



### Trends in the use of Female Sterilisation through Minilaparotomy for Contraception at a Teaching Hospital in North Central Nigeria

*Tendances de la stérilisation féminine par mini laparotomie comme moyen contraceptif dans un hôpital universitaire du nord-centre du Nigeria*

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#### ABSTRACT

**BACKGROUND:** Female sterilisation is the most widely used method of contraception worldwide. However, only a small proportion of contraceptors are reported to rely on female sterilisation in Nigeria. Continuous reviews of trends in its use are necessary to develop policies that will improve uptake in the country.

**OBJECTIVE:** To determine the volume and trends in the use of female sterilisation through minilaparotomy as a method of contraception in a Nigerian university teaching hospital.

**Methods:** The records of women who had sterilisation through minilaparotomy over a ten year period were reviewed for social-demographic characteristics, reasons for undergoing sterilisation, timing of the procedure, surgical method used and complications recorded. This is too sketchy

**RESULTS:** Female sterilisation through minilaparotomy accounted for 95 (0.8%) of the 12,035 total contraceptive use during the period. The rate decreased from 1.5% of total contraceptive use in 1995 to 0.22% in 2003. Eighty two (86.4%) of the female sterilisation acceptors were aged 35 years and above, 46 (48.4%) had no or only primary education and 42 (44.2%) were petty traders. Sixty six (69.5%) of the women were grandmultiparae and 70 (73.7%) had more children than they desired. Seventy three (76.8%) had used other contraceptive methods before sterilisation. The average cost of female sterilisation through minilaparotomy in our hospital was USD25 and this was significantly more than the cost of other contraceptives, and more than hospital charges for normal vaginal delivery.

**CONCLUSION:** The proportion of contraceptive acceptors who rely on female sterilisation is low in our environment and has steadily declined over the years. The higher cost of the procedure as compared to other contraceptives appears to be the main barrier. Reduction or outright elimination of cost will probably act as incentive for women to choose female sterilisation as a method of contraception. *WAJM 2012; 31(1): 34–38.*

#### RÉSUMÉ

**CONTEXTE:** La stérilisation féminine est la méthode contraceptive la plus largement utilisée à l'échelle mondiale. Toutefois au Nigeria il est rapporté que seule une faible proportion de praticiens de la contraception compte sur la stérilisation féminine. Une revue soutenue sur les tendances dans son utilisation est nécessaire pour développer des stratégies visant à améliorer l'intérêt de cette méthode au Nigeria.

**OBJECTIF:** Déterminer le volume et les tendances dans l'utilisation de la stérilisation féminine par mini laparotomie comme méthode contraceptive dans un Hôpital Universitaire du Nigeria.

**MÉTHODES:** Les données de femmes ayant subi une stérilisation par mini laparotomie sur une période de 10 ans ont été revues en s'intéressant aux aspects socio démographiques, aux raisons motivant la stérilisation, à la durée de l'intervention, à la technique utilisée et aux complications. La liste n'est pas exhaustive.

**RÉSULTATS:** La stérilisation féminine par mini laparotomie a concerné 95 (0,8%) des 12,035 cas de contraception durant la période d'étude. Le taux a baissé passant de 1,5% du total des contraceptions en 1995 à 0,22% en 2003. Quarante deux (86,4%) des femmes ayant accepté la stérilisation étaient âgées de 35 ans et plus, 46 (48,4%) avaient au maximum une éducation primaire et 42 (44,2%) étaient de petites marchandes. Soixante six (69,5%) des femmes étaient de grandes multipares et 70 (73,7%) avaient plus d'enfants qu'elles ne souhaitaient. Soixante treize (76,8%) utilisaient d'autres méthodes contraceptives avant la stérilisation. Le coût moyen de la stérilisation féminine par mini laparotomie dans notre hôpital était de 25 USD et ce coût était significativement plus élevé que celui des autres moyens contraceptifs de même que les charges hospitalières pour un accouchement normal par voie vaginale.

**CONCLUSION:** La proportion de femmes acceptant la contraception et optant pour une stérilisation féminine est faible dans notre environnement et a même baissé au fil des années. Les couts élevés de la technique comparés aux autres contraceptions constituent une barrière. La baisse ou tout simplement la suppression des coûts pourraient être une bonne incitation aux femmes à utiliser la stérilisation comme méthode contraceptive. *WAJM 2012; 31(1): 34–38.*

Keywords: Female sterilisation, minilaparotomy, trend.

Mots clés: Stérilisation, mini laparotomie, tendance

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## INTRODUCTION

Female sterilisation involves occlusion of the fallopian tubes to prevent pregnancy.<sup>1-4</sup> It provides a safe and effective permanent contraception.<sup>2,3</sup> Tubal occlusion can be achieved by surgical ligation of the tubes or by application of clips, rings or electro-coagulation.<sup>4,5</sup> Over the years, female sterilisation has been achieved through minilaparotomy and laparoscopy though laparotomy and caesarean section also offer opportunity to effect sterilisation when indicated.<sup>3,4</sup> New methods involving trans-cervical occlusion of the tubes using chemicals (quinacrine), micro-coils and plugs are in various stages of development.<sup>6</sup> Although, female sterilisation is increasingly being performed through laparoscopy in the developed world, scarcity of sophisticated equipment and trained specialist limits its use in African countries.<sup>7</sup> Thus, minilaparotomy is the most popular approach to female sterilisation in most developing countries including Nigeria.<sup>8-10</sup> It is considered ideal for sterilisation performed within a few days of delivery though it is also used for interval procedures.<sup>2,5</sup>

Female sterilisation is the most widely used method of contraception worldwide.<sup>2</sup> Although popular in developed countries, it is practised to a limited extent in Africa.<sup>7</sup> In Nigeria, only a small proportion of contraceptors are reported to rely on female sterilisation.<sup>10-12</sup> Among the reasons advanced for this low rate of sterilisation are low level of knowledge about the procedure, cultural and religious factors favouring large family size and inadequate facilities and trained personnel.<sup>2</sup> The benefits of female sterilisation are especially important in developing countries where temporary methods of contraception may be periodically in short supply or used less effectively, and where unwanted pregnancies carry a high risk of maternal death.<sup>7</sup> Therefore, efforts to improve demand and supply services for sterilisation are desirable. This study was undertaken to determine the trend in female sterilisation through minilaparotomy at the University of Ilorin Teaching Hospital.

## SUBJECT, MATERIALS AND METHODS

University of Ilorin Teaching Hospital is located in Ilorin, a sub-urban town in North Central Nigeria, and has an average annual delivery of 3000. The family planning clinic offers a wide range of contraceptive methods. It has a minor operating theatre where minilaparotomy procedure for sterilisation is performed. The records of women who had sterilisation through minilaparotomy from 1<sup>st</sup> January 1994 to 31<sup>st</sup> December 2003 were reviewed. Social-demographic characteristics of clients such as age, educational status and parity were obtained. The reasons for undergoing sterilisation, timing of the procedures, type of anaesthesia, surgical method used and complications were also studied.

Prior to sterilisation, proper counselling is provided. The women are screened for risk indicators for regret such as young age, low parity, unmarried status and mental disorders. Details of the procedure, its permanent nature, information on reversal, possibility of failure, complications and the need to use condom for protection against sexually transmitted diseases are explained to them. They are informed about alternative methods of contraception. Those being considered for sterilisation in the puerperium are counselled during pregnancy.

Postpartum sterilisation is performed within 48 hours of delivery while interval procedure is performed anytime outside the puerperium and unrelated to pregnancy. Packed cell volume of the women is determined and urinalysis is performed prior to the procedure. After the procedure, the women are observed till full recovery from anaesthesia and discharged. They are followed up in the family planning clinic. The average fee charged for female sterilisation through minilaparotomy is three thousand Nigeria naira (about 25 United State Dollar – USD). Normal vaginal delivery costs half this amount. However, female sterilisation through caesarean section or laparotomy attracts no additional charge to the cost of the primary surgery. Insertion of Norplant costs two thousand naira (USD15) while Intrauterine Contraceptive

Device insertion costs acceptors only a hundred naira (USD 0.75).

The data obtained were analysed using the SPSS package version 9.0. For the descriptive aspects of the analysis, frequency distributions were generated for all categorical variables. Means and standard deviation were determined for quantitative variables. The chi-square test was applied for the comparison of proportions and for evaluating association of categorical variables. Statistical significance was said to be achieved where the p-value  $\leq 0.05$

## RESULTS

During the 10-year period from 1<sup>st</sup> January 1994 to 31<sup>st</sup> December 2003, two hundred and five women had surgical sterilisation. Of the number, 95 (46.3%) were sterilized through minilaparotomy and 110 (53.7%) through laparotomy or caesarean section. The observed difference was not statistically significant (p-value= 0.258). There were 25,625 deliveries in the hospital during the same period. Thus, there were 8 female surgical sterilisations per 1000 deliveries. Furthermore, the rate of tubal ligation performed through minilaparotomy was 3.7 per 1000 deliveries. A total of 12,035 clients accepted a method of contraception in the hospital during this period. Thus, female sterilisation accounted for 1.7% of total contraceptives use while those performed through minilaparotomy accounted for 0.8%. These proportions are significantly lower than the rates of other methods of contraception (Figure 1). The 95 women sterilised through minilaparotomy form the subject of this study.

Table 1 shows the age distribution of the women. The age ranged from 27 to 47 years with a mean of 38.9  $\pm$  2.8 years.

**Table 1: Age Distribution of the Women**

Age (years)	No.	Percentage
25–29	1	1.0
30–34	12	12.6
35–39	67	70.6
$\geq 40$	15	15.8
<b>Total</b>	<b>95</b>	<b>100.0</b>

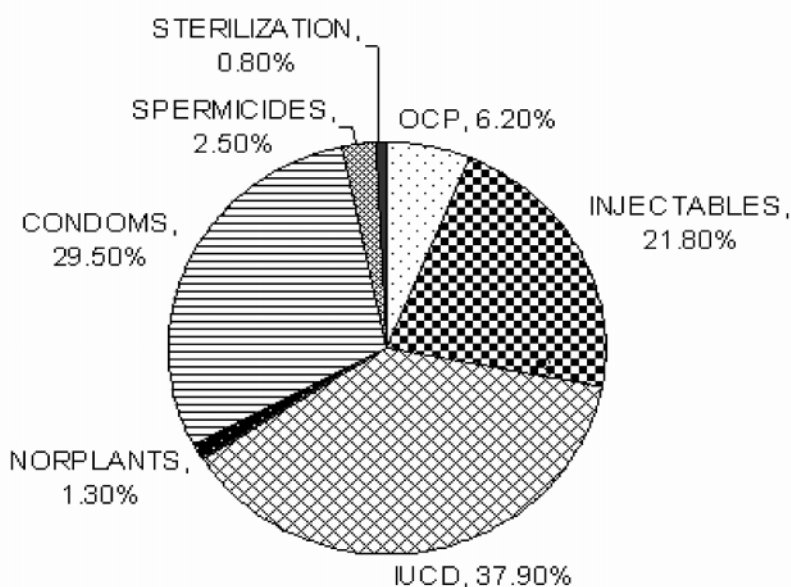
$\chi^2 = 4.308$ , P-value = 0.04

**Table 2: Trends in the Rate of Female Sterilisation by Minilaparotomy**

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
ST	19	17	13	12	7	8	8	3	5	3	95
TB	5,318	2226	2039	2299	2199	2482	2254	1975	2049	2577	25,418
R1	3.6	7.6	6.4	5.2	3.2	3.2	3.5	1.5	2.4	1.2	3.7
TCA	1773	1135	1221	1141	864	994	1321	1071	1144	1371	12035
R2	1.07	1.50	1.06	1.05	0.81	0.80	0.61	0.28	0.44	0.22	0.80

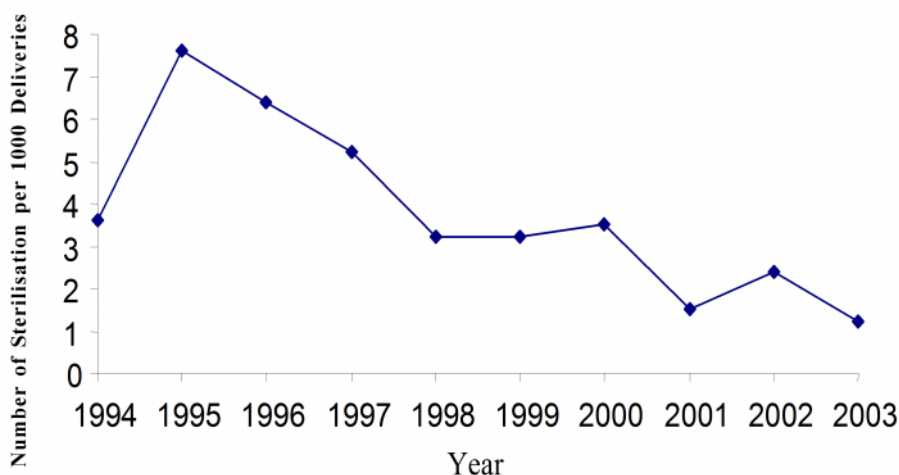
$\chi^2=49.40$ , P-value=0.000

R1, Number of sterilisation through minilaparotomy per 1000 deliveries; R2, Percentage of total contraceptive acceptors who chose female sterilization; TB, Total number of birth; TCA, Total contraceptive acceptors; ST, Sterilisation through minilaparotomy;



IUCD, Intrauterine contraceptive device; OCP, Oral Contraceptive pills

**Fig. 1: Proportion of Total Contraceptive Acceptors using each Method**



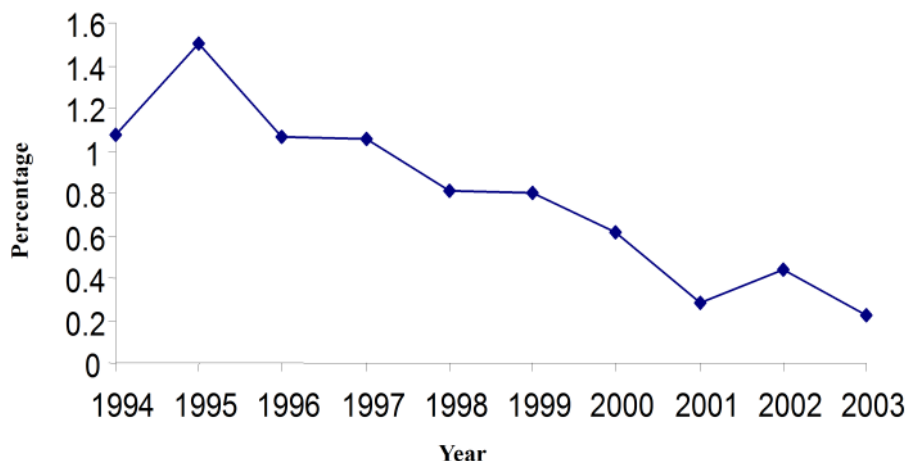
**Fig. 2: Yearly Trend in Number of Female Sterilisation per 1000 Deliveries**

Majority, 82 (86.4%) were aged 35 years and above. Compared to the proportion of women below 35 years (13.6%), the difference was statistically significant (p-value= 0.000). Only one woman was less than 30 years of age while 15 (15.8%) women were 40 years and above. Forty-six women (48.4%) had none or primary education while the remaining 49 (51.6%) had at least secondary education. The observed difference in the proportions of these two groups was not statistically significant insert (p-value= 0.572). Also, 42 (44.2%) of the women were petty traders while civil servants, teachers and nurses accounted for 14 (14.7%), 10 (10.5%) and 6(6.5%) respectively. The parity of the women ranged from 3 to 10 with a mean parity of  $5.4 \pm 1.2$ . Sixty six women (69.5%) were grandmultiparae. Seventy three (76.8%) of the women had used other contraceptives before sterilisation.

‘Too many children’ (having more than actually desired) was the indication for sterilisation among 70 (73.7%) women while only 12 (12.6%) women had sterilisation at completion of their desired family size. Thirteen (13.7%) of the procedures were for medical conditions which made further pregnancies hazardous. These included hypertension in six (6.5%), sickle cell disease in four (4.2%), renal disease in two (2.1%) and psychiatric disorders in 1 (1.05%).

A significant majority, 75(79%), were interval procedures while 20(21%) were postpartum (p-value= 0.000). Thus, 8 postpartum sterilisations were performed with every 10,000 deliveries. All the sterilisation procedures were performed using the Pomeroy’s technique whereby a section of the tube is tied as a loop and the top of the loop is then excised. Intravenous ketamine/diazepam was used for anaesthesia in 52 (54.7%) women while 43 procedures (45.3%) were performed under local anaesthesia.

Complications occurred in four (4.2%) women. These included wound infection in two (2.1%), urinary tract infection in one (1.05%) and laceration of the mesosalpinx in another one (1.05%). There was no mortality. There was one failure in a 40 year old nurse who had an intrauterine pregnancy four years after tubal ligation.



**Fig. 3: Yearly Trend in the Proportion of Total Contraceptive Acceptors that had Female Sterilisation**

Table 2 shows yearly trend in the rate of female sterilisation by minilaparotomy during the period. There was a decline in the rate from 7.6 per 1000 births in 1995 to 1.2 per 1000 births in 2003. Similarly, the proportion of total contraceptive acceptors who had female sterilisation through minilaparotomy gradually declined from 1.5% in 1995 to 0.22% in 2003. Figure 2 and 3 show the graphic representation of yearly trend in the rate of female sterilisation through minilaparotomy.

## DISCUSSION

Female sterilisation is the most widely used method of contraception among women in the developed world.<sup>1-4</sup> This has been attributed to the trend towards a small family size in these regions.<sup>2,3</sup> Recently, the desire to limit family size among women in developing countries has been on the increase because of growing urbanisation, the increasing participation of women in the paid labour force and the diminishing ability of families to support many children.<sup>3</sup> It is therefore expected that female sterilisation will equally become more popular in developing countries. However studies in Nigeria have shown that the proportion of contraceptors who chose female sterilisation is low and has further declined over the years.<sup>10-12,14</sup> Our study has also demonstrated this. Female sterilisation is the least used contraceptive method in our centre with less than two out of every hundred contraceptive users opting for it. Further, a five fold

decline in the proportion of total contraceptive acceptors who had female sterilisation is noted over the period under review.

Reasons often advanced for low acceptance of female sterilisation include low level of knowledge which gives rise to fear about the overall health benefits or otherwise of the procedure.<sup>10-12,14</sup> Illiteracy is believed to contribute significantly to low level of knowledge about the procedure. Reports from Nigerian studies show that most acceptors of female sterilisation have formal education.<sup>10-12,14,15</sup> However, there was no significant difference in the proportion of the acceptors who have secondary or tertiary education as compared to acceptors who have primary or no formal education in this study. Thus, contrary to general believe in our country, women who have no or low level of formal education equally accept voluntary female sterilisation as their counterpart with higher education in our locality.

With such level of acceptance of female sterilisation among the illiterate who by virtue of poor exposure to reproductive health education should ordinarily have inadequate knowledge of the procedure, the results of this study do not suggest poor knowledge as the reason for the low rate of acceptance of female sterilisation in our centre. Rather, a critical look at the financial cost of female sterilisation through minilaparotomy suggests an economic barrier between the women and the use of the method. Female surgical sterilisation costs more

than other method of contraception with the cost of inserting a Copper T intrauterine device being only 3% of the cost of female sterilisation through minilaparotomy in our centre. Hospital fee for a normal vaginal delivery is half the cost of female sterilisation through minilaparotomy. It does become less tolerable when clients are asked to pay twice more to prevent pregnancy than to deliver a baby – so it seems, at least, on the short term. This probably explains why only a fifth of the sterilisations performed were postpartum, with about eight postpartum sterilisations being performed per ten thousand deliveries. Also, a fee of USD 25 for preventive health service in a region where about 66% of the population lives below the poverty line of one USD a day may create a barrier to service delivery<sup>16</sup>. Nigeria witnessed a steady downturn in the economy largely during the period under review with increasing proportion of the population suffering from abject poverty. Thus, the decline in the use of voluntary female sterilisation over this period probably reflects diminishing capacity to pay for the procedure.

Similar to report from other Nigerian studies,<sup>10-12,14</sup> more than three quarter of the women in this series had used another method of contraception prior to sterilisation. Despite this, about 70% of them were grandmultiparae with a similar proportion accepting sterilisation because they believed they had ‘too many children’. These were women who had more children than they wished, as different from those who had sterilisation at the completion of their desired family size. Thus many women in our study could not achieve their desired family size while using temporary methods of contraception. This is usually because temporary methods may be periodically in short supply or used less effectively.<sup>17</sup> Such problems are common in developing countries and as such female sterilisation which provides permanent protection against pregnancy is more desirable. It therefore becomes imperative to implement policies that will increase access to this method of contraception. Local anaesthesia is used for more than 75% of sterilisation worldwide and is recommended for sterilisation by

minilaparotomy in order to minimize anaesthetic complications<sup>2-4</sup>. It was used for about half of the procedures in this study while intravenous ketamine/diazepam was used for the rest. Studies from other part of Nigeria show that female sterilisation through laparotomy is more often done with local anaesthesia.<sup>10-12,18</sup> Although, no complication was attributable to anaesthesia among the women, the use of local anaesthesia can improve acceptability of the procedure and probably reduce the cost. Generally, complication rate was low and comparable to rates reported by other authors.<sup>19,20</sup> The complications were also minor and related mainly to sepsis. In conclusion, the proportion of contraceptive acceptors who rely on female surgical sterilisation is low in our environment and has steadily declined over the years. This is despite being a safe, effective and more desirable method of contraception in our region where temporary methods are often in short supply or ineffectively used. The relatively high cost of accessing the service by a predominantly poor populace appears to be the main barrier. Reduction (or outright elimination) of cost will act as incentive for women to choose female sterilisation as a method of contraception. Knowledge, perception and attitude studies are needed to validate this.

#### REFERENCES

1. Filshie GM. Tubal Sterilisation. *Obstet Gynaecol.* 1999; **1**: 26–32.
2. Rioux JE, Daris M. Female sterilisation: an update. *Curr Opin Obstet Gynaecol.* 2001; **13**: 377–381.
3. World Health Organisation. Female sterilisation. A guide to provision of services. Geneva: WHO, 1992.
4. ACOG Technical Bulletin. Sterilisation. *Int J Gynaecol Obstet.* 1996; **53**: 281–288.
5. Nardin JM, Kulier R, Boulvain M. Techniques for the interruption of tubal patency for female sterilisation. *Cochrane Database Syst Rev.* 2003; CD003034.
6. Abbot J. Transcervical sterilisation. *Best Pract Res Clin Obstet Gynaecol.* 2005; **19**: 743–756.
7. Centre for Disease Control. Sterilisation. In: Family Planning Methods and Practice, Africa. CDC, Atlanta. 1983: 253–272.
8. Kidan KG, Azeze B, Ismail S. Female Sterilisation through minilaparotomy at Gondar College of Medical Sciences. *East Afr Med J.* 2001; **78**: 414–417.
9. Bhutta SZ, Zaeem S, Korejo R. Female surgical sterilisation at a tertiary care hospital in Karachi. *J Ayub Med Coll Abbottabad.* 2004; **16**: 42–45.
10. Ogunniyi SO, Faleyimu BL, Ifaturoti O. Female surgical contraception in Ile-Ife: an Eight-Year Review. *Nigeria Medical Practitioner.* 1991; **21**: 72–74.
11. Aisien AO, Oronsaye AU. Two decades of minilaparotomy female sterilisation at the university of Benin teaching hospital. *Nig Postgrad Med J.* 2007; **14**: 67–71.
12. Otubu JAM, Towobola OA, Aisien AO, Uguru VE. Female Sterilisation by minilaparotomy; The Jos university teaching hospital experience *Trop J Obstet. Gynaecol.* 1990; **2**: 26–27.
13. Feyisetan BJ, Bankole A. Fertility transition in Nigeria: trends and prospects. Paper presented at the Expert Group Meeting on Completing the Fertility Transition. United Nations, New York, 2002.
14. Aisien AO, Ujah IA, Mutihir JT, Guful F. Fourteen years' experience in voluntary female sterilisation through minilaparotomy in Jos, Nigeria. *Contraception.* 1999; **60**: 249–252.
15. Adesiyun AG. Female sterilisation by tubal ligation: a re-appraisal of factors influencing decision making in a tropical setting. *Arch Gynecol Obstet.* 2007; **275**: 241–244.
16. National Population Commission (NPC), Federal Republic of Nigeria and ORC Macro. Nigeria Demographic and Health Survey 2003. Calverton, MD, USA: NPC and ORC Macro, 2004.
17. Arkutu A. Family planning in sub-Saharan Africa: present status and future strategies. *Int J Gynaecol Obstet.* 1995; **2**: 27–34.
18. Aisien AO, Olarewaju RS, Ujah IA, Mutihir JT, Sagay AS. Anaesthesia for minilaparotomy female sterilisation in JUTH, Nigeria: a fourteen-year review. *Afr J Med Med Sci.* 2001; **30**: 119–121.
19. Aisien AO, Mutihir JT, O Ujah IA, Sagay AS, Imade GE. Fifteen years analysis of complications following minilaparotomy female sterilisation in Jos Nigeria. *Nig Postgrad Med J.* 2002; **9**: 118–122.
20. Huber AW, Mueller MD, Ghezzi F, Cromi A, Dreher E, Raio L. Tubal sterilisation: Complications of laparoscopy and minilaparotomy. *Eur J Obstet Gynaecol Reprod Biol.* 2007; **134**: 105–109.