

Association between Socio-Demographic Characteristics and Uptake of Caesarian Section among Mothers at a Private Tertiary Health Care Facility in Nairobi Kenya

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Abstract: Caesarean section (CS) is a surgical approach used to deliver the baby when vaginal delivery has failed. An incision is made on the mother's abdomen, through the uterus to enable the extraction of the baby. The current study was carried out to determine the association between socio-demographic characteristics and uptake of caesarean section among mothers at a private tertiary health care facility in Nairobi, using cross-sectional study design. Census method was utilized to sample the study respondents. The study involved six doctors, 23 midwives and 68 mothers. Results of the study showed that area of residence had no significant relationship to the choice of C/S as a mode of delivery. The study also demonstrated a significant relationship between university level of education and preference of CS as a mode of delivery ($p=0.042$, $x^2=1.3$). Being single demonstrated a significant relationship to the preference of C/S as a mode of delivery ($p=0.038$, $x^2=.400$). Also, being in a formal employment, had a significant relationship to the uptake of caesarean section as a mode of delivery ($p=0.034$, $x^2=5.8$). Similarly, there was a significant relationship between the respondents who earned 40,000 to 60,000 (Kenya shillings) and the uptake of caesarean section as a mode of delivery ($p=0.037$, $x^2=2.56$). However, there was no significant relationship between being married and the uptake of C/S as a mode of delivery ($p=0.459$, $x^2=4.942$ for married, $p=0.695$, $x^2=2.835$ for divorced/separated).

Keywords: Uptake, Caesarean section, Mode of delivery, Socio-demographic, Characteristics.

I. INTRODUCTION

Caesarian section (CS) is a surgical approach used to deliver the baby when vaginal delivery has failed. An incision is made on the mother's abdomen, through the uterus to enable the extraction of the baby [1]. The indications of CS include previous CS delivery, multiple pregnancy, foetal distress and malpresentation and cephalopelvic disproportion among others [2]. Caesarean sections are on the increase in both developed and developing countries due to various indications, despite the fact that they are associated with risks which can be either short or long term [3]. The short-term risk for the mother includes postpartum morbidity and reduced fertility [4]. The authors further showed that major non-anaesthetic related complications related to caesarean section mode of delivery are infection, hemorrhage, injury to pelvic organs, and thrombo-embolic disorders. The long term risks are an increased risk of abnormal placentation in future pregnancies.

II. LITERATURE REVIEW

A. Introduction:

Caesarean section is a surgical approach carried out on an expectant mother to deliver the baby, when vaginal delivery is not possible. It is carried out to save the life of the mother or the baby, and sometimes both. However, studies have demonstrated that mothers' socio-demographic characteristics may influence the choice of delivery as illustrated below.

B. Mothers' Socio-demographic Characteristics:

Various studies have demonstrated that different socio-demographic characteristics of mothers demonstrated significant relationships with the uptake of caesarean section. For example, a study carried out to describe the trends in socio-demographic factors associated with caesarean section at a Tanzanian referral hospital between 2000 and 2013 showed that urban mothers and being married was associated with higher odds of CS compared to being single [5]. The study also revealed that mothers whose highest level of education was secondary school showed a higher preference to having caesarean section compared to the mothers with primary level of education. Mothers aged 25 years and above, were significantly predictive for C/S. This was according to a study carried out on Caesarean delivery and its correlates in Northern Region of Bangladesh [6]. A study carried out on the social predictors of caesarean section births in Italy revealed that the place of residence was one of the social factors which was significant in predicting caesarean section [7]. Another study carried out a study on the trends and socio-demographic differentials of Caesarean section rate in Addis Ababa, Ethiopia showed that caesarean section rates were high among women with secondary school level of education (32.3%) and higher (33.3%) in women with higher education [8]. The rates among the illiterate women was (14.8%) and those with primary level of education (15.8%) ($P < 0.001$). These findings were supported by results of a study on determinants of caesarean section carried out in Egypt which showed that the mother's education and area of residence were important determinants of caesarean section [9]. Results of a study conducted to determine the women who are at an increased risk of a caesarean section or an instrumental vaginal birth in the UK indicated that women from lower occupational status and households were at an increased risk of elective caesarean section [10]. The study also showed that women with lower academic qualifications were at an increased risk of elective caesarean section compared to women with university level of education.

III. STUDY METHODOLOGY

A. Study design:

Descriptive cross-sectional study design was adopted to determine the association between socio-demographic characteristics and uptake of caesarean section among mothers at the Mater Hospital in Nairobi, (Kenya).

B. Sample size and sampling method:

The study involved 12 consultant doctors, 23 mid wives and 79 mothers at the Mater Hospital in Nairobi (Kenya). Census sampling method was used whereby all mothers in the post-natal ward and those who had visited the Child Welfare Clinic (CWC) following CS delivery during the study period participated in the study until the desired sample was achieved. The same procedure was applied to the doctors and midwives until the sample size was achieved.

C. Data collection and management:

Ethical clearance was obtained from Mount Kenya University Ethics and research committee, while permission to collect the data was obtained from the Mater Hospital management. An informed consent was obtained from the respondents before data collection. Data collection tools included semi-structured questionnaires and an interview guide were utilized to collect data from the study respondents. Qualitative and quantitative analysis of the collected data was carried out using SPSS version 21 with chi square (χ^2) being used to determine the relationship between variables ($p \leq 0.05$).

IV. STUDY FINDINGS

A. Introduction:

The study targeted 79 mothers 12 doctors and 23 midwives respondents, but managed to obtain responses as follows 6(50%) doctors, 23(100%) midwives and 68 (86%) mothers. The total respondents interviewed were 97 representing a response rate of 95%.

B. Respondents' socio-demographic characteristics:

Table 1 below shows that there was a significant relationship between university level of education and preference of caesarean section as a mode of delivery ($p=0.042$, $\chi^2=1.3$). However there was no significant relationship between the other levels of education and preference of CS as a mode of delivery. Respondents' area of residence did not affect the choice of mode of delivery ($p=0.459$, $\chi^2=1.56$ for urban estates within Nairobi, $p=0.462$, $\chi^2=1.544$ for sub urban estates within Nairobi, $p=0.375$, $\chi^2=2.56$ for the mothers living outside Nairobi. The study also indicated that there was no

significant relationship between the mothers' religion and choice of caesarean section as a mode of delivery ($p=0.069$, $\chi^2=10.22$ for protestants, $p=9.86$, $\chi^2=10.22$ for Catholics, $p=0.480$, $\chi^2=3.07$ for Muslims). From the study findings, there was a significant relationship between being single and the choice of caesarean section as a mode of delivery ($p=0.038$, $\chi^2=4.00$). The other status of marriages did not demonstrate any significant relationship with choice of CS as a mode of delivery ($p=0.459$, $\chi^2=4.942$ for married, $p=0.695$, $\chi^2=2.835$ for divorced/separated). Results of the study showed a significant relation between the number of children born through caesarean section and the choice of CS as a mode of delivery ($p=0.0001$). The significant relationship was displayed for all the mothers irrespective of the number of children the mothers had delivered through CS.

Table 1: Respondents' education, residence, religion, marital status and number of children borne through Caesarean section

Variable		No (%)	X ² (df)	p-value
Education level	Secondary	8 (11.8)	5.2 (2)	0.848
	College	46 (67.6)	6.3 (2)	0.055
	University	14 (20.6)	1.3 (3)	0.042
	Total	68 (100)		
Residence	Urban estates within Nairobi	35 (51.5)	1.56 (2)	0.459
	Sub urban estates within Nairobi	27 (39.7)	1.54 (2)	0.462
	Outside Nairobi	6 (8.8)	2.56 (1)	0.375
	Total	68 (100)		
Religion	Protestant	44 (64.7)	9.46 (4)	0.069
	Catholic	22 (32.4)	10.22 (3)	0.986
	Muslim	2 (2.9)	3.07 (2)	0.480
	Total	68 (100)		
Marital status	Married	61 (89.7)	4.942 (4)	0.459
	Single	6 (8.8)	5.400 (4)	0.038
	Divorced/Separated	1 (1.5)	2.835 (2)	0.695
	Total	68 (100)		
Number of Children borne through caesarean section	One	41 (60.3)	28.936 (4)	0.0001
	Two	20 (29.4)	32.821 (3)	0.0001
	Three	6 (8.8)	23.274 (2)	0.0001
	Four	1 (1.5)	26.162 (2)	0.0001
	Total	68 (100)		

Table 2 shows that there was a significant relationship between the respondents on formal employment and the uptake of caesarean section as a mode of delivery ($p=0.034$, $\chi^2=5.8$). There was no significant relationship between the other forms of occupation and uptake of caesarean section as a mode of delivery ($p=0.714$, $\chi^2=6.3$ for informal employment, $p=0.635$, $\chi^2=1.3$ for self-employment and $p=0.123$, $\chi^2=1.6$ for house wives). There was a significant relationship between respondents earning 40,000 and 60,000 and the uptake of caesarean section as a mode of delivery ($p=0.037$, $\chi^2=2.56$). The other levels of earning did not demonstrate any significant relationship to the choice of caesarean section as a mode of delivery ($p=0.459$, $\chi^2=2.89$ for those earning between 0 and 20,000, $p=0.462$, $\chi^2=2.93$ for those earning between 20,000 and 40,000, $p=0.716$, $\chi^2=4.29$ for the respondents earning between 60,000 and 80,000, $p=0.513$, $\chi^2=3.42$ for the ones earning more than 80,000 per month).

Table 2: Respondents' occupation and average income

Variable		No (%)	X ² (df)	p-value
Occupation	Formal employment	42 (61.8)	5.2 (2)	0.034
	Informal employment	1 (1.5)	6.3 (2)	0.714
	Self employed	22 (32.3)	1.3 (3)	0.634
	House wife	3 (4.4)	1.6 (3)	0.123
	Total	68 (100)		
Average income (Kenya shillings)	0-20,000	10 (14.7)	2.89 (2)	0.459
	20,001-40,000	9 (13.2)	2.93 (2)	0.462
	40,001-60,000	25 (36.8)	2.56 (1)	0.037
	60,001-80,000	10 (14.7)	4.29 (3)	0.716
	Above 80,000	14 (20.6)	3.42 (4)	0.513
	Total	68 (100)		

V. DISCUSSIONS

The study revealed that 51.5% of the respondents lived within Nairobi. However, the area of residence had no significant relationship to the choice of C/S as a mode of delivery ($p=0.459$, $\chi^2=1.56$ for urban estates within Nairobi, $p=0.462$, $\chi^2=1.544$ for sub urban estates within Nairobi, $p=0.375$, $\chi^2=2.56$ for the mothers living outside Nairobi). This was contrary to a study carried out to describe the trends and socio-demographic factors associated with caesarean sections at a Tanzanian referral hospital between years 2000 to 2013 which established that urban mothers had higher odds of CS [5]. The study findings were also contrary to the findings of another study on the social predictors of caesarean section births in Italy which revealed that place of residence as one of the social factors which was significant in predicting the uptake of caesarean as a mode of delivery [7]. The study results also contradicted the findings of another study carried out to establish the determinants of caesarean section in Egypt, which established that mother's residence was an important determinant of utilization of caesarean section mode of delivery [9]. The contradiction from the findings at The Mater Hospital could be explained by the fact that this is a private institution where most of its clients are sponsored by their employers who are distributed in various parts of the country. Others have insurance covers (either self or from the spouse), a situation which is not tied to the area of residence. Majority of the respondents (67.6%) had attained college level of education while 20.2% of them had university level of education, although this did not demonstrate any significant relationship ($p=0.055$, $\chi^2=6.3$) to the choice of C/S as a mode of delivery. However, there was a significant relationship between university level of education and preference of CS as a mode of delivery ($p=0.042$, $\chi^2=1.3$). These findings corresponded to a study carried out on the trends and socio-demographic differentials of caesarean section rates in Addis Ababa, Ethiopia, which established that CS rates among women with secondary level of education or higher were nearly two times more than the rates among the illiterate women and those with primary level of education ($P<0.001$) [8]. Also, the findings were similar to those of a study on caesarean delivery and its correlates in Northern Region of Bangladesh which established that mothers with higher level of education were significant predictors for delivery by CS [6]. The findings of this study were also supported by the information from the key informants who also stated that CS was highly noted in educated young mothers. However, these findings were in contradiction to the results of a study carried out to describe the trends and socio-demographic factors associated with caesarean section at a Tanzanian referral hospital between 2000 to 2013 whereby mothers whose highest level of education was primary school showed a higher preference to having caesarean section compared to the mothers with the other levels of education [5]. Most of the mothers in the current study at the Mater Hospital had a formal employment. This means that for them to qualify professionally, they must have undergone some specialized training in their area of employment. Most of these trainings are offered in colleges. Despite the fact that majority (87.5%) of the respondents were married, there was no significant relationship between being married and the uptake of CS as a mode of delivery ($p=0.459$, $\chi^2=4.942$ for married, $p=0.695$, $\chi^2=2.835$ for divorced/separated). However, the study revealed that there was a significant relationship between being single and preference of CS as a mode of delivery ($p=0.038$, $\chi^2=4.400$), contrary to the findings of a study which was carried out to describe the trends and socio-demographic factors associated with caesarean section at a Tanzanian referral hospital between 2000 to 2013 which showed that being married was associated with a higher odds of CS compared to being single [5]. The situation in this study may be explained by the fact that being in formal employment offers an individual a degree of self-determination, hence the husbands may have played the supportive role after the mothers had made a decision. This may be supported by the fact that most of the mothers still opted for normal delivery in their subsequent pregnancies. Majority of the respondents (61.8%) were in formal employment, which also demonstrated a significant relationship to the uptake of caesarean section as a mode of delivery ($p=0.034$, $\chi^2=5.8$). Contrary to these findings, a study carried out to determine the women who are at an increased risk of a caesarean section in the UK showed that those women from lower occupational status were at an increased risk of elective caesarean section [10]. This could also explain the reason why there was a significant relationship between the respondents who earned 40,000 to 60,000 (Kenya shillings) and the uptake of caesarean section as a mode of delivery ($p=0.037$, $\chi^2=2.56$). Since 61.8% of the respondents were in formal employment and earning more than 40,000/- they were also enrolled in a medical cover which catered for their medical expenses, hence less than half of the respondents paid for their delivery services through the medical insurance cover.

VI. CONCLUSION

Area of residence had no significant relationship to the choice of C/S as a mode of delivery ($p=0.459$, $\chi^2=1.56$ for urban estates within Nairobi, $p=0.462$, $\chi^2=1.544$ for sub urban estates within Nairobi, $p=0.375$, $\chi^2=2.56$ for the mothers living outside Nairobi). The study also demonstrated a significant relationship between university level of education and

preference of CS as a mode of delivery ($p=0.042$, $x^2=1.3$). Being single demonstrated a significant relationship to the preference of C/S as a mode of delivery ($p=0.038$, $x^2=.400$). Also, being in a formal employment, had a significant relationship to the uptake of caesarean section as a mode of delivery ($p=0.034$, $x^2=5.8$). Similarly, there was a significant relationship between the respondents who earned 40,000 to 60,000 (Kenya shillings) and the uptake of caesarean section as a mode of delivery ($p=0.037$, $x^2=2.56$). However, there was no significant relationship between being married and the uptake of C/S as a mode of delivery ($p=0.459$, $x^2=4.942$ for married, $p=0.695$, $x^2=2.835$ for divorced/separated).

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