ABSTRACT

Context: Effective contraceptive use is important after a caesarean or operative delivery because of the possible risks a woman may face in subsequent pregnancies.

Objectives: The objective of the present study was to determine the uptake and choices of contraception among women with previous operative delivery.

Materials and Methods: A retrospective study was conducted at the Barau Dikko Teaching Hospital from 1st January, 2000 to 31st March, 2014. Family planning cards were retrieved, and relevant information was collected and analyzed using the Statistical Package for Social Sciences version 15. Chi-square test was used as a test of association, with significance level established at a P value of < 0.05.

Results: Of the 5992 cards retrieved, 164 (2.7%) had previous operative delivery; 152 caesarean sections and 12 laparotomies for ruptured uterus. Only 17.7% initiated contraception within 6 months. More women were spacers (86.6%) rather than limiters (13.4%). Age, education, religion, parity, prior contraception, and interval from the last delivery were significantly associated with the current choice of contraception (P < 0.05), whereas breast feeding status was not (P > 0.05). Overall, when comparing the pattern among those with a previous operative delivery and those without, there was no significant difference between both the groups; injectables was the most popular method chosen followed by intrauterine devices, oral contraceptive pills, and implants.

Conclusion: Most women with a previous operative delivery were at risk of unwanted pregnancies because they did not initiate contraception within 6 months of their last delivery. Their preferred forms of contraception were injectables and intrauterine devices, which was not significantly different from the methods chosen by other women.

Key words: Contraception; family planning; northern Nigeria; previous caesarean; previous operative delivery.

Introduction

Caesarean section is one of the most common surgical procedures performed worldwide for various indications.\(^1\,2\) Caesarean section rates have generally been on an increase worldwide.\(^1\) In Nigeria, the caesarean section rate (CSR) is variable. A previous study at the teaching hospital in Zaria estimated the overall CSR to be 11.94% and primary CSR as 8.71%.\(^1\) Higher rates have been quoted in other parts of the country; in Enugu, CSR has been reported to be 27.6%,\(^3\) in Oshogbo 35.5%\(^2\) and in Maiduguri 11.8.\(^4\)
Caesarean sections are now much safer than they were in the past due to several reasons such as better antibiotic cover, safe anaesthesia, and blood transfusion practices. Nevertheless, it still carries a higher maternal/perinatal morbidity and mortality than vaginal delivery.\[^1\] Complications may also occur in subsequent deliveries as a result of previous surgery and have a negative impact.\[^1,8\] A woman with a previous caesarean is more likely to have a repeat caesarean in the presence of other complications.\[^6\] Repeated caesarean sections may be associated with adhesions and a higher risk of damage to the bladder, ureters or bowel, and is associated with placenta praevia, placental invasion into the myometrium and peripartum hysterectomy.\[^7\] Mortality rates increase from 8 per 100,000 deliveries with the first cesarean delivery to 39 per 100,000 deliveries with the fourth cesarean delivery.\[^7\]

In the Nigerian context, a woman with a previous caesarean may be faced with additional dangers due to the societal pressures to prove her womanhood by having a vaginal birth. Hence, despite being at higher risk for complications, she may still attempt vaginal delivery outside the health care facility.\[^1,5\]

The World Health Organization (WHO) recommends a birth-to-pregnancy interval of at least 24 months to reduce the risk of adverse maternal, perinatal, and infant outcomes.\[^8\] A delivery less than 2 years from previous caesarean birth is one of the factors associated with a decreased likelihood of a successful vaginal birth after caesarean (VBAC). Therefore, the use of effective contraception is important after a caesarean, and the contact with health personnel during the caesarean should ideally involve adequate counseling and should be an additional motivation for contraceptive uptake.

With the general low contraceptive usage in the country, this study was conducted to determine the uptake and choices of contraception by women who have had a previous caesarean section in this setting, as well as factors that may contribute to their choice of contraception.

**Materials and Methods**

This was a retrospective study conducted at the Barau Dikko Teaching Hospital (BDTH), a 240-bed secondary/tertiary care hospital located in Kaduna and catering to the metropolis and its environs. We retrieved all available client cards from the family planning clinic from 1\(^{st}\) January, 2000 to 31\(^{st}\) March, 2014. Information was collected on demographics, reproductive and contraceptive history. Data of a subset of women with previous operative delivery were extracted. Approval for the study was obtained from the Kaduna state ministry of health. There was little or no risk to clients whose information was kept confidential. Data was analyzed using the Statistical Package for Social Sciences version 22 (IBM SPSS statistics 22.0). Missing responses were stated as such and excluded from analysis. Chi-square was used as a test of association, with significance level established at a $P$ value of $< 0.05$.

**Results**

A total of 5992 case files were retrieved within the study period, but only 164 (2.7%) had a past history of operative delivery; 152 were previous caesarean sections and 12 were laparotomies for ruptured uterus.

As shown in Table 1, analysis of the subset of women with a past history of operative delivery revealed that all women were married, majority were between the ages of 20 and 34 years (80.5%), however, all 12 women with a previous ruptured uterus were aged between 25 and 29 years of age. Table 1 also shows that a majority of women had completed their secondary education (70.7%), were of lower parity (less than 4 deliveries) and were Muslims (51.8%). Approximately 58.5% of women were currently breastfeeding and only 17.7% initiated contraception within 6 months of their last delivery. More of the women were spacers (86.6%) rather than limiters (13.4%).

Table 1 also shows that 49 women (29.9%) had used contraception in the past, which were most commonly oral contraceptive pills. However, their current choice of contraception was most commonly the injectable methods (48.2%). A high percentage of women were also using intrauterine devices (37.2%). There was no record of condom use or use of permanent methods of contraception.

As shown in Table 2, age, education, religion, parity, prior contraception and interval from last delivery were significantly associated with the current choice of contraception in this subset of women with previous operative delivery ($P < 0.05$), whereas breast feeding status was not ($P > 0.05$). Younger women preferred to use oral contraceptive pills and injectables whereas older women preferred intrauterine devices. The higher the educational status, the higher the likelihood of contraceptive use, most commonly injectables followed by intrauterine devices. Less educated women preferred to use oral contraceptive pills. Muslims were more likely to use injectables whereas Christians were more likely to use intrauterine devices. Those of lower parity were more likely to use injectables whereas those of higher parity were more likely to use intrauterine devices. Only those using injectable methods of contraception were more likely to initiate contraception.
within 6 months of their last delivery. Those who had used prior contraception were more likely to choose intrauterine devices as their current method.

**Table 1: Demographic characteristics of family planning clients with previous operative delivery**

| Variable                        | Frequency | %   |
|---------------------------------|-----------|-----|
| **Age**                         |           |     |
| <20                             | 8         | 4.9 |
| 20-24                           | 34        | 20.7|
| 25-29                           | 38        | 23.2|
| 30-34                           | 60        | 36.6|
| 35-39                           | 10        | 6.1 |
| 40-44                           | 14        | 8.5 |
| ≥50                             | 0         | 0   |
| **Education**                   |           |     |
| None                            | 8         | 4.9 |
| Some primary                    | 5         | 3   |
| Completed primary               | 13        | 7.9 |
| Some secondary                  | 22        | 13.4|
| Completed secondary or more     | 116       | 70.7|
| **Religion**                    |           |     |
| Islam                           | 85        | 51.8|
| Christianity                    | 79        | 48.2|
| Others                          | 0         | 0   |
| **Parity**                      |           |     |
| 1-2                             | 94        | 57.3|
| 3-4                             | 53        | 32.3|
| >4                              | 9         | 5.5 |
| **Currently breastfeeding**     |           |     |
| Yes                             | 96        | 58.5|
| No                              | 47        | 28.7|
| Missing                         | 21        | 12.8|
| **Last pregnancy ended**        |           |     |
| <6 months                       | 29        | 17.7|
| 6-15 months                     | 110       | 67.1|
| >15 months                      | 25        | 15.2|
| **Reason for contraception**    |           |     |
| limiters                        | 22        | 13.4|
| Spacers                         | 142       | 86.6|
| **Prior contraception**         |           |     |
| Oral contraceptive pills        | 19        | 11.6|
| Injectables                     | 16        | 9.8 |
| Intrauterine devices            | 14        | 8.5 |
| Implants                        | 0         | 0   |
| Missing                         | 115       | 70.1|
| **Current contraceptive choice**|           |     |
| Oral contraceptive pills        | 21        | 12.8|
| Injectables                     | 79        | 48.2|
| Intrauterine devices            | 61        | 37.2|
| Implants                        | 3         | 1.8 |
| Missing                         | 0         | 0   |
| **Total**                       | 164       | 100 |

Overall, when comparing the pattern among those with a previous operative delivery and those without, there was no significant difference among both groups [Table 3]; injectables was the most popular method chosen followed by intrauterine devices, oral contraceptive pills and implants.

**Discussion**

Number of women seen at the family planning clinic with a past history of operative delivery (2.7%) was low. This is despite higher caesarean rates in the country.[1-4] BDTH is a tertiary center, and family planning services are available at the primary and secondary healthcare centers. Hence, while women may have caesarean section at secondary/tertiary healthcare centers, they can access family planning care at lower level facilities. Table 1 shows the demographic characteristic of the clients with previous operative delivery, and Table 2 compares these and other factors with their contraceptive choices. Age, education, religion, parity, when last pregnancy ended and prior use of contraception significantly affected the choice of contraception whereas breast feeding did not. Majority were in the age group of 20–34 years (80.5%), which is within the reproductive age when most women get pregnant and may want to delay pregnancy. Most had been educated up to the secondary level (70.7%); a positive correlation between increasing education and higher uptake of contraception is well documented.[9-11] Educated women are more likely to be aware of as well as accept contraceptive services and understand its benefits by dispelling myths.

Most of the women in this study with previous operative delivery were of lower parity (less than 4 deliveries). Perhaps those of higher parity may have opted for sterilization during caesarean section. There are no specific guidelines for choice or contraindication to use of different contraceptive methods in women with previous operative deliveries. More women (58.5%) were breastfeeding, and exclusive breastfeeding can be used as a reliable form of contraception within the first 6 months postpartum.[12] However, only 17.7% of these women sought contraception within 6 months of their last delivery. This puts them at a high risk of unwanted pregnancies. Though abortion with a previous caesarean in early pregnancy is fairly safe except for a risk of uterine rupture[13] it is still illegal in Nigeria. The usual concerns and contraindications in the immediate postpartum period, especially for hormonal contraception before lactation is established, also apply for women with previous caesarean birth.[12] More women changed their preferred method of contraception from oral contraceptive pills to injectable methods after operative delivery but there was also an increased use of intrauterine
Table 2: Cross tabulations of demographic factors of clients and their contraceptive choice

| Variable           | Oral contraceptive pills | Injectables | Implants | Intrauterine devices |
|--------------------|---------------------------|-------------|----------|-----------------------|
| Age (n=164)        |                           |             |          |                       |
| <20                | 3                         | 0           | 0        | 0                     |
| 20-24              | 13                        | 21          | 0        | 0                     |
| 25-29              | 0                         | 30          | 3        | 5                     |
| 30-34              | 0                         | 28          | 0        | 32                    |
| 35-39              | 0                         | 0           | 0        | 10                    |
| 40-44              | 0                         | 0           | 0        | 14                    |
| Chi square 165.638, degree of freedom 15, P value 0.000 |

| Education (n=164) |                           |             |          |                       |
|--------------------|---------------------------|-------------|----------|                       |
| None               | 8                         | 0           | 0        | 0                     |
| Some primary       | 0                         | 0           | 0        | 5                     |
| Completed primary  | 13                        | 0           | 0        | 0                     |
| Some secondary     | 0                         | 22          | 0        | 0                     |
| Completed secondary or more | 0             | 57          | 3        | 56                    |
| Chi square 194.182, degree of freedom 12, P value 0.000 |

| Religion (n=164)  |                           |             |          |                       |
|--------------------|---------------------------|-------------|----------|                       |
| Islam              | 8                         | 51          | 3        | 23                    |
| Christianity       | 13                        | 28          | 0        | 38                    |
| Chi square 14.375, degree of freedom 3, P value 0.002 |

| Parity (n=156)    |                           |             |          |                       |
|--------------------|---------------------------|-------------|----------|                       |
| 1-2                | 13                        | 51          | 3        | 27                    |
| 3-4                | 0                         | 28          | 0        | 25                    |
| >4                 | 0                         | 0           | 0        | 9                     |
| Chi square 27.411, degree of freedom 6, P value 0.000 |

| Breastfeeding (n=143) |                           |             |          |                       |
|-----------------------|---------------------------|-------------|----------|                       |
| Yes                   |                           | 44          | 3        | 41                    |
| No                    | 8                         | 27          | 0        | 20                    |
| Chi square 6.243, degree of freedom 3, P value 0.100 |

| Interval from last delivery (n=164) |                           |             |          |                       |
|-------------------------------------|---------------------------|-------------|----------|                       |
| <6 months                           |                           |             |          |                       |
| 6-15 months                         | 1                         | 23          | 3        | 0                     |
| >15 months                          | 20                        | 54          | 0        | 36                    |
| Chi square 80.294, degree of freedom 6, P value 0.000 |

| Prior contraception (n=49)           |                           |             |          |                       |
|--------------------------------------|---------------------------|-------------|----------|                       |
| Oral contraceptive pills             |                           |             |          |                       |
| Injectables                          | -                         | -           | 0        | 19                    |
| Intrauterine devices                 | -                         | -           | 3        | 13                    |
| Chi square 6.591, degree of freedom 2, P value 0.037 |

Table 3: Comparison of patterns of contraception among those with a previous operative delivery and those without

| Previous operative delivery? | Oral contraceptive pills | Injectables | Implants | Intrauterine devices | Total |
|------------------------------|---------------------------|-------------|----------|----------------------|-------|
| No (row %)                   | 652 (12.4%)               | 2344 (44.6%)| 220 (4.2%)| 2035 (38.8%)         | 5251 (100%) |
| Yes (row %)                  | 21 (12.8%)                | 78 (48.2%)  | 3 (1.8%)  | 61 (37.2%)           | 164 (100%) |
| (Chi square 2.714, degree of freedom 3, P value 0.438) |

devices. However, intrauterine devices can be inserted even at the time of a caesarean delivery and are safe and effective, but is associated with higher perforation and expulsion rates. While this method is still safe and may have been ideal for women, especially as most women in this environment are lost to follow up and majority of caesarean sections done in this part of the world are emergencies; hence, women may not have received adequate counselling to consent to intraoperative insertion of intrauterine devices.
Overall, the preferred form of contraception among women with a previous operative delivery was the “injectables;” most
Conclusion and Recommendations

Most women with a previous operative delivery were at risk of unwanted pregnancies because they did not initiate contraception after 6 months of their last delivery. Their preferred forms of contraception were injectables and intrauterine devices, which was not significantly different from methods chosen by other women. To increase the uptake of intrauterine devices during caesarean, awareness and training need to be increased. Better counseling and specific guidelines needs to be developed for this subset of women in view of possible complications that they may face in future pregnancies. Prospective and qualitative studies may help further explore the findings.

Limitations of the study

While the overall sample was large, the subset of women with previous operative delivery is small, which may reduce the power and generalizability of the study. The study had a cross-sectional retrospective design, some variables were missing and others cannot be fully explored. The number and timing of previous cesareans were not stated.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Kolawole AO, Onwuhaafu P, Adesiyun G, Oguntayo A, Mohammed-Duro A. Audit of Primary Caesarean Sections in Nulliparae Seen in ABUTH Kaduna. Aust J Basic App Sci 2011;5:1088-97.
2. Adekunle D, Adeyemi A, Fasanu A. Caesarean section at a tertiary institution in Southwestern Nigeria—A 6-year audit. Open J Obstet Gynecol 2013;3:357-61.
3. Ugwu E, Obioha K, Okezie O, Ugwu A. A Five-year Survey of Caesarean Delivery at a Nigerian Tertiary Hospital. Ann Med Health Sci Res 2011;1:77-83.
4. Geidam AD, Audu BM, Kasuwa BM, Obed JY. Rising trends and indications of caesarean section at the university of Maiduguri teaching hospital, Nigeria. Ann Afr Med 2009;8:127-32.
5. Ijaia MA, Aboyejjil PA. Caesarean delivery the Trend over a ten-year period at Ilorin, Nigeria. Niger J Surg Res 2001;3:11-8.
6. Iyoke CA, Ugwu GO, Ezegwu FO, Lawani OL, Onah HE. Risks associated with subsequent pregnancy after one caesarean section: A prospective cohort study in a Nigerian obstetric population. Niger J Clin Pract 2014;17:442-8.
7. Quinlan JD, Murphy NJ. Cesarean Delivery: Counseling Issues and Complication Management. Am Fam Physician 2015;91:178-84.
8. WHO. Report of a WHO Technical Consultation on Birth Spacing. Geneva, Switzerland: WHO; 2007.
9. Rutaremwa G, Kabagenyi A, Wandera SO, Jhamba T, Akior E, Nviiri L. Predictors of modern contraceptive use during the postpartum period among women in Uganda: A population-based cross sectional study. BMC Public Health 2015;15:262.
10. Ndugw C, Cleland J, Madise NJ, Fotsu JC, Zulu EM. Menstrual pattern, sexual behaviors, and contraceptive use among postpartum women in Nairobi urban slums. J Urban Health 2011;88(Suppl 2):S341-55.
11. Lopez LM, Hiller JE, Grimes DA, Chen M. Education for contraceptive use by women after childbirth. Cochrane Database Syst Rev 2012;8:CD001863.
12. Mohammed-Durosinlorun A, Abubakar A, Adze J, Bature S, Mohammed C, Taingson M, Ojabo A. Comparison of Contraceptive Methods Chosen by Breastfeeding, and Non-Breastfeeding, Women at a Family Planning Clinic in Northern Nigeria. Health 2016;8:191-7.
13. Mazouni C, Provansal M, Porcu G, Guidicelli B, Heckenroth H, Gammer M, et al. Termination of pregnancy in patients with previous cesarean section. Contraception 2006;73:244-8.
14. Goldstuck ND, Steyn PS. Intrauterine Contraception after Cesarean Section and during Lactation: A Systematic Review. Int J Womens Health 2013;5:811-8.
15. Ameh N, Sule ST. Contraceptive choices among women in Zaria, Nigeria. Niger J Clin Pract 2007;10:205-7.
16. Muhammad Z, Maimuna DG. Contraceptive trend in a tertiary facility in North Western Nigeria: A 10 year review. Niger J Basic Clin Sci 2014;11:99-103.
17. National Population Commission (NPC) [Nigeria] and ICF International (2014) Nigeria Demographic and Health Survey 2013. National Population Commission and International ICF, Abuja.
18. Anyebe EE, Olufemi SK, Lawal HR. Contraceptive Use among Married Women in Zaria, Northwest Nigeria. Res Humanities Soc Sci 2014;4:69-75.