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Cesarean section or normal vaginal delivery: A cross-sectional study of attitude of medical students

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Abstract:

INTRODUCTION: Childbirth is regarded as an important life event for women, and growing numbers of them are making the choice to give birth by cesarean delivery. Increasing rate of births by cesarean section is an issue of concern in many countries. In order to reduce the rates of unnecessary cesarean sections, it is essential to acquire information of the reasons that motivate physicians to carry out cesarean sections rather than vaginal deliveries. The objective of present study is to evaluate whether the education process for undergraduate medical students affects their decision-making.

MATERIALS AND METHODS: The present study was cross-sectional and questionnaire based. A total of 292 students participated in the study. Out of which, 150 were first-year students and 142 were doing internship in Maharashtra Institute of Medical Education and Research (MIMER), Talegaon Dabhade, Maharashtra, India. The study was conducted in the months of June and July 2019. Data was collected with the help of person to person interview of all the participants who satisfied the inclusion criteria after obtaining their informed consent. The data was entered by using Microsoft Excel 2007 and was analyzed using Epi Info version 3.3.2. The data was tabulated and analyzed according to responses which were given by the respondents.

RESULTS: A total of 292 students answered the questionnaire. Age of participants varied between 19 and 23 years. 130 males and 162 females were the subjects, out of which 40 students declared fear of labor. Most of the students preferred vaginal delivery over cesarean sections in all the four scenarios. The difference of opinion was significant in case of an uneventful pregnancy and normal pregnancy under their care. For general population as healthcare manager this difference of opinion was not significant. In case of one's own or partner's delivery, internship students preferred cesarean section but this difference was statistically non-significant.

CONCLUSION: Most of the students would recommend vaginal delivery because this form of delivery has fewer risks as compared to cesarean section. Majority of students chose vaginal delivery for the birth of their own child; however, a higher number of interns as compared to first year students preferred cesarean section. Pain associated with vaginal delivery was the most common reason given for choosing cesarean section. The student's preference for childbirth changed in due course of graduation toward cesarean section. This indicates a probable effect of medical education on permissive culture of cesarean section as a mode of delivery.

Keywords:

Attitudes, Cesarean section, Medical education, Vaginal delivery

Introduction

The pain that you have been feeling could not compare to the joy that is coming. Such words are said to women who are pregnant, who are about to bring another

soul into this world. With all this love and affection a mother tries to choose what is best for her baby and in such moments of fear and doubt, we let assumptions such as, cesarean sections are safer for the child and has higher success rate or natural births help to keep the child healthier and

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avoids any infections, etc., into our minds. These are all just conclusions made based upon various cases or situations that have occurred earlier. Historically, the natural process of Vaginal Birth (VB) has been viewed as the unquestioned mode of birth, whereas Cesarean Delivery (CD), which involves an operative incision, has been perceived as a risky procedure designed for women with medical indications.^[1]

Cesarean section is only recommended when life of mother or fetus is at risk. However, this method has currently become a way of escaping from labor pain. People have a common belief that CD is less painful, safer, and healthier than VD.^[2] The childbirth is regarded as an important life event for women, and growing numbers of them are making the choice to give birth by CD.^[3] With advances in reproductive technology, an increase in the number of CDs has been observed in recent years.^[4] An increasing rate of births by cesarean section is an issue of concern in many countries. In developed countries, women often opt for CD because of their improved understanding of its role and safety and increasing importance given to the right to self decision-making, regarding mode of delivery. However in developing countries like India, women are reluctant to accept CD because of their traditional beliefs and sociocultural norms, hence they even try to avoid hospital delivery and engage in the services of untrained and unskilled care providers. These women usually report to hospital with life threatening complications and in such situations most of the cesareans are performed as an emergency procedure under suboptimal circumstances.^[5]

Despite the recommendations by World Health Organization (WHO), that no region in the world is justified to have a Cesarean section (C-section) rate greater than 10-15%, it is the most common obstetrical operation worldwide.^[6] It is a challenge to achieve adequate C-section rates as it entails a balance between performing appropriately indicated C-sections while avoiding unnecessary interventions that do not provide better health outcomes and can cause complications to the mother and the infant.^[7] The overall rate of cesarean section delivery (CSD) in 2015–2016 is around 17.2% in India, increased from 8.5% in 2005–2006.^[8] However, WHO recently suggested that they do not recommend a specific rate at either a country-level or a hospital-level.

The cause of increased cesarean section rate is multi-factorial and decision to deliver by cesarean section depends on a variety of factors including previous cesarean section, multiple gestation, malpresentation, fetal distress, failure of progress during labor, and maternal medical conditions.^[9-14] while considering the rapidly increasing cesarean rates, non-clinical factors have emerged as equally important as clinical factors.^[15]

Studies have reported that pregnant women, even those with no pathology, prefer surgical childbirth. Fear of the pain associated with VD, uncertainty with respect to her sexual life following delivery and the belief that this route of delivery is more unpredictable and therefore more risky for the infant are factors that are said to contribute to women's preference for a cesarean section.^[16-19]

Further it should be kept in mind that neither women preferences nor clinical indications can justify such increasing cesarean section rates. The physician's role should be taken into consideration. Whatever experience and skills medical students gain from their practical training will be reflected in their professional conduct. There is a direct link between knowledge and attitude of medical students with future practice. Today, where awareness toward natural birth frequently finds a voice and it is being increasingly questioned, views of young medical students on VD is of utmost importance. In view of the need to reduce, the rates of unnecessary cesarean sections (cesarean sections with no indication or clinical justification), it is essential to acquire information on the reasons that motivate physicians to carry out cesarean sections rather than vaginal deliveries. Therefore, the objective of this present study was to evaluate whether the education process for undergraduate medical students affects their decision-making. There are no studies available regarding the attitude of medical students toward the choice of mode of delivery in India. So, this study was planned in this perspective.

Material and Methods

Study design and setting

The present study was cross-sectional in nature and was conducted in Maharashtra Institute of Medical Education and Research (MIMER), Talegaon Dabhade, Maharashtra, India. The study was undertaken in months of June 2019 and July 2019 (two months) and analysis and writing report stretched till October 2019.

Study participants and sampling

The study participants were the medical students enrolled in first year and those doing Internship. There are no studies available regarding the attitude of medical students toward the choice of mode of delivery in India. All the medical students present in first-year MBBS (150) and all those who are doing Internship (150) in Maharashtra Institute of Medical Education and Research (MIMER), Talegaon Dabhade were included as study population. Hence, the sample size should have been 300 but 8 interns did not participate in the study. These interns could not be contacted after repeated efforts. So, final sample size was 292.

Data collection tool and technique

Data was collected with the help of person to person interview of all the participants who satisfied the inclusion criteria after obtaining their informed consent.

- Inclusion criteria: Students who were willing to participate.
- Exclusion Criteria: Students who were not willing to participate were excluded.

A pre-designed, pre-tested, self-administered questionnaire in English was devised to collect data. It was validated after a pilot study. Questionnaire was explained to participants for their understanding. Administration of questionnaire forms was done for all the study participants after briefing them the purpose of the study.

The Proforma had two sections:

- Section-1 was regarding the sociodemographic data of the participant like age, gender, parent's education, monthly family income, how the student was born (cesarean/vaginal), etc.
- Section-2 included questions addressing four different scenarios in childbirth as follows:
 - Under an uneventful pregnancy
 - Mode of delivery for a pregnant woman under their care
 - Best choice as a healthcare manager
 - Choosing the birth of their own child.

For each circumstance, there was an open question to explain their choice.

Ethical consideration

Ethical clearance of Institutional Ethics Committee (IEC) was taken before conducting research. Informed consent was obtained from each of the study participant before administration of questionnaire. We took all possible precautions to maintain anonymity of each study participant. Confidentiality was assured in collection of personal data. The study was conducted abiding by all principles of the Declaration of Helsinki.

Statistical analysis

The data was entered by using Microsoft Excel 2007 and was analyzed using Epi Info version 3.3.2. The data was tabulated and analyzed according to responses given by the respondents. Results were tabulated in percentages and proportions. To calculate the differences between the groups, appropriate statistical tests including chi square test was applied. Significance was checked at $P = 0.05$. Yates correction was applied whenever it was required.

Results

The sociodemographic characteristics of the study

subjects are shown in Table 1. A total of 292 college students finished the questionnaire, 150 students in the first year and 142 doing internship in medical college. Eight internship students did not take part in the study. Out of 292 students, there were 130 (44.5%) males and 162 (55.5%) females. But the distinction among first year and interns with respect to gender was found to be statistically non-significant ($P = 0.320$). There were 71 (47.3%) males and 79 (52.7%) females in first year and there were only 59 (41.5%) males and 83 (58.5%) females in internship. In addition, there has been a significant four years difference in age between the groups. All the study subjects were unmarried.

Based at the distribution of the control variables [Table 1], statistically significant differences was found between the two age groups with respect to monthly family income ($P = 0.00002$). The monthly family income of the subjects ranged from Rs 10000 to Rs 300000. It became determined that 86 (57.3%) of first-year college students and 115 (81.0%) of internship students had their monthly family income less than Rs 50000.

Table 2 shows the students' responses to their birth history and their knowledge of the modes of delivery, with a statistically significant difference found in the area of birth, previous experience of seeing delivery, and knowledge of the type of delivery causing more complications.

Table 1: Sociodemographic characteristics of the study population

	1 st year		Interns		P
	n	%	n	%	
Gender					
Male	71	47.3%	59	41.5%	$\chi^2=0.988$, d.f=1, $P=0.320$
Female	79	52.7%	83	58.5%	
Fathers education					
Illiterate	03	02.0%	02	01.4%	$\chi^2=0.855$, d.f=3 $P=0.836$
10 pass	04	02.6%	08	05.6%	
10+2	11	07.3%	10	07.0%	
Graduate	88	58.7%	79	55.6%	
Postgraduate	44	29.3%	43	30.3%	
Mother education					
Illiterate	04	02.6%	08	05.6%	$\chi^2=3.040$ d.f=3 $P=0.385$
10 pass	14	09.3%	12	08.5%	
10+2	14	09.3%	17	12.0%	
Graduate	82	54.7%	82	57.7%	
Postgraduate	36	24.0%	23	16.2%	
Monthly family income					
upto Rs.50000	86	57.3%	115	81.0%	$\chi^2=21.379$, d.f=2, $P=0.00002$
Rs.50001 -100000	38	25.3%	21	14.8%	
Rs.100001-150000	11	07.3%	04	02.8%	
Rs.150001- 200000	02	01.3%	02	01.4%	
Rs.200001- 250000	03	02.0%	00	00.0%	
Rs.250001- 300000	03	02.0%	00	00.0%	
Rs.300001 and above	07	04.7%	00	00.0%	

Of the birth history, 62 (41.3%) of first-year college students and 73 (51.4%) internship students were born in metropolitan city which represents the majority, while only 31 (20.7%) of first-year college students and 14 (9.8%) internship students were born in village area. Statistically, the difference was significant ($P = 0.0281$).

When looking at the type of hospital they were born in, a high number of around 117 (78.0%) of first-year students and 112 (78.9%) interns admitted being born in private hospital. When asked regarding the mode of delivery by which they were born, a maximum 102 (68.0%) of first year and 107 (75.4%) of final-year students were born by VD whereas a very few of 48 (32.0%) of first-year students and 35 (24.6%) of internship students were born by CD, which had a greater influence on decision making.

An expected rate of 100% interns had seen a delivery so far, compared to a limited 25 (16.7%) of first-year students. Statistically, the difference turned out to be significant ($P = 0.000$). The last question on this table was the type of delivery with the most complications, with a maximum of 131 (92.3%) internship students and 91 (60.7%) of first-year students who said that cesarean section were at higher risk and complications, which was thought to be the greatest influencing factor, on their preferred delivery mode when making personal and professional decisions, the difference was statistically significant ($p = 0.000$).

Table 3 shows the students response to each one of the four scenarios, consisting of the preferred mode of delivery preferred in the event of an uneventful pregnancy, normal pregnant women under their care, in general population as a healthcare manager and in their pregnancy or of their partner.

According to the analysis carried out, it was found out that in the first scenario: preferred mode of delivery under an uneventful pregnancy where no pathology was present, most students in the first year, that is, 104 (69.3%) and 114 (80.3%) internship students preferred VD, while only 46 (30.7%) first-year students and 28 (19.7%) internship students preferred a cesarean section. Statistically, the difference was significant ($P = 0.032$).

Undergraduate students who preferred VD rated child's health as their prime concern, followed by emergency situations and time needs. Technology was the least rated. Whereas students preferring cesarean section, also ranked emergency situations on their top priority, giving technology and cost the least rank. While in the case of interns, those who prefer VD and a cesarean section, greater importance was attached to child health and emergency situations while technology was given zero importance.

In the second scenario: normal pregnant women in their care, it was observed that 136 (90.7%) of the first-year students and 142 (98.6%) of the interns preferred VD, while a level below 14 (9.3%) and 2 (1.4%) of first-year and internship students preferred a cesarean section, respectively. The difference was statistically significant ($P = 0.003$).

Where, among first-year students opting for a cesarean section, child health was their top priority while time, technology, and patients opinion were less of a priority and for VD, child health was the top priority and least importance was given to technology and cost.

On the other hand, among interns who preferred VD, child health was the most important while 0% gave

Table 2: Birth history and knowledge regarding modes of delivery among study subjects

	1 st year		Interns		P
	n	%	n	%	
Which area were you born?					
Metropolitan	62	41.3%	73	51.4%	$\chi^2=7.14$, d.f=2, $P=0.0281$
Town	57	38.0%	55	38.7%	
Village	31	20.7%	14	09.8%	
Which hospital were you born?					
Government	33	22.0%	30	21.1%	$\chi^2=0.333$, d.f=1, $P=0.856$
Private	117	78.0%	112	78.9%	
Which mode of delivery were you born by?					
Cesarean	48	32.0%	35	24.6%	$\chi^2=1.938$, d.f=1, $P=0.164$
Vaginal	102	68.0%	107	75.4%	
Have you seen a delivery					
Yes	25	16.7%	142	100%	$\chi^2=203.516$, d.f=1, $P=0.000$
No	125	83.3%	00	00.00%	
Delivery having more complications					
Cesarean	91	60.7%	131	92.3%	$\chi^2=39.932$ d.f=1, $P=0.000$
Vaginal	59	39.3%	11	07.8%	

Table 3: Preferred mode of delivery by study subjects in different scenarios

	1 st year		Interns		P
	n	%	n	%	
Mode of delivery under an uneventful pregnancy?					
Cesarean	46	30.7%	28	19.7%	$\chi^2=4.621$, d.f=1, P=0.032
Vaginal	104	69.3%	114	80.3%	
Mode of delivery preferred for normal pregnant woman under your care?					
Cesarean	14	09.3%	02	01.4%	$\chi^2=8.845$, d.f=1, P=0.003
Vaginal	136	90.7%	142	98.6%	
Mode of delivery preferred in general population, as a health care manager?					
Cesarean	11	07.3%	07	04.9%	$\chi^2=0.729$, d.f=1, P=0.393
Vaginal	139	92.7%	135	95.1%	
Mode of delivery preferred in your own pregnancy or of your partner's pregnancy?					
Cesarean	19	12.7%	21	14.8%	$\chi^2=0.278$ d.f=1, P=0.598
Vaginal	131	87.3%	121	85.2%	

priority to technology and for cesarean section interns preferred time and emergency situations over other options (0%).

In the third scenario, preferred delivery modality as a healthcare manager, in which the healthcare executive ensures that the organization grows with financial strength and medical quality, it was witnessed that 139 (92.7%) and 135 (95.1%) of first-year and internship students, respectively, preferred VD for their patients. Statistically, the difference was found to be non-significant ($P = 0.393$).

Among first-year students who preferred VD rated health of the child as their prime concern, followed by emergency situations and cost required. Technology was the least rated. Whereas students preferring cesarean section also ranked health of child on their top priority, giving technology and patient's opinion zero priority. Interns who preferred VD, gave health of child followed by emergency situations, cost and patients opinion the most important while technology was given least importance.

In the last scenario, 131 (87.3%) of the first-year students expressed a higher proportion of the preference for VD for the birth of their own child in their own pregnancy or their partner compared to internship students 121 (85.2%), cesarean section was preferred by 21 (14.8%) of internship students as compared to 19 (12.7%) of first-year students for the mode of self or partner birth and the difference is statistically non-significant ($P = 0.598$).

Among first-year students who preferred cesarean section, pre-operative pains was their topmost reason while post-operative pain was given zero priority and in VD, the greatest importance was given, as it is a natural process of birth and least importance was given to relying on technology development and post-operative pains. Among interns, those preferring VD, natural process

of birth was the given the most importance while least priority was given to preoperative and post-operative pains. And in cesarean section, pre-operative pains were prioritized while natural process of VB was given 0% priority.

When the results in case of their own pregnancy or that of their partner were compared with their options in the different scenarios, it was found that if the student preferred VD for himself/herself, he/she invariably chose the same mode of delivery in the other scenarios.

The analysis of the open question as to why the student opted for this particular form of delivery revealed that the following reasons were given when choosing a VD "lesser morbidity and mortality for the mother and foetus", "natural and physiological process", "quicker recovery", and "shorter hospital stay" both in the case of the first year students and interns. When cesarean section was chosen for the birth of one's own child, the most common reason given was "less pain and less suffering". Another reason given was the possibility of being able to "schedule the delivery", and this was mentioned both by first-year and by interns. Three students (two in their internship and one in their first year) preferred a cesarean section because it offered "Lesser risk to the mother and less traumatic for baby".

Discussion

Pregnancy is a very special and beautiful experience for the parents. It is a physiological phenomenon, and its end is associated with pain, fear, anxiety, and even fear of death for mothers. Child delivery is a multi-dimensional process with physical, emotional, social, physiological, cultural, and psychological dimensions. Childbirth can be a critical and sometimes painful experience for women.^[20] Sharing different kind of experiences of the women with others also involve the pain related to childbirth. It constitutes a false image about labor. Labor

pain is a very important factor that affects individuals' preference toward the mode of delivery preferred. It also involves the physician or the medical student who are in their clinical practice.

Personal preferences of medical students toward the mode of delivery are an important aspect to study as it affects the population in a great way. The choice of mode of delivery is a very important decision for the health of baby and mother. Many studies have been done in pregnant women,^[21] university graduates,^[22] and nursing students^[23] but we were not able to find any similar studies involving medical students except, a cross-sectional study conducted among medical students in Santa Catarina, Brazil.^[24] There were total of 189 students (101 males and 88 females) in the above mentioned study.

In the Brazilian study,^[24] the statistics state that 45.4% were born by VD whereas the remaining 54.6% were born by cesarean in the first-year students. In the present study, the analysis states that 68% of the participants were born by VD and 32% were born by cesarean in the first year.

According to the analysis of the Brazilian study^[24] for the internship year students, 45.1% were born by VD whereas the remaining 54.9% were born by cesarean. In the present study, the analysis states that 75.35% of the interns were born by VD and 24.64% were born by cesarean section.

When the mode of delivery preferred in an uneventful pregnancy or as a healthcare manager, it was observed that in our study 84.25% of students preferred VD whereas in Brazilian study,^[24] around 95% students preferred VD for their patients. It is indeed very pleasing to know that today, although the cesarean section rate is on the rise, new generation sides itself with normal birth.

Whereas around 30% of the medical students who participated in Brazilian study^[24] stated that they would prefer a cesarean section for the birth of their own child, with a significantly greater proportion of sixth-year students opting for this mode of delivery compared to the first-year students. Whereas, in our study around 15% students preferred cesarean section for the birth of their own child or of their partner, with the difference being non-significant. But it was found that majority of the students who would choose a CD for themselves or for their partner would recommend VD for their patients when no pathologies are present. In the Iran study conducted by Hantoushzadeh S *et al.*,^[22] it was reported that 28.3% of the professionals who stated having recommended VD for their patients would choose a cesarean section for themselves.

A web survey was applied to over 3,600 university students on their preference for type of childbirth. No comparison was made between age-groups; however, slightly less than 9% indicated a preference for a cesarean section which is lesser as compared to our study (15%).^[25] In another meta-analysis, conducted in a population of more than 600 nulliparous, only 10.2% would opt for a cesarean section.^[26] which is lesser as compared to our study.

Although either of the studies has come to their own conclusion, this study covers only a small fragment or part of a very wide population. The preferences are just based on their own personal experiences with their parents or people surrounding them and also based on what knowledge they gain through their academics or what they may have experienced with other patients during their internship year.

Limitations and recommendations

The study had certain limitations, the cross-sectional study design that does not allow causal relationships to be determined. The study was conducted in a limited time period (two months) and qualitative evaluation of open-ended questions could not be performed. In the present study, the difference in age between the two groups was predictable. It constituted as a confounding factor, since there was a difference of four years in age between the groups. It should be taken into consideration that the internship students have more experience and greater maturity with regard to their sexuality and may be closer to planning their own pregnancies. These differences between the groups have affected the students' answers irrespective of the effect of their medical training.

There are many other limitations like cultural differences, sense of maturity, opportunity of watching or studying a patient closely during a delivery, etc., that do not for sure help us to come to any such conclusions that any one mode of delivery is a 100% perfect decision of the women today irrespective of where they are located around the globe. This is because the factors based on which these decisions are made, may keep changing with time hence the preferences may also keep changing with time.

Nowadays, due to increased rate of cesarean section and invasive delivery preferences there is an urgent need to reduce the rates of unnecessary cesarean sections in our country. It is essential to gather information on the reasons that motivate doctors to prefer cesarean section rather than VD. More number of studies particularly longitudinal and qualitative should be conducted in different groups like doctors and women of reproductive age groups in different parts of the country. Raising

awareness on natural birth among young generation is of great importance. Comprehensive information about adverse effects of cesarean section is often not available to pregnant women and their families. So, we feel the need to emphasize the importance of educative and informative programs for people.

Conclusions

Majority of medical students preferred VD because the delivery has lesser risks and it is a natural phenomenon having greater benefits. Most of the internship students preferred VD in case of uneventful delivery and normal pregnant women under their care, as compared to first-year students and statistically, the difference in both scenarios was found to be significant. Their attitude suggests that they would practice this in near future and would recommend the same as a healthcare manager for general population. Majority of the medical students would prefer VD for the birth of their own child or their partners. In this case, greater number of internship students preferred cesarean section as compared to first-year students. It is thought provoking that almost all the students think that labor is a normal physiological phenomenon; still when it comes to their own situation almost 15% prefer cesarean section. The main reason for choosing cesarean section by interns was preoperative (labor) pains. Although this difference was not statistically significant, this indicates a probable effect of medical education on escalating rates of cesarean sections as an option of child birth. As physicians personal choice is always reflected in his/her profession, reasons for preference of cesarean section for oneself or partner need to be explored in detail.

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Conflicts of interest

There are no conflicts of interest.

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