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RESEARCH

Prevalence and predictors of Implanon uptake in Ugu (Ugu North Sub District) 2016/17

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Background: The contraceptive implant (Implanon) has been recognised as one of the most effective family planning methods and is a healthier choice for women in Africa due to its efficacy and convenience. Despite the evidence of effectiveness and safety of the implant, the actual uptake for Implanon use in the Ugu district of KwaZulu-Natal is relatively low. The aim of the study was to determine factors associated with Implanon uptake in Ugu North Sub District 2016/17.
Methods: An observational cross-sectional study with an analytical component using self-administered questionnaires to collect information from 385 participants using randomised systematic sampling was conducted at family planning clinics at GJ Crookes Hospital and seven surrounding primary health care clinics. The chi-square test and multivariate logistic regression was used to determine associations.
Results: Some 16% ($n = 60$) of the participants utilised Implanon. Despite having the correct knowledge 65.7% ($n = 220$) were not willing to use Implanon if it were offered. In addition, 55% of participants ($n = 177$) believed Implanon had more side effects. Parity (< 4 children) was found to be a statistically significant protective factor against ($p < 0.05$) Implanon uptake.
Conclusion: Implanon is a highly unattractive method of contraception for women residing in the Ugu North Sub District. Fear of side effects and invasive method of insertion were identified as the major barriers to Implanon use. Education and increased patient awareness are strategies to increase the desirability and uptake of Implanon.

Keywords Contraception, sexual health, parity, Implanon uptake, primary healthcare

Background

The use of modern contraceptives globally has increased slightly from 54.0% in 1990 to 57.4% in 2014.[1] In 2015, 19.0% of women who were married or cohabiting depended on female sterilisation, whilst 14.0% of women opted for a long-acting intrauterine contraceptive device (IUCD).[2] Fewer women relied on short-acting contraceptive methods as only 9.0% used the pill and 5.0% used an injectable. In Africa and Europe, short-term methods have been found to be most dominant whereas in Asia and North America long-term methods such as implants and IUCD and permanent contraception are most used by women.[3] Variability in the use of certain contraceptive methods is found in high-, middle- and low-income countries. In Ethiopia primarily the injectable (20.8%), was increasingly relied upon followed by the long-acting reversible contraceptives (LARC) (3.7%).[4] In South Africa (SA), the most common contraceptive method was the injectable (28.4%) with the oral contraceptive pill as second choice (10.9%).[4] In SA, the prevalence of current modern contraceptive use remains low although it has increased, from 37.3% in 2013/14 to 46.8% in 2014/15. The contraceptive prevalence for SA is below the national target of 55.0%.[5]

In SA, the best performing province for 2014/15 with the highest contraceptive prevalence was the Western Cape (60,0%) with the province of Gauteng producing the lowest contraceptive prevalence (38.7%). The uMgungundlovu District (KZN) showed the highest contraceptive prevalence (52.9%) in the country. Pixely ka Seme was the third poorest performing district (33.0%). The Ugu district was ranked among the 10 worst in the country with a 47.0% contraceptive prevalence, below the target of 55.0%.[5] Access to highly effective clinical methods of contraception like Implanon are found to be less prevalent among disadvantaged young women living in rural areas.[6]

In 2012, the South African Department of Health launched the revised Contraception and Fertility Policy. The policy addresses the prevention and planning of pregnancy by providing quality contraceptive health services that consider the needs of different groups.[7] The new policy emphasises a shift away from injectable progestogens, which have dominated contraceptive use in SA in the past, towards the alternative long-acting and reversible contraceptive sub-dermal implant.[7]

Contraceptive implants have been recognised as one of the most effective family planning methods available and are well known worldwide.[8] Due to its efficacy and convenience,[8] the implant is a long-term hormonal contraceptive method and is a healthier choice for women in sub-Saharan Africa. The following benefits of implants over other contraceptive methods have been listed:[9] (a) requires only motivation for long-term usage; (b) their effectiveness is not user-dependent nor do they require adherence; (c) they have the lowest discontinuation rates of all contraceptive methods; (d) they do not require regular visits for resupply; (e) no extra subsidy is required for consistent use once they have been placed; (f) they are extremely cost effective; (g) the procedure is reversible, and fertility is returned after removal of Implanon.

In February 2014, Implanon was introduced in SA as a recent addition to the choice of contraceptives in an effort to reduce the number of unintended pregnancies.[7] This modern contraceptive is active for three years and is freely available at all government facilities in SA. Trained nurses and midwives can safely

and effectively provide implant insertion and removal in their consulting rooms in a minor surgical procedure. Implanon is a single-rod implant 4 cm long, 2 mm in diameter and contains 68 mg of etonogestrel, and is implanted below the skin of the arm. The primary mode of action is to prevent ovulation and is effective for up to three years.[10] Implanon is a cost-effective contraceptive choice for women as a minimum of three visits in three years to the healthcare provider is required: once for insertion, once for a three-month check and once for removal, as a result reducing the burden of transportation cost and time.[7]

Anecdotal evidence suggests that the uptake of Implanon has been low in the Ugu district with a total of 17 124 Implanon insertions reported for 2014, but the level of Implanon use was reduced significantly for 2015 as only 1 982 clients accepted Implanon insertion. Personal interviews with professional nurses at a clinic level showed that patients are reluctant to use Implanon.

There is a lack of studies that include unmarried women in SA as most studies are restricted to women who are married or cohabiting, thereby restricting comparison of data with other countries. In order to bridge this gap in knowledge, a study was undertaken to determine factors associated with Implanon uptake at a district hospital and surrounding primary health care clinics in Ugu North Sub District and was inclusive of married and unmarried women.

Methods

Study design and setting

An observational cross-sectional study with an analytical component was conducted at the family planning clinics at GJ Crookes Hospital and surrounding PHC clinics in Ugu North between December 2016 and May 2017.

Study population

The study population included all women of reproductive age 18–49 years attending family planning clinics at GJ Crookes District Hospital and the seven surrounding primary health care clinics, namely Gateway, Scottburgh, Pennington, Umzinto, Dlangezwa, Dududu and Philani.

Study sample and sampling method

The sample size was determined using the following criteria: an estimated population proportion of 50%, confidence interval of 95% and relative precision of 10%. Based on the above, a sample size of 385 was required.[11] The number of patients selected per clinic was proportionate to the family planning services headcount. Systematic sampling was used. Every sixth potential participant attending family planning services was identified and requested to participate. In the event the sixth potential participant declined to participate, a replacement was added and considered as the sixth participant.

Data collection

A self-administered structured questionnaire was used to collect primary data from participants. The questionnaire contained closed-ended questions with spaces for explanation where required. The data were collected daily from Monday to Friday in order to retrieve an average of 15–20 self-administered questionnaires per day.

Reliability

The design of the questionnaire was guided by findings from the literature and previously validated questionnaires administered in similar settings. The questionnaire was designed in English and IsiZulu. A translator was recruited to ensure the content of the questionnaire was consistent in both languages and that there were no variations in interpretations. The instrument was prepared using simple language that is easy to understand and to avoid difficult technical terms.

Test–retest reliability was conducted by administering the same measure to the same group of test-takers under the same conditions on two different occasions and correlating the scores. Pearson's correlation was used to determine reliability.

Validity

The content validity of the questionnaire was ensured by using findings from the literature, previously validated questionnaires and through consultation with OM and an independent professional to determine whether the questionnaire was effective, useful and relevant. Face validity was ensured by submitting the questionnaire to a professional nurse providing contraceptive services who examined it superficially to view the order and relevance.

Data management and analysis

All data from the questionnaire were collected and captured electronically using Epi Info (CDC, Atlanta, GA, USA) and was password protected. Descriptive statistics was used to describe sociodemographic characteristics such as age groups, parity, education level and family planning knowledge. The mean and median were used for continuous variables and frequencies, and proportions were used for categorical variables. Frequency tables were generated for categorical variables showing frequency and percentage of sociodemographic characteristics. The chi-square test was used to determine the associations between the uptake of Implanon with independent categorical variables such as marital status, age, religion, parity and educational level. Multivariable logistic regression analysis was carried out to isolate the adjusted effects of each independent variable on the outcome variable, this being the uptake of Implanon.

Ethical considerations

Ethical considerations included obtaining written informed consent from all participants. Ethical approval to conduct this study was obtained from Biomedical Research and Ethics Committee of the University of KwaZulu-Natal (Reference number BE443/16). Permission from the GJ Crookes Medical Manger, District Manager and the KwaZulu-Natal Provincial Department of Health were obtained to conduct this study.

Results

A total of 385 patients attending family planning clinics across seven PHC clinics and one district hospital in Ugu (Ugu North Sub District) were recruited to participate in the study during December 2016–May 2017. The majority of participants were from Umzinto (42.6%; 164), Dududu (16.8%; 65) and GJ Crookes (16.3%; 63) hospital (Table 1).

In total, 97% of participants (97.0%; 372) were currently using contraceptives. Among the women using contraceptives, the injectable was the most preferred method (61.0%; 228/372) followed by the oral contraceptive pill (20.2%; 76/372.) and

Table 1: Frequency of the proportion of study participants per facility between December 2016 and May 2017 in Ugu (Ugu North Sub District) ($n = 385$)

Variables	Number	Proportion
Umzinto clinic	164	42.6%
Dududu clinic	65	16.8%
Dlangezwa clinic	11	2.9%
Philani clinic	13	3.4%
Gateway clinic	16	4.2%
Pennington clinic	30	7.8%
Scottburgh clinic	23	6.0%
GJ Crookes hospital	63	16.3%
Total	385	100%

Implanon (16.0%; 60). Of the total of 60 patients on Implanon the largest proportion of Implanon users (41.3%), were at the district hospital. The reasons given by participants for using contraceptives were to prevent pregnancy (75.0%; 265), to limit family size (16.4%; 265), to space births (10.6%; 40) and to prevent HIV/AIDS (2.4%; 9). The main reasons cited by the women for not using contraceptives were a dislike of contraceptives followed by a desire to have more children and partner disapproval of contraception.

Sociodemographic characteristics of Implanon users and non-users

The mean age among Implanon users and non-users was 27 years (SD 6.25) and 30 years (SD 7.46) respectively. The majority among the population of Implanon users (80.0%; 48) and non-users (61.2%; 199) were never married. In all, 90% (54) of Implanon users and 70.0% (230) of non-users reported having fewer than three children (Table 2). Despite not being significant, participants with a higher level of education (odds ratio [OR] 2.6, (95% CI 0.4–16.3) and occupation (odds ratio [OR] 1.4 (95% CI 0.7–2.8) had higher odds of Implanon use. Marital status (single or unmarried) ($p = 0.05$) and parity (< 4 children) ($p = 0.03$) were significant protective factors against Implanon use on bivariate analysis but not significant on multivariate analysis (Table 3).

Knowledge of and attitude towards Implanon

A total of 326 (86.7%) of the participants were aware of Implanon as a contraceptive modality, with more than half (57.3%) of patients obtaining information from a health worker, 24.2% from friends/relatives, while 12.6% received information from the Internet and 5.8% from the mass media (television, radio and newspapers). Altogether, 91% (307) of participants displayed correct knowledge regarding the insertion of Implanon. Despite this, 65.7% (220) were not willing to use Implanon if it were offered to them whilst 52.3% (115/220) had considered Implanon use. Some 55% (177) of participants believed Implanon had more side effects than other methods, 1.2% (4) believed it could cause cancer and a further 1.2% (4) believed it can cause infertility. This is in contrast to the 42.7% (138) who believed Implanon is better than other methods in preventing pregnancy (Table 4). Multivariate analysis found that willingness to use Implanon was strongly associated with increased Implanon uptake, being four times greater, but their association was not statistically significant. Duration of contraceptive use (< 3 years) remains a significant protective factor against Implanon uptake. After multivariate analysis there was no significant association between Implanon uptake and the factors of

Table 2: Frequency of the sociodemographic profile between Implanon users and non-users at a district hospital and PHC clinics in Ugu (Ugu North Sub District) between December 2016 and May 2017 ($n = 385$)

Variable	Implanon users	Implanon non-users
Age (*n*)	60	325
Mean	27.46 (SD:625)	30.05 (SD:7.46)
Median	27.5 (IQR:18–40)	29 (IQR: 18–49)
< 20	6 (10%)	18 (5.5%)
20–29	33 (55%)	154 (47.4%)
30–39	19 (31.6%)	108 (33.2%)
40–49	2 (3.3%)	45 (13.8%)
Marital status (*n*)	60	325
Single	48 (80%)	199 (61.2%)
Married	8 (13.3%)	65 (20%)
Living with partner	4 (6.6%)	58 (17.8%)
Divorced/separated	0 (0%)	3 (0.09%)
Level of education (*n*)	56	323
Primary	2 (3.3%)	21 (6.5%)
Se Secondary	31 (51.6%)	184 (56.9%)
College/university	25 (41.6%)	96 (29.7%
No formal education	2 (3.3%)	22 (6.8%)
Occupation (*n*)	60	320
Housewife/unemployed	27 (45%)	140 (43.1%)
Employed/business	7 (11.6%)	40 (12.3%)
Unskilled/semiskilled worker	11 (18.3%)	89 (27.4%)
Still in school/college/university	15 (25.0%)	51 (15.7%)
Religion (*n*)	58	322
Christianity	45 (76.3%)	248 (76.3%)
Islam	1 (1.7%)	2 (0.6%)
Traditional others	13 (22.0%)	72 (22.1%)
Ethnic group (*n*)	60	323
Black African	56 (93.33%)	295 (90.7%)
White	1 (1.6%)	5 (1.5%)
Asian	3 (5%)	23 (7.1%)
Number of children (*n*)	60	323
Zero	9 (15.0%)	30 (9.2%)
One	22 (36.6%)	90 (27.7%)
Two	23 (38.3%)	110 (33.8%)
Three	5 (8.3%)	48 (14.7%)
Four or more	1 (1.6%)	45 (13.8%)

Table 3: Bivariate and multivariate analysis of sociodemographic factors of patients associated with Implanon uptake of patients attending a district hospital and PHC clinics between December 2016 and May 2017 ($n = 385$)

Variable	Bivariate analysis: unadjusted OR (95% CI)	Multivariate analysis: adjusted OR (95% CI)
Age (< 27 years)	0.83 (0.4–1.5)	1.41 (0.6–2.9)
Marital status (Single/unmarried)	0.51 (0.2–1.1)*	0.56 (0.2–1.2)
Education (higher)	2.26 (0.2–16.2)	2.6 (0.4–16.3)
Occupation (employed)	1.55 (0.8–3.0)	1.4 (0.7–2.8)
Parity (< 4 children)	0.4 (0.1–0.9)*	0.4 (0.1–1.1)

* = level of statistical significance $p < 0.05$.

Table 4: Patient attitude towards and knowledge of Implanon use among study population at a district hospital and PHC clinics between December 2016 and May 2017 ($n = 385$)

Variable	Study population
Implanon knowledge	$n = 376$
Yes	326 (86.7%)
No	50 (13.3%)
Source of information	$n = 326$
Hospital/health worker	187 (57.3%)
Mass media (TV, radio, newspaper)	19 (5.8%)
Internet	41 (12.6%)
Friends/relatives	79 (24.2%)
Knowledge about Implanon insertion	$n = 337$
Yes	307 (91.1%)
No	30 (8.9%)
Implanon perceptions	$n = 323$
They have more side effects than other methods	177 (54.8%)
They are better at preventing pregnancy	138 (42.7%)
Can cause cancer	4 (1.2%)
Can cause infertility	4 (1.2%)
Willingness to use Implanon in the future	$n = 335$
Yes	115 (34.3%)
No	220 (65.7%)

patient satisfaction, knowledge of side effects, source of information and provision of information (Table 5).

Discussion

Implanon appears to be a less attractive option for a fairly large proportion of women in Ugu (Ugu North Sub District). The overall prevalence use of Implanon at a district and PHC level was 16.0% ($n = 60/385$), similar to results obtained in a 2014 study conducted among 1 057 women in Southern Nigeria, which found the uptake of Implanon was 18.6% ($n = 197/1$ 057).[12] The findings in the current study are higher than in a study conducted in Singaporean women attending an obstetrics and gynaecology clinic at a National University Hospital, which showed the prevalence of implant use as 4.8%,[13] as well as a study in Uganda showing an implant uptake of 1.9% and two studies in Western Nigeria that found the prevalence of Implanon use to be 7% (14/200) and 3.6% (88/2456) respectively.[10,14,15] However, the prevalence of Implanon use in the current study was lower than the 22% uptake reported in a 2015/2016 study in rural Pakistan.[16] The differences in uptake of Implanon in other research in contrast to this study could be attributed to the following factors: study settings, sample sizes, religions and marital status.[8,10,12]

Table 5: Bivariate and multivariate analysis of association between participants' knowledge and attitude towards Implanon and Implanon uptake at a district hospital and PHC clinics between December 2016 and May 2017 ($n = 385$)

Variable	Bivariate analysis: unadjusted OR (95% CI)	Multivariate analysis: adjusted OR (95% CI)
Duration of use	0.02 (0.05–0.2)**	0.04 (0.02–0.06)*
Patient satisfaction	0.09 (0.1–0.35)	0.3 (0.09–8.9)
Knowledge of side effects	0.03 (0.6–0.1)	0.2 (0.02–17.2)
Willingness to use Implanon	8.31 (4.2–16.4)*	4.1 (0.2–98.8)
Provision of information	0.6 (0.3–1.0)	2.7 (0.1–56.7)

* = level of statistical significance $p < 0.05$. ** $p = < 0.001$.

In the current study, the main reasons expressed by the participants for not using Implanon were fear of side effects (67.1%) and the invasive nature of the method (18%) whilst in Western Nigeria women who refused Implanon expressed concerns with pain associated with insertion (9.2%), difficulty in Implanon removal (11.3%), the cost implication of Implanon (2.7%) and the majority believed Implanon insertion involved a surgical operation (76.%).[14]

The mean age of Implanon users in this study was 27 years (SD 6.25) with a median age of 27 years (IQR 18–49. This finding is in line with a study conducted in Uganda, which found that LARC use was greater in women aged 24 years and older (63.69%) and lower among women less than 24 years (36.3%).[15] These results support the Contraceptive CHOICE study in the USA, which found that adolescent girls and women aged 18–19 years were less likely to report any use of LARC compared with women aged 25–29 years.[10,12,17]

The finding in the current study that unmarried women were less likely to use Implanon (OR –0.56) is consistent with other studies which have shown that married women who are supported by their husbands are more likely to use implants.[18] The main reason for using implants is for spacing of pregnancies.

The current study found that participants with higher education preferred long-term methods and had higher odds (OR 2.6) of Implanon use compared with those who had no formal education. The potential reason for this finding is that respondents with secondary education were able to manage information correctly and are aware of the advantages of using Implanon as a contraceptive, namely its convenience, and that it does not require compliance and repeat visits to health facilities.[9]

Parity was a significant protective factor against Implanon use (OR 0.4) in women with fewer than four children. These findings are consistent with a study in Ethiopia showed that women who had more than five children were almost 5.54 times more likely to use an implant contraceptive as compared with women who had fewer than four children.[18]

In a Ugu (Ugu North Sub District) 2016/17 study, about 30% (100) of the women were willing to consider Implanon if offered, while 70.1% (234) would not consider it for various reasons.[19] Some cited possible pain on insertion, health concerns, spousal disapproval and fear of side effects. This study found that unsubstantiated fears regarding Implanon safety can lead women to use less effective methods. Most women in the study chose to use mainly an injectable or an oral contraceptive pill.

Study limitations

Although due care was taken to ensure that the study remained scientifically sound and limitations were minimised at every stage, the following limitations were encountered that may have impacted on the findings:

1. Although the participants were assured of confidentiality and that their participation in the study would not

influence their medical consultation, participants were still reluctant to participate.

2. Respondent bias in the study was beyond the control of the investigator. Participants across all facilities may not have been honest in their response to the questionnaires as they may have felt it would impact negatively.
3. The study focused mostly on individual factors and has not addressed the wider healthcare delivery factors.
4. Although many individual factors were included in the questionnaire, these factors were not exhaustive. Factors such as attitude towards family planning (FP) service use, community approval of FP, road access, distance from health facility and attitude of healthcare personnel, which were found to affect Implanon use in previous studies, were not included.
5. This study relied solely on quantitative data, and it is important that a better understanding of the factors that are associated with Implanon use be explored through future qualitative data.

Conclusion and recommendation

Implanon is a highly unattractive method of contraception for women residing in the Ugu North District with the majority of women have misperceptions regarding the safety and efficacy of Implanon. Fear of the side effects and the invasive nature of the method were identified as a major barrier to the use of Implanon. Higher education and willingness to use Implanon were associated with increased Implanon uptake. The low uptake of Implanon despite patient awareness confirms that a holistic approach to change patients' practice is required that may include social marketing and enlisting high-profile champions to market the programme.

Disclosure statement

No potential conflict of interest was reported by the authors.

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