Population

All women of reproductive age who opted for Implanon Nxt insertion during the study period and provided informed consent were included in the study. Women who had contraindications to hormonal contraceptive implants, those suffering from serious systemic illnesses, and those unwilling to provide informed consent were excluded from the study.

Sample Size: The sample size was calculated using the formula $n = Z^2 \times p \times q / d^2$, considering the expected prevalence of side effects was taken as 65.9% based on previous studies with a confidence level of 95% and an absolute precision of 6.5%. Based on this calculation, the required sample size was determined to be 368 participants.

Procedure: Eligible participants were counseled regarding the procedure, benefits, and possible side effects of the contraceptive implant before insertion. After obtaining informed written consent, the Implanon Nxt implant was inserted subdermally in the inner aspect of the non-dominant upper arm under aseptic conditions and local anesthesia by a trained healthcare provider following standard clinical protocols.

Data Collection and Follow-up: Baseline socio-demographic and clinical information including age, residence, educational status, occupation, parity, and medical history were recorded using a pre-designed proforma.

Participants were followed up to evaluate the effectiveness of the implant and to document any side effects during the study period, with particular attention to menstrual disturbances and other non-menstrual side effects.

Statistical Analysis: Data were entered in Microsoft Excel and analyzed using descriptive statistics. Frequencies and percentages were calculated to summarize demographic characteristics, side effects, and implant removal rates.

Results

Table 1: Socio-demographic characteristics of the study participants

Variable	Category	Number of cases	Percentage
Age (years)	15–19	10	2.7%
	20–24	139	37.8%
	25–29	118	32.1%
	30–34	70	19.0%
	35–39	24	6.5%
	40–44	5	1.4%
	>45	1	0.3%
Residence	Urban	282	76.5
	Rural	86	23.5
Occupation	Housewife	336	91.2
	Working	32	8.8

Table 2: Distribution of participants according to educational status and parity

Variable	Category	Number of cases	Percentage
Education level	Illiterate	14	3.9
	Primary	213	57.8
	Secondary	101	27.5
	Graduate	40	10.8
Parity	P1	91	24.7%
	P2	175	47.5%
	P3	102	27.7%

Table 3: Implant Removal and Follow-up

Variable	Number of cases	Percentage
Implant removal	8	2.2%
Follow-up cases	199	54.1%
Total insertion	368	100%

Table 4: Timing of Implant Insertion

Insertion time	Number of cases	Percentage
Interval	124	33.7%
Post-partum	197	53.5%
Post-abortion	48	13.0%
Total	**368**	**100**

Discussion

The present study evaluated the effectiveness and side effects of the subdermal contraceptive implant Implanon Nxt among women attending a tertiary care institute in western Rajasthan. In the present study, the majority of participants belonged to the age group of 20–24 years, indicating that young reproductive age women are more likely to adopt long-acting reversible contraceptive methods. Similar findings have been reported in previous studies which observed good acceptance of contraceptive implants among women seeking effective and long-term contraception [15].

In the present study, the majority of implant insertions were performed during the postpartum period (53.5%). Most women were counseled for contraceptive use after delivery, either following normal vaginal delivery or cesarean section during their stay in the postnatal ward.

Counseling was also provided in the postoperative ward and family planning department. Postpartum counseling plays an important role in improving the acceptance of long-acting reversible contraceptive methods because women are already in contact with healthcare providers and are more receptive to family planning advice.

In this study, side effects were reported in 65.7% of participants, with menstrual disturbances being the most common complaint. Irregular bleeding, spotting, or amenorrhea are well-recognized effects associated with hormonal contraceptive implants. Previous studies have reported similar findings, where menstrual pattern changes were the most frequently observed side effects among implant users [12]. These changes are mainly due to the continuous release of progestin from the implant which alters the endometrial response.

Despite these side effects, the contraceptive efficacy of the implant was found to be very high. No contraceptive failure was observed during the study period, highlighting the effectiveness of Implanon Nxt as a reliable long-acting reversible contraceptive method. Previous clinical trials have also demonstrated that etonogestrel implants provide highly effective contraception with extremely low failure rates [8,9]. Furthermore, studies evaluating extended use of etonogestrel implants have suggested that the contraceptive effectiveness may continue beyond the recommended duration, emphasizing the reliability of this method [10,12].

In the present study, the implant removal rate was 2.2%, with side effects, particularly menstrual irregularities, being the most common reason for discontinuation. Similar findings have been reported in earlier studies where menstrual disturbances were identified as the primary reason for implant removal [11,13,14]. However, appropriate counseling regarding expected side effects has been shown to improve continuation rates and overall user satisfaction.

Conclusion

The present study demonstrates that Implanon Nxt is a highly effective and safe long-acting reversible contraceptive method. Although menstrual disturbances were commonly reported, the discontinuation rate remained low. Proper counseling regarding expected side effects may

improve acceptance and continuation of this method.

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