



## Assessment of Factors Associated with Caesarean Section Among Women Attending Kampala International University Teaching Hospital: A Retrospective Study

Theophilus Pius<sup>1</sup>, Namiwanda Joaniter<sup>2</sup>, Solomon Mbina<sup>2</sup>, Saphurah Nabaasa<sup>3</sup>, Susan Nabukeera<sup>3</sup>, Ibrahim Ntumlume<sup>4</sup>, Robinson Ssebuufu<sup>5</sup>, Ejike Daniel Eze<sup>6</sup>

<sup>1</sup>Department of Medical Laboratory Sciences, Kampala International University Teaching Hospital, P.O BOX 71 Bushenyi, Uganda

<sup>2</sup>Department of Public Health, Health and Community Health School of Allied Health Sciences, Kampala International University, Western Campus, P.O BOX 71 Bushenyi, Uganda

<sup>3</sup>Department of Medical Laboratory Sciences, Kampala International University, Teaching Hospital P.O BOX 71 Bushenyi, Uganda

<sup>4</sup>Department of Microbiology and Immunology Kampala International University, Western Campus, P.O BOX 71 Bushenyi, Uganda

<sup>5</sup>Faculty of Clinical Medicine and Dentistry, Kampala International University, Teaching Hospital P.O BOX 71 Bushenyi, Uganda

<sup>6</sup>Department of Physiology Kampala International University, Western Campus, P.O BOX 71 Bushenyi, Uganda

### Abstract

The rate of caesarean section has continue to increase worldwide and the lack of harmony on its indications and the associated short- and long-term risks has been a cause of concern among health professionals and the public at large. A retrospective study was done to assess factors associated with caesarean section at Kampala International University Teaching Hospital (KIU-TH) Western Uganda from 2017-2018. KIU-TH is the biggest hospital in Bushenyi district and also served as a referral hospital to neighbouring district in Western and other parts of Uganda. This study reviewed 320 women records that underwent CS. Data was collected systematically using simple structured questionnaires and was analyzed using statistical package for social sciences (SPSS). Out of the 320 records reviewed, patient related factors has an increased odd with maternal ages 32-38 and 39-45 were significance, Occupational status, Level of education and primigravidas were significance factors associated with rate of CS. On medical related factors, fetal distress, obstructed/prolonged labour, premature rupture of membrane and mal-presentation were significance associated factors at p-value<0.005 respectively. Despite the factors indicated in this study, pregnant women with should be encourage to attend antenatal clinics for proper preparation towards safe delivery in order to avoid high rate of CS dependent delivery.

**Keywords:** Caeserean Section, Patient related factors, Medical related factors

### Corresponding author: Theophilus Pius

Department of Medical Laboratory Sciences, Kampala International University Teaching Hospital, P.O BOX 71 Bushenyi Uganda.

Tel: +256700509207,

E-mail: piustheophilus@kiu.ac.ug

**Citation:** Theophilus Pius et al. (2020), Assessment of Factors Associated with Caesarean Section Among Women Attending Kampala International University Teaching Hospital: A Retrospective Study.

Int J Clinical & Case. 4:2

**Copyright:** ©2020 Theophilus Pius et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

**Received:** March 06, 2020

**Accepted:** March 13, 2020

**Published:** xxxx, 2020

## Introduction

Caesarean section (CS) is known to be the last resort delivery modes in complicated situations where spontaneous vaginal delivery has failed<sup>[1]</sup>. Worldwide, CS rates have increased tremendously in recent years, especially among high-income countries, raising concerns about over-utilization of CS without added benefits<sup>[2]</sup>. Though the rates of caesarean section are high and continue to rise in developed countries<sup>[3]</sup>, world health organization (WHO) recommended that the rate of caesarean section (CS) should not exceed 10% to 15% in any country<sup>[4]</sup>. However, in Sub-Saharan Africa, where two-thirds of the world's 302,000 maternal deaths occur annually, their CS rate is the lowest in the world (7.3%)<sup>[4]</sup>. Factors associated with increased odds of cesarean section were: prim-parity, mother's age 20-34, previous scar, mother's request, gestational hypertension, mal-presentation and gestational age > 41 weeks<sup>[5]</sup>. Many other factors have been identified to be associated with CS across the world such as premature rupture of the amniotic membrane, cephalo-pelvic disproportion, foetal distress, multiple pregnancy, breech presentation, place of birth(private or public hospital), maternal preference, birth weight, parity, maternal height and antenatal care use<sup>[6]</sup>. There is no documented data that shows the benefits of CS for women or infants especially, where it is not necessary<sup>[7]</sup>. In Uganda, there is high maternal mortality ratio (MMR), which was estimated to be at 336 per 100,000 live births in 2016; this translates into a lifetime risk of maternal death of 1 in 47<sup>[8]</sup>. To address this, the government has made deliberate efforts to increase availability, quality, access to, and utilization of emergency

obstetric care services to manage and treat complications of pregnancy, labour, and delivery<sup>[9]</sup>. In western Uganda, between 2012-2016, Fort-portal district had the highest level of caesarean section rates of 11-26 followed by Mbarara with<sup>[11-14]</sup><sup>[10]</sup>. In Bushenyi district, no figures and factors have been established hence, this study is aimed at determining factors influencing the rates of caesarean section in Kampala International University Teaching Hospital western Uganda.

## Methods

The study was a retrospective study and patients records who underwent CS were reviewed and data collected using a simple structured questionnaire to assessed factor influencing the CS among patients from 2017-2018. A total of 320 sample size was obtained out of a total population of 1900 as described by Krejcie & Morgan, 1970 table of sample size determination. A systematic sampling technique was employed among the files of each year 2017 and 2018 respectively. A multivariate analysis of data was done using a software SPSS version 20 to determine the significance of factors associated with CS.

## Results

Patient related determinants of cesarean section among mothers who delivered in year 2017/2018 from KIU teaching hospital.

The below table indicated on multivariate analysis of patient related factors associated with CS among pregnant women identified patients' age 32-38 and 39-45 were significance as indicated on the table. The employed, primary education level, secondary education level, and primigravida and among the significance factors associated with rate of CS.

		OR	95%CI	P-VALUE
Age (years)	18-24	1		
	25-31	0.241	1.043-3.243	0.056
	32-38	1.320	2.002-5.012	0.002*
	39-45	0.013	1.004-3.240	0.003*
Occupation	Employed	1.210	2.043-6.343	0.004*
	Farmer	0.431	1.054-3.241	0.120
	Housewife	0.551	2.0710-4.112	0.202
	Student	1		
Level of education	Uneducated	1		
	Primary	0.343	1.241	0.001*
	Secondary	1.221	2.543-6.021	0.002*
	Tertiary	0.103	1.222-5.204	0.112
Gravidity	Primigravida	0.043	1.200-4.054	0.001*
	Multi gravida	0.032	1.023-5.111	0.320
	Grand para	1		
Mother's request	No	1		
	Yes	1.343	2.212-6.221	0.123
Religion	Catholic	0.461	1.042-4.211	0.132
	Anglican	1		
	Muslim	0.261	1.203-3.567	0.211

\*statistically significant  $p < 0.005$

**Table 1:** showing the multivariate analysis of patient related determinants of caesarean section

**Medical related determinants of caesarean section among mothers who delivered in the year 2017/2018 from KIU teaching hospital**

In the below table, fetal distress, obstructed/prolonged labour, premature rupture of membranes and mal-presentation were significantly associated with CS among pregnant women in KIU-TH

	OR	95%CI	P-VALUE
Fetal distress	0.024	1.200-3.002	0.003*
pre-eclampsia /eclampsia	0.243	1.110-4.222	0.014
obstructed/ prolonged labor	1.433	2.022-5.143	0.001*
PROM	0.343	1.221-3.433	0.004*
Previous scar	0.323	1.022-3.121	0.201
Placenta previa	0.434	1.202-4.221	0.033
CPD	0.122	1.322-4.354	0.012
Mal-presentation and position	0.322	1.032-4.643	0.001*
Macrosomia	0.034	1.002-5.201	
others	1		

\*statistically significant  $p < 0.005$

**Table 2:** shows the multivariate analysis of medical related determinants of caesarean section.

## Discussion

This study revealed that mothers of ages 32 to 38 were more prone to caesarean section with 44.7% than other age groups [Table 1]. The reasons for the increased C-section in the age group [Table 2] 32-38 were previous prolong labour, foetal distress, premature rupture of membrane and mal-presentation and this agree with a study by<sup>[11]</sup>. However, this is contrary to a study by<sup>[12]</sup> where he found that advanced maternal age were associated with increased CS. According to this study, the employed were much more likely to undergo caesarean section than the rest of other individuals [Table 1]. This may be because they could afford to pay for the service as some of them requested for the CS for fear of labour pain. Patients who are Farmers, housewives and students were less likely to opt for CS due to its cost and affordability. The tendency of caesarean section increased with increased in level of income as seen in this study and can be compared to a study done by<sup>[13]</sup>. This study also indicated that mothers who attained primary and secondary education level had the highest rate of CS which is significance at p-value 0.005 [Table 1] than other education categories. This could be because, Mothers who attended tertiary level of education are likely to make informed decision despite their previous CS scar and women with primary and secondary are easily convince for the CS with any objection. This was in agreement with a study conducted in Brazil by 5 and<sup>[14]</sup>. Also, women who have reached tertiary level tend to produce fewer children or sometimes no children and hence are less likely to undergo CS reason for the lower percentage than women who attained secondary school level [Table 1]. This study found that women who delivered for the first time (prim gravidas) did that through CS than those who already had one or more children (multigravidas) [Table 1]. The increased CS in primigravidas may be due to fear of labour and pains during childbirth. The reduced frequency of C-section in multigravidas may be because their pelvis has been tested by previous pregnancies and has had their previous childbirth by vaginal delivery. This is similar to a study done by 15 where increased parity lowers CS. In the African setting including Bushenyi Uganda tradition, CS is associated with stigma where women who delivered by CS are seen as coward, lazy and against the natural process of normal delivery by the community. This study has not recorded any maternal

request to undergo CS and this may be due to fear of complications of the procedure as people believed that whoever goes into the theatre alive rarely comes out alive. Also, mother requests for C-sections may not have been documented hence giving a 100% medical indications for CS. However, in a study conducted in Bangladesh, the reason for request of C-section was fear of perineal tears while others saw it as a modernization because it is technology based process<sup>[16]</sup>. In this study, fetal distress, obstructed/prolonged labour, premature rupture of membranes and mal-presentation were significance indicators of medical related factors for CS [Table 2]. According to this study, previous caesarean births was not a major reason of subsequent CS; also, pre-eclampsia/eclampsia, macrosomia, and placenta previa were not significance based on this study [Table 2]. The results was not in agreement with a study by<sup>[17]</sup>, who showed leading indications for CS were Cephalo-pelvic disproportion (CPD). This study is in agreement with study by<sup>[5,18,19]</sup>. Macrosomia in mothers who are diabetic with hyperglycaemia were not significance based on this study and is contrary to a study according to<sup>[20]</sup>.

## Conclusion

This study found out that women who delivered by CS between 2017 and 2018, were mainly due to foetal distress, prolong labour, PROM and mal-presentation. This study recommends improved awareness on the need of pregnant women to attend antenatal clinics during gestation period to prepare for safe natural delivery. This will help reduce the high rate of caesarean births among pregnant women in the district and Uganda at large.

## Data Availability

The raw data that support this study are available on request to the corresponding author. The raw data are publicly display because of restriction as this could compromise the privacy and confidentiality of the research participants.

## Conflict of Interest

The authors have declared that there is no any conflict of interest in regard to this research now and in the future.

## Funding Statement

This research has no funding support to declare

## Acknowledgement

The authors will like to acknowledge the management of Kampala International University Teaching Hospital for permission to carry out the study in their facility. The authors also acknowledge the record units KIU-TH for their cooperation and guidance during data collection that made the files accessible. The authors also acknowledge the statistician for data management and analysis.

## References

1. Ji H, Jiang H, Yang L, Qian X, Tang S. [Factors contributing to the rapid rise of caesarean section: a prospective study of primiparous Chinese women in Shanghai](#). *BMJ Open*. 2015;5:1-9. doi:10.1136/bmjopen-2015-008994
2. Gibbons L, Belizán JM, Lauer JA, Betrán AP, Meriáldi M, Althabe F. [The Global Numbers and Costs of Additionally Needed and Unnecessary Caesarean Sections Performed per Year: Overuse as a Barrier to Universal Coverage](#).; 2010.
3. Panda S, Daly D, Begley C, Karlström A, Larsson B, Bäck L. [Factors influencing decision-making for caesarean section in Sweden – a qualitative study](#). *BMC Pregnancy Childbirth*. 2018;1-8.
4. Harrison MS, Goldenberg RL. [Caesarean section in sub-Saharan Africa](#). *Matern Heal Neonatol Perinatol*. 2016;1-10. doi:10.1186/s40748-016-0033-x
5. Orsi ED, Chor D. [Factors associated with cesarean sections in a public hospital in Rio de Janeiro , Brazil Fatores associados à realização de cesáreas em uma maternidade pública do Município do Rio de Janeiro , Brasil](#). *Artig Artic*. 2006;22(10):2067-2078.
6. Shi Y, Jiang Y, Zeng Q, et al. [Influencing factors associated with the mode of birth among childbearing women in Hunan Province : a cross-sectional study in China](#). *BMC Pregnancy Childbirth*. 2016;1-9. doi:10.1186/s12884-016-0897-9
7. AP Betran, a MR Torloni, b JJ Zhang c AG, Ulmezoglu a for the WWG on C, Section. [WHO Statement on Caesarean Section Rates](#) €. *An Int J Obstet Gynaecol*. 2015;667-670. doi:10.1111/1471-0528.13526
8. Betr AP. [Determinants of caesarean section rates in developed countries : supply , demand and opportunities for control](#) Jeremy A . Lauer , Ana P . Betrán , Mario Meriáldi and Daniel Wojdyla [The path to universal coverage](#). *World Heal Organ*. 2015;(February):1-23.
9. Mucunguzi S, Wamani H, Lochoro P, Tylleskar T. [Effects of Improved Access to Transportation on Emergency obstetric Care Outcomes in Uganda](#). 2014;18(September):87-94.
10. Atuheire EB, Opio DN, Kadobera D, Ario AR, Matovu JKB, Harris J. [Spatial and temporal trends of cesarean deliveries in Uganda : 2012 – 2016](#). *BMC Pregnancy Childbirth*. 2019;(April):2012-2016. doi:10.1186/s12884-019-2279-6
11. Kaur J, Singh S, Kaur K. [Current trend of caesarean sections and vaginal births](#). *Pelagia Res Libr* 196. 2013;4(4):196-202.
12. Manyeh AK, Amu A, Akpakli DE, Williams J, Gyapong M. [Socioeconomic and demographic factors associated with caesarean section delivery in Southern Ghana : evidence from INDEPTH Network member site](#). 2018;(November):1-9.
13. CÂMARA A, MARCELO BURLÁ, JOSÉ FERRARI, LANALIMA, JOFFRE AMIM JUNIOR, ANTONIO BRAGA JRF. [Caesarean section by maternal request](#). *Rev Col Bras Cir* 2016;. 2016;43(4):301-310. doi:10.1590/0100-69912016004002
14. Nilsen C, Østbye T, Daltveit AK, Mmbaga BT, Sandøy IF. [Trends in and socio-demographic factors associated with caesarean section at a Tanzanian referral hospital , 2000 to 2013](#). *Int J Equity Health*. 2014;1-11. doi:10.1186/s12939-014-0087-1
15. Manyeh AK, Amu A, Akpakli DE, Williams J, Gyapong M. [Socioeconomic and demographic factors associated with caesarean section delivery in Southern Ghana : evidence from INDEPTH Network member site](#). *BMC Pregnancy Childbirth*. 2018;(November):1-9.
16. Rukhsana KF. [Factors Affecting the Increased Rates Factors Affecting the Increased Rates Of Caesarean Section in Bangladesh](#). 2016.
17. Medicine AOF. [iMedPub Journals Prevalence and Outcome of Caesarean Section in Attat Hospital , Gurage Zone , SNNPR , Ethiopia Abstract](#). *iMedPub Journals*. 2015;7(4):4-9.
18. Begum T, Rahman A, Nababan H, et al. [Indications and determinants of caesarean section delivery : Evidence from a population- based study in Matlab , Bangladesh](#). *PLoS One*. 2017;1-16.
19. Abebe FE, Gebeyehu AW, Kidane AN, Eyassu GA. [Factors leading to cesarean section delivery at Felegehiwot referral hospital , Northwest Ethiopia : a retrospective record review](#). *Reprod Health*. 2016;1-7. doi:10.1186/s12978-015-0114-8
20. Am B, Sa A, Ys K, et al. [Caesarean Section : Incidence , Causes , Associated Factors and Outcomes : A National Prospective Study from Jordan](#) *iMedPub Journals Caesarean Section : Incidence , Causes , Associated Factors and Outcomes : A National Prospective Study from Jordan*. *Gynecol Obstet Case Rep*. 2017;3(June 2018). doi:10.21767/2471-8165.1000055