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Factors associated with women's intention to request caesarean delivery in Dar es Salaam, Tanzania

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Background. In the past decade, the rate of caesarean section (CS) has increased dramatically in many parts of the world. At Muhimbili National Hospital (MNH) there has been a dramatic rise in the caesarean section rate over the past decade.

Objective. To determine the incidence of maternal request for CS and factors associated with intention to request caesarean section at the MNH antenatal clinic.

Methods. We conducted a cross-sectional study from August to October 2014. A structured questionnaire gathered participants' background and obstetric information, perceptions and opinions regarding a request for caesarean section, and the respective reasons for the request. Confidence intervals were calculated and a p -value <0.05 was considered significant.

Results. The incidence of CS on maternal request was about 6%. The intention to request for CS in the index pregnancy was 8%. Higher-level education and formal-sector employment had higher odds for requesting CS ($p=0.01$ and $p=0.05$, respectively). Half of the participants agreed that maternal request for CS should be allowed; more private patients agreed that it could affect the doctor-patient relationship ($p=0.02$); more private patients agreed that request for CS was due to fear of losing a child ($p=0.03$). Previous history of CS was an independent predictor of maternal request for caesarean section (OR 1.7; 95% CI 1.7 - 15.4) and (OR 5.8; 95% CI 1.6 - 20.1), respectively.

Conclusion. Maternal requests for CS exist at the national referral hospital in Tanzania. This was associated with factors other than women's preferences, including perceived fear of child loss and events associated with previous CS.

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Caesarean section (CS) on maternal request implies patient choice for caesarean delivery, or CS on demand without maternal or fetal indications.^[1] The concept of CS on maternal request is not well-defined as a clinical entity despite progress in establishing policy guidance for the procedure for CS on maternal request.^[2] Healthcare providers may be uncertain on how to respond to maternal request for CS. In Tanzania, the rates of maternal requests for CS have not been published.^[3] In 2014, the birth registry at the national referral hospital, Muhimbili National Hospital (MNH), recorded the highest rate of CS, at 51%, compared with other public hospitals. The high rate of CS at MNH was associated with low-risk Robson groups, doubtful CS indications, and increased likelihood of performing CS on request among private patients performed at that hospital compared with public patients.^[4,5]

According to the Tanzanian Ministry of Health guidelines, CSs are commonly performed for saving the lives of the mothers and newborns. A study at MNH showed that the total risk of 'near-miss' events associated with CS procedures was 3 - 7 per 1 000 operations.^[6] The risk of CS has been closely associated with unsafe anaesthesia, poor preoperative preparations and delayed interventions due to limited resources.^[7] In some settings, limited access to CS has been shown to contribute to severe maternal morbidity, such as postpartum haemorrhage, uterine rupture, puerperal sepsis, genital fistula and maternal death.^[8-12] Limited access to CS also imposes a risk of intrapartum asphyxia with subsequent neonatal

neurological damage, and perinatal death.^[13] Some documented literature reports that patients' autonomy in healthcare includes maternal request for CS, even in the presence of the considerable risk associated with CS and inequity in maternal and newborn healthcare.^[14,15] Women's perceptions and their involvement in decision-making regarding CS have been used to draw conclusions relating to women's requests for elective CS without medical grounds.^[16] Most women at MNH receive counselling around the decision to perform CS during admission for labour or when abnormal labour is detected.^[17] However, the antenatal care (ANC) clinic provides a better environment with reduced anxiety for making an informed choice.^[18]

The strategies necessary for reducing maternal and perinatal mortality include adequate antenatal care and appropriate caesarean intervention as part of Comprehensive Emergency Obstetric Care (CEoC).^[19,20] At MNH, there are no clear guidelines relating to indications for CS. This has led to subjective indications for CS, including prior recurrent fetal loss, history of infertility and in vitro fertilisation, meconium-stained liquor, and non-assuring fetal heart traces.^[17] Also, fear and blame among care providers in case of poor outcome, poorly conducted perinatal audits, maternal perceived fear of birth trauma, and loss of the baby during childbirth are possible reasons for performing unnecessary CS; this may include maternal requests for CS.^[21] Interventions to reduce CS rates include fetal monitoring using fetal doppler, training on partography, correct

audit meetings, engaging mothers in the decision-making process of mode of delivery during antenatal care. Healthcare providers' unawareness of women's opinions of CS on maternal request hinders efforts to reduce unnecessary CS. This study aimed to determine the women's perceptions and intentions for CS on maternal request and the factors associated with that intent.

Methods

Study design and setting

This cross-sectional study was conducted at MNH antenatal care clinic from August to October 2014. MNH is the largest referral hospital in Tanzania, located in the city of Dar es Salaam. Patients who attend ANC at MNH include referrals cases from public health facilities and patients who come directly from private facilities or from home as private patients under intramural private practice management (IPPM).

Sample size and sampling technique

The sample size was calculated using OpenEpi version 3 (EpiData Association, Denmark), a software program for population surveys, with the assumption that the anticipated proportion for the desired outcome was 50%, with a precision of 5%, power of 80%, and a design effect of 1. The minimum required sample size was 384 cases. After the daily health education session, the investigator and research nurse informed all antenatal clinic attendees about the study. On a daily basis, ANC cards of all women who attended the clinic were collected and listed in order to create a sampling frame that was used to assess the eligibility of the study participants. Every fifth card was selected during the day's clinic registration process and the card-holder was identified. Women with communication difficulties were excluded. Also, women with either two previous scars or one previous scar with a perceived recurrent indication for CS, such as cephalopelvic disproportion, were excluded. Out of 462 eligible participants, 440 agreed to participate in the study, yielding a response rate of 95%.

Data collection and research tools

Data were collected using a structured questionnaire adapted from previous surveys and comprising four sections.^[22,20] The first section contained participants' background information. The second section included fertility history, pregnancy history and mode of deliveries, the associated pregnancy outcome, and feedback on previous pregnancies. The third section contained questions about willingness to request CS and the fourth section contained 12 questions addressing the women's perceptions of CS on maternal request. The questionnaire was translated from English into Swahili and pretested to ensure accuracy and appropriateness of the questions and responses; an obstetrician reviewed the document. Data were collected by the principal investigator and two trained research assistants.

Data analysis

SPSS version 19 (IBM Corp., USA) was used to perform data entry and cleaning. Descriptive statistics for sociodemographic, past obstetric history, and previous delivery experiences and perceptions were calculated. Pearson's χ^2 , Fisher's exact test and *t*-tests were performed to compare the association of predictor variables with history and desire to request CS without medical grounds. Factors that were significant at $p < 0.05$ were analysed by logistic regression.

Definition of variables

CS on maternal request was defined as a caesarean delivery for a singleton pregnancy on maternal request after 37 completed weeks of gestation in the absence of any medical or obstetric indications. 'Perception of CS on request' referred to participants' opinions on cesarean section on maternal request.

Ethical clearance

The Muhimbili University of Health and Allied Sciences Research Ethics and Publication committee reviewed the study proposal and granted ethical approval. Permission to conduct the study was obtained from the Executive Director of MNH (ref. no. HD/MUH/T.130/2012). Informed consent was obtained voluntarily from the participants, who were informed about the objectives of the study, and were assured of confidentiality and that their names would not be used for the purpose of identification.

Results

Of the 440 participants who were interviewed, more than half (57%, $n=250$) were private patients, as shown in Table 1. Both public and private patients had a mean (SD) age of nearly 30 (5) years. There were more public patients in the category of those participants aged less than 25 years compared with other categories ($p=0.07$). Most of the patients (90%) had been married at least once in their lifetime and there was no significant difference in marital status between public and private patients. Private patients were more educated compared with public patients (61% v. 25% for tertiary education; $p=0.01$). Similarly, there was a lower proportion of public patients who were employed in the formal sector compared with the private patients (63.5% v. 28.3%; $p < 0.001$).

Table 1. Sociodemographic characteristics of private and public category of pregnant women in the study cohort

Characteristics	Total (N=440), n (%)	Private (n=249), n (%)	Public (n=191), n (%)	<i>p</i> -value
Age (years)				
≤ 25	84 (19.1)	41 (16.5)	43 (22.5)	
26 - 30	172 (39.1)	98 (39.4)	74 (38.7)	
31 - 34	94 (21.4)	63 (25.3)	31 (16.2)	
≥35	90 (20.5)	47 (18.9)	43 (22.5)	
Age (years), mean (SD)	29.8 (5.01)	29.9 (4.87)	29.7 (5.19)	0.07
Marital status				
Single	45 (10.3)	22 (8.8)	23 (12.0)	
Ever married	395 (89.7)	227 (91.2)	168 (88.0)	0.27
Education level				
Primary school or less	95 (21.6)	31 (12.4)	64 (33.5)	
Secondary school	144 (32.7)	65 (26.2)	79 (41.4)	
College/university	201 (45.7)	153 (61.4)	48 (25.1)	0.01
Occupation				
Employed	216 (49.1)	158 (63.5)	58 (28.5)	
Petty trader	127 (28.9)	54 (21.7)	73 (39.2)	
Other	97 (22.0)	37 (14.8)	60 (32.3)	0.01

SD = standard deviation.

When assessing the mode of delivery in the last pregnancy, the rate of previous CS was 42%, of which 14% were elective and 28% were emergency CS (Table 2). The rate of previous stillbirths was as high as 15%, and higher among private patients (19%) compared with their public counterparts (12%). The proportions of live births, stillbirths and miscarriages were comparable between the private and public groups ($p=0.35$). Twelve percent of the studied group had a history of infertility, and 38% of the patients were primiparas. The mean (SD) age at first pregnancy was 25 (4.6) years, with private clients being significantly older than their public counterparts ($t(435) = 4.58; p=0.001$).

Different background characteristics were analysed for an association with maternal request for CS in the previous pregnancy (Table 3). Patients with secondary school education or higher were more likely to request CS than those with primary education or no formal education (7.7% v. 1.4%; $p=0.05$). Similarly, patients who had been employed in the formal sector (9.2%) were more likely to request CS than informal traders (2.1%) and others (3.5%) ($p=0.005$). Other background characteristics had no significant association with maternal request for CS (all $p \geq 0.17$).

The perception of maternal request for CS based on 'fear of losing a child on normal delivery' was more prevalent among private patients compared with their public counterparts (51% v. 38%; $p=0.03$) (Table 4). More private patients also agreed that requesting to deliver by caesarean section could affect the doctor-patient relationship, compared with their public counterparts (44%

v. 32%; $p=0.02$). Other perspectives of women's perceptions were not significantly different between the private and public patients. Intention to request to deliver by CS was reported by approximately 8% of the respondents. Previous history of CS was the only factor that was a significant predictor of the intention to request CS in the index pregnancy ($p=0.001$) (Table 5).

Factors that were associated with reproductive history and previous delivery outcomes in the bivariate analysis were entered in the regression model (Table 6). The intention to request for CS was 6-fold more likely among patients who had a previous elective CS delivery than those who had vaginal delivery (adjusted odds ratio (AOR) 5.8; 95% CI 1.6 - 20.2). Furthermore, patients who had had a previous emergency CS were 5-fold more likely to request CS compared with those who delivered vaginally in their previous pregnancy (AOR 5.1; 95% CI 1.7 - 15.4). Study participants were less willing to request CS in other public low-referral point health facilities compared with private health facilities. Other factors related to intention to deliver by CS were not statistically significant.

Discussion

This study revealed that the proportion of women who had a history of requesting CS was 6% and those intending to request CS was 8%. The main reasons for requesting CS were fear of losing a baby and a history of previous CS. Even though the proportion requesting CS seems small, it is highly likely to increase, based on the trend of increasing numbers of CS birth at MNH. In this hospital, CS births

Table 2. Comparison of past obstetric history between private and public pregnant women in the study cohort

Obstetric history	Total (N=440), n (%)	Private (n=249), n (%)	Public (n=191), n (%)	p-value
Mode of delivery of the last pregnancy*				
NVD	145 (57.8)	71 (60.7)	74 (55.2)	
Elective CS	35 (13.9)	14 (12.0)	21 (15.7)	
Emergency CS	71 (28.3)	32 (27.3)	39 (29.1)	0.61
Outcome of last pregnancy†				
Live birth	206 (69.8)	91 (65.4)	115 (73.7)	
Macerated still birth	23 (7.8)	13 (9.4)	10 (6.4)	
Fresh still birth	22 (7.5)	13 (9.4)	9 (5.8)	
Miscarriage	44 (14.9)	22 (15.8)	22 (14.1)	0.35
History of infertility				
Yes	54 (12.3)	25 (13.1)	29 (11.6)	
No	386 (87.7)	166 (86.9)	220 (88.4)	0.65
Parity				
Nulliparous	167 (38)	102 (41.0)	65 (34.0)	
Primiparous	145 (33)	87 (34.9)	58 (30.4)	
Multiparous	128 (29)	60 (24.1)	68 (35.6)	0.14
Age at first pregnancy (years), mean (SD)	25.05 (4.6)	25.9 (4.4)	23.9 (4.6)	0.001

NVD = Normal vaginal delivery; CS = caesarean section; SD = standard deviation.

*Excluded primigravida and miscarriages.

†Excluded miscarriages.

Table 3. Comparison of maternal characteristics with the history of CS on request among pregnant women in study cohort

Characteristic	Ever requested to deliver by CS?		p-value
	Yes, n (%)*	No, n (%)*	
Type of clinic			
Public	4 (3.2)	122 (96.8)	
Private (IPPM)	11 (7.5)	136 (92.5)	0.18
Education level			
Primary or less	1 (1.4)	76 (98.6)	
Secondary and above	14 (7.7)	182 (92.3)	0.05
Age (years)			
<25	2 (8.3)	22 (91.7)	
26 - 30	6 (5.8)	97 (94.2)	
31 - 34	6 (5.9)	95 (94.1)	
>35	1 (2.2)	44 (97.8)	0.71
Occupation			
Employed	11 (9.2)	108 (90.8)	
Informal trader	2 (2.1)	94 (97.9)	
Others	2 (3.4)	56 (96.6)	0.05
Parity			
Primiparous	10 (6.9)	135 (93.1)	
Multiparous	5 (3.9)	123 (96.1)	0.279
Age at first pregnancy (years), mean (SD)	23.7 (4.0)	24 (4.2)	0.76

CS = caesarean section; IPPM = intramural private practice management; SD = standard deviation.

*Unless otherwise specified

RESEARCH

Table 4. Comparison of different perceptions of CS on request among pregnant women in study cohort

Perceptions of CS on request	Total (N=440), n (%)	Private (n=249), n (%)	Public (n=191), n (%)	p-value
CS on request should be allowed				
Disagree	202 (46.0)	111 (44.4)	91 (47.9)	0.77
Not sure	31 (7.0)	19 (7.6)	12 (6.3)	
Agree	207 (47.0)	120 (48.0)	87 (45.8)	
Doctor has the right to overrule CS on maternal request				
Disagree	90 (20.5)	52 (20.9)	38 (19.9)	0.14
Not sure	64 (14.5)	29 (11.6)	35 (18.3)	
Agree	286 (65.0)	168 (67.5)	118 (61.8)	
Women who request delivery by CS had history of infertility				
Disagree	255 (58.0)	139 (55.8)	116 (60.7)	0.44
Not sure	130 (29.5)	75 (30.1)	55 (28.8)	
Agree	55 (12.5)	35 (14.1)	20 (10.5)	
Women who request delivery by CS due to previous miscarriage				
Disagree	205 (46.6)	111(44.4)	94 (49.5)	0.39
Not sure	88 (20)	49 (19.6)	39 (20.5)	
Agree	147 (33.4)	90 (36.0)	57 (30.0)	
Women who request delivery by CS are >35 years old				
Disagree	230 (52.3)	123(49.4)	107 (56.0)	0.38
Not sure	76 (17.3)	45 (18.1)	31 (16.2)	
Agree	134 (30.5)	81 (32.5)	53 (27.7)	
Women who request delivery by CS have psychological problems				
Disagree	182 (41.4)	100 (40.2)	82 (42.9)	0.21
Not sure	103 (23.4)	53 (21.3)	50 (26.2)	
Agree	155 (35.2)	96 (38.6)	59 (30.9)	
Women who request delivery by CS are financially well supported				
Disagree	206 (46.8)	111 (44.6)	95 (49.7)	0.21
Not sure	55 (12.5)	28 (11.2)	27 (14.1)	
Agree	179 (40.7)	110 (44.2)	69 (36.1)	
Women who request delivery by CS have a fear of losing a child on normal delivery				
Disagree	167 (38)	84 (33.7)	83 (43.5)	0.03*
Not sure	73 (16.6)	38 (15.3)	35 (18.3)	
Agree	200 (45.5)	127 (51.0)	73 (38.2)	
Women who request delivery for CS have a fear of labour pain				
Disagree	54 (12.3)	25 (10.0)	29 (15.2)	0.23
Not sure	37 (8.4)	20 (8.0)	17 (8.9)	
Agree	349 (79.3)	204 (81.9)	145 (75.9)	
Requesting delivery by CS can affect doctor-patient relationship				
Disagree	167 (38)	88 (35.2)	79 (41.6)	0.02*0
Not sure	100 (22.7)	50 (20)	50 (26.3)	
Agree	173 (39.3)	112 (44.8)	61 (32.1)	
Women who request delivery by CS have a need to undergo tubal ligation				
Disagree	130 (29.5)	78 (31.3)	52 (27.2)	0.28
Not sure	209 (47.5)	110 (44.2)	99 (51.8)	
Agree	101 (23)	61 (24.5)	40 (20.9)	
Women who request delivery by CS will have less pelvic flow injury compared with normal delivery				
Disagree	124 (28.2)	63 (25.3)	61 (31.9)	0.22
Not sure	157 (35.7)	96 (38.6)	61 (31.9)	
Agree	159 (36.1)	90 (36.1)	69 (36.1)	

CS = caesarean section.

*Statistically significant.

increased from 22% in 2002 to 51% in 2014, and therefore there is a need to examine the factors that affect women's decisions to elect for CS, based on their attitudes and experiences.

Fear of losing a child was a predictor for maternal request for CS, as was reported in a study in Sweden in which 28% of respondents believed that requesting for CS was based on their concerns for the newborn.^[23] Having a negative perception of childbirth based on the mother's experience in a prior pregnancy and a history of obstetric complications could be the underlying

reason for expressing concern for the new baby and, subsequently, the maternal request for CS.^[24] Prior local evidence has highlighted that mothers' perceptions of maternal complications and risk, the chance of delivering a healthy baby following previous poor outcome, or an external influence such as seeking experience and advice from peers, are all contributing factors for CS on request.^[17] At MNH and other health facilities in Tanzania, understaffing and limited health resources have led to the provision of substandard care; thus, upgrading CEoC could not only prevent adverse delivery outcomes, but might also contribute to reducing the number of unnecessary CSs based on maternal request.

As shown in this study, previous history of CS was a significant factor associated with requesting CS, and previous emergency CS had a higher likelihood of maternal request for CS compared to previous elective CS. Similar findings have been reported in Canada, Sweden and Nigeria.^[20,25,26] Furthermore, evidence has shown that fear of childbirth associated with obstetric complications is usually related to emergency rather than elective CS. Parturients and their newborns in health-resource-limited settings such as in Tanzania have a high risk of severe morbidity during birth due to abnormal labour, which could lead to avoidance of vaginal delivery as a result of a negative perception of childbirth.^[17]

The findings regarding the influence of advanced maternal age, psychological problems and previous pregnancy loss to intention to request CS were contrary to the findings of other studies.^[27] Cultural differences could explain these differences. The participants' unwillingness to request CS in another public referral point at a lower referral level, such as a regional hospital, compared with private health facility could imply women's lack of trust/confidence and the provision of a relatively lower quality of service in these facilities compared with MNH.^[6] This finding is supported by Okonkwo *et al.*,^[20] who reported that the rate of maternal request for CS was higher in a tertiary hospital compared with secondary and primary health centres. Furthermore, almost half of the participants were of the opinion that CS on request should be allowed and that doctors had the right to overrule maternal request for CS. Nonetheless, participants felt that requesting CS might affect the doctor-patient relationship, which aligns with the findings of a previous qualitative study at MNH that highlighted maternal anxiety and poor client counselling during childbirth and thus found room for improvement.^[17]

Evidence relating to the potential benefits of elective CS compared with vaginal delivery has been inconsistent. While some literature supports the notion that elective CS is associated with a decreased risk of urinary incontinence, pelvic organ prolapse, anal sphincter damage, fecal incontinence and flexible timing for the mother,^[1,28] others advocate vaginal delivery, considering the risk of adverse outcomes of CS, including haemorrhage, admission to the ICU, blood transfusion and hysterectomy, especially in low-resource settings.^[29,30] As with any major surgical procedure, there are risks associated with CS, including complications of anaesthesia, excessive blood loss, breathing problems, infection, urinary tract injury, and injury to the baby.^[6,7] In addition, recovery time and hospital stay following caesarean delivery are longer than following vaginal delivery and therefore CS is associated with increased cost of care for the individual, the family and the health system. Therefore, adequate information should be made available to the clients when considering delivery by CS when vaginal delivery is also possible.

This study was conducted at the largest tertiary hospital in Tanzania, which has a rapidly increasing CS rate that represents

Table 5. Factors associated with intention to undergo CS on maternal request*

Factors	Intend to request delivery by CS			p-value
	Yes, n (%)	No, n (%)	Total, n (%)	
Mode of delivery of the last pregnancy				
NVD	4 (2.7)	141 (97.3)	145 (100)	
Elective CS	6 (17.1)	29 (82.9)	35 (100)	
Emergency CS	11 (15.5)	60 (84.5)	71 (100)	0.001†
Outcome of your last pregnancy				
Live birth	20 (9.7)	186 (90.3)	206 (100)	
Macerated birth	1 (4.3)	22 (95.7)	23 (100)	
Stillbirth	1 (4.5)	21 (95.5)	22 (100)	
Miscarriage	3 (6.8)	41 (93.2)	44 (100)	0.687
Type of antenatal care clinic				
Public	14 (7.3)	177 (92.7)	191 (100)	
IPPM (private)	20 (8.0)	229 (92.0)	249 (100)	0.798
Education level				
Primary school or less	7 (7.4)	88 (92.6)	95 (100)	
Secondary school	11 (7.6)	133 (92.4)	144 (100)	
College/university	16 (8.0)	185 (92.0)	201 (100)	0.99
Age (years)				
<21	6 (7.1)	78 (92.2)	84 (100)	
26 - 30	10 (5.8)	162 (94.2)	172 (100)	
31 - 34	13 (10.0)	117 (90.0)	130 (100)	
>35	5 (9.3)	49 (90.7)	54 (100)	0.79
Occupation				
Employed	19 (8.8)	197 (91.2)	216 (100)	
Informal trader	9 (7.1)	118 (92.9)	127 (100)	
Other	6 (6.2)	91 (93.8)	97 (100)	0.25
Ever delivered by CS				
Yes	19 (16.7)	95 (83.3)	114 (100)	
No	4 (2.5)	155 (97.5)	159 (100)	0.001†
Have you ever had an infertility problem				
Yes	4 (20.0)	16 (80.0)	20 (100)	
No	13 (14.6)	76 (85.4)	89 (100)	0.55

CS = caesarean section; NVD = normal vaginal delivery; IPPM = intramural private practice management.

* Some numbers do not add up to the total due to missing values in some variables.

† Statistically significant.

Table 6. Logistic regression on factors associated with intention of maternal request for CS

Factor	COR	95% CI	AOR	95% CI	p-value
Mode of delivery of last pregnancy					
NVD	1		1		
Elective CS	6.7	1.4 - 9.3	5.8	1.6 - 20.2	0.006
Emergency CS	8.1	2.6 - 10.1	5.1	1.7 - 15.4	0.004
Outcome of last pregnancy					
Live birth	1		1		
Stillbirth	0.38	0.43 - 3.2	0.5	0.12 - 1.4	0.83
Miscarriage	0.11	0.14 - 1.2	0.24	0.21 - 3.1	0.37
Have you ever had an infertility problem					
No	1		1		
Yes	1.25	0.35 - 4.4	1.25	0.47 - 3.39	0.65

CS = caesarean section; COR = crude odds ratio; AOR = adjusted odds ratio; NVD = normal vaginal delivery; CI = confidence interval.

a real problem in Tanzanian referral health facilities. The environment within a referral centre could also be the reason for the increase in the number of CS associated with low-risk pregnancy.^[4] The seemingly rare complications of CS, including subsequent placenta praevia with placenta accreta, and endometriosis should be addressed as possible adverse effects of CS during counselling. The reported numbers of maternal request for CS in this study might be biased by the fact that this study was conducted in the largest tertiary urban health facility, which received referred complicated pregnancies as well as private patients with low-risk pregnancies. Furthermore, the national CS rate of 6% in Tanzania is still below the 10% that was deemed acceptable based on WHO literature. However, CS rates should not be demand-driven but based on optimal indications. CS without maternal or fetal indications unnecessarily depletes the scarce resources available in a low-income country like Tanzania.

Conclusion

Maternal requests for CS do exist at the highest national referral hospital in Tanzania. The maternal requests for CS were associated with factors other than women's preferences, including perceived fear of child loss following vaginal delivery and events associated with previous CS. In the absence of maternal or fetal indications for CS, a plan for vaginal delivery is a safe and appropriate option and should be recommended. Care providers have the responsibility of alleviating women's perceived fear of childbirth by providing adequate counselling on their decision of mode of delivery to assist women in making an informed choice. Furthermore, good-quality intrapartum care encourages women to attempt vaginal birth. A deeper understanding of women and health care providers' perceptions and attitudes towards maternal requests for CS through a qualitative approach is also recommended.

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1. Viswanathan M, Visco AG, Hartmann K, et al. Cesarean delivery on maternal request. *Evid Rep Technol Assess* 2006;(133):1-138.
2. American College of Obstetricians and Gynecologists. ACOG committee opinion no. 559: Cesarean delivery on maternal request. *Obstet Gynecol* 2013;121(4):904-907. <https://doi.org/10.1097/01.AOG.0000428647.67925.d3>
3. National Bureau of Statistics (NBS), ICF Macro. Tanzania Demographic and Health Survey 2010. Dar es Salaam, Tanzania and Calverton, MA: NBS and ICF Macro, 2011.
4. Litorp H, Kidanto HL, Nyström L, Darj E, Essén B. Increasing caesarean section rates among low-risk groups: A panel study classifying deliveries according to Robson at a university hospital in Tanzania. *BMC Preg Childbirth* 2013;13:107. <https://doi.org/10.1186/1471-2393-13-107>
5. Mdegela MH, Muganyizi PS, Pembe AB, Simba DO, Van Roosmalen J. How rational are indications for emergency caesarean section in a tertiary hospital in Tanzania? *Tanzan J Health Res* 2012;14(4):236-242.
6. Litorp H, Kidanto HL, Rööst M, Abeid M, Nyström L, Essén B. Maternal near-miss and death and their association with caesarean section complications: A cross-sectional study at a university hospital and a regional hospital in Tanzania. *BMC Preg Childbirth* 2014;14:244. <https://doi.org/10.1186/1471-2393-14-244>
7. Eriksson J, Baker T, Jörnvall H, Irestedt L, Mulungu M, Larsson E. Quality of anaesthesia for caesarean sections: A cross-sectional study of a university hospital in a low-income country. *Trop Med Int Health* 2015;20(10):1329-1336. <https://doi.org/10.1111/tmi.12553>
8. World Health Organization. WHO Guidelines for the Management of Postpartum Haemorrhage and Retained Placenta. Geneva: WHO, 2009.
9. Kongnyuy EJ, Mlava G, van den Broek N. A criterion based audit of the management of obstructed labour in Malawi. *Arch Gynecol Obstet* 2009;279(5):649-654. <https://doi.org/10.1007/s00404-008-0786-1>
10. Sorensen BL, Elsass P, Nielsen BB, Massawe S, Nyakina J, Rasch V. Substandard emergency obstetric care – a confidential enquiry into maternal deaths at a regional hospital in Tanzania. *Trop Med Int Health* 2010;5(8):894-900. <https://doi.org/10.1111/j.1365-3156.2010.02554.x>
11. Maaloe N, Sorensen BL, Onesmo R, Secher NJ, Bygbjerg JC. Prolonged labour as indication for emergency caesarean section: A quality assurance analysis by criterion-based audit at two Tanzanian rural hospitals. *BJOG* 2012;119(5):605-613. <https://doi.org/10.1111/j.1471-0528.2012.03284.x>
12. van Beekhuizen HJ, Unkels R, Mmuni NS, Kaiser M. Complications of obstructed labour: Pressure necrosis of neonatal scalp and vesicovaginal fistula. *Lancet* 2006;368(9542):1210. [https://doi.org/10.1016/S0140-6736\(06\)69477-4](https://doi.org/10.1016/S0140-6736(06)69477-4)
13. Kabakyenga JK, Östergren P-O, Turyakira E, Mukasa PK, Pettersson KO. Individual and health facility factors and the risk for obstructed labour and its adverse outcomes in south-western Uganda. *BMC Preg Childbirth* 2011;11(11):73. <https://doi.org/10.1186/1471-2393-11-73>
14. Nilstun T, Habiba M, Lingman G, et al. Cesarean delivery on maternal request: Can the ethical problem be solved by the principlist approach? *BMC Med Ethics* 2008;9(1):11. <https://doi.org/10.1186/1472-6939-9-11>
15. Signore C, Hemachandra A, Klebanoff M. Neonatal mortality and morbidity after elective cesarean delivery versus routine expectant management: A decision analysis. *Semin Perinatol* 2006;30(5):288-295. <https://doi.org/10.1053/j.semperi.2006.07.010>
16. Nama V, Wilcock F. Caesarean section on maternal request: Is justification necessary? *Obstet Gynaecol* 2011;13(4):263-269. <https://doi.org/10.1576/toag.13.4.263.27693>
17. Litorp H, Mgaya A, Kidanto HL, Johnsdotter S, Essén B. 'What about the mother?' Women's and caregivers' perspectives on caesarean birth in a low-resource setting with rising caesarean section rates. *Midwifery* 2015;31(7):713-720. <https://doi.org/10.1016/j.midw.2015.03.008>
18. Selinger H. Maternal request for caesarean section: An ethical consideration. *J Med Ethics* 2016;40(12):857-860. <https://doi.org/10.1136/medethics-2013-101558>

RESEARCH

19. Campbell OMR, Graham WJ, Lancet Maternal Survival Series steering group. Strategies for reducing maternal mortality: Getting on with what works. *Lancet* 2006;368(9543):1284-1299. [https://doi.org/10.1016/S0140-6736\(06\)69381-1](https://doi.org/10.1016/S0140-6736(06)69381-1)
20. Okonkwo NS, Ojengbade OA, Morhason-Bello IO, Adedokun BO. Maternal demand for cesarean section: Perception and willingness to request by Nigerian antenatal clients. *Int J Wom Health* 2012;4:141-148. <https://doi.org/10.2147/IJWH.S10325>
21. Litorp H, Mgaya A, Mbekenga CK, Kidanto HL, Johnsdotter S, Essén B. Fear, blame and transparency: Obstetric caregivers' rationales for high caesarean section rates in a low-resource setting. *Soc Sci Med* 2015;143:232-240. <https://doi.org/10.1016/j.socscimed.2015.09.003>
22. Bettes BA, Coleman VH, Zinberg S, et al. Cesarean delivery on maternal request: Obstetrician-gynecologists' knowledge, perception, and practice patterns. *Obstet Gynecol* 2007;109(1):57-66. <https://doi.org/10.1097/01.AOG.0000249608.11864.b6>
23. Wiklund I, Edman G, Andolf E. Cesarean section on maternal request: Reasons for the request, self-estimated health, expectations, experience of birth and signs of depression among first-time mothers. *Acta Obstet Gynecol Scand* 2007;86(4):451-456. <https://doi.org/10.1080/00016340701217913>
24. Storksén HT, Garthus-Niegel S, Vangen S, Eberhard-Gran M. The impact of previous birth experiences on maternal fear of childbirth. *Acta Obstet Gynecol Scand* 2013;92(3):318-324. <https://doi.org/10.1111/aogs.12072>
25. Nieminen K, Stephansson O, Ryding EL. Women's fear of childbirth and preference for cesarean section – a cross-sectional study at various stages of pregnancy in Sweden. *Acta Obstet Gynecol Scand* 2009;88(7):807-813. <https://doi.org/10.1080/00016340902998436>
26. Kornelsen J, Hutton E, Munro S. Influences on decision making among primiparous women choosing elective caesarean section in the absence of medical indications: Findings from a qualitative investigation. *J Obstet Gynaecol Canada* 2010;32(10):962-969. [https://doi.org/10.1016/S1701-2163\(16\)34684-9](https://doi.org/10.1016/S1701-2163(16)34684-9)
27. Hildingsson I, Nilsson C, Karlström A, Lundgren I. A longitudinal survey of childbirth-related fear and associated factors. *J Obstet Gynecol Neonatal Nurs* 2011;40(5):532-543. <https://doi.org/10.1111/j.1552-6909.2011.01274.x>
28. Cacciatore A, Giordano R, Romano M, La Rosa B, Fonti I. Putative protective effects of cesarean section on pelvic floor disorders. *J Prenat Med* 2010;4(1):1-4.
29. Shah A, Fawole B, M'Imunya JM, et al. Cesarean delivery outcomes from the WHO global survey on maternal and perinatal health in Africa. *Int J Gynecol Obstet* 2009;107(3):191-197. <https://doi.org/10.1016/j.ijgo.2009.08.013>
30. Lumbiganon P, Laopaiboon M, Gülmezoglu AM, et al. Method of delivery and pregnancy outcomes in Asia: The WHO global survey on maternal and perinatal health 2007-08. *Lancet* 2010;375(9713):490-499. [https://doi.org/10.1016/S0140-6736\(09\)61870-5](https://doi.org/10.1016/S0140-6736(09)61870-5)