



CLINICAL ARTICLE

Evaluation of parturient perception and aversion before and after primary cesarean delivery in a low-resource country



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ABSTRACT

Objective: To determine the perception of and aversion to cesarean delivery (CD) and their determinants before and after primary CD. **Methods:** A prospective cross-sectional survey of pregnant women undergoing primary CD (elective or emergency) was conducted in six health facilities in Ilorin, Nigeria. All participants completed an interviewer-administered questionnaire before the operation and 3–4 days thereafter. The statistical analysis included the calculation of odds ratios (ORs) with 95% confidence intervals (CIs) and a logistic regression. **Results:** Of the 254 participants, 182 (71.7%) and 53 (20.9%) had an aversion to CD before and after the procedure, respectively. A woman's personal decision was the overriding factor influencing acceptance of the operation. Preoperative predictors of aversion were prenatal admission (OR 2.86 [95% CI, 1.07–7.66]; $P = 0.030$) and a history of previous surgery (OR 0.42 [95% CI, 0.24–0.75]; $P = 0.003$), whereas postoperatively a low number of prenatal clinic visits (less than four; OR 3.05 [95% CI, 1.63–5.69]; $P = 0.001$) and a history of previous surgery (OR 0.51 [95% CI, 0.27–0.96]; $P = 0.034$) were significant. Postprocedure, 164 (64.6%) women said they would accept a repeat CD. **Conclusion:** Patient education, prenatal care, and previous surgical experiences were important in determining women's perception of and aversion to CD.

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1. Introduction

Cesarean delivery (CD) remains the only alternative to vaginal delivery. At inception, CD was associated with high rates of maternal and neonatal complications; however, the risks have reduced significantly owing to improved surgical technique and anesthesia, effective antibiotics, and safer blood transfusion [1]. Nevertheless, CD is associated with a 5–7 times higher mortality rate [2] and a higher rate of puerperal morbidity [3] compared with vaginal delivery.

In Sub-Saharan Africa, there is a strong aversion to and an unfavorable perception of CD because of a desire for vaginal delivery, fears about the surgical operation, anesthesia, blood transfusion, and possible death, and the misconception that having had a CD precludes a future vaginal delivery [4,5].

The rate of CD has been on the increase globally. Factors associated with CD include a high educational level of the parturient, a high

maternal age, history of a previous CD, and fear of litigation [6], although some women in low-income countries also request an elective CD [7].

Previous studies have evaluated the perception of or aversion to CD in women before delivery. The present study aimed at evaluating the perception and aversion before and after the procedure in the same group of women undergoing primary CD. The findings will help to identify the concerns of parturients and the effects of the procedure on attitudes toward CD, and will therefore assist in improving patient satisfaction.

2. Materials and methods

The present study was a cross-sectional multicenter survey conducted at six health facilities in Ilorin, North Central Nigeria; these included three public health facilities (two secondary hospitals [Kwara State Specialist Hospital and Civil Service Clinic and Maternity] and a tertiary hospital [University of Ilorin Teaching Hospital]) and three private obstetrician-supervised facilities (Royal Care Hospital, Anchormed Hospital, and Surulere Medical Centre). Multiple health facilities were

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chosen to have a wide representation of women from different socio-economic groups.

The study included pregnant women scheduled to have a CD (elective or emergency) irrespective of their age, parity, or indication for the procedure between March 1, 2013, and May 31, 2014. All participants underwent primary CD while women with a vaginal delivery or hysterotomy were excluded.

The calculation of the sample size has been described previously [8] and was based on the local CD rate of 14.08% [9], a confidence level of 95%, a degree of accuracy of 0.05, and an estimated attrition rate of 10%, giving a minimum sample size of 211.

All eligible women were informed about the study and informed consent was obtained. A purposive sampling technique was used in which all consenting women were recruited for the study. The participants' confidentiality was maintained by using codes instead of names and making the data accessible to members of the research team only.

The study procedures were in accordance with local and international ethics standards and with the Helsinki Declaration on human experimentation. The Ethics Review Committee of the University of Ilorin Teaching Hospital, Ilorin, approved the study before its commencement.

Each participating woman completed an interviewer-administered questionnaire designed for the present survey to evaluate the women's perception of and aversion to CD before the procedure. This was done immediately after the decision to undergo CD in emergency cases and a few hours before the procedure in elective cases. The concluding part of the questionnaire was administered by the same interviewer 3–4 days postoperation to evaluate the perception of and aversion to CD after the procedure. The interval of 3–4 days was chosen because, by that time, the women were expected to be sufficiently clinically and emotionally stable to give reliable answers with a good recall of the events. Trained interpreters who were fluent in English and local dialects assisted in interpretation during the interviews for women who could not communicate in English.

The collected information included demographic parameters, perception of and aversion to CD before the surgery, response when informed of the need to undergo CD, factors influencing acceptance of the procedure, type of anesthesia, maternal and fetal outcome, and perception and aversion after the procedure. The social class was determined as recommended by Olusanjo et al. [10]. Knowledge about CD was defined as the ability to recognize it as a surgical procedure to deliver the newborn through a cut on the abdomen.

The statistical analysis was conducted with SPSS version 20.0 (IBM, Armonk, NY, USA). The Pearson χ^2 test was used for comparisons, and odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. Logistic regression analysis was performed using the Wald test and B coefficients. $P < 0.05$ was considered statistically significant.

3. Results

The study included 254 participants with a mean age of 31.89 ± 4.9 years (range, 17–43 years); 130 (51.2%) were multiparous (parity 2–4), 153 (60.2%) belonged to a low social class, 45 (17.7%) had been educated up to primary level or less, 210 (82.7%) had received some form of prenatal care, and 124 (48.8%) had a history of previous surgery (Table 1). The most common indication for CD was cephalopelvic disproportion (45; 17.7%).

In total, 237 (93.3%) women had knowledge about CD and 104 (40.9%) women accepted the CD without delay (Table 2). Maternal knowledge and motivation was the overriding factor influencing the acceptance of the procedure. The majority (250 [98.4%]) described their experience of the procedure as satisfactory, 164 (64.6%) said they would willingly accept a future CD, and 202 (79.5%) said they would encourage a friend to undergo CD (Table 2).

After the operation, there was a significant reduction in the number of women who perceived CD as being similar to a death sentence; fears surrounding anesthesia, possible harm to mother or infant,

Table 1

Sociodemographic and clinical characteristics of the participants (n = 254).^a

Parameter	Frequency
Age	
<20 years	1 (0.4)
20–24 years	13 (5.1)
25–29 years	63 (24.8)
30–34 years	102 (40.2)
35–39 years	58 (22.8)
40–44 years	17 (6.7)
Parity	
0	50 (19.7)
1	70 (27.6)
2–4	130 (51.2)
≥5	4 (1.6)
Social class	
Low	153 (60.2)
High	101 (39.8)
Level of education	
None	9 (3.5)
Primary	36 (14.2)
Secondary	75 (29.5)
Tertiary	134 (52.8)
Booking status	
Booked	210 (82.7)
Not booked	44 (17.3)
Timing of booking	
First trimester	40 (15.7)
Second trimester	117 (46.1)
Third trimester	54 (21.3)
Number of prenatal care visits	
<4	62 (24.4)
≥4	148 (58.3)
Not stated	44 (17.3)
Admission during prenatal period	
Yes	37 (14.6)
No	217 (85.4)
Previous history of surgery	
No	130 (51.2)
Yes	124 (48.8)
Minor	10 (8.1)
Major	114 (91.9)
Indication for CD	
Severe oligohydramnios	5 (2.0)
Lower segment fibroid	9 (3.5)
Cord prolapse	9 (3.5)
Medical disorders	9 (3.5)
Nonreassuring FHR	12 (4.7)
Contracted pelvis	13 (5.1)
Obstructed labor	18 (7.1)
Fetal macrosomia	19 (7.5)
Poor obstetric history	19 (7.5)
Abnormal presentation	20 (7.9)
Abnormal lie	22 (8.7)
Prepartum hemorrhage	25 (9.8)
Severe pre-eclampsia/eclampsia	29 (11.4)
Cephalopelvic disproportion	45 (17.7)

Abbreviations: CD, cesarean delivery; FHR, fetal heart rate.

^a Values are given as number (percentage).

blood transfusion, or the surgical procedure were also significantly reduced ($P < 0.05$) (Table 3). The proportions of women who thought that having undergone a CD means that they need to have a repeat CD the next time they give birth or that a CD reduces the number of children they can have in the future was also smaller after the operation ($P > 0.05$).

Before the operation, 182 (71.7%) women were averse to having a CD (Table 4). Significant predictors for aversion to CD were a history of previous surgery (OR 0.42 [95% CI, 0.24–0.75]; $P = 0.003$) and admission during the prenatal period (OR 2.86 [95% CI, 1.07–7.66]; $P = 0.030$). After the operation, 53 (20.9%) women were averse to having a CD; significant predictors to aversion were a history of previous surgery (OR 0.51 [95% CI, 0.27–0.96]; $P = 0.034$) and a smaller number of prenatal care visits (OR 3.05 [95% CI, 1.63–5.69]; $P = 0.001$).

Table 2Knowledge, response, and experience of the participants with regard to cesarean delivery (n = 254).^a

Parameter	Frequency
Knowledge about CD	
Yes	237 (93.3)
No	17 (6.7)
Reaction when told about need for CD	
Accepted immediately	104 (40.9)
Broke down in tears	60 (23.6)
Refused initially	49 (19.3)
Said that doctor should tell husband	18 (7.1)
Asked for some time	9 (3.5)
Said that doctor should tell religious leader	2 (0.8)
Said that doctor should tell mother	1 (0.4)
Other	5 (2.0)
No response	6 (2.4)
Greatest influence toward acceptance	
Maternal knowledge and motivation	98 (38.6)
Husband/partner	68 (26.8)
Health workers	61 (24.0)
Parents	14 (5.5)
Friend	8 (3.1)
Religious leader	4 (1.6)
Other relatives	1 (0.4)
Type of CD	
Elective	131 (51.6)
Emergency	123 (48.4)
Blood transfusion	
Yes	54 (21.3)
No	200 (78.7)
Neonatal outcome	
Alive and well	219 (86.2)
Alive but sick	35 (13.8)
Description of experience	
Satisfactory	250 (98.4)
Regretful	4 (1.6)
If told next time that CD is needed	
Will refuse	31 (12.2)
Will willingly accept	164 (64.6)
Don't know	59 (23.2)
Advice to a friend who may need CD	
Will encourage her to undergo it	202 (79.5)
Will advise her to refuse it	5 (2.0)
Don't know	47 (18.5)

Abbreviation: CD, cesarean delivery.

^a Values are given as number (percentage).

Women who evaluated the care received as satisfactory were more likely to be favorably disposed to CD after delivery (OR 0.20 [95% CI, 0.15–0.25]) (Table 5). However, 49 (92.5%) women with an aversion to CD after the operation judged the care received as satisfactory and 32 (60.4%) would recommend the procedure to a friend.

Table 3Perception of cesarean delivery pre- and postoperation (n = 254).^a

Perception	Before CD	After CD	X ²	P value
Costly	50 (19.7)	60 (23.6)	0.909	0.340
Death sentence	21 (8.3)	9 (3.5)	4.800	0.028
Fear of anesthesia	47 (18.5)	27 (10.6)	5.405	0.020
Can harm my child	16 (6.3)	4 (1.6)	7.200	0.007
Can harm me	18 (7.1)	5 (2.0)	7.348	0.007
Fear of complication	54 (21.3)	36 (14.2)	3.600	0.058
Fear of blood transfusion	33 (13.0)	15 (5.9)	6.750	0.009
Dangerous	57 (22.4)	41 (16.1)	2.612	0.106
Indicates lack of faith	4 (1.6)	2 (0.8)	0.167	0.683
Fear of surgery	125 (49.2)	56 (22.0)	26.304	0.003
Need for repeat CD	72 (28.3)	56 (22.0)	2.000	0.157
Reduction in the number of children I can have	63 (24.8)	53 (20.9)	0.862	0.353
Long hospital stay	84 (33.1)	88 (34.6)	0.093	0.820

Abbreviation: CD, cesarean delivery.

^a Values are given as number (percentage) unless indicated otherwise.

Logistic regression analysis showed that the number of prenatal clinic visits was the only independent predictor of aversion to CD after delivery (Table 6), with a higher frequency of aversion among women with fewer than four visits (Table 4).

4. Discussion

In the present study, the majority of the participants had knowledge about CD, the woman's personal decision was the overriding factor leading to acceptance of the procedure, and there was some delay in accepting the procedure in more than half of the participants. The majority of patients that underwent CD described the experience as satisfactory, would encourage a friend to undergo the procedure, and would willingly accept a CD the next time they give birth. Postoperation, there was a decline in negative perception of and aversion to CD. A previous history of another surgical operation was a significant predictor of aversion to CD before and after the operation, and a low number (less than four) of prenatal care visits was an independent predictor of aversion to CD. Social class, level of education, type of the previous surgical procedure, blood transfusion, and outcome of CD in a relative were not statistically significant in predicting aversion. The strength of the study is that it evaluated the same group of women before and after undergoing CD, unlike other studies, where the evaluation occurred either before or after the operation.

The high level of knowledge about CD in the present study was comparable with the rate of 100% reported for Southwest Nigeria [11] and higher than the 59% rate reported for Southern Nigeria [12]. This indicates that knowledge about CD is commensurate with its being one of the most common obstetric procedures worldwide. However, similar to other reports, the perception in the present study was that CD is costly and has long-term ill effects on the mother [5], with fears of death, postoperative pain, and future infertility [13,14].

The 71.7% aversion rate to CD pre-operation is comparable with the rate of 71.1% observed in Southwest Nigeria [11] but higher than the 31.5% rate reported in a study from Southern Nigeria [12]. A report from Pakistan [13] showed that 48.6% of women in that country will not agree to undergo CD under any circumstance. This confirms that aversion to CD remains prevalent despite an increase in knowledge.

The reasons for aversion to CD reported in the literature include negative perceptions such as the idea that CD represents a curse on unfaithful women, a procedure for weak women, a denial of womanhood, or a sign of obstetric failure [11–14]; the desire to experience a vaginal delivery; inadequate counseling; and economic reasons [15]. These findings are similar to the results of the present study.

Cost was a contributing factor to aversion to CD in the present study, and the number of women who perceived CD as costly was higher after the operation than it had been before surgery, especially among those who belonged to a low social class. A previous report from Southwest Nigeria [11] showed that 66.5% of women were averse to CD because of the financial implications. By contrast, income had little or no influence on the preference for a particular mode of delivery in Chile [16], and another study [12] found that social class has little or no effect on aversion to CD. A systematic review reported a higher preference for CD among women living in low-income countries than among those living in high-income countries [17]. The perception about cost in the present study may result from the fact that the National Health Insurance Scheme in Nigeria has yet to fully integrate the whole population, with civil servants being the main beneficiaries at present whereas other citizens have to pay from their personal funds.

In the present study, 40.9% of women accepted the procedure without delay and a woman's personal decision was the overriding factor leading to acceptance; this indicates an improvement in the maternal response when faced with the need to undergo CD. However, education at the family and community levels should be improved because 12.2% of women had a poor reception at home after a CD in Pakistan [13], and more than 50% of women in Southwest Nigeria were concerned about

Table 4
Predictors of pre- and postoperative aversion to cesarean delivery.

Parameter	Preoperative aversion				Postoperative aversion			
	Yes (n = 182)	No (n = 72)	OR (95% CI)	P value	Yes (n = 53)	No (n = 201)	OR (95% CI)	P value
Social class								
Low	105 (57.7)	48 (66.7)	0.68 (0.39–1.21)	0.188	31 (58.5)	122 (60.7)	0.91 (0.49–1.69)	0.770
High	77 (42.3)	24 (33.3)	Ref.		22 (41.5)	79 (39.3)	Ref.	
Educational status								
None	34 (18.7)	11 (15.3)	1.27 (0.61–2.68)	0.522	9 (17.0)	36 (17.9)	0.94 (0.42–2.09)	0.875
Educated	148 (81.3)	61 (84.7)	Ref.		44 (83.0)	165 (82.1)	Ref.	
Number of prenatal care visits								
<4	68 (37.4)	31 (43.1)	0.79 (0.45–1.37)	0.402	32 (60.4)	67 (33.3)	3.05 (1.63–5.69)	0.001
≥4	114 (62.6)	41 (56.9)	Ref.		21 (39.6)	134 (66.7)	Ref.	
Admission during the prenatal period								
Yes	32 (17.6)	5 (6.9)	2.86 (1.07–7.66)	0.030	10 (18.9)	27 (13.4)	1.50 (0.67–3.33)	0.318
No	150 (82.4)	67 (93.1)	Ref.		43 (81.1)	174 (86.6)	Ref.	
Previous surgery								
Yes	78 (42.9)	46 (63.9)	0.42 (0.24–0.75)	0.003	19 (35.8)	105 (52.2)	0.51 (0.27–0.96)	0.034
No	104 (57.1)	26 (36.1)	Ref.		34 (64.2)	96 (47.8)	Ref.	
Type of previous surgery								
Minor	5 (6.4)	5 (10.9)	1.78 (0.49–6.52)	0.497	3 (15.8)	7 (6.7)	0.38 (0.09–1.63)	0.181
Major	73 (93.6)	41 (89.1)	Ref.		16 (84.2)	98 (93.3)	Ref.	
Relation had CD								
Yes	134 (73.6)	51 (70.8)	1.15 (0.63–2.11)	0.652	42 (79.2)	143 (71.1)	1.55 (0.75–3.22)	0.238
No	48 (26.4)	21 (29.2)	Ref.		11 (20.8)	58 (28.9)	Ref.	
Anesthesia								
General	0 (0.0)	1 (1.4)	0.00	0.238	0 (0.0)	1 (0.5)	0.00	>0.99
Regional	182 (100.0)	71 (98.6)	Ref.		53 (100.0)	200 (99.5)	Ref.	
Blood transfusion								
Yes	39 (21.4)	15 (20.8)	1.04 (0.53–2.03)	0.917	8 (15.1)	46 (22.9)	0.60 (0.26–1.36)	0.217
No	143 (78.6)	57 (79.2)	Ref.		45 (84.9)	155 (77.1)	Ref.	

Abbreviations: CD, cesarean delivery; CI, confidence interval; OR, odds ratio.

^aValues are given as number (percentage) unless indicated otherwise.

likely criticism by their partners if they accepted a CD as the mode of delivery [7]. Therefore, the campaign toward reducing aversion to CD must address family and community influences, while there appears to be an improvement in acceptance among pregnant women. An important way of achieving this is to encourage men to accompany their partners to the prenatal clinic, where they can be educated on pregnancy and delivery, including CD. This also means that health facilities should be male-partner-friendly.

The high level of satisfaction postoperation expressed by the present participants is in contrast to previous reports that women often have a negative perception of CD after the procedure [18] and tend to be

less satisfied with their experience and themselves [19]. This discrepancy might be explained by the fact that the participants in the present study received repeated counseling during the prenatal and intrapartum periods, leading to improved maternal knowledge and motivation to accept the procedure. This reinforces a previous report [15] that inadequate counseling was a factor contributing to aversion to CD and indicates the need to address this deficiency.

The evaluation of patient satisfaction, safety concerns, and pregnancy outcomes in the present study showed that some of the women who were undecided about their level of satisfaction or who experienced morbidity were not averse to CD postoperation. Patient perception of

Table 5
Influence of pregnancy outcome, clinical safety aspects, and maternal experience on postoperative aversion to cesarean delivery.

Parameters	Aversion (n = 53)	No aversion (n = 201)	X ²	P value	OR (95% CI)
Neonatal morbidity					
No	47 (88.7)	172 (85.6)	0.341	0.659	1.32 (0.52–3.37)
Yes	6 (11.3)	29 (14.4)			Ref.
Type of anesthesia					
General	0 (0.0)	1 (0.5)	0.265	>0.99	0.00
Regional	53 (100.0)	200 (99.5)			Ref.
Blood transfusion					
No	45 (84.9)	155 (77.1)	1.521	0.260	1.67 (0.74–3.79)
Yes	8 (15.1)	46 (22.9)			Ref.
Parturient perception of quality of care received					
Satisfactory	49 (92.5)	201 (100.0)	15.413	0.002	0.20 (0.15–0.25)
Not satisfactory	4 (7.5)	0 (0.0)			Ref.
Possible attitude to CD at next delivery					
Will accept	0 (0.0)	164 (81.6)			Ref.
Will refuse	31 (58.5)	0 (0.0)	195.00	<0.001	0.00
Undecided	22 (41.5)	37 (18.4)	67.85	<0.001	0.00
Recommendation of CD to a friend					
Will recommend	32 (60.4)	170 (84.6)			Ref.
Will not recommend	1 (1.9)	4 (2.0)	0.06	0.584	0.75 (0.08–18.28)
Undecided	20 (37.7)	27 (13.4)	16.47	<0.001	0.25 (0.12–0.54)

Abbreviations: CD, cesarean delivery; OR, odds ratio; CI, confidence interval.

^aValues are given as number (percentage).

Table 6

Logistic regression on predictors of postoperative aversion to cesarean delivery.

Variable	B	SE	Wald	df	P value	OR (95% CI)
Social class	0.099	0.412	0.058	1	0.810	1.10 (0.49–2.48)
Educational status	0.684	0.622	1.211	1	0.271	1.98 (0.59–6.70)
Number of prenatal care visits	–1.605	0.397	16.367	1	0.001	0.20 (0.09–0.44)
Admission during prenatal period	0.094	0.529	0.031	1	0.860	1.10 (0.39–3.10)
Previous history of surgery	–0.676	0.418	2.617	1	0.106	0.51 (0.22–1.15)
Outcome of CD in a relative	–0.109	0.958	0.013	1	0.910	0.90 (0.14–5.87)
Blood transfusion in index surgery	–0.928	0.511	3.294	1	0.070	0.40 (0.15–1.08)
Newborn status	0.234	0.651	0.129	1	0.719	1.26 (0.35–4.52)

Abbreviations: B, B coefficient; SE, standard error; Wald, Wald statistic; df, degrees of freedom; CD, cesarean delivery; OR, odds ratio; CI, confidence interval.

the care received is a major determinant of public acceptance and use of a health facility and its survival amid competition in a healthcare system. However, patient perception may be subjective because it arises from a comparison of the care received with the respective individual's expectations [20]. This may explain the nonaversion despite nonaffirmation of satisfaction with the care received. Above all, health facilities must recognize that quality health service is defined by the employment of skilled manpower accompanied by service delivered in a patient-friendly manner [20].

Women's mode of delivery preference after a primary CD varies. In the present study, 64.6% said they would willingly accept CD as the mode of delivery for their next pregnancy, compared with 73.2% who would accept a repeat CD in Southern Nigeria [12]. However, 26.8% of women in Southwest Nigeria said they would rather die than accept a repeat CD [11]. In Sweden, multipara with a previous CD scar were favorably disposed toward a repeat CD [21], similar to the findings of the present study. This may be a reflection of individual experiences during the primary CD, exemplifying the need for healthcare personnel to pay attention to patient satisfaction.

The influence of a history of another surgery on aversion to CD has not been previously evaluated; however, the present study showed that the experience of a previous surgical operation is a significant predictor of aversion to CD, both before and after the CD. This indicates that all health practitioners need to be involved in reducing aversion to CD, by improving counseling and patient safety and by taking proactive measures to reduce untoward experiences during surgical procedures of any kind. It can be expected that improvement of patient satisfaction after other procedures will lead to a reduction in aversion to CD.

Prenatal care visits afford pregnant women an opportunity to learn about planning for a safe birth and dealing with pregnancy emergencies [22]. The number of visits is an important factor, with the WHO recommending a minimum of four visits [22] and a study from India [23] reporting that three or more prenatal clinic visits had a significant positive impact on women's attitudes toward institutional delivery. A report from Pakistan [24] showed that during pregnancy, a woman is more amenable to being persuaded to use services that are favorable for her and her child's health. These reports corroborate the present finding that the number of prenatal clinic visits is an independent predictor of aversion to CD, with aversion being more likely if the woman has had less than four visits.

The present study was restricted to a few health facilities in the same geographic area. This may limit the national and global generalizability of the findings, especially to areas with a different social, cultural, or economic environment. Therefore, similar evaluations will be necessary in such areas to provide a wider range of data.

The present findings have implications for patient care. Efforts should be made to improve maternal knowledge and motivation regarding CD and to encourage women to have at least four prenatal care visits. There is also a need for improved patient care and satisfaction during other surgical procedures because this plays a role in the perception of and aversion to CD. Women's response when informed of the need to undergo CD appears to have improved; future studies should explore male-partner and community education.

Conflict of interest

The authors have no conflicts of interest.

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