

IMPLEMENTATION RESEARCH TO REDUCE CAESAREAN SECTION RATES IN TELANGANA STATE

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University of Hyderabad

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in

Health Sciences

(Public Health)

By

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Parts of the thesis have been:

A. Published in the following conference publications:

1. Jirra K, Prasad MS, Br S. Understanding the Reasons for High Rates of Caesarean Section Deliveries in Telangana, South India: An Explorative Study. National Journal of Community Medicine [Internet]. 2023 Nov 1;14(11):704-10.

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SUSTAINABLE DEVELOPMENT GOALS

Thesis Title: **Implementation Research to Reduce the Caesarean Section Rates in Telangana State.**

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Supervisor(s): **Prof. B.R. Shamanna.**

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Among 17 goals (<https://sdgs.un.org/goals>), under which SDG the work incorporated in the thesis will be addressed:

SDG 3 - Good Health and Well-being.

How the work has been incorporated in the thesis addresses the above SDG (in some 250 words):

The United Nations' Sustainable Development Goals (SDGs), adopted in 2015, outline a global agenda to tackle key challenges by 2030. Central to this is SDG 3: Ensure healthy lives and promote well-being for all at all ages. This goal includes 13 targets, with Target 3.1 aiming to reduce the global maternal mortality ratio (MMR) to less than 70 per 100,000 live births. In low- and middle-income countries, where pregnancy complications claim around 287,000 women's lives annually, this target highlights stark health inequities. My PhD thesis, "Implementation Research to Reduce the Caesarean Section in Telangana State," leverages SDG 3 to explore evidence-based interventions in maternity care, focusing on curbing unnecessary caesarean sections (C-sections) in one of India's high-burden regions.

C-sections, vital when medically indicated, should comprise only 10-15% of births per World Health Organisation (WHO) guidelines to minimise risks like infections, haemorrhage, and long-term complications. Yet, over-medicalisation drives higher rates, undermining maternal safety. In India, the national C-section rate has risen to 21.5% (NFHS-5), with southern states like

Telangana reporting the highest preventable procedures at 8.4%. This contributes to elevated MMR around 45 per 100,000 in Telangana despite improvements, exacerbating costs and risks, including a 25% increase in maternal deaths from non-emergency surgeries.

My thesis employs implementation research, guided by the Consolidated Framework for Implementation Research (CFIR), to identify barriers and facilitators in public and private facilities. Interventions include clinician training on labor monitoring, patient education on delivery options, and policy incentives for vaginal births. Piloted in select districts, these aim to cut C-section rates by 15-20% over three years, potentially lowering MMR and aligning with Target 3.8 on universal health coverage. By emphasising gender equity and reproductive rights, the study supports Targets 3.2 (neonatal mortality) and 4.2 (early childhood development).

As India accounts for 17% of global maternal deaths, scalable findings could enhance national schemes like Janani Shishu Suraksha Karyakram, yielding 10-12% reductions in preventable C-sections and safer births statewide. In essence, this research transforms SDG 3 from ambition to action, promoting equitable care and ensuring no woman is left behind as 2030 approaches.

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LIST OF ABBREVIATIONS

C-Section/CS/CD	Caesarean Section/Caesarean Delivery
WHO	World Health Organisation
UNICEF	United Nations Children's Fund
NFHS	National Family Health System
DLHS	District Level Health Surveys
IDI	In-depth interviews
FGD	Focus group discussions
VBAC	Vaginal Birth After Caesarean
ANC	Antenatal Care
ASHA	Accredited Social Health Activist
ANM	Auxiliary Nurse and Midwife
PAR	population attributable risk
MO	Medical Officer
DMHO	District Medical and Health Officer
SCD	Sickle Cell Disease
HIV	Human immunodeficiency viruses
OECD	Organisation for Economic Cooperation and Development
PHC	Primary Health Centre
UPHC	Urban Primary Health Centre
AH	Area Hospital
DH	District Hospital
MCH	Maternity and Child Health

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ABSTRACT

Caesarean section (C-section) rates have risen globally, including in Telangana, India, where the latest NFHS-5 report indicates a rate of 60.7%, significantly exceeding WHO recommendations. While C-sections are life-saving in medically indicated cases, unnecessary procedures pose short- and long-term risks to maternal and child health, including infection, thromboembolism, neonatal respiratory distress, and future complications such as placenta accreta and uterine rupture. This study aimed to identify drivers of non-medically indicated C-sections in Telangana and develop a non-clinical intervention to reduce C-sections.

A mixed-methods field study across seven districts (with high, medium, and low C-section rates) used 210 in-depth interviews with recently delivered mothers, 41 focus group discussions (with mothers, families, ASHA/ANM workers, nurses, and medical officers), and 3 key informant interviews. Findings identified multifaceted drivers: medical (repeat C-section, fetal distress, tubectomy coupling); cultural (auspicious birth dates, delivery at maternal home); behavioural (pain intolerance, late pregnancy, family pressure); systemic (staff shortages, lack of VBAC support, referral gaps); and infrastructural (private facility preference, fear of violence/litigation). Among 210 mothers, 73.3% underwent C-section; 85.7% had medical indications, 5.2% non-medical, and 9.1% no documented reason. Convenience scheduling (76% weekday procedures) and family/health worker influence were prominent.

Based on these results, a multi-level non-clinical intervention framework was developed, targeting mothers/families (pain relief, nutrition, exercise education via audio-visual pamphlets), frontline workers (ASHA/ANM training), and providers (clinical guidelines, feedback). The intervention was piloted in three districts (Karimnagar, Nalgonda, and Mahbubnagar), enrolling 30 primigravida women in the 2nd/3rd trimesters. Pre- and post-delivery interviews showed 14 (47%) achieved normal delivery post-intervention (vs. 8 (26.7%) preference pre-intervention),

with improved birth preparedness, exercise adherence, and family support. Qualitative feedback confirmed enhanced confidence in vaginal birth.

This study demonstrates that behavioural and systemic factors significantly contribute to unnecessary C-sections. Targeted education, community engagement, and health system strengthening can shift preferences toward normal delivery. Limitations included follow-up challenges due to maternal relocation and resistance to exercise adoption. Future scale-up should integrate decision-support protocols, midwifery promotion, and policy alignment for sustainable reduction in non-indicated C-sections.

CHAPTER 1

1. INTRODUCTION

Birth is perhaps the most exciting and risky journey taken over a lifetime¹. Approximately 140 million human births occur worldwide each year². That's more than four births every second of every day³. Usually recommended mode of delivery for healthy women with no complications during pregnancy, labour, or delivery is vaginal delivery or normal delivery¹. Although it is the recommended method of childbirth, vaginal delivery is contraindicated in several situations. Under some circumstances, vaginal delivery must be swiftly switched to an emergency caesarean section to be able to give birth.⁴.

1.1.CAESAREAN SECTION DELIVERY:

A caesarean section, or C-section, is a surgical procedure in which the mother's abdomen and uterus are cut open to deliver the baby. It is among the most frequently done major procedures globally, with rates that differ greatly between geographical areas and healthcare systems. According to the World Health Organisation (WHO), C-section rates have risen globally from with some countries reporting rates as high as 50%^{5&6}.

CAESAREAN SECTION RATES: GLOBAL, INDIAN, AND TELANGANA PERSPECTIVES:

GLOBAL CAESAREAN SECTION RATES:

Caesarean section (C-section) rates have risen globally from 7% in 1990 to 21% in 2018, with projections estimating 29% by 2030⁷. Regional disparities are stark: Latin America and the Caribbean lead at 42.8%, while sub-Saharan Africa trails at 5%. The WHO recommends a 10-15% rate for optimal maternal and neonatal outcomes at the community level, as higher rates often reflect overuse without added benefits, increasing risks like infections and prolonged recovery. Drivers include enhanced surgical access, financial incentives, maternal preferences, and litigation fears. Low rates in some areas indicate unmet needs due to poor infrastructure. The

global challenge is addressing overuse in high-income settings while ensuring access in underserved regions⁸.

CAESAREAN SECTION RATES IN INDIA:

India's C-section rate increased from 8.5% (2005-06) to 21.5% (2019-21), per the National Family Health Survey (NFHS-5)⁹. This rise aligns with 92% institutional deliveries by 2020 but exceeds the WHO's threshold. Rates vary from 5.2% in Nagaland to 60.7% in Telangana. Southern states like Andhra Pradesh (42.4%), Tamil Nadu (44.9%), and Kerala (38.9%) show elevated rates due probably due to better infrastructure and wealth. Private hospitals (47.4%) far outpace public facilities (14.3%), driven by financial motives and maternal requests. Unnecessary C-sections raise costs (Rs 23,978 vs. Rs 10,814 for vaginal delivery) and risks. India must balance access for the underprivileged with curbing overuse⁹.

CAESAREAN SECTION RATES IN TELANGANA:

Telangana has India's highest C-section rate at 60.7% (NFHS-5, 2019-21), up from 57.7% (2015-16). Private facilities report 81.5% compared to 45% in public hospitals. The state's 100% institutional delivery rate, bolstered by schemes like cash benefit transfer called KCR Kit, ensures access but fuels concern over excessive C-sections. Drivers include medical factors (e.g., maternal age), cultural preferences for auspicious timings, and profit motives in private hospitals. Low inequality across wealth groups suggests widespread adoption. Policy interventions, awareness campaigns, stricter guidelines, and training for vaginal deliveries are critical to reduce reliance on surgery⁵.

Rising C-section rates globally, in India, and particularly in Telangana, reflect improved healthcare access but highlight overuse. Globally, balancing unmet needs with overuse is key. In India, targeting high-rate southern states is essential. Telangana requires urgent action: regulating

private facilities, educating the public on risks, and promoting vaginal deliveries, including vaginal birth after caesarean. WHO-recommended monitoring and audits can align rates with medical necessity, minimising risks and costs while ensuring safe childbirth. While C-sections are lifesaving in cases of medical necessity, their overuse, particularly for non-medical reasons, has raised concerns about maternal and neonatal health outcomes, healthcare costs, and equity in access to appropriate care. This chapter provides an overview of C-section delivery, its indications and contraindications, medical and non-medical reasons for its use, and existing gaps in research and practice.

1.2.INDICATIONS FOR CAESAREAN SECTION:

C-sections are indicated when vaginal delivery poses risks to the mother, fetus, or both. The indications can be broadly categorised into maternal, fetal, and obstetric factors, often requiring clinical judgment to balance risks and benefits. Common indications include:

1. Maternal Indications:

- Previous C-section: A prior C-section increases the likelihood of repeat C-sections, particularly if vaginal birth after caesarean (VBAC) is contraindicated or unavailable¹⁰.
- Medical conditions: Maternal health issues like severe preeclampsia, eclampsia, or heart disease may require a C-section to minimise risks¹¹.

2. Fetal Indications:

- Fetal distress: Non-reassuring fetal heart rate patterns indicating hypoxia often prompt immediate C-section¹⁰.
- Malpresentation: Breech, transverse, or other abnormal fetal positions may prevent safe vaginal delivery¹².

- Multiple pregnancies: Twins or higher-order multiples may require C-sections, especially if complications arise¹³.

3. Obstetric Indications:

- Placental abnormalities: Placenta previa or placental abruption often necessitates surgical delivery to prevent hemorrhage¹⁴.
- Umbilical cord complications: Cord prolapse or compression can compromise fetal oxygenation, requiring urgent C-section¹¹.

These indications are guided by evidence-based protocols to ensure C-sections are performed when medically justified, optimising outcomes for both mother and baby.

1.3.CONTRAINDICATIONS FOR CAESAREAN SECTION

While C-sections are generally safe, certain conditions may contraindicate the procedure due to increased risks. Contraindications are rare but include:

1. Absolute Contraindications:

- a) Maternal refusal: A competent mother's informed refusal of surgery overrides medical recommendations, provided she understands the risks¹⁰.
- b) Severe maternal coagulopathy: Conditions like disseminated intravascular coagulation increase the risk of uncontrolled bleeding during surgery¹¹.

2. Relative Contraindications:

- a) Fetal demise: In cases of confirmed intrauterine fetal death without maternal complications, vaginal delivery may be preferred to avoid surgical risks (WHO, 2015)⁸.
- b) Extreme prematurity: In very preterm infants, C-section may not improve outcomes compared to vaginal delivery, depending on gestational age and fetal condition¹⁵.

Contraindications require careful assessment to avoid unnecessary surgery while ensuring maternal and fetal safety.

1.4.MEDICAL AND NON-MEDICAL REASONS FOR CAESAREAN SECTION:

The decision to perform a C-section is driven by a combination of medical and non-medical factors, reflecting clinical, cultural, and systemic influences.

1.4.1. Medical Reasons

Medical reasons align with the indications outlined above and are grounded in evidence to prevent adverse outcomes. For example, a C-section is often mandatory in cases of placenta previa to avoid catastrophic hemorrhage¹⁴. Similarly, fetal distress detected via cardiotocography necessitates rapid intervention to prevent hypoxia-related morbidity¹⁰. Medical reasons account for the majority of C-sections in high-risk pregnancies, but their overuse in borderline cases, such as suspected fetal macrosomia, has been criticised for lacking robust evidence¹⁶.

1.4.2. Non-Medical Reasons

Non-medical reasons for C-sections are increasingly prevalent, particularly in high-income countries and urban settings. These include:

1. **Maternal Request:** Some women prefer C-sections due to fear of labor pain, perceived convenience, or desire to schedule delivery¹⁷. This trend is more common among educated and affluent women, as seen in studies from Brazil and China⁶.
2. **Cultural and Social Factors:** In some cultures, C-sections are viewed as safer or more prestigious, influenced by family expectations or media portrayals¹⁸.

3. **Healthcare System Factors:** Provider convenience, financial incentives, and fear of malpractice litigation drive C-section rates in some settings. Private hospitals often have higher C-section rates due to economic motivations
4. **Lack of Support for Vaginal Delivery:** Limited access to VBAC, inadequate labor support, or insufficient antenatal education can lead to elective C-sections¹⁹.

Non-medical C-sections contribute significantly to global rate increases, often without clear benefits and with potential risks, such as higher rates of maternal infections and neonatal respiratory issues²⁰.

2. GAPS IN RESEARCH AND PRACTICE:

Despite extensive research on C-sections, several gaps remain that warrant further investigation and action:

1. **Overuse and Underuse:** The WHO recommends an optimal C-section rate of 10-15% at the community level to balance maternal and neonatal outcomes²¹. However, rates exceeding 30% in many countries suggest overuse, while low rates in resource-poor settings indicate underuse, leading to unmet needs²². Research is needed to identify context-specific factors that drive these disparities.
2. **Non-Medical C-Sections:** The rise in maternal-request C-sections lacks comprehensive data on long-term outcomes for mothers and babies. Studies often focus on medical indications, leaving gaps in understanding socio-cultural and psychological factors¹⁷.
3. **Antenatal Education:** However, standardised, scalable education programs are understudied, particularly in low-resource settings¹⁹.

4. **VBAC Access:** Limited availability of VBAC due to provider reluctance or lack of facilities contributes to repeat C-sections. Research on safe VBAC protocols and their implementation is critical¹⁰.
5. **Equity and Access:** Disparities in C-section access based on socioeconomic status, geography, and healthcare system structure remain underexplored. For example, rural mothers may face delays in emergency C-sections, while urban mothers may undergo unnecessary procedures²².
6. **Long-Term Outcomes:** While short-term risks of C-sections (e.g., infection, bleeding) are well-documented, long-term effects, such as impacts on future pregnancies or maternal mental health, are less studied²⁰. Recent studies have demonstrated the biochemical mechanisms underlying the long-term impacts of CS on children as well as the acute and chronic consequences on their health.

Caesarean section is a critical intervention in modern obstetrics, saving lives when medically indicated but posing risks when overused for non-medical reasons. Understanding its indications, contraindications, and the complex interplay of medical and non-medical drivers is essential for optimising maternal and neonatal health. Addressing gaps in research and practice, particularly around education, equity, and long-term outcomes, will support evidence-based policies to ensure C-sections are performed appropriately. The implementation of Right Care's tenets serves as a foundation for evaluating national and international initiatives to address variations in the use of CS worldwide while taking cost-effectiveness and women-centred care into account.²⁰. To give treatments a stronger foundation for achieving an ideal frequency of CS use for women and children, further study is required to comprehend the high frequency of CS use and its determinants in various countries²³. Multifaceted (clinical and non-clinical) strategies are needed to reduce CS use and to increase physiological birth for healthy women and babies; these

strategies must be scientifically tested, and tailored to local determinants (beliefs, norms, and behavioural aspects that impact women, health professionals, health-care organisations, and society standards)²⁴. This chapter sets the stage for further exploration of maternal delivery preferences and their implications, drawing on both clinical and socio-cultural perspectives.

JUSTIFICATION FOR THE DOCTORAL RESEARCH

Given the context and the situation, this implementation research study was planned to understand the reasons for unnecessary C-sections and plan a pilot intervention based on the reasons to see if the rates could be reduced for non-medically indicated C-sections.

PURPOSE OF THE STUDY

To undertake implementation research through developing and pilot testing of an innovative intervention to reduce C-section rates in Telangana State.

OBJECTIVES:

PHASE- 1:

Objective 1.1.

To carry out a review of available literature on C-Section deliveries and understand reasons/indications for the same.

Objective 1.2.

To undertake a study to understand the possible medico-socio-economic factors associated with an increase in C-Section rates, specifically in Telangana State.

PHASE- 2:

Objective 2.1.

To develop a framework and conceptualise a non-clinical intervention based on Phase 1 findings to reduce unwanted and unnecessary C-Section rates in Telangana state.

Objective 2.2.

To pilot the interventions in 3 districts that have high, medium and low C-Section rates in the state of Telangana.

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CHAPTER 2

REVIEW OF LITERATURE

1. INTRODUCTION:

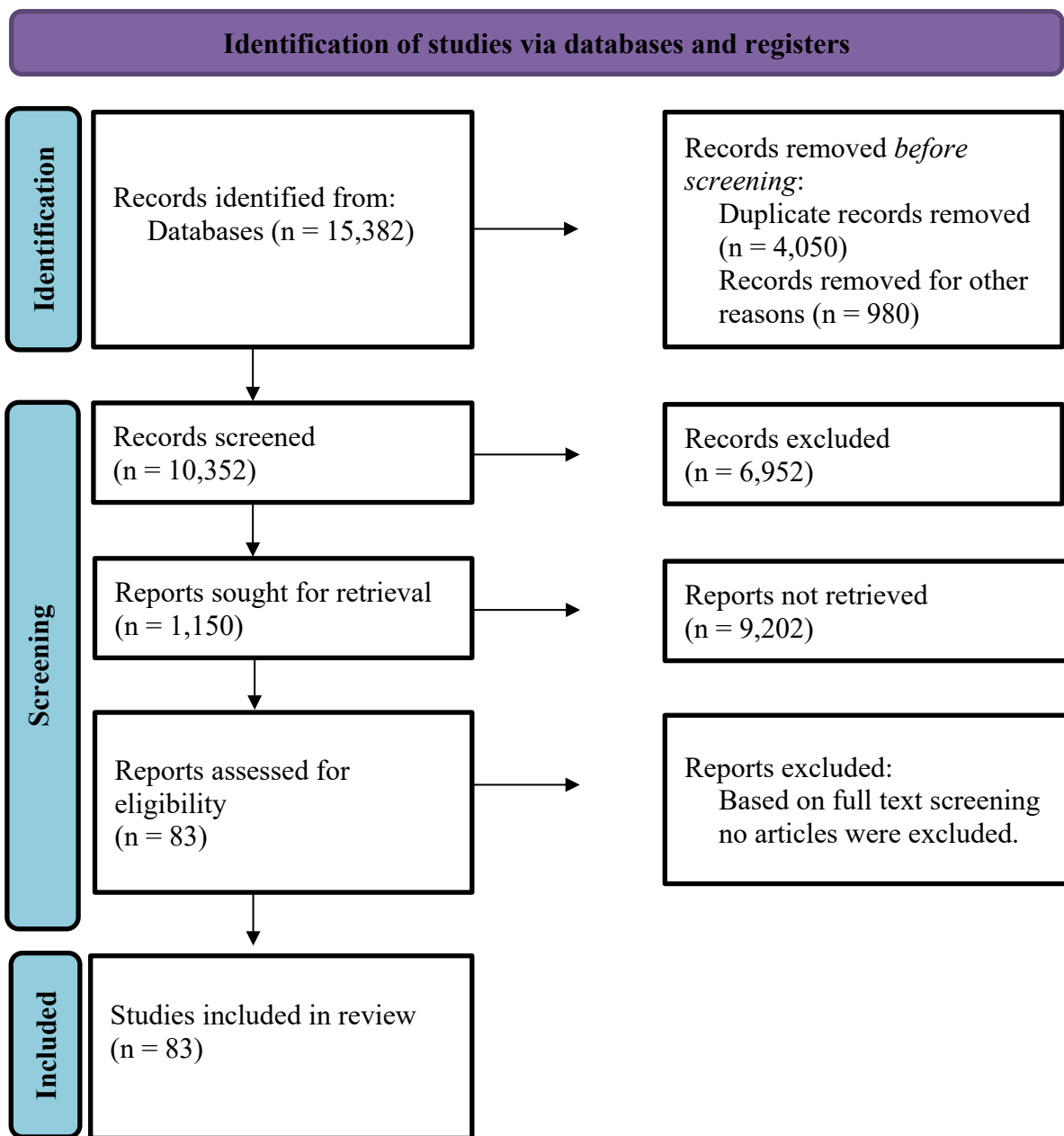
The human experience of childbirth is profound and intense. Women's birth narratives frequently include emotions of empowerment, joy, and accomplishment, especially after vaginal delivery without medical assistance¹. The life-saving medical procedure known as a caesarean section (CS) must be available to all women who require it². This procedure needs to be carried out solely for medical reasons, because CS has a number of immediate and long-term health impacts on mothers and children³. When there is a substantial risk of a negative result for the mother and/or fetus, CS is medically justified⁴. The rise in CS cases for non-medical reasons, like maternal requests, is a reflection of shifting perspectives among obstetricians and women regarding delivery methods^{5&6}. In the meantime, it is becoming more common to perform CS without a medical reason, such as a mother's wish. Preschool-aged children whose mothers request elective caesarean sections before 39 weeks of pregnancy are more likely to experience emotional issues and behavioural challenges⁷. Compared to planned vaginal birth, low-risk planned caesarean sections are linked to longer hospital stays and higher postpartum health risks (cardiac arrest, serious puerperal infection, etc.). Unreasonably and disproportionately using health resources can increase when CSs are performed for non-medical causes⁸.

For instance, in 2008, the projected global cost of medically approved CS was \$432 million, while the estimated global cost of unneeded CS was \$2.32 billion⁹. Pre-labour caesarean sections are more expensive than vaginal births that occur naturally ($P < 0.01$). CS is proven to be more expensive during labor¹⁰. In low-income nations, unnecessary CSs can strain the finances of families, individuals, and the healthcare system.

The increase in overall CS rates could be largely attributed to the growing incidence of CS for non-medical purposes. It is associated with CS's cultural acceptance as a safer delivery method, which turns childbirth into a medical procedure. Evidence indicates that pregnant women are encouraged to request CS by using an ultrasound to diagnose their unborn child's nuchal cord. The percentage of mothers who requested CS varied from 0.2% to 24.7%. The preference for CS was 15.6% worldwide, and it was greater in middle-income nations (22.1%). However, in low-income nations, there are insufficient studies on maternal preferences and requests. The topic that the review seeks to address is the non-medical justifications for performing CS.

2. MATERIALS AND METHODS:

Several bibliographic electronic sources were examined to find studies showing the problems with CS performed for non-medical purposes, including PubMed, MEDLINE, Google Scholar and Web of Science. Medical Subject Headings (MeSH) headings like caesarean, caesarean, and c-section were paired with particular keywords like non-medical, preference, request, demand, choice, lawsuit, and convenience using Boolean operators (and/or) to find articles about CS for non-medical purposes. The reference lists of the chosen publications and official websites like WHO were searched for further articles. This study covered both quantitative and qualitative research that focused on non-medical indications and were written in English and published between 2000 and 2020. The author (SD) evaluated each chosen article for inclusion eligibility. After first screening abstracts and titles, each article's whole content was examined, and pertinent information was taken out. Other authors verified the accuracy of the extracted data. Any disagreements or differences about the studies' eligibility were discussed with the reviewers and settled by consensus. After that, a content analysis was carried out. After an evaluation, 83 of the 15,382 articles that had been identified were used.



Source: Page MJ, et al. *BMJ* 2021;372: n71. doi: 10.1136/bmj. n71.

3. RESULTS AND DISCUSSION:

An evidence synthesis of factors contributing to deliveries by caesarean section:

1. Evidence from existing cohort studies:

Mother-baby physiology & health-related factors: Most of the studies analysed hospital-based cohorts as part of the maternal and child health care programs. Studies identified that the following gestational factors were associated with delivering baby by caesarean section: pregnancy-induced hypertension¹¹, gestational weight gain¹², preeclampsia¹³, and multifetal pregnancy³, malpresentation of the foetus¹, prolonged labour¹, foetal distress¹, gestational age more than 41 weeks³ and birth weight less than 4 kg³. Gestational weeks and the mother's hemoglobin level during pregnancy showed no relation with caesarean section¹. In addition, maternal history of previous miscarriages/stillbirth¹⁴, previous infertility⁴, previous caesarean deliveries¹ were associated with caesarean delivery. Primiparas were at more risk of caesarean section deliveries compared to multiparas^{1&4}.

Sociodemographic factors: identified that the risk of caesarean deliveries were more with male baby, whereas identified that gender of newborn baby had not associated with mode of delivery¹. Caesarean delivery on maternal request were more in urban population, and it was identified that Education, family income and reimbursement of health service expenses were all highly correlated with the variable of resident status¹⁵. Maternal age was associated with caesarean deliveries with guidelines-based indicators⁵. Another study was in accordance with this finding, identified that women above 34 years are at high risk of Caesarean section compared to younger women (OR with CI: 1.77 (1.21-2.59))⁶. Caesarean births were more in urban areas compared to the deliveries of rural areas⁴. They identified that caesarean section rates were associated with the level of education of the mother as well as of the father.

Economic status of the family & payment system: Caesarean deliveries were more in wealthy people⁵. Women having full insurance were more prone for CS deliveries compared to women with self-payment (odds ratio with CI = 1.53 (1.25. 1.87)³.

Ethnicity: the trends of caesarean deliveries in tribal people in comparison with non-tribal people getting maternal and child healthcare services at the same facility. The study identified that non-tribal women had more caesarean deliveries. Maternal education was significantly associated with caesarean deliveries in non-tribal women, whereas maternal age was associated with caesarean deliveries in tribal women¹.

Tribal women coming to the hospital from more than 20 km had more caesarean deliveries CS were more in private hospitals compared to government hospitals. OR with CI: 1.85 (1.56- 2.20) with 19.2% of population attributable risk (PAR).

Other factors: About 50 % of caesarean deliveries were in accordance with national guidelines, in 3% women doctors felt the need for a caesarean delivery though not based on national guidelines, and in 15.1% the caesareans were due to maternal request though not based on national guidelines⁵. It was identified that women who opted for caesarean deliveries on maternal request had low self-efficacy.

2. Evidence from existing qualitative studies:

Previous personal experience/experience of family & peers:

Women expressed their own or family members' experiences against vaginal delivery, which were the motivating factors for them to opt for caesarean delivery. Many expressed that they had suffered from "*bad pain twice*", that was prolonged labour, ended in caesarean section¹⁶. Chronic incontinence⁶, lacerations of vagina & skin, and worsening of hemorrhoid's¹⁷ were experienced after vaginal delivery. So, these women opted for

caesarean section delivery. Few had good experience with caesarean delivery, so they opted for caesarean again^{6&18}. (Cohort & cross-sectional studies also identified that women with previous caesarean delivery had more prone to deliver by caesarean section.)

The dilemma was expressed as below:

*"I thought a lot about choosing caesarean because I was worried about the wellbeing of my baby. If I had a big body, I might try to experience childbirth pain as most mothers have to go through. I wanted to know what it would be like to experience pain in childbirth. But I was afraid that I might lose the baby through childbirth process, so I decided to have a caesarean instead of vaginal birth. My doctor said if he was me, he would try a vaginal birth and if things did not go well then, I could have caesarean. But I did not wish to try to risk my baby's life, as I have lost one already"*¹⁹.

Perceived benefits/difficulties:

Women perceived that caesarean delivery was safe for the baby^{4&20}. *"The Healthcare provider said that the National Health Insurance program would cover it. If it did not provide cover, it would be very expensive. However, even in that situation, I would still choose a caesarean delivery because of the consideration of safety"* - a women's comment about her selected mode of delivery⁶.

Other perceived benefits of caesarean delivery were safety of baby^{4,9&21}, less painful²², convenient for the family to plan⁷ for a delivery and chance to select an auspicious day for birth⁹ expressed by a 32 year old pregnant women: *"I knew that C-section has no pain and guarantees the health of my baby. It doesn't lead to sexual dysfunctions either; so, I wanted to have a C-section."* - 32 years old, bachelor's degree, in favour of C-section"²³.

Perceived difficulties with vaginal delivery driving women to choose caesarean delivery were: severity of pain^{7&9}, unpredictable nature of vaginal delivery, perceived inability, that

was “**not** strong enough to push the baby”, vaginal delivery causes fetal injury, harmful to baby, vaginal delivery with previous caesarean section “*puts the baby and the mother at a high risk*”^{6&7}.

“I think that Natural spontaneous delivery is hard to control, with a lot of unpredicted risks, such as baby jammed in birth canal, maybe asphyxia, or cerebral palsy. Caesarean delivery seems more under control and safe.” Was the expression about the complications and unpredictable nature of vaginal delivery⁷.

Patient-doctor relationship

Many women attributed the decision to the doctor’s recommendation. The reasons were different. In a study of (country)⁸ women obey the doctor's decision for a caesarean delivery after understanding the justification, but women of ⁶ expressed that they obeyed the doctors’ recommendation for caesarean delivery though they don’t have enough information about their condition. Health care providers expressed that they were unsure if the family would follow their recommendation for a caesarean section^{9&7}. It was also identified that women had confidence in doctors’ skills for conducting a caesarean^{7&8} Conversely, not confident enough in doctors’ ability to deal with the natural delivery²⁴.

The following were two different scenarios:

1. Confidence in doctors’ decision: *“I only listen to my doctor’s advice. I don’t care about other people’s sayings. If he tells me that you should have a caesarean delivery, I will accept.”*²⁵
2. Considering the unpredictable nature of vaginal delivery and the consequent medico-legal issues, doctors did caesarean delivery on maternal request: *“Many mothers insist on undergoing a C-section from the beginning of their pregnancy. If a vaginal delivery would become problematic in such patients, they would file a complaint against the physicians. Many*

physicians, therefore, do what their patients ask of them as courts support patients rather than physicians in the majority of the cases.”⁸.

Doctors’ preferences:

A midwife expressed that doctors did not want to assist normal delivery, instead preferred doing caesarean section: *“Most doctors say we do not do natural delivery. They say we don’t have enough time. These doctors try to convince women to do caesarean because they want to get more money. I believe first we should focus on doctors rather than women if we wish to increase natural delivery”*²⁵

Policy influencing procedure

With one child policy people were considering that the baby was very precious, thus opted for caesarean deliveries to avoid unpredictable nature of vaginal delivery. They felt that there was no need to think about the effects of caesarean section on having a second child. In context of policy change, allowing for a second child, a women felt, *“I would have considered vaginal birth, because I heard that then having the second child is easier”*¹¹.

Perceived risk factors:

Old age, previous caesarean delivery, overweight & obesity were considered by the women as risk factors for caesarean section: *“I had a uterine scar, which is risky. Also, I felt like I did not have any self-confidence to deliver vaginally. Add to that my age, I felt like the possibility of me giving birth vaginally was practically zero”*¹¹.

Parity:

Primipara preferred caesarean delivery compared to mothers who had already had children. They worried about the pain, fetal injury and unpredictable nature of vaginal delivery.

Inadequate skilled healthcare personnel:

Specialist doctors were trained in caesarean deliveries but were less exposed to assisting vaginal delivery. Residents were not adequately trained to assist normal delivery because of the reduced number of vaginal deliveries. *“In the past few years, many obstetricians have never had the opportunity to do a vaginal delivery. The knowledge of a first-year resident regarding the procedure is similar to that of an intern. Residents learn the process of natural delivery during the first year but by the time they have learned how to deal with physiologic labor, the year ends”*¹³.

Midwives, who were trained to assist the normal vaginal delivery, were less in number. *“Midwives could manage hard labors previously but now they can’t as they avoid such situations due to financial problems”*¹³.

Profitable for the provider:

There was per case payment system for physicians in Iran. Midwives attended normal delivery with no incentive or payment. So, they did not show interest in conducting VD. Physicians expressed, *“Many midwives claim that physicians receive all the money so why should a midwife spend long hours in the labor room; physicians, on the other hand, claim they should receive more money as they are in charge of any possible legal problems linked to labor.”*¹³.

Hospitals encourage caesarean deliveries for getting profits: *“The autonomy plan has deeply damaged the health care system as these independent hospitals do anything to have higher incomes.”*¹³.

A midwife responded that caesarean sections were performed for the benefit of care providers: *“I think that one aim of caesarean section is to decrease doctors’ trouble, and the other one is to get more profit for the hospital.”*

Sociodemographic factors:

Gender of the newborn played a role, *"I was lucky that it was a boy. I already had a daughter. If this one were a girl, it would not have been possible for me to have a third child quickly in hope of having a boy."* Other cohort and cross-sectional studies observed that caesarean sections were more with male newborn babies.

Media influence:

News, videos and health awareness programmes motivated women for caesarean section. According to a midwife specialists invited by media programmes talk about high-risk conditions only, *"Media significantly influence the public belief about medical issues. An obstetrician is invited to a program to discuss simple topics such as labor"*¹³.

Doctors' preference:

In a study in Iran, doctors were not interested in attending vaginal delivery as it was time consuming: *"I don't care about the tariff; I really don't have time for it (vaginal delivery). This is of great concern for me as the procedure (vaginal delivery) is really time- consuming."* and *"I won't do it (vaginal delivery), even if I'm paid 10 times more."* Were expressed by doctors.

No screening during the antenatal period:

One case narrated by the midwife was *"Some of the patients admitted at the hospital with pre-eclampsia and edema have not been assessed during their 9 months of pregnancy, and should undergo a C-section according to the current laws and text books"*¹³.

Auspicious date:

Beliefs about birth in certain days will affect the fate of newborn played a role in selecting mode of delivery⁸ *"My husband wanted the baby to be born on either a Monday or Thursday, but not on a Saturday. He said a Monday child will be clever and smart and if a baby is a boy*

he will become a soldier. A Thursday child will be a strong child and easy to raise. A Saturday child will have a dominant fate which means that he or she will be stubborn and may become aggressive and parents will have problem in bringing them up. The baby was due around Thursday and because my doctor's schedule was not too busy on Thursday, we chose a Thursday".

C-section is the last resort:

Women believed that vaginal delivery was natural and safe, and only if they were unable to deliver naturally, then only should go for a caesarean delivery: *"In my opinion, C-section is the last resort. When there is absolutely nothing else that we can do and there is no other way to save the pregnancy, we should choose C-section."* - primigravida¹².

Awkward/Elegant birth:

*Delivery by caesarean section was considered elegant birth, "I thought caesarean delivery would be easier, in place of difficult and awkward NSD (Natural spontaneous delivery). I just wanted an elegant childbirth."*⁷.

Vaginal delivery affects tightness of vagina:

Primipara mentioned embarrassment and discomfort with vaginal delivery: *"I want a caesarean delivery because Dee Hsu [a well-known female star in Taiwan] said that childbirth affects the tightness of vagina"*²⁶.

Comment by a midwife confirmed the same: *"The husband calls for a C-section as soon as we tell them she would be relaxed in this technique"*¹³.

Along with these factors contributing to the opt for caesarean delivery, these studies identified a few factors promoting vaginal delivery:

Fast recovery with vaginal delivery:

Fast recovery was the reason for women choosing vaginal delivery: "My first baby was delivered by caesarean section, and my second baby was by vaginal birth. Comparing the two methods, I think the recovery was faster for the vaginal birth"⁶.

On the contrary women with caesarean section took long time to recover: "*Most of the time my mother tells me that do the natural delivery. She gave birth to four children. I saw my sister in law and also my neighbor that had caesarean section. Both of them had post-delivery problems.*"

"*My sisters say that the natural delivery is better since you can keep your baby better. You can leave the bed very soon but in caesarean section you should lay in bed for sometime as you have pain.*"

Doctor's assurance:

Doctors recommendation and support helped the women to go for a normal delivery: "*I did consider a caesarean birth [during labor] because it hurt so much. But the doctor said the baby was very small. They encouraged me to deliver vaginally, because there are more benefits to vaginal birth.*"

"*During labor, I could not handle it. I was anxious, and I was afraid. I just wanted to get the baby out. When I requested a C-section, [the nurse-midwife] said 'right now, there's no problem so you should keep on going.' She said that a C-section is not good for your recovery*"

Policy influence:

After a change in policy in China allowing second child, most women preferred normal vaginal delivery, considering to have second child very soon: *"At the time, we were not allowed a second child, so we never considered the risks. Right now, we regret that decision to get a C-section."*¹¹.

*Policy to Implement to comply with national guidelines to select a mode of delivery, reduced the number of caesarean sections in China: "[The caesarean rate] was higher before because of 'social factors.' Women would get a caesarean just because their family members wanted one, they feared the pain, or for the slightest problem, like if the amniotic fluid was a bit low. Even women who had severe myopia would get caesareans. Now all these will try for vaginal birth."*¹¹.

Stigma against Caesarean delivery:

Women were blamed for the conditions lead to delivery by caesarean section: *"People do not take the caesarean operation easily. They say Allah proved that she is not a good person by cutting her abdomen."*²⁷.

*This stigma also had a financial aspect: "People do not take the caesarean operation easily. They say Allah proved that she is not a good person by cutting her abdomen."*¹⁴.

Vaginal delivery was natural:

People consider that vaginal delivery was natural and convenient for the baby: *"I can't intervene with the timing that my baby is well- prepared to come to the world. By nature is the best way for him."*⁷.

Economic status:

Caesarean costs a lot: *“A caesarean section needs Tk 40,000-50,000. The economic status of my parents and husband was not strong enough to bear this cost”*¹⁴.

Insurance companies promote vaginal delivery: *“Insurance companies are setting up all the propagandas against C-section to pay less. These companies advertise for vaginal delivery in order to pay less for delivery.”*⁸.

3. Evidence from existing case-control studies:

Women with dystocia, preeclampsia, foetal distress and previous caesarean delivery had increased risk to have caesarean delivery²⁸.

Existing case-control studies indicate that women with dystocia, preeclampsia, fetal distress, and a history of previous caesarean delivery face an increased risk of caesarean delivery. These conditions are associated with higher likelihoods due to complications affecting labor progression, maternal health, or fetal well-being, often necessitating surgical intervention.

4. Evidence from existing cross-sectional studies:

The following conditions were identified to be associated with high caesarean rates:

1. **Delivery in private hospitals:** Delivery in private hospitals is associated with higher caesarean rates, though some studies show no significant difference compared to public hospitals.²⁹
2. **High economic status:** Women from higher economic backgrounds are more likely to undergo caesarean deliveries due to access to private healthcare and preferences^{30,31&32}.
3. **Women’s education level (<5th grade):** Women with education below the 5th grade have higher caesarean rates, possibly due to limited health literacy and reliance on medical recommendations.^{17,16,18&33}.

4. **Urban residents:** Urban women are more likely to have caesarean deliveries due to better access to healthcare facilities and cultural preferences.^{16,18,&21}.
5. **Employed women:** Employed women prefer caesarean deliveries, often citing scheduling convenience and workplace demands.²¹.
6. **Overweight or obese women:** Overweight or obese women face higher caesarean rates due to increased obstetric complications^{18&34}.
7. **Height < 150 cm:** Women shorter than 150 cm are at greater risk of caesarean delivery due to potential cephalopelvic disproportion²².
8. **Fetal birth weight >3750 grams:** Fetuses weighing over 3750 grams are associated with higher caesarean rates due to risks of macrosomia-related complications²².
9. **Very young (<19 years) and very old (>34 years):** Women under 19 or over 34 years have elevated caesarean rates due to physiological and obstetric risks¹⁸.
10. **Primipara:** First-time mothers (primipara) are more likely to undergo caesarean delivery due to a lack of prior vaginal delivery experience ¹⁷.
11. **Women with more than 4 deliveries:** Women with more than four deliveries have higher caesarean rates, often due to cumulative obstetric risks
12. **Fear of labor pain:** Women who fear labor pain are more likely to opt for caesarean delivery to avoid the discomfort of vaginal birth²¹.
13. **Perception that caesarean is easy and convenient:** The belief that caesarean delivery is simpler and more convenient contributes to higher rates²¹.
14. A few advantages of CS include decreased incidence of urogenital prolapse and incontinence³.

15. **Perceived inability & risk factors for vaginal delivery:** Women who perceive themselves as unable to deliver vaginally or have risk factors are more likely to have caesareans³⁵.
16. **Perception of precious baby:** The perception of the baby as "precious" increases caesarean rates due to heightened concern for fetal safety.
17. **Concern about safety of mother & baby:** Concerns about maternal and fetal safety drive higher caesarean rates, especially in high-risk pregnancies.
18. **Previous caesarean section:** A history of caesarean section significantly increases the likelihood of repeat caesareans due to limited access to vaginal birth after caesarean (VBAC)³⁶
19. **Antenatal check-ups >3 times:** Women with more than three antenatal visits have higher caesarean rates, possibly due to increased medical monitoring and interventions^{17,18&20}.
20. **History of caesarean, stillbirth, or neonatal death:** Previous caesarean, stillbirth, or neonatal death is associated with higher caesarean rates due to perceived risks¹⁷.
21. **Obstetric complications:** Conditions like fetal distress, prolonged/obstructed labor, amniotic fluid disorders, post-dated pregnancy, fetal malpresentation, gestational hypertension, placenta previa, and general ill health increase caesarean rates¹⁷
22. **Sickle Cell Disease (SCD):** Women with sickle cell disease have higher caesarean rates due to associated pregnancy complications¹.
23. **Nuchal cord:** A nuchal cord (umbilical cord around the neck) is linked to higher caesarean rates due to potential fetal distress.
24. **Ability to choose the time of birth:** The ability to schedule delivery time encourages caesarean deliveries for convenience³⁷.

25. **Financial assistance for caesarean delivery:** Government financial support for caesareans is associated with higher rates, as it reduces cost barriers³⁸.

The following conditions were identified to be associated with Low caesarean rates:

1. **Intent to have a second child:** Women planning a second child are less likely to choose caesarean delivery to avoid complications in future pregnancies
2. **Caesarean section perceived as dangerous:** The perception that caesarean delivery is risky reduces its preference, favouring vaginal delivery²¹
3. **Concern about safety of mother & baby:** Concerns about maternal and fetal safety can lower caesarean rates when vaginal delivery is deemed safer²⁷
4. **Previous vaginal delivery:** A history of vaginal delivery significantly reduces the likelihood of caesarean delivery in subsequent births.
5. **Women with 2-4 deliveries:** Women with two to four deliveries have lower caesarean rates, likely due to experience with vaginal births.
6. **Belief that vaginal delivery is natural:** The preference for vaginal delivery over caesarean is fueled by the notion that it is the natural approach^{39 & 27}.
7. **Self-preferred route of health care providers:** Health care providers who advocate for vaginal delivery reduce caesarean rates through patient counselling²⁷.
8. **Quicker postpartum recovery with vaginal delivery:** The expectation of faster recovery after vaginal delivery lowers caesarean rates^{27&29}
9. **Vaginal delivery is healthier for the mother:** The belief that vaginal delivery is healthier for the mother promotes its choice over caesarean²⁹
10. A higher risk of maternal morbidity and mortality is linked to CS rates³.

11. CS-born infants are exposed to various microbiological, physiological, hormonal, and medicinal factors (such as intrapartum antibiotics and uterotonins)³.
12. Short-term risks of CS rates, which range from altered immune development, allergy, atopy, asthma, and reduced diversity of the intestinal gut microbiome, compared with those born vaginally³.

4. CONCLUSION:

The review conducted from cohort, qualitative, case control and cross sectional studies on factors contributing to deliveries by caesarean section shown the mother-baby physiology & health-related factors, Sociodemographic factors, economic status of the family & payment system, ethnicity, previous personal experience/experience of family & peers, Patient-doctor relationship, Doctors' preferences, Policy influencing procedure, Perceived risk factors, Media influence, No screening during antenatal period, Auspicious date, Dystocia, Preeclampsia, Fetal distress, Delivery in private hospitals, High economic status, Women's education level, Urban residents, Employed women prefer caesarean deliveries, has influenced the mothers to undergo caesarean section. In obstetrics care, performing CS without medical grounds is a growing public health concern that is posing ethical, economic, and medical challenges. Providing high-quality obstetric care will help cut down on needless CS. Optimising the use of CS is necessary, supported by a deeper comprehension of the supply and demand dynamics that contribute to excessive CS use. Pregnant women must receive counselling and education on the method of birthing, including indications, risks, and advantages of caesarean sections (CS), adequate labor monitoring, analgesic medication throughout labor, social support during labor, and adherence to evidence-based practice and recommendations. Therefore, further research on CS for non-medical causes has to be done.

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CHAPTER 3

NON-MEDICAL FACTORS CONTRIBUTING FOR CAESAREAN DELIVERIES IN TELANGANA STATE: A DESCRIPTIVE STUDY.

1. INTRODUCTION:

Caesarean, which means "to cut," is derived from the Latin word "caesare". In 1020 AD, the first caesarean delivery (CD) was documented, and ever since, the process has undergone significant evolution. A caesarean section (CS) involves the delivery of a fetus via a uterine incision (hysterotomy) and an open abdominal incision (laparotomy)¹. In certain clinical scenarios, vaginal birth would be dangerous; the major indications for CD are uterine/anatomical, maternal and fetal indications. The uterine/anatomical indications include abnormal placentation (placenta previa and placenta accreta), prior classical hysterotomy, placenta abruption, prior full-thickness myomectomy, invasive cervical cancer, history of uterine incision dehiscence, prior trachelectomy, permanent cerclage and genital tract obstructive mass. The maternal indications include maternal request, prior caesarean delivery, pelvic deformity or cephalo pelvic disproportion, prior pelvic or anal/rectal reconstructive surgery, previous perineal trauma, herpes simplex or HIV infection, cerebral aneurysm or arteriovenous malfunction, cardiac or pulmonary disease, pathology requiring concurrent intra-abdominal surgery and perimortem caesarean. Fetal indications include umbilical cord prolapse, non-reassuring fetal status or abnormal fetal heart tracing, failed operative vaginal delivery, macrosomia, malpresentation, congenital anomaly, prior neonatal birth trauma and thrombocytopenia^{2&3}.

Contraindications of CS are pregnant patients have severe coagulopathy which makes surgery extremely dangerous and a patient with extensive history of abdominal surgery and in the event of fetal demise⁴. Complications of CS deliveries include intra operative complications like

infections, risk associated with anesthesia, organ injury (bladder, intestines, ureter etc.), need for blood transfusions and hysterectomy as a treatment for severe bleeding from placenta praevia^{5,6&7}. Postoperative complications include thromboembolic complications like embolism and thrombosis, adhesions and persistent pain^{8,9&10}. CS leads to risk for subsequent pregnancies like spontaneous abortion, intrauterine growth retardation, preterm delivery, ectopic pregnancy, uterine rupture, still birth and infertility^{11,12,13,14&15&16}.

Worldwide rise is seen in caesarean rates in emerging and developed countries as well, the most are seen in Turkey, Korea, Mexico, Chile, Poland, Australia, Ireland, Hungary, Switzerland, Italy and the United States per 1000 live births in 2021 according to the Organisation for Economic Cooperation and Development (OECD). C-section rates in OECD countries in 2021¹⁷ are shown in figure 1.

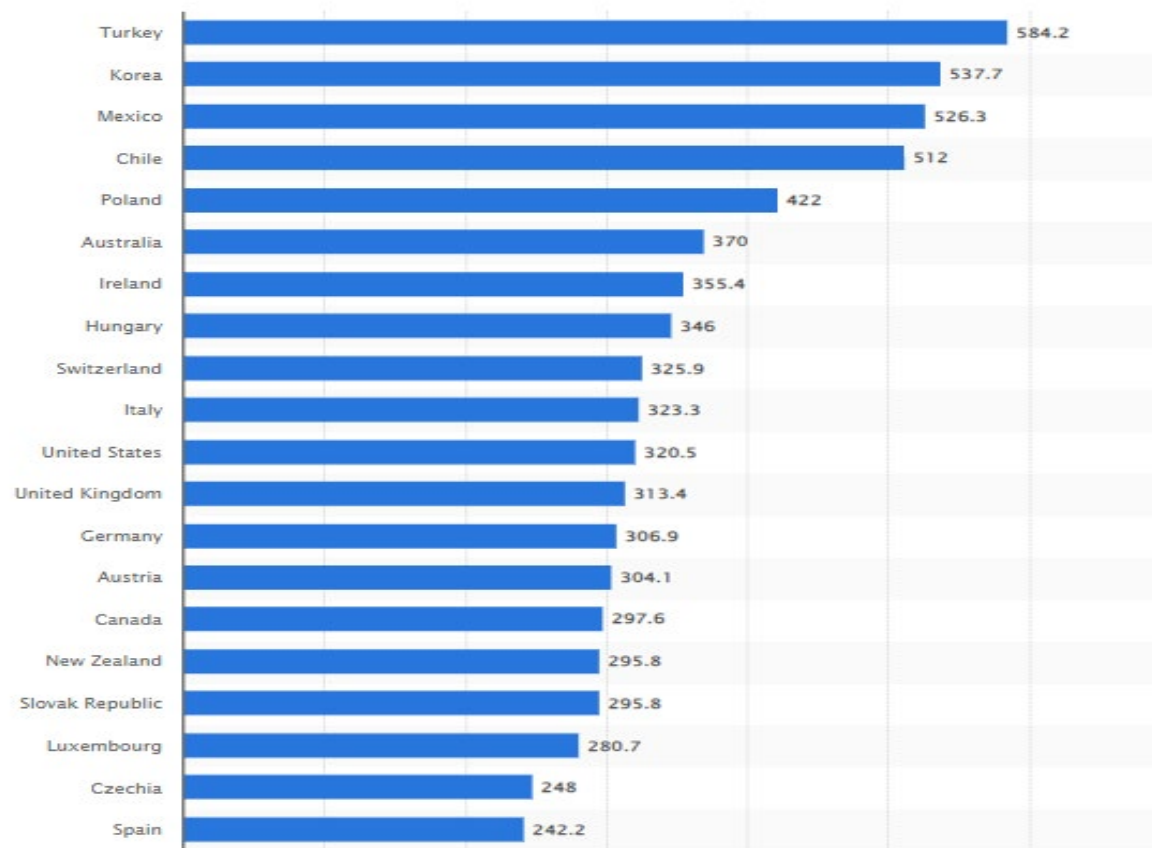


Fig.1. C-section rates in OECD countries in 2021.

In Indian scenario the prevalence of C- section deliveries have increase from 17.2 % (2016) to 21.5 % (2021), in figure 2, we can see that Telangana is having more percentage of C-sections than other states.

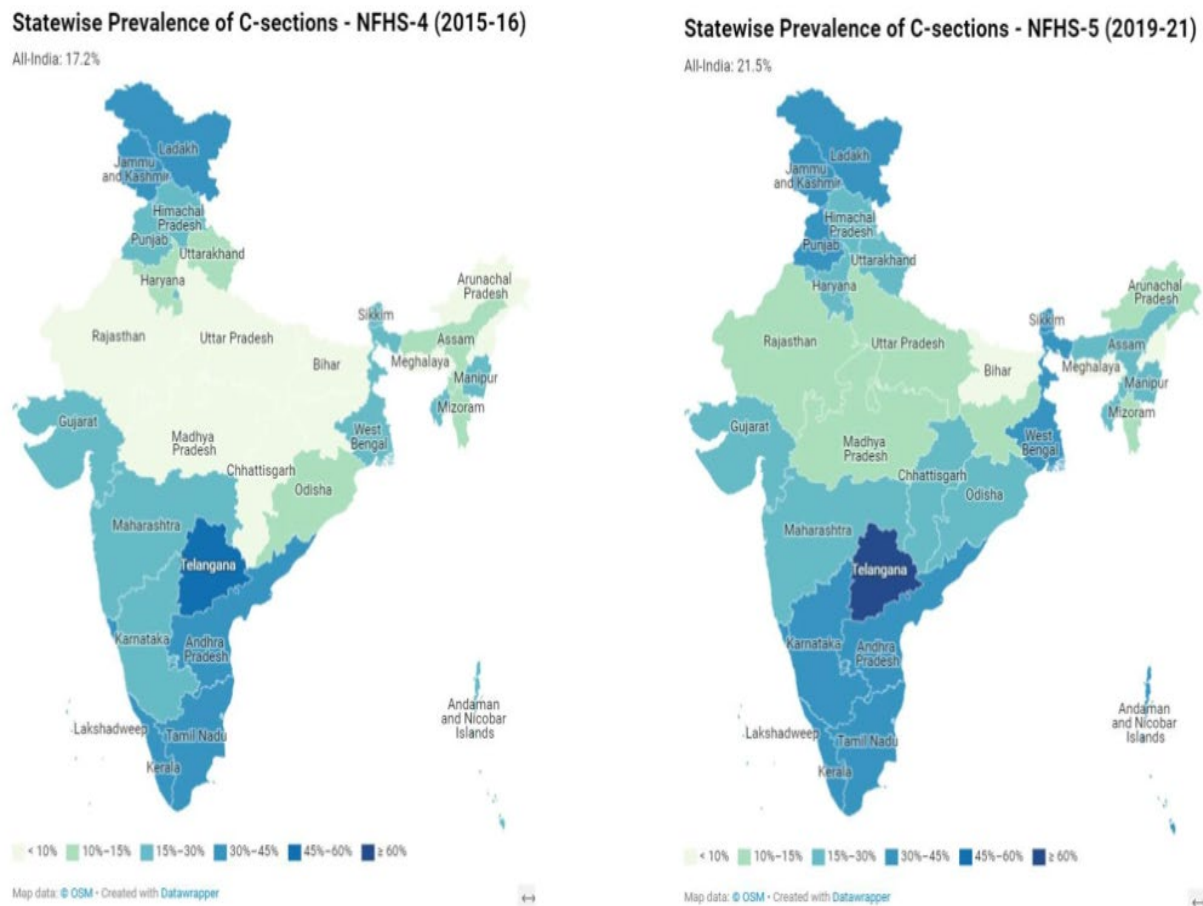


Fig.2. Prevalence of C- section deliveries across the India (NFHS4 & NFHS5)¹⁸.

The percentage of Caesarean deliveries in Telangana was 62.5% in August 2021 which has decreased to 56.8 % in July 2022, which has dropped by nearly 6% in the last one year ¹⁹.

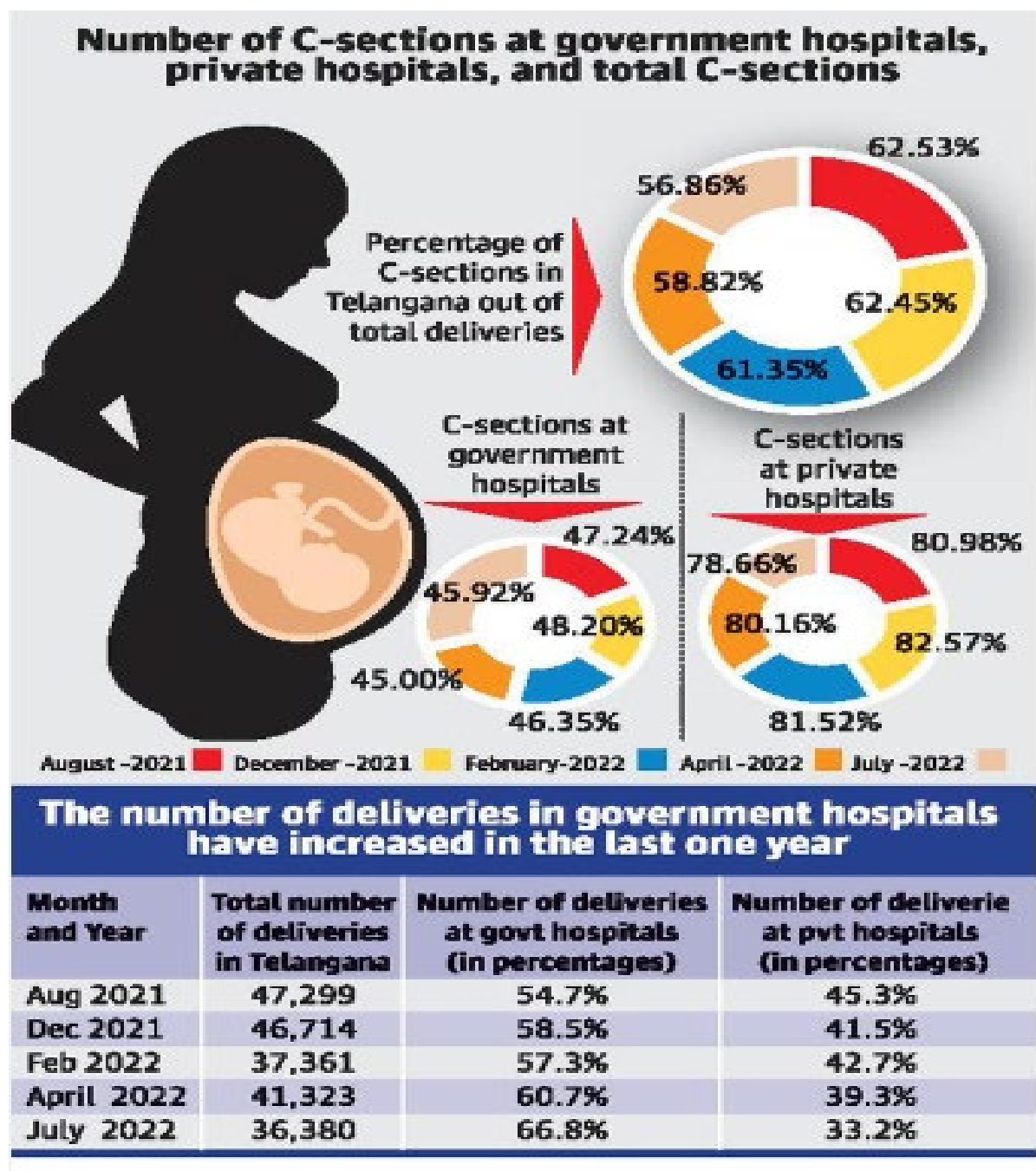


Fig.3. Caesarean deliveries in Telangana. (Source: The Hindu).

Due to the alarming increase in the caesarean rates in India the government has come up with the several beneficial schemes and initiatives for welfare and assistance to pregnant women's like

- Janani Suraksha Yojana (JSY): a demand promotion and conditional cash transfer scheme which aims to promote institutional delivery.
- Janani Shishu Suraksha Karyakram (JSSK): every pregnant woman is entitled to free delivery, including caesarean section, in public health institutions along with the provision of free transport, diagnostics, medicines, other consumables, diet & blood (if required).
- Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) provides pregnant women a fixed day, free of cost assured and quality antenatal check up by a Specialist/Medical Officer on the 9th day of every month. Further, Extended PMSMA strategy was launched to ensure quality ANC to pregnant women, especially to high-risk pregnancy (HRP) women and individual HRP tracking till a safe delivery is achieved.
- Surakshit Matritva Aashwasan (SUMAN) aims to provide assured, dignified, respectful and quality healthcare at no cost and zero tolerance for denial of services for every woman and newborn visiting the public health facility.
- Labour Room Quality Improvement Initiative (LaQshya) improves the quality of care in labour room and maternity operation theatres to ensure that pregnant women receive respectful and quality care during delivery and immediate post-partum.
- Pradhan Mantri Matru Vandana Yojana (PMMVY) is a maternity benefit program run by the Ministry of Women and Child Development, Government of India. The scheme aims to cover women belonging to socially, economically disadvantaged and marginalised sections of society. All Pregnant Women who have their pregnancy for the first child in family on or after 01.01.2017 are eligible for getting benefit under the programme. Additionally, in accordance with the new "Mission Shakti" guidelines, which was effective from April 1, 2022, the PMMVY 2.0 program aims to encourage

positive behavioural change toward girls by offering an extra financial incentive to the second child, if that child is a female²⁰.

The Telangana government has launched initiatives like Arogya Laxmi and KCR Kit, where the Arogya Laxmi scheme provides one nutritious meal every day to pregnant and lactating mothers through the Anganwadi centres, whereas mothers who gave birth at a government hospital are eligible to use the KCR Kit program for up to two deliveries. Under this initiative, pregnant mothers will receive Rs 12,000 in three phases of financial support; if the baby is a girl, the government will also provide an additional Rs 1,000²¹.

In spite of all the necessary actions from the government still there is an increase in the C-Section rate in Telangana, therefore, to address this issue we have conducted a study on exploring the non-medical reasons for caesarean deliveries in Telangana state.

2. METHODOLOGY:

We have conducted a 360 degree and phenomenological approach. Purposive sampling was used to guarantee rich context and variation among healthcare facilities and regions. In order to understand whether there is a differences in the causes of higher or lower C-section rates, the districts selected were Karimnagar, Nalgonda, Suryapet, Warangal, Hyderabad, Medak, Nirmal, and Wanaparthi, which represented high, medium, and low rates of CS based on state government's published data. In this study, we have focused on 210 mothers, how they have perceived the events they have experienced and how participants attribute a meaning to them through their own descriptions. Data was collected using a questionnaire which contained 34 questions about the socio-demographic characteristics of the mothers and 210 In-depth interviews, including questions about the mode of birth, their influences, concerns and preferences within 6 months of having birth.

During the interviews, we have ensured that the mothers and their babies are comfortable, and the participants were observed by the interviewer, and their behaviours and moods were noted along with their statements. The interviews lasted for 15-20 minutes and were recorded with the participants' written consent.

The following districts and locations were studied:

- Hyderabad – Rasoolpura community, AH-Nampally and DH -King Koti.
- Karimnagar – AH -Huzurabad, MCH - Karimnagar; PHCs – Garreypally, Sultanabad and Kothapally.
- Medak – DH - Sangareddy, AH - Patancheru, MCH - Medak – MCH, UPHC - Medak & PHC - Kandi.
- Nalgonda – DH – Nalgonda & Community, DMHO - Nalgonda, AH - Miryalguda & Community, AH - Nagarajunasagar & Community.
- Suryapet – AH Suryapet & PHC, Durasapally and Community, B B Gudem – Community & FDHS.
- Nirmal – AH - Nirmal & Community, PHC - Mujgi village & Community, PHC - Manjulapur & Community.
- Warangal – DH - Warangal, AH - Narsampet & Community, AH – Parkal, PHC – Chennaraopet & Community.
- Wanaparthy – DH - Wanaparthy & Community, PHC - Gopalpet – Community, PHC - Jagathpally & Community.

The above districts represented the high, medium, and low CS rate locations.

3. STATISTICAL ANALYSIS:

In this study, we have transferred the audio recordings and transcribed the mothers' statements. The data was analysed using NVivo software and Microsoft Excel. To test the validity of the study, the data obtained from the interviews were examined by two faculty members who are expert in this research, and the consistency of the researchers was checked. The data was presented as frequencies and percentages.

4. RESULTS:

From the in depth interviews of the mothers delivered during last 6 months the results has broadly divided into 3 different categories:

4.1. Factors attributing to Demographics

4.2. Factors attributing to readiness of Birth

4.3. Factors attributing to the preference of Birth

4.1. Factors attributing to Demographics:

Based on the responses of the mothers, we have seen that there is a relevance between the demographic variables such as Age, Literacy etc.

Of the 210 In-depth interviews conducted, majority of the mother's i.e.; 175 (83.3%) belong to 20 to 25 *age group* during their last birth and mothers belonging to more than 25 age group were 35(16.7%) (figure. 4).

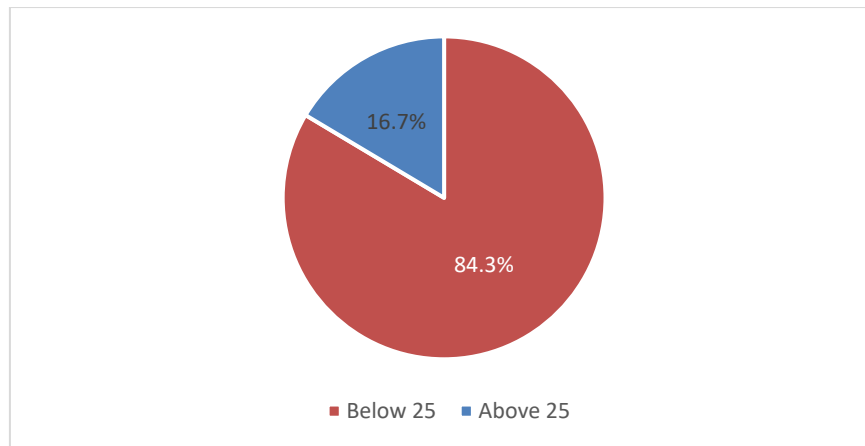


Figure .4. *Age during last birth*

Around 47% (Figure .5) of the mothers have had no formal schooling or less than 10 years of schooling, and 7% of them have had no education.

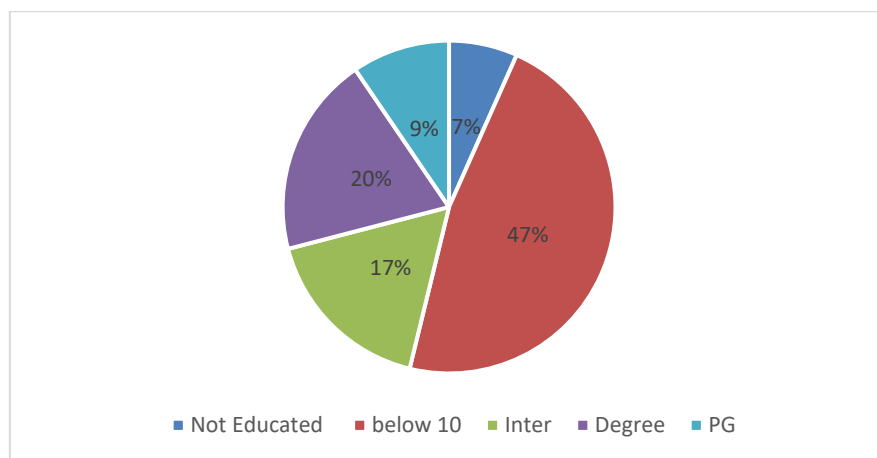


Figure 5: *Mothers' Literacy Rate*

Studies reveal that **Literacy** plays a vital role in C-section deliveries and are higher in the southern states than in other parts of India.

“No one suggested but normal is good for health and surgery would have longer effects. My husband requested a doctor as I'm unable to bear pain”

4.2. Factors attributing to readiness of Birth:

Out of the 210 mothers, 96.7% of them were *registered for ANC*. 171(85.1%) of the mothers have attended the *Antenatal Clinic more than 4 visits* (Figure 6.)

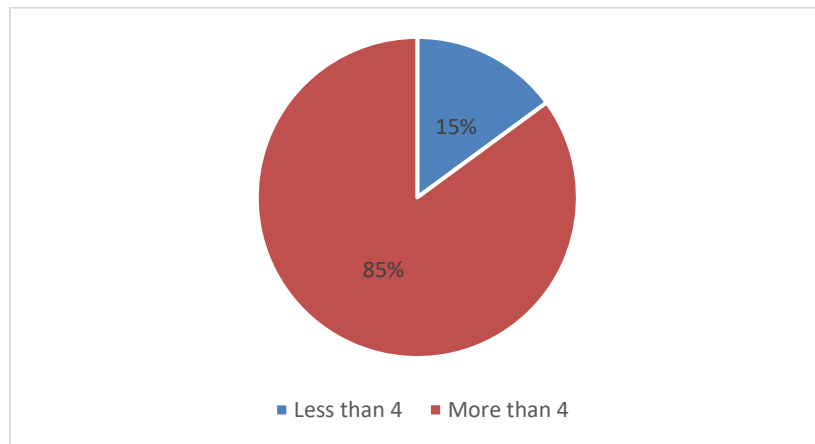


Figure 6. *ANC visits*

Of all the mothers, only 105 (52%) of these mothers have enrolled for the *KCR kit for monetary reasons* under the KCR kit scheme (Figure 7)

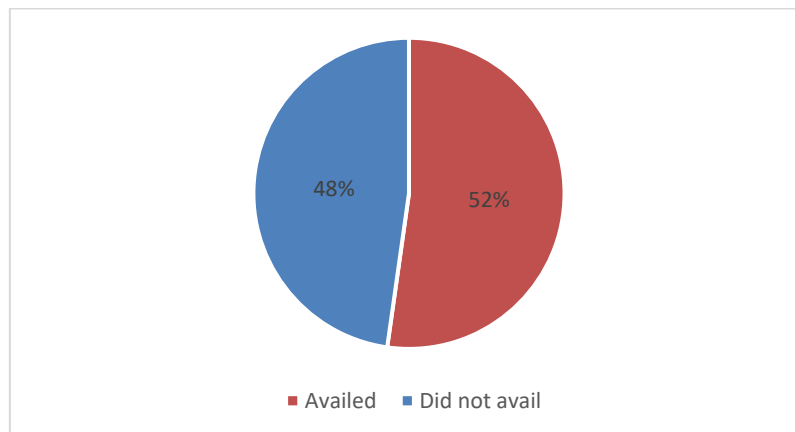


Figure 7. *KCR kit/DBT/reimbursement*

“My ANC check-up is normal and C-section is done in Private hospital. They did not say the problem but took sign as they said they can’t take risk.”

Majority of the mothers i.e.; 65.6% have expressed their *preference to be involved in the pregnancy and birth* (figure 8).

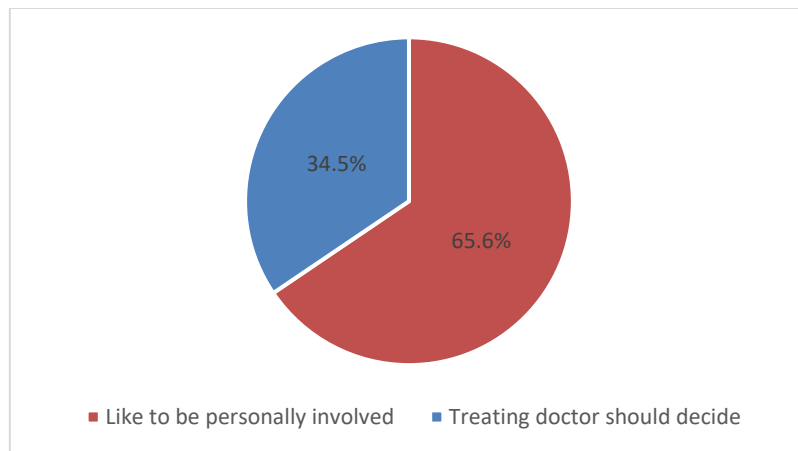


Figure 8. *Preference for birth*

We have found an alarming rate of 64% of mothers have not been explained the process of birth (Figure 9).

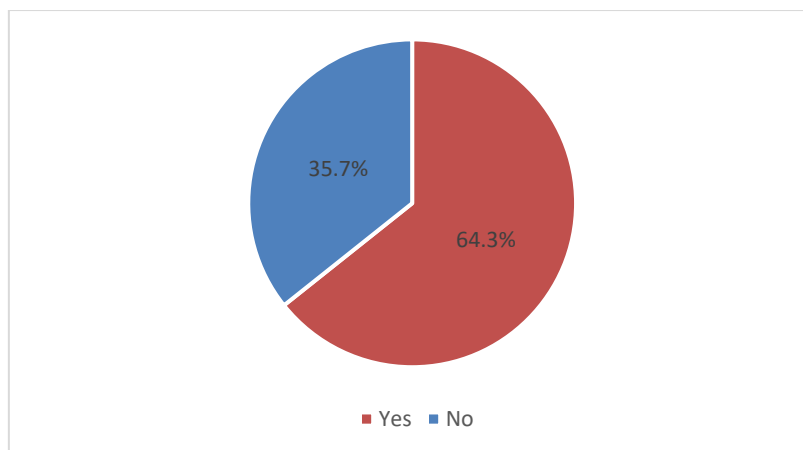


Figure 9. *Mode of delivery*

This emphasises the need for Birth preparedness and Complication readiness. Around 56(26.7%) of the mothers have ***preferred normal births***; however, on the contrary, 154(73.3%) of them landed in C-section (Figure 10).

“Normal is good, if surgery we cannot do the works, it becomes little difficult”

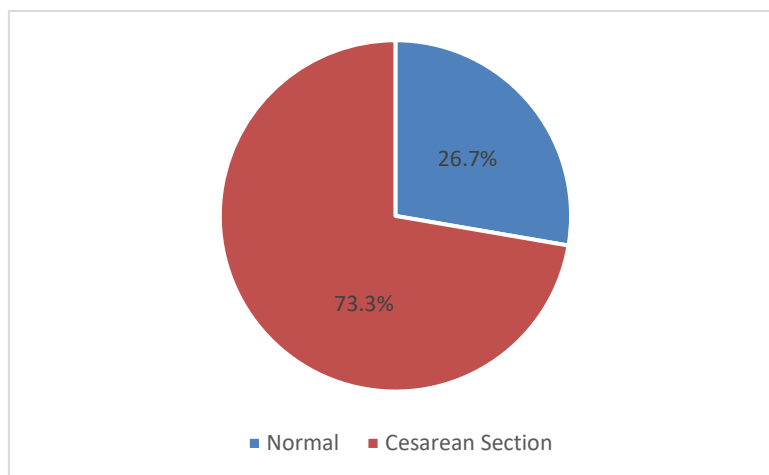


Figure 10. *Choice of birth*

4.3. Factors attributing to the preference of birth:

Asked the mothers if they know the reason for C-section. Around 24% of the mothers have requested for C-section either by the family or self.

Of the 210 mothers interviewed, majority of them i.e.; 154 of them have undergone C-sections and only 56 of them have undergone Normal births. Of the C-sections done 132(85.7%) of them have had ***medical indications*** and 8(5.2%) have non-medical reasons and surprisingly 14(9.1%) do not have any reasons. Of the 210 births, 112(53.3%) of the mothers birthed at their parental native whereas 98(46.7%) of them have had birthed at their in-law's place.

Around 160(76%) of the mothers were operated on **week-days** and only 50(24%) of mothers were operated on **week-end** (Figure 11). This predominantly shown the convenience of the Obstetrician as a contributing factor to C-section.

“Delayed labor pains and hence posted for surgery before Saturday”

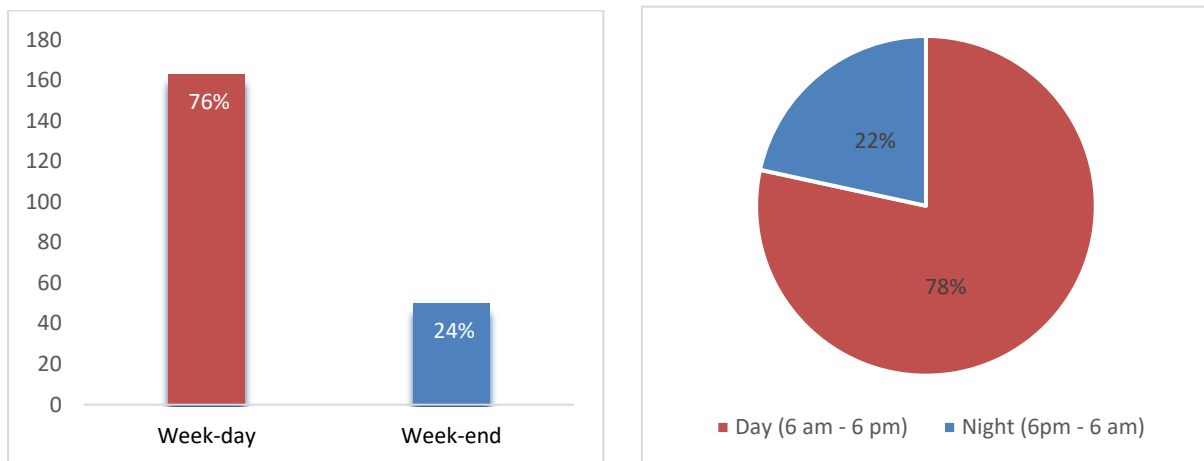


Figure 11. *Date and time of birth*

“Baby weight is of 3kgs and no proper pain. The doctor suggested its best to operate in during morning shift only”

Interestingly 164(78%) of the births took place during ***the day (6am-6pm)*** preferably in the ***week days*** (Figure 11) which strikingly show the convenience of the Obstetricians in performing the C-sections. However, studies show that mothers who are operated for C-section during night might have higher rates of complications such as PPH, endometritis, wound infection etc^{22&23}.

In this study, further ranked the ***influencers upon choice of preference of birth-both Household and Health care providers***. It is shown as in the table 1 below. Amongst the household, mother & mother in law have emerged as the major influencers.

Name of the Companion	Rank Order
Mother & Mother-in-law	1
Spouse	2
Head of the family	3
Relatives & others	4

Table .1. Represents the rank order of the companion (Household)

Similarly, amongst the health care providers, the rank order is as shown in Table 2 as below.

The frontline health workers, such as ASHA and ANM, have emerged as the major influencers.

Name of the Companion	Rank Order
ASHA	1
ANM	2
Staff Nurse	3
Medical Officer	4
Obstetrician	5

Table 2. Represents the rank order of the companion (Healthcare provider)

Table 3. The summary of the in-depth interviews of mothers.

Total IDs of mothers delivered during the last 6 months	Frequency	Percentage
Age Group (n=210)		%
Below 25	175	83.3
Above 25	35	16.7
Mode of Delivery(n=210)		
Normal	56	26.7
Caesarean Section	154	73.3
Parity (n =210)		
Primigravida	91	43.3
More than 1	119	56.7
Reasons for CS (n=154)		
Medical Reasons	132	85.7
Non-Medical Reasons	8	5.2
Do not know	14	9.1
Nativity during delivery (n=210)		
In -laws	98	46.7
Parental	112	53.3
Day of delivery (n=210)		
Week-day	160	76.2
Week-end	50	23.8
Time of delivery (n=210)		
Day (6 am - 6 pm)	164	78.1
Night (6pm - 6 am)	46	21.9
Place of delivery (n=210)		
Public	188	89.5

Private	22	10.5
Place of Public Delivery (n=188)		
Area Hospital	93	49.5
Community Health Centre	24	12.8
District/MCH facility	63	33.5
Primary Health Centre	8	4.2
Funds for Delivery (N=123)		
Did not require	86	69.9
Had own insurance	4	3.3
Had to loan/borrow/mortgage	33	26.8
KCR Kit/DBT/Reimbursement (N=201)		
Availed	105	52.2
Did not avail	96	47.8
ANC Visits attended (N=201)		
Less than 4	30	14.9
More than 4	171	85.1
Registered Pregnancy (210)	206	98.09
Institutional Deliveries (210)	210	100
Counselling of Spouse – MOD (N =77)		
Normal	59	77
C-Section	13	17
Doctors' decision	5	6
Influence on Mode of Delivery (Household)	Rank order	
Mother and Mother-in-Law	1	

Spouse	2	
Head of family	3	
Relatives and others	4	
Influence on Mode of Delivery (Health Care Provider)	Rank order	
ASHA	1	
ANM	2	
SN of PHC	3	
MO of PHC	4	
OBG specialist in the Facility	5	
Education of Mother (N=193)		
10 years of schooling or less	99	47
More than 10 years of schooling	97	46
No Education in any form	14	7
Monetary concerns on delivery (N=172)		
Mode of Delivery		10
Place of Delivery		32
Place of Delivery for 1st child		29
Monetary concerns on the mode of delivery		1
Did the doctor explain the delivery process? (N =33)		
Yes	12	36.4
No	21	63.6
Have/had you met your doctor earlier? (N =33)		
Yes	23	69.7
No	10	30.3

Preference to be involved in pregnancy and birth (N = 32)		
Like to be personally involved	21	65.6
Treating doctor should decide	11	34.5
Explain/Discuss on mode of delivery (N =28)		
Yes	18	64.3
No	10	35.7
Readiness for delivery (N = 29)		
Yes	23	79.3
No	6	20.7
Did you have a choice of the mode of delivery? (N = 32)		
Yes	21	65.6
No	11	35.4
Did you plan for your scheduled delivery? (N = 27)		
Yes	4	14.8
No	23	85.2
Did the doctor explain the need for a C-section? (N = 27)		
Yes	22	81.5
No	5	18.5
Request for C-section (N = 25)		
Own request	2	8
Family	4	16
Doctor	19	76
Pressurised to undergo CS (N=16)		
Yes	3	18.8

No	13	81.2
Preference for a normal delivery (N = 33)		
Yes	18	55.6
No	15	44.4

Table 4. The details of the district-wise Focus Group Discussions.

District	Community	Area Hospital – Nurses, ANM's etc	District Hospital – same as last column	MCH Centre health care professionals	PHC – MO, ANM, ASHA	DMHO & FDHS
Hyderabad	1	1	1			
Karimnagar		1		1	3	1
Medak		1	1	2	2	
Nalgonda	2	2	1			1
Suryapet	2	2			1	1
Nirmal	3	1			2	
Warangal	2	2	1		1	
Wanaparthy	2		1		2	
Total	12	10	5	3	11	3

ANM: Auxiliary Nursing Midwifery; MO: Medical Officer; ASHA: Accredited Social Health Activist; DMHO: District Medical Officer; FDHS: Fixed Day Health Service Officer.

Table 5. The details of district-wise in-depth interviews.

District	Primigravida	> 1 gravida
Hyderabad	10	20
Karim Nagar	9	21
Medak	14	16

Nalgonda & Suryapet	15	15
Nirmal	7	23
Wanaparthy	21	9
Warangal	15	15
Grand Total	91	119

5. DISCUSSION:

This study explored the reasons for C-section in Telangana, a south Indian state with a high percentage of institutional deliveries and C-section. From 1992 (NFHS 1) to 2020 (NFHS 5) the percentage of institutional deliveries increased from 32.8 % to 97 %, in Telangana and erstwhile Andhra Pradesh. Additionally, the percentage of C-section deliveries increased by 60.7%. Global evidence report that C-section rates are influenced by improving educational status, availability of services, patient factors, physician factors and health system factors such as increasing prominence of private players in institutional deliveries etc²⁴. From the focus group discussions and in-depth interviews, the reported mothers have undergone C-Section at their first birth and have also opted for caesarean at the 2 and 3 birth without knowledge about the vaginal birth after caesarean section (VBAC) might be due to the health care providers afraid of potential complications like uterine rupture or dehiscence with associated maternal and/or neonatal morbidity and also need to counsel the patient regarding the benefits of attempting trial of labour (TOL)²⁵.

Women with more education are likely of higher socioeconomic status and might have resources necessary to access facilities that provide CS and possibly be less likely to tolerate long labor pains, particularly in primiparous mothers. The increased CS rates over time have

also been observed elsewhere in India^{26&27}. Advanced maternal age is associated with increased risk of caesarean section in women undergoing labour induction with a single cephalic presentation at term without a previous caesarean section.

In our study surprisingly 64% of mothers have not been explained the process of birth. In this study 73% of the mothers have ended up in caesarean delivery, this reiterates the importance of Childbirth education right from the antenatal first visit. A research study conducted in South Ethiopia supports the findings i.e.; Although vaginal birth has remained the most preferred *mode of birth* among most pregnant women, about a quarter of pregnant women have reported that they prefer to deliver by caesarean section, a prevalence rate which is higher than the national average, indicating that the choice of caesarean section is still increasing among women²⁸. 24% of mothers have requested for caesarean delivery either by the self or family, shown that *maternal request* is the leading non-medical factor which contributed to increase in C-section rates in middle- and high-income countries²⁹.

A study published in BMC Pregnancy and Childbirth Journal in 2018 states that “The majority of respondents said that providers’ convenience, in terms of time spent and timing of deliveries, was the most important consideration for doctors”³⁰.

While studies indicate several monetary and non-monetary reasons for high prevalence of C-section in private sector³¹. Recent evidence estimates that over 0.9 million unwanted C-sections were performed in private sector alone³². With a higher number considering the increase in C-section numbers from 2015-2020. The data shows that the C-sections can be averted by emphasizing upon involving the birth companion in the counselling sessions i.e.; Childbirth education, Nurse led relaxation training, Psychosocial couple based prevention programme, Psychoeducation. These are some of the educational and support programmes (Pamphlets, videos, role play etc.) recommended by WHO³³.

6. CONCLUSION:

In conclusion, the in-depth interviews with 210 mothers who delivered in the past six months illuminate critical gaps in India's maternal healthcare system, necessitating a multi-faceted approach to improve delivery outcomes. The study reveals an alarmingly high C-section rate of 73.3%, far exceeding the World Health Organisation's recommended 10–15% for optimal maternal and neonatal health. Notably, 14.3% of these C-sections (9.1% unexplained and 5.2% for non-medical reasons) lack clear medical justification, pointing to systemic issues such as provider-driven decisions and inadequate patient education. Demographic factors exacerbate these challenges, with 83.3% of mothers aged 20-25 and 47% having less than 10 years of schooling, correlating with higher C-section rates, particularly in southern India. This suggests that younger, less-educated mothers may be more vulnerable to external influences, including family pressures or medical recommendations, limiting their ability to make informed choices. Health systems must prioritise mandatory, accessible counselling tailored to low-literacy populations, ensuring mothers understand the birth process, delivery options, and potential risks of surgical interventions. Such education is critical, as 64% of mothers reported not being explained the birth process, undermining their autonomy and preparedness for delivery.

To address the overuse of C-sections, stricter oversight of medical indications is imperative, particularly in private hospitals where convenience-driven practices are evident. The study found that 76% of C-sections occurred on weekdays and 78% during daytime hours (6 am-6 pm), suggesting scheduling aligns with obstetricians' preferences rather than medical necessity. This trend, coupled with reports of mothers undergoing C-sections without clear explanations (e.g., "They did not say the problem but took sign"), raises concerns about informed consent and potential profiteering in private facilities. Regulatory measures, such as

mandatory audits of C-section justifications and standardised protocols for surgical decisions, can curb unnecessary procedures. Additionally, public awareness campaigns highlighting the benefits of normal deliveries preferred by 26.7% of mothers but achieved by only 56 can shift perceptions and reduce reliance on C-sections for non-medical reasons, such as family requests (24% of cases) or perceived convenience.

Community health workers, particularly ASHA and ANM, emerge as pivotal influencers in shaping delivery choices, outranking obstetricians in the study's healthcare provider rankings. Their proximity to communities positions them uniquely to bridge information gaps and advocate for maternal autonomy. However, only 65.6% of mothers expressed a desire to be involved in pregnancy and birth decisions, indicating a need for enhanced health worker training to empower mothers rather than reinforce provider-driven decisions. Targeted programs equipping ASHA and ANM with skills to educate on normal delivery benefits, complication readiness, and informed consent can transform their role into one of advocacy and empowerment. Moreover, addressing socioeconomic barriers is crucial, as only 52% of mothers availed of the KCR kit scheme, despite 26.8% resorting to loans or mortgages for delivery costs. Increasing awareness of financial support through community outreach and simplifying access to schemes like the KCR kit can alleviate economic burdens, enabling families to prioritise health over financial constraints.

By tackling these systemic, sociocultural, and economic challenges, India can move toward a maternal healthcare system that is safer, more equitable, and aligned with global standards. The study's findings underscore the need for a holistic strategy that integrates education, regulation, and community engagement to respect mothers' preferences, particularly for normal deliveries, which are often overshadowed by surgical interventions. Coordinated efforts to enhance birth preparedness, regulate C-section practices, and leverage frontline health workers will empower women, reduce unnecessary medical interventions, and improve health outcomes for mothers

and newborns. Ultimately, fostering a system that prioritises informed choice and maternal autonomy will ensure that vulnerable populations, including younger and less-educated mothers, are supported in navigating their delivery experiences with confidence and dignity.

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CHAPTER 4

**EXAMINING THE POTENTIAL CAUSES CONTRIBUTING TO THE
EXACERBATION OF CAESAREAN DELIVERIES IN THE STATE OF
TELANGANA.**

THE GLOBAL SCENARIO OF CAESAREAN DELIVERY:

The ideal caesarean section percentage, according to the worldwide medical community, is between 10% and 15% at community settings. Since that time, both established and emerging nations have seen an increase in the frequency of caesarean sections. A caesarean section can successfully reduce maternal and infant mortality and illness when medically necessary. For mothers or infants who do not need a caesarean delivery, there is no proof to support its advantages. Like any operation, caesarean sections carry complications that might affect the mother's and her child's health as well as future pregnancies for years after the procedure. Women who have less access to thorough obstetric treatment are at greater risk. Governments and medical professionals have recently indicated disquiet over the increase in caesarean births and their possible detrimental effects on both mother and child health. Additionally, the need to review the suggested rate from 1985 has been brought up by the international community more frequently. Since then, for a number of causes, caesarean sections have increased in popularity in both established and developing nations. When medically required, caesarean sections can effectively prevent mother and newborn mortality and disease. For mothers or infants who do not need a caesarean delivery, there is no proof to support its advantages. Women who have less access to thorough obstetric treatment are at greater risk. The percentage of caesarean sections at the community level is a gauge of how widely this intervention is available and used. It can be used as a benchmark by governments and policy-makers to

evaluate advancements in mother and new-born health and to track the use of resources and emergency obstetric care. Governments and medical professionals have recently voiced worry about the increase in caesarean births and the possible harm they may do to mother and child health. Given that caesarean sections are a significant expenditure for overburdened - and frequently compromised - health systems, cost is also a significant factor in enhancing equal access to mother and infant care. The inability to generate standardised data that allows for demographic comparisons and gives researchers a tool to look into factors contributing to the caesarean section tendency is at the root of the problem in determining the ideal caesarean section rate at any level.

WHO carried out a systematic review of the ecological studies that were available in the scientific literature in 2014 in order to identify, assess, and synthesize the results of the earlier studies that look at the relationship between caesarean section rates and maternal, perinatal, and infant outcomes. Using the most current data available, WHO conducted a global ecological analysis at the same time to evaluate the relationship between caesarean sections and maternal and neonatal mortality. Accordingly, the observation that were founded was as follows. Reductions in maternal, neonatal, and infant mortality are associated with population-level increases in caesarean section rates of up to 10-15%, per the WHO comprehensive analysis¹. Beyond this threshold, there is no longer a correlation between a rise in the incidence of caesarean sections and a decline in mortality. Nevertheless, the association between higher rates of caesarean sections and lower mortality decreased or altogether disappeared in research that considered social factors. The WHO performed a second study to further analyse this issue because it is probable that socioeconomic variables account for the majority of the link between higher caesarean section rates and reduced mortality in this analysis. The panel of foreign specialists reviewed these findings at a consultation that the WHO held in Geneva, Switzerland, on October 8-9 of 2014². According to the WHO's global ecological research, socioeconomic

variables likely account for a sizable portion of the link between caesarean section rates and death. Nevertheless, maternal and newborn mortality dropped as caesarean section rates rose below a 10% level. No difference in death rates was seen as the percentage of caesarean sections rose above 10% and up to 30%³. The study used country-level statistics and a longitudinal methodology, adjusting for socioeconomic growth. This method might be able to get around some of the problems with cross-sectional studies that the comprehensive review identified, but it must be stressed that ecological associations do not entail causality. When analysing caesarean section statistics and fatalities, quality of care particularly in terms of safety is a crucial factor. Surgery carries the chance of infection and other complications, which can be risky, especially in environments where there aren't enough resources or personnel to carry out the secure operation. Due to a lack of population-level statistics, the relationship between caesarean section rates and stillbirth or morbidity results could not be established. Only death indicators were examined in the available ecologic studies, likely because they are more easily accessible than maternal and infant morbidity indicators at the community level. In the study, psychological and social factors connected to the method of birth were not taken into account. Future research must evaluate the relationship between the prevalence of caesarean sections and short- and long-term maternal and perinatal morbidity outcomes because death is an uncommon result, particularly in industrialised nations (e.g. obstetric fistula, birth asphyxia). These include the psychosocial effects on the mother-child bond, the psychological well-being of women, their capacity to start breastfeeding effectively, and paediatric results.

Total Caesarean use, or the percentage of all livebirths by Caesarean, can also be calculated as the sum of the percentage of institutional births all live births in the community that took place in a health facility and the percentage of livebirths by Caesarean within those facilities (interinstitutional Caesarean use). The intra-institutional Caesarean estimate provides

additional information about the epidemiology of Caesarean in countries where a significant portion of pregnancies occur at home, as the percentage of institutional births varies over time and between countries. It is clear that the intra-institutional Caesarean data (Caesarean per 100 livebirths in health facilities) are calculated by dividing the proportion of livebirths via Caesarean by the percentage of livebirths in health institutions. Between 2000 and 2015, there was an increase in the percentage of births taking place in medical facilities, which accounted for 66.5% of the increase in Caesarean use globally, and this rise in Caesarean use within medical facilities, which accounted for 33.50% of the increase⁴. The small rise in the population's use of Caesarean in sub-Saharan Africa was primarily brought on by the rising percentage of births that took place in hospitals. The frequency of intra-institutional Caesarean use dropped in the eastern and southern African area, which had a detrimental impact on the shift in population Caesarean use⁴. These patterns might indicate that the medical facilities are unable to handle the rise in visitors and the consequent demand for Caesarean that could save lives. In a global analysis of the WHO, Caesarean was used in more than 15% of births in 106 of the 169 nations evaluated, while it was used in less than 10% of births in 48 of the countries, according to an analysis based on the most current data point from each country. Even among nations with comparable percentages of institutional deliveries, there were significant variations in intra-institutional Caesarean use. With over 95% of births occurring in medical facilities, the Dominican Republic and Brazil had more than 50% intra-institutional utilisation, while Turkmenistan and Kyrgyzstan had fewer than 10%. Ten of the 32 nations that stated that 80-94% of deliveries took place in a facility used Caesarean less than 10% of the time, while Egypt used Caesarean in 63 % of births⁵. Seven of the 24 countries where less than 60% of pregnancies occur in institutions reported intra-institutional Caesarean use in at least 15% of live births, but of these 24 countries, Bangladesh and Myanmar reported the highest intra-institutional Caesarean use rates⁵. However, in order to fully comprehend the short- and long-

term impacts of C-section on a global scale, there were a number of limitations with regard to the study design, such as the inability to account for confounders, the improper choice of comparison groups, the lack of study power, etc. The nation's socioeconomic development (measured by gross national income per capita), women's education (measured by the net enrolment of girls in secondary school), urbanisation (the percentage of the population living in urban areas), total fertility (the number of children a woman at the age of 15 would have by the end of her reproductive lifespan at current fertility rates), and physicians per 10,000 population are all correlated with the most recent data on Caesarean use. The percentage of Caesarean deliveries was significantly higher in countries with greater levels of urbanisation, lower fertility, higher physician densities, higher socioeconomic development, and higher net female secondary school enrolment. Global understanding of Caesarean also analysed the existence of country-based disparities in terms of Caesarean deliveries, and most of them contribute to other dimensions of debate, which is overuse versus the poorest access. Women in the poorest quintile of income in these nations and the wealthiest quintile used Caesarean at significantly different rates. In less than 10% of pregnancies among the poorest women, 35 of the 82 low- and middle-income nations recorded population Caesarean use, and two-thirds (55 countries) reported less than 3% of births among these women⁵. The median Caesarean use was 17% among the poorest quintile and 10.6% among the wealthiest quintile in 40 nations with a nationwide Caesarean use of less than 10%. There are no obstetric grounds to anticipate that the poorest women will use Caesarean less frequently than richer women once the women have arrived at a health centre⁵. However, women in the richest quintile reported using Caesarean on average 24 times more than women in the poorest quintile, highlighting the significant access disparities to Caesarean even after women have arrived at a health centre. Some possible reasons for this discrepancy include a low overall capacity to provide Caesarean, particularly in rural areas where most women in the poorest quintile give birth, financial

barriers to Caesarean, and a role for the private sector in providing Caesarean to wealthier women in primarily urban areas. Intra-institutional Caesarean use was 16 times higher in private facilities than in public facilities, according to survey data from 69 of the 82 low- and middle-income countries⁶. In 12 nations, the intra-institutional Caesarean use rate in private institutions was greater than 50%. The public sector still accounted for the majority of births by Caesarean despite the more common use of Caesarean in private facilities: the median percentage of all Caesareans that took place in the public sector was 81% across the 69 nations⁶. High-income and higher middle-income nations have also been shown to use Caesarean more frequently than public health facilities, and nearly all births of wealthy women in private health facilities have been shown to use Caesarean. In high-income and upper-middle-income countries, the odds of obtaining a Caesarean section were found to be, on average, 1.84 times greater in private, for-profit hospitals than in non-profit ones⁶. Therefore, further rises in the use of Caesarean may result from increasing obstetric care privatisation. Differences within nations are also significant. For instance, subnational statistics for the ten nations with the highest birth rates between 2010 and 2015 revealed significant but variable variations between nations. In Ethiopia, Caesarean births were recorded in 20% of births nationwide, but in Addis Ababa, they were documented in 24% of births⁷. Nigeria had a nationwide Caesarean use rate of 2%, and even the states with the highest usage rates recorded use of less than 10%. Bangladesh, Brazil, and the USA all reported using Caesarean in more than 25% of births on a national level, but the use of Caesarean varied between the administrative areas with the most and least common use by at least a factor of two. China and India both had significant regional variations, spanning from 4% to 62% for provinces in China and from 7% to 49% for inter-state variations⁸.

CAESAREAN IN INDIA: LOCATING FACTS AND FACTORS:

Serious public health concerns have been raised by the fact that the Caesarean incidence in India, one of the developing countries, has reached the WHO threshold of 15%. Other developing countries including Bangladesh, China, and Sri Lanka have also seen increases in the caesarean rate over the last 20 years. One of the main causes of this increased Caesarean rate is the increase of institutional deliveries, along with other contributing factors include unregulated healthcare facilities, primarily private institutions, and a growing trend of women selecting it. These factors are thought to be non-clinical and need more research in order to understand the increased frequency of caesarean deliveries. The conceptual framework depicted in Figure 1 examines the many factors driving the increase in Caesarean deliveries in India in accordance with WHO recommendations and guidelines⁹.

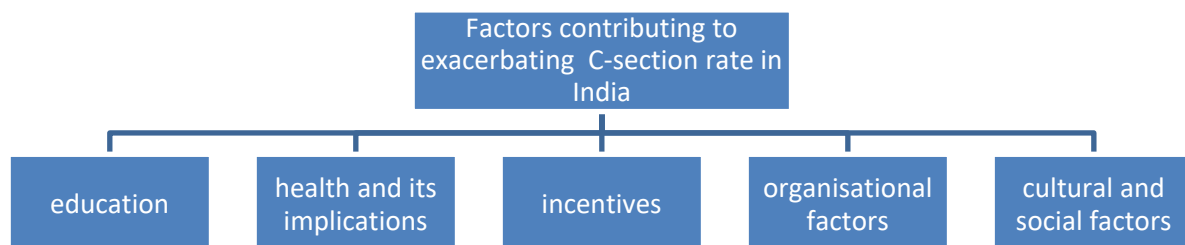


Figure 1; Factors contributing to C-section delivery in India

From this conceptual framework, it is clear that choices about birth methods in poor nations are significantly influenced by the income of women and their families. Lifestyle is an essential component of income, and due to the rising incidence of obesity in women and their propensity for caesarean births, particularly in metropolitan areas where physical activity is lacking.

Additionally, secondary infertile women who become pregnant worry about having a regular delivery because it could mean missing the opportunity to have a live baby. It is well known that a Caesarean birth is more expensive financially than a regular delivery. There is no question that a caesarean birth is quicker, easier, and more expensive than a typical vaginal delivery. For financial reasons, private sector healthcare institutions encourage caesarean deliveries, which creates an uncontrolled market. It is also important to note that as women's levels of education and literacy rise, their dread of suffering and their fear of medical malpractice lawsuits has increased. Religious practises that encourage numerous births need to be handled in order to lessen the need for unnecessary caesarean sections. Unnecessary Caesarean sections are currently a public health issue in India. To comprehend the potential causes of the elevated Caesarean rates in India generally and Telangana specifically, research concentrating on Telangana become the requisite of the time primarily because of the state's highest contribution to the rate of Caesarean to the National average. Due to India's population's diversity, there are notable geographical, religious, social, and other socioeconomic differences, all of which affect women's income, health, and educational opportunities. The increased use of Caesarean births is largely attributed to improved healthcare availability, caesarean delivery knowledge, and educational efforts. Along with an increase in hospital deliveries and more access to obstetric and gynecological care, caesarean deliveries have also been on the rise. A survey of 33 tertiary care centres by the Indian Council of Medical Research (ICMR) found that the average incidence of caesarean sections increased from 21.8% in 1993-1994 to 25.4% in 1998-1999¹⁰. The National Family Health Survey from 1992-1993 found that the greatest proportion of c-section births occurred in two states: Kerala and Goa¹¹. According to Kerala, the incidence of caesarean sections increased from 11.9% in 1987 to 21.4% in 1996¹². In many Indian regions, the proportion of C-section births has significantly increased. Only 2.9% of deliveries at the all-Indian level were c-sections in NFHS-1, but that number rose

to 7.1 in NFHS-2 and 10.2 in NFHS-3. States like Telangana, Kerala, Goa, Andhra Pradesh, Tamil Nadu, Punjab and West Bengal have a comparatively large disparity in the number of c-section deliveries between NFHS-1 and NFHS-3. From 1992 to 2006, the C-section incidence in these regions increased quickly. The highest rate (27%) was found in the state of Andhra Pradesh in 2005-06. (Even though the state's rate was as low as 4.4% in 1992-93). It is crucial to keep in mind that, compared to other states, states with fast demographic change have higher rates of caesarean births. This is much more evident through the data of c-section rate in Telangana. It is noteworthy to point out that there is a significant variation in the frequency of caesarean deliveries between rural and metropolitan areas in India. Urban regions have a greater percentage of Caesarean deliveries, highlighting the disparity in access to healthcare. It has been demonstrated that the proportion of caesarean births is significantly greater in urban than in rural regions, with over 30% of urban deliveries occurring in states like Telangana, Andhra Pradesh, West Bengal and Kerala⁹. With rural areas only making up 5.8% of c-section deliveries and metropolitan areas making up over 30%, West Bengal exhibits an intriguingly large discrepancy in c-section rates. Greater levels of women's choice, more sophisticated healthcare facilities to address risk factors, and the prevalence of the for-profit, private healthcare industry in urban regions may all contribute to higher rates. The growing institutionalisation of birth is positively correlated with a higher proportion of C-section deliveries. A medical intervention would only be used during hospital deliveries in order to improve results. It is a recognised truth that institutional delivery offers a chance to handle delivery difficulties. More significantly, it aids the doctor in determining whether a normal birth should be attempted or a caesarean section based on the severity of the complication. It is generally agreed upon in safe parenting strategies that assuring hospital birth and providing necessary obstetric care are the best ways to lower maternal mortality in all situations. Ironically, the current situation has led to an overuse or improper use of caesarean deliveries

in many nations despite the fact that this helpful medical technique improved the outcomes of different pregnancy complications. In many jurisdictions, commercial healthcare facilities perform more c-section deliveries than do public healthcare facilities. Caesarean births are occurring at extremely high rates in West Bengal, Andhra Pradesh, and Goa. In some regions like West Bengal, Goa, and Orissa the disparity in caesarean deliveries between public and private health institutions is very significant. However, it is challenging to definitively pinpoint the precise cause of such a situation. The high caesarean delivery rate in private healthcare institutions may be a sign of easier access to healthcare services, but it may also be a result of recent trends towards increased privatisation and the pursuit of profit over patient care.

In both metropolitan and remote areas, there is a noticeable difference between caesarean pregnancies and regular births. In Tripura, c-section deliveries account for 95.7% of babies in metropolitan regions compared to 54.7% in rural areas¹³. With c-section deliveries, taking the easier route may come with its own set of dangers and health threats. Excessive scar tissue development, infection (a risk that is twice compared to vaginal births), blood clots, and bladder damage could all be at risk. With each successive Caesarean, the risk of placenta accreta when the placenta attaches abnormally and bowel obstruction increases. One cannot deny the frequency of caesarean deliveries in urban environments when examining national data. In Andhra Pradesh, 26.6 percent of births in public sector institutions and 63% of pregnancies in the private sector involved caesarean sections¹⁴. In Chhattisgarh, C-sections were used in 57% of deliveries in the private sector and 8.9% in the state sector. The percentages for the country and metropolitan segments in the private sector were 54.5 percent and 60.4%, respectively. In the public sector, the proportions of rural and metropolitan areas were 7.1% and 17.8%, respectively¹⁴. In Bihar, where 39.6% of pregnancies in urban areas and only 3.9% of births in rural areas were caesareans, inequality between the urban and rural regions reached newer highs. WHO declared, "A caesarean section can successfully reduce maternal and newborn

deaths when it is medically essential. According to two recent HRP (human resource planning) studies, the number of maternal and newborn fatalities declines when the population's caesarean section rate rises by 10%. There is no proof that the fatality rate decreases when the rate exceeds 10%. The doctor would order an anticipated birth or a caesarean up until the 1990s. Furthermore, it was thought that after a woman has her first caesarean delivery, she should always birth her children using the same technique. But modern medical science has demonstrated that giving birth vaginally after a c-section is now both secure and acceptable. To prevent vaginal damage or discomfort in the perineum and belly for a few days after delivery, mothers may elect a Caesarean over a vaginal birth.

The need for a caesarean relies on a number of medical crises, including the mother's high maternal age, obesity, the baby's breech appearance, the baby's discomfort, and the mother's inability to advance through labour. These elements are regarded as danger elements that favour caesarean deliveries. The mother's age at birth, the size of the child at delivery, the weight at birth, the mother's BMI (body mass index), and complications during pregnancy are all taken into consideration as risk factors for the current study due to the dearth of information on these aspects in secondary data sets. The NFHS statistics show that these variables have an impact on caesarean section deliveries in India. The size of the infant at delivery is a crucial component for the success of a c-section. Bigger infants are more likely to require a c-section during delivery. Additionally, newborn weighing more than 3 kg are also at a high risk. It's interesting to note that even children born later are more likely than first-borns to be delivered via c-section. Delivery problems are considerably less common in higher-order pregnancies, claim Mishra and Ramanathan (2002). As previously mentioned, socioeconomic (demand) variables play a significant role in the desire for c-section deliveries. A number of socioeconomic variables have been taken into account in the current study as non-medical or demand-related factors for the efficacy of caesarean deliveries. The link between

socioeconomic variables and c-section births in India is very much in depth as much it is visible in its states as well. Telangana being the state in India, which is highly contributing in to its national average also possess a strong socio-cultural factor behind electing Caesarean. The mother's level of schooling and where she lives are the two most crucial socioeconomic variables for the success of a c-section. The research demonstrates that mothers with intermediate and higher education have much greater rates of c-sections than mothers with no education or only basic education. In India, a high percentage of moms with high educational backgrounds undergo a caesarean birth, which may be evidence that women with greater educational achievement are capable of making choices about their own health care.

Factors related to institutions: It is believed that institutionalising delivery is an efficient method to reduce maternal morbidity and death. The chance to handle birth-related complications in a specialised setting is offered by institutional delivery. A greater incidence of Caesarean deliveries is also encouraged by hospital births. The rates of births in public and private institutions have been examined for the current study. The NFHS statistics for three straight years show that, from 1989 to 2006, the percentage of c-section deliveries rose along with the rise in institutional births. More significantly, commercial healthcare institutions perform more caesarean deliveries than do public ones. The study of the relationship between pregnancies in private and public health institutions reveals that in India, nearly 39% of births occur in medical facilities, with private health facilities recording a higher proportion of births than public facilities. In India, the prevalence of caesarean deliveries rose from 8.5% to 17.2% between 2005 and 2016. While the rate of caesarean deliveries in private health care facilities increased from 12.3% to 40.9% during the same period, the caesarean delivery rate in public facilities increased from 7.2% in the NFHS-1 to 11.9% in the NFHS-4, indicating a significant distributional gap between the public and private sectors¹³. Understanding the characteristics of India's private sector, which offers a variety of health care services in both metropolitan and

rural regions, is crucial in this context. Hospitals in the private sector vary in size from tiny, family-run general clinics to one's offering super specialty tertiary care. Because there is no set price schedule and patients typically pay for services directly, consultation costs differ (ie, out of pocket). Additionally, the private health care industry in India is not well regulated, and due to expensive health care expenses, millions of Indians become impoverished each year. The amount of avoidable caesarean deliveries, presuming the private sector witnessed the mean national caesarean delivery rate, would be 1.67 million, with a possible savings of \$293.36 million³. According to one research, there could be 0.9 million unnecessary caesarean deliveries in India's private sector, which is in line with our results. 39 According to another research, 6.2 million needless caesarean deliveries costing \$2.32 billion were made around the world in 2008. Such preventable caesarean deliveries use a significant number of resources on a national and international level, have consequences for equality, and stand in the way of attaining universal health care. Within India, the South Indian states of Telangana, Andhra Pradesh, Kerala, Karnataka and Tamil Nadu have a substantially higher percentage of C-section deliveries ranging from 31.5% to 60.7%¹⁵. The state of Telangana with over 97% institutional deliveries essentially has an alarmingly high rates of caesarean deliveries at 60.7%¹⁶. Studies report alarmingly high-rated actually wanted Caesarean in India in general and Telangana in pretty specific¹⁷, which essentially is quite significant. Unwanted Caesarean result in inefficient use of health system resources, risk intra operative and post-operative complications and impacts the future health and wellbeing of the mother traditionally, evidence also indicates that unwanted Caesarean can also result in pretty high out of pocket expenses, debt and push the families into poverty, basically contrary to popular belief. There is also evidence pointing to the longer-term impact of Caesarean in mothers that is literally emerging in a subtle way. The worrisome increase in unnecessary or planned Caesarean is a public health issue that requires top priority. Decision-making within the system and family comprehension

are two of the most important Caesarean prevention techniques. Healthcare decision-making is described in the models for understanding decision-making as a collaborative procedure involving medical professionals, patients, and their families. In this respect, it is crucial to comprehend Caesarean decision-making from a multi-stakeholder viewpoint that includes mothers, family members, and healthcare professionals. The high frequency of Caesarean births in Telangana is supported by data from representative surveys like the NFHS and DLHS, but little is known about the significant factors that influence pregnant women and their families to choose Caesarean deliveries.

CAESAREAN IN TELANGANA; RISE/CAUSES/FACTORS:

Telangana in particular and India in general, this chapter emphasises regional and state-level differences in caesarean section deliveries and its related variables. By choosing specific socioeconomic, demographic, and maternal health-related explanatory variables, we discovered discernible variations in patterns and the probability of caesarean section birth in each district of the state chosen for the research. According to the current study's state-level trends, Telangana had a caesarean delivery rate that was nearly twice as high as the national average. The results of the current study demonstrate that all selected reproductive health-related explanatory variables (ANC visit, pregnancy loss, place of delivery, and pregnancy complication) and women's age, age at first marriage, birth order, place of residence, caste, educational attainment, and wealth status are significant predictors of caesarean delivery in Telangana. The findings are consistent with numerous earlier investigations carried out in India and elsewhere. Maternity care, pregnancy-related health variables, and socioeconomic factors were the main explanations for the use of caesarean sections in Telangana in the current research. There are differences in caesarean section delivery by rural-urban residents, illiterate-higher education, and poor-rich income classes, according to comparative patterns of caesarean section delivery by chosen explanatory factors between various districts of Telangana. Due to

a number of reasons, Caesarean section deliveries appear to be the new standard in Telangana: A survey commissioned by the United Nations Children's Fund identified a deficient public health infrastructure, a proliferation of private health care facilities, and even a perceived idea of prestige (UNICEF). The research found that families think that having infants delivered via C-section demonstrates that they have taken excellent care of their daughters and daughters-in-law. Partners were getting older and having fewer kids. Several families informed researchers that they wished to guarantee the security of deliveries. A woman's birth family as well as her nuptials family supported an easy, "safe" childbirth. In state hospitals, caesarean sections were used in 30% of deliveries; in private facilities, the incidence was 67%¹⁸. This chapter already discussed the factors associated with globally and nationally with reference to increase in the rate of caesarean deliveries. But the factors are further supplemented by the regional factors when we have a close look at the geographic level. Telangana, being a state in India also do shares the general factors causing increase in caesarean rate across the state as well as extent the list by adding few more causes resulting in the same and keeping Telangana high in terms of caesarean rate. The analysis of in-depth interviews and focus group discussions with post-natal mothers, husbands, mother-in-law, mothers, ASHA workers, Staff Nurse, and medical officers yielded the following themes. There is not having a single prominent cause behind the increase of caesarean in Telangana. Instead, the caesarean preference was found to be largely influenced by a multitude of reasons including that pertaining to individual health, personal, cultural, and health system and associated service reasons. Women need to be able to perceive their requirements in order to use and receive quality care. They also need to be able to pursue, contact, pay for, and interact with the healthcare system. Women's health views, education, confidence in the medical system, and expectations all affect how well they can identify their own requirements for medical treatment. Healthcare services for women must be gender- and culturally sensitive. Additionally, they require the freedom to obtain treatment and

a supportive sociocultural environment. Access and usage are also influenced by additional elements like awareness of available health services, geographic restrictions, the hospital's image, mobility, self-efficacy in expressing need, and socioeconomic position. The significant regional differences in caesarean rates are due more to societal than to medical factors. The way a mother views care affects how she uses it and searches it out. Moms who favor caesarean think it is safer for both the mother and the infant¹⁹. In families with high and medium wage levels, many women choose caesarean even when there is no medical justification. The number of Caesarean sections performed at the mother's request (CSMR) has increased recently. One of the major causes of this has been cited as tokophobia, an extreme dread of giving birth, which affects percent of mothers who go for an elective caesarean. While these shows the evidence in demand side of the caesarean, the increased rate of caesarean in Telangana also do have the supply side characteristics that resulted in the exacerbation of the rate of caesarean across the state. Supply-side variables are as follows: Access to treatment is made possible by accessible, acceptable, available, accommodating, cheap, and adequate health services. The treatment's approachability and approval are influenced by the treatment's openness, the efficacy of the information being delivered to the target audience, professional ideals, tastes, and social and cultural standards. Additionally, care needs to be accessible, cheap, and suitable. Some factors that affect this include the facility's capability and resources, the demographics, habits, and ease of the healthcare professionals, the type of facility, and the payment method. The health system's healthcare workers in Telangana are crucial in deciding the rates of caesareans. After health care system determinants (like concern about malpractice lawsuits and resources) and clinical characteristics (like personal convenience, clinician demography, confidence, and skills), this study compiled clinicians' views of determinants that influence caesarean rates and found that clinicians' personal beliefs (including professional values/philosophies) were the most significant deciding factors. caesarean is viewed by many

obstetricians as a better choice that lowers risks and prevents complications. According to studies, obstetricians frequently opt for caesarean in ambiguous circumstances and when they anticipate risks like urine and fecal leakage and pelvic floor prolapse. These figures demonstrate the value of the clinician's assessment and view of the birth situation. The findings from Telangana also support the argument, especially when the rate of c-section is comparatively high in private institutes with regard to public institutes.

In the context of Telangana, the multicausal factors do holds both supply and demand determinants in terms of caesarean delivery as like we mentioned above. Figure 2 represents the graphical representation of factors associated with increasing caesarean in Telangana based on the supply and demand determinants.

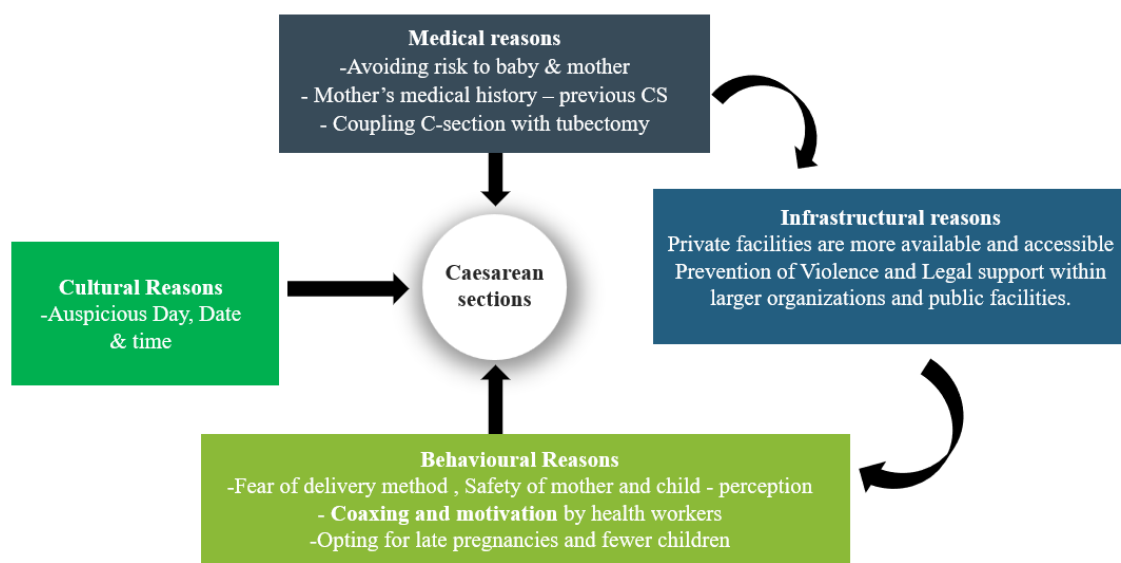


Fig.2. Reasons for C-section deliveries

Medical reasons:

In Telangana, labour stoppage, foetal heart rate issues, foetal malposition, multiple gestations and probable foetal macrosomia are the most commonly mentioned causes of medically

required surgical deliveries. Notably, many of these have highly varying, occasionally random, and frequently subjective clinical classifications. For instance, the meaning of an abnormally lengthy labour differs depending on the clinical context and has evolved over time. There may be chances to lower the rate of caesarean sections because of differences in risk evaluation and societal conceptions of childbirth across healthcare systems, at least in part. It might take longer and more uterine contractions for the infant head to connect and trigger cervical dilation because of how closely the mother's pelvis fits the new born's head. The duration of labour also varies greatly within humans and within person to person. It follows that it is not unexpected that the durations of both the first (uterine contractions and cervix dilation) and second (pushing the baby out) phases of labour are also highly varied given all of the ways in which women and infants may differ. It is challenging to support a random cut-off point (e.g., 12 h for primiparas and 7 h for multiparas) for the suggestion of surgical birth because maternal parity, age, and body weight all affect labour duration in humans. previous research on C-section founded that, the incidence of caesarean birth was decreased by just over 50% without affecting neonatal or maternal morbidity when the time restriction for the second (pushing) stage of labour was expanded by a third beyond what is considered to be "prolonged second stage of labour" (from 3 to 4 h)²⁰. Labor seems to last longer now, possibly as a result of evolving standards of care, assessment techniques, or maternal traits (such as older age and higher BMI). Cultural standards have a distinct impact on how long a job should last than how sleep habits, mealtimes, and other parts of our biological existence are culturally built into norms of behaviour. The evolutionary medicine suggestion of careful waiting before inducing labour with oxytocin, rupturing the membranes, or switching to surgical delivery may be suitable in the context of labour management.

The foetus or mother may be at risk for compromised health or life when labour lasts for an overly lengthy period of time (however that may be described). The deliveries which are

prolonged and complicated are usually referred for a C-section to protect the mother and baby. One of the health workers reported it as follows.

“In some complicated cases, if the fetal sounds are low, c section is the only way for safe delivery. It is good for baby also. Meconium cases are dangerous and families blame us if we don't opt for sections” (A2. FGD_ANM_Place-)

But before turning to surgery, many of the causes of protracted labours can be addressed in other ways. For instance, prolonged labours and stopped or ineffectual labour contractions are frequently caused by maternal anxiety. Numerous studies have demonstrated that good prenatal care and mental support during delivery can shorten labour time and improve uterine function by reducing stress. Walking during labour can shorten it, as well as make the mother more likely to put off asking for a surgical birth and reduce her pain. Walking during labour and other suggestions based on evolutionary medicine may help to reduce the number of women in labour who seek surgical births. Additionally, any additional external elements that increase a woman's satisfaction during labour and delivery are likely to improve the quality of the birth. In addition to lowering the number of surgical births, attempts to mimic the ancestral settings of delivery (such as in a familiar location with familiar people) without endangering health can have a beneficial effect on the birthing process. According to evolutionary medicine, the hospital setting for a typical delivery is frequently incompatible with the setting that promotes healthy birth results. Consider how a normal home birth is quite different from a delivery suite, which typically has low lights, calming music, and familiar faces. A delivery suite typically has glaring florescent lights, loud beeping machinery, and strange faces. Obstructed labour can also occur when the baby is unable to pass through the birth canal despite having enough uterus contractions. The mother's life, the baby's health, and both are possibly in jeopardy in this circumstance. The mother is at risk for uterine rupture, sepsis, injuries to the rectum and bladder, as well as the particularly problematic risk of an obstetric fistula, where the region

between the vagina and rectum is weakened and could, in the worst-case scenario, result in lifelong impairment. Damage to the baby's brain and nerves as well as asphyxia-related mortality are risks. In regions of the world where safe surgical birth is infrequently accessible, the risk of mortality and impairment is disproportionately high, serving as a reminder that in some regions of the state, there is a need to follow an increase in the rate of C-section delivery.

Another cause of labour obstruction is cephalo-pelvic asymmetry (CPD). CPD is the obstetric issue, despite not being the most frequent cause of surgical birth. Human infants with large heads and bodies must fit through the narrow, twisted birth canal, and in some circumstances, the pelvic is too small or the baby's head is too big for normal delivery without surgery. The most frequent cases are linked to rickets, fractured pelvises, diabetes, baby post maturity, and abnormal pelvic shapes. Additionally, women who are shorter in height are more susceptible to CPD. Given the strong relationship between stature and diet, there may be a connection between poverty and CPD-related labour obstruction. The prevalence of CPD may have been lower in the human race before the advent of agriculture due to dietary changes that have likely increased neonatal size and, consequently, increased delivery difficulties (about 10,000 years ago)^{21&22}.

Although talks of the trade-off between neonatal size and pelvic size typically focus on how the neonatal head passes through the birth canal, humans have wide, rigid shoulders that can lead to shoulder dystocia, which is a reasonably common source of birth injury in people today¹⁹. Shoulder dystocia is not known to be one of the risk factors for medical birth because it usually develops so late in the labour process that a caesarean section is rarely used to treat it. We bring up shoulder dystocia because, if left untreated, it can result in perineal damage, postpartum bleeding for the mother, and neuromusculoskeletal injuries for the newborn. The abnormal foetal heart rate, which is typically detected by computerised foetal sensors today, is another frequently occurring cause of caesarean section. Foetal heart rates can fluctuate as a

consequence of labour contractions, but they typically experience brief accelerations and decelerations. This variation is typical and anticipated up to a point. Extreme heart rate fluctuation and extended (>2 min) decelerations are frequently considered indicators of foetal distress, and at this stage, action is typically advised²³. Although heart rate variation may simply represent an erroneous reading of electronic foetal monitors and even if correct, may not be an accurate sign of distress, rapid delivery is sometimes viewed as a high priority. The generation of stress hormones by the mother, which impacts embryonic heart rate, is one reason for foetal heart rate anomalies, though there are many others that may benefit from medical treatment. Continuous labour assistance lessens mother worry, which lessens foetal stress. This may lead to a decrease in needless procedures, such as surgical birth. The need for a caesarean section may be indicated by issues with placental implantation (such as blocking the cervical opening) and early detachment, which can cause a number of detrimental effects, like postpartum bleeding. Although implantation and separation issues may have been common throughout much of human history, they are now more frequent as a result of the uterus's medical scarring from earlier caesarean sections and some kinds of abortions, for example. Humans have highly invasive placentas that directly communicate with the mother's vascular system to provide the foetus with the nutrients and air it requires²⁴. The human placenta experiences a secondary incursion, also known as burrowing in, in the third month after initial insertion, when brain development accelerates and nutrient and oxygen requirements soar. Preeclampsia can occur when this secondary incursion is ineffective, restricting the transport of nutrients and oxygen later in pregnancy. The price is frequently a weakened pregnancy or even the loss of the mother or the foetus. Preeclampsia can only be treated by having the baby delivered, which is typically done today via abortion or caesarean delivery.

Maternal risk factors:

Mothers with poor nutritional status, prolonged labor and pre-existing health conditions were advised to undergo Caesarean by the physicians. The rise in maternal age looks to play a significant part in the incidence of caesarean deliveries. Pregnancy in a lady over 35 has been regarded as a high-risk baby for some time. The chance of foetal congenital abnormalities, hypertension, and even diabetes mellitus increases with mother age. Age alone does not necessarily indicate the need for a caesarean birth; rather, the frequency of particular risks in this age group may do so.

“Mode of delivery is planned based on risk factors, if no risk factors, we will promote deliveries in PHC. If High risk factors like if 1st is section, hypertension, short stature, any family history then we will be referring her to area hospital or district hospital”. (Quote from Medical Officer)

Some maternal illnesses raise the likelihood of risk factors that might require a caesarean section. The first of these is diabetes mellitus, also known as gestational diabetes which, if left unchecked, can cause babies to be born weighing more than 4000g²⁵. The likelihood of women with diabetes becoming pregnant or developing gestational diabetes is growing as a natural consequence of the rising incidence of Caesarean worldwide²⁶, not just in Telangana. Additionally, fat and overweight are linked to additional dangers like hypertension. Foetal macrosomia is thought to be a subjective sign, so this element may be influencing the caesarean rate. The rise in assisted reproductive interventions, which are increasingly resulting in multifetal pregnancies, is another widely debated explanation for the reported increase in caesarean deliveries. Increased caesarean rates are a direct result of reproductive treatments, but mother worry about her child's health may also be a significant factor.

Specifically, it was observed that caesarean was a preferred advice for the mothers with a previous history of caesarean. One of the health workers reported as follows.

“If the first case is caesarean, then the second will be caesarean too.” (A3. Patancheru)

Although having a previous caesarean section does not mandate having one during subsequent pregnancies, moms and doctors' feeling of security appear to be the driving force behind multiple caesarean births. The results of the field research also provided evidence to back up the prior claim. The medical officer who was interviewed acknowledged that there is a risk of uncommon but serious adverse outcomes with vaginal birth after a previous caesarean delivery (increased rate of perinatal deaths and hypoxic brain damage), whereas the risks are more common but less serious with repeat caesarean (e.g., increased rate of children with impaired respiratory adaptation).

An interesting observation was made with respect to coupling caesarean with family planning procedure of Tubectomy. It was observed that once the desired number of children (often two) were reached, some mothers prefer to opt for caesarean to simultaneously undergo Tubectomy. One of the health workers reported in following ways

“Now in these days after two children they are going to tubectomy. Only for getting tubectomy they are going for c section. At the same time delivery and tubectomy both will be finished. So, they are preferring caesarean.” (A 4. Huzrabad).

Non-medical reasons:

There are a number of non-medical causes for caesarean sections, though it is difficult to tell the difference between the two. There are frequently errors in determining the medical necessity for caesarean sections, as evidenced by the previously mentioned arbitrary criteria for labour duration. Along with rises in labour induction, augmentation, and epidural use practices that have also been the topic of examination regarding their medical necessity,

caesarean sections have risen. Women who experience unrelieved dread or nervousness about giving birth may opt for (or consent to) a caesarean section rather than give birth naturally. The causes span a variety of socioeconomic, cultural, political, legal, and personal motives, such as fear of litigation (in India, where medical malpractice lawsuits are prevalent), financial incentives for doctors or hospitals, physician's preference or convenience, and increasingly, maternal request in many samples chosen. Women may opt for a caesarean section due to worries about discomfort and lack of control, harm to the urinary or rectal system, tissue damage from trauma, and trauma that might reduce their sexual attractiveness to their companions. Caesarean section has been justified by the desire to avoid an inauspicious day (such as Friday the 13th or February 29th) or to have a newborn on an auspicious day. While these factors may matter to women, their doctors, or the healthcare system, elective caesarean sections typically do not offer mothers or their infants a clear health advantage that might outweigh the health risks that they both face as a result of the procedure.

Cultural factors:

The choice to have a caesarean section was affected by a number of significant cultural factors and ideas. The mothers' and their family's choice to have a caesarean section was influenced by going to the mother's home for the first birth and planning to deliver on lucky days (such as Deepavali, Dusshera, etc.). The answers also took the arrival date and time into account. Going to the mother's home for the first delivery is a traditional practice in Telangana and Andhra Pradesh. The following was stated by a health worker from the Nalgonda region. The fact that the mother underwent a Caesarean was also interpreted as a sign of good parental care.

“Women go to their mother's place for First delivery. There they go to private hospital where they don't try for normal delivery” (A3_SN_Nalgonda)”

Indians have always sought the advice of their gurus, who typically consult the stars to determine the ideal hours for weddings, business transactions, or even when to board a long-distance train. When the stars are in the right alignment, astrological timing is so crucial that thousands of bridal rituals take place on the same day in states like Telangana and Andhra Pradesh. For millennia, Indians have consulted astrologers to determine the ideal moment for conception. With increasing wages and easier access to healthcare, many people are now consulting their gynecologists about the best time to have their children. Even the minute of birth matters in Hindu horoscope. The precise time of birth is frequently mentioned in matrimonial advertisements and on websites where Indian families look for compatible partners for their kids to determine cosmic affinity. Theoretically, a few minutes here and there could make or break a person because the good and evil planets are constantly waxing and waning, resulting in both amazing and terrible combos every day. Some women assert that worries about potential problems from a caesarean section are outweighed by the significant potential benefits of having a child who is blessed by the stars. The proper timing, according to astrologers, can produce anything from a kid who is more attractive to one who is silent or obedient or even a good performer. However, according to Bombay astrologer Geetanjali Saxena, most parents aren't that precise. They pray for the ideal moment for their kid to succeed in everything. Parents today are having fewer children, so they want the finest for them. It was observed that some families preferred Childbirth on specific days and times. One ASHA worker with years of experience working with pregnant mothers and their families reported the following.

“We also suggest them to go through normal delivery, for normal delivery baby and mother will be healthy. (But) Most of the people looking for an auspicious day. This is the main reason for c- section” (ASHA 3. Huzrabad).

Behavioural reasons:

Despite the dangers of caesarean birth and the numerous advantages of vaginal delivery, a significant number of caesarean sections are still carried out without a valid medical reason. The significant variance in caesarean section rates across the state and between various clinical contexts suggests that, in addition to the previously mentioned societal considerations, there are additional variables that impact birthing choices. Based on a meta-analysis of 16 comprehensive studies published between 2006 and 2016²⁶, recently reviewed the literature and identified three main causes for seeking a caesarean section. Social standards, emotional experiences, and personal encounters were among the themes found. The desire for a caesarean section by mothers is commonly mentioned as being motivated by fear of or highly unfavourable attitudes towards childbirth. The same prevalence of tokophobia is acknowledged by the research in Telangana regions. Women with poor mental health, low levels of social support, and, most significantly, a prior negative delivery experience were found to have notably high rates of fear of childbirth. Concern for the unborn child, aversion to pain, past or present psychiatric or mental issues, sexual abuse and other sexual problems, issues with prior pregnancies or births, a lack of societal support, and ignorance about birth are a few of the reasons given for fearing labor. Fear typically has a negative relationship with one's level of schooling and income. Among the results are expressions of dread that their bodies won't function as they should, that they won't be able to push effectively, that they'll tire out during labor, and that they'll feel helpless. In most instances, these anxieties could be reduced by receiving extensive childbirth instruction and ongoing social support throughout labor and delivery. The respondents' responses to the query, "*Does dread of childbirth cause caesarean sections?*" recognise the proportional connection between the two. Fear has also been mentioned in international research as a factor in planned caesarean sections. According to a continuous cohort study conducted in six European nations, women who are fearful of delivery

have nearly double the likelihood of having multiple pregnancies and nearly treble the likelihood of having a caesarean section²⁷. Sleep deprivation in the late stages of pregnancy is frequently linked to fear and worry about giving birth, which is linked to the chance of caesarean section. Women who voice fear of childbirth have substantially higher odds of needing an emergency c-section. On the other hand, it has been demonstrated that, in some circumstances, refusing a woman an elective caesarean section when she firmly wants one can worsen postpartum depression. Another common observation from the Focus Group Discussions includes the fear of Labor Pains. Specifically, the health workers reported that the primiparous (1st time mothers) and their families sometimes fear the normal delivery process and pressure the doctors to undertake a Caesarean.

“Few of them, will not be able to tolerate pains, there is fear among pregnant women of young age group and they themselves ask for c section saying that they are not able to cope up with pains” (A1. FGD_ANM_Place-)

Moreover, it was also observed that due to the fear of complications, the family members of the mothers pressurize the doctors and healthcare staff to perform C-section. One health worker reported the following

“We will get phone calls to do caesarean as early as possible, to avoid unbearable labour pain. Sarpanch, MPTC, ZPTC and other leaders, whoever they know they make them call us, recommending us to perform the surgery as soon as possible. They will call and force the doctors here. With no choice left, doctors perform C-Section” (S5_SN_Medak)

Families perceive that CS are safer and most convenient way for mothers to deliver without pain, early mobilisation and having access to health care professionals in facilities to ensure safety of mother and child.

“Many are like that. When they come for ANC checkups, they ask us for C-Section saying that their daughter can’t bear the pains.” (P2_SN_Nirmal)

“Mainly attendants ask for section, patients are fine. Due to attendants, we have more C-sections.” “They are unable to see the women suffering from labor pains” (P1. ANM_DH_Nalgonda)

“Husbands directly fight with us, ask us why we don’t do operation for their wife.” “Why don’t you do operation, who is responsible in anything bad happens to the baby inside? - they ask us” (P3. ANM_DH_Nalgonda).

Infrastructural reasons:

The amount of CS done has been linked to the health system's capacity and resources. Some of the factors that determine this include the number of hospitals, hospital beds, and hospital goods per population. Regardless of medical necessity, there has been a tendency for the number of invasive maternity operations to increase as system capacity increases. One research study that examined caesareans in developed and developing nations discovered that increasing hospital beds by twofold was associated with an increase in caesarean rates of 26.8% and 15%, respectively²⁸. Private hospitals are placed in top infrastructure rank when compared to public hospitals. One of the major drivers for Caesarean deliveries in rural areas are lack of adequate infrastructure in public health facilities. Specifically, it was observed that the referral centers were not at an accessible distance or human resources were not available due to which the mothers opt for private facilities often undergoing a Caesarean delivery. According to the

National Family Health Survey-5 (NFHS-5), the number of Caesarean deliveries at private clinics in Hyderabad and other Telangana regions over the previous five years was alarmingly high. It has risen from the NFHS-4 high of 74.5 percent to 81.5 percent. The proportion is 82.7 in the state's metropolitan regions compared to 80.6 in its rural areas. When compared to the national norm, Caesarean deliveries are also more common in public health institutions. In state health institutions, it is 44.5%. At the national level, the Caesarean rate is 14.3 per cent in state health institutions compared to 47.4 per cent in private hospitals. Although the majority of the income impact was mitigated by the place of birth, i.e., delivery occurring in private hospitals, the effect of income on Caesarean delivery was nearly six and a half times higher than that of the place of delivery. A significant number of samples also acknowledged that access to private hospitals is primarily influenced by household or family wealth because private hospitals in India have quite expensive costs for doctors, hospitalisation, etc. that everyone in India cannot pay. As a consequence, there are more instances of Caesarean deliveries when wealthier families have convenient access to the pricier private hospitals.

Receiving ANC services only at private institutions had a significant impact on Caesarean delivery, though most of it was mediated by the location of birth (in private hospitals). This research also acknowledges that choosing to give birth in a private hospital after getting ANC treatments there results in a caesarean delivery. This is because during prenatal visits, relationships are formed between clients or expectant mothers and private gynecologists or obstetricians, which encourages mothers to give birth at the same hospital or by the same physician. As a result, there is a higher likelihood of caesarean delivery because private hospitals play a role in performing caesarean deliveries.

In Telangana, with a greater percentage of deliveries happening in Private Hospitals. The District Medical and Health Officer in one of the study areas who oversees the healthcare delivery at the district level reported the following.

“Women go to their mother’s place for First delivery. There they go to private hospital where they don’t try for normal delivery” (A3_SN_Nalgonda)

Additionally, the lack of availability of Gynecologists, Infrastructure, timing of the deliveries and distance from referral centers also contributed to delivery in Private Sector, a significant proportion of which were Caesarean.

“In government facilities, doctors will not be available at night, only one gynecologist; sometimes doctors refer to Gandhi and Niloufer hospitals, but people see the distance, so they go to a private which is near.” (A3. Patancheru)

Health insurance coverage did have a substantial impact on the location of birth in the path models; however, previous global research had found a favorable correlation between having health insurance and having caesarean deliveries in private facilities²⁹. Obstetric practice is increasingly risk-focused and protective when it comes to the birth method. This must be viewed primarily as a result of the expansion of rules and laws. Damage lawsuits can currently cost millions of dollars, as they do around the globe and particularly in India. The dread among physicians regarding the blame culture grows as a result of these amounts, specially to avoid legal challenges. Through the interviews of doctors and other healthcare providers, it was inferred that Caesareans are conducted by the doctors fearing any violence that may be caused by the family members of pregnant women in the event of any unwanted outcomes during the normal delivery process. Moreover, the tedious process of maternal death review and audit causes the doctors to encourage Caesarean.

“We can’t predict whether the baby has cord around neck, and if have still birth occurs, then we have legal issues”. (Quote from obstetrician).

CONCLUSION:

The causes and factors of the increasing Caesarean rate in Telangana are conglomerated in nature. It includes but not limited to Personal & Family reasons such as: Having a smaller family, having a late pregnancy and child, The primary concern of safety of mother and child, Inability to bear pains, Faster processes and personalised care at a private facility, Mothers/mothers-in-law want painless births for their wards. Community reasons such as Previous history of c-section among siblings and Peers in the community, Live Demonstration in the community, Higher Socio-Economic status and Education Level, and Status symbol to have a caesarean in the community. System reasons such as; Acute Staff shortage & distribution at all care levels, High Case Loads; Managing OPD, Lack of training and enabling environment of health care staff, Limited time and capacity to attend to pregnant woman in labour, Absence of clear cut protocols for triaging, referral and care Empowering local health care staff for decision making, Managing expectations during false pains, Fear of medico-legal issues and own safety/protection, Specialists subjected to influence & pressure at work. Policy reasons such as; Guidelines for 3rd & 4th ANC visits at higher facilities for all, Gap in interpretation of advice leads to lost to system, Increased registrations due to KCR kit institutional births. Medical and other reasons, such as Previous LSCS surgeries, are the biggest indication. Tentativeness and no support facilities for VBAC, Avoiding Consumer issues like violence and litigation

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CHAPTER 5

DEVELOPING A FRAMEWORK AND CONCEPTUALISING A NON-CLINICAL INTERVENTION BASED ON NON-MEDICAL REASONS TO REDUCE UNWANTED AND UNNECESSARY C-SECTION RATES IN TELANGANA STATE.

1. INTRODUCTION:

Globally, there is significant worry over the tendency of excessive caesarean sections due to potential risks to the mother and her child connected to an avoidable caesarean delivery. Among these concerns include preventable maternal problems such infections, hemorrhages, and associated with the use of anesthesia or blood transfusions, as well as newborn morbidity, such as childhood obesity, asthma, and respiratory issues. Additionally, caesarean sections may cause the mother to experience more issues in the future. Problems with placental implantation, uterine rupture, and the need for a hysterectomy are examples of pregnancy difficulties¹. Significant health care expenses are also linked to high rates of caesarean sections, which can put a significant strain on healthcare systems. The rates of caesarean sections are rising due to a number of circumstances. A higher maternal age at birth, maternal obesity, and an increase in the occurrence of multiple pregnancies are some of the clinical factors contributing to the growing rates. The magnitude of the increase in caesarean section rates cannot likely be explained by these causes alone, nor the significant differences between hospitals, regions, and health care providers. Research has indicated correlations between the frequency of caesarean sections and non-clinical elements, including variations in healthcare provider practices, anxiety about malpractice lawsuits, and organisational, financial, social, and cultural aspects². Worldwide, a rising percentage of caesarean procedures are preventable and not medically necessary.

To combat the growing rates globally and stop the harm that excessive usage causes to expectant mothers and babies of this process, the World Health Organisation (WHO) released updated guidelines for non-clinical measures in 2018 to cut down on needless caesarean procedures³. According to this recommendation, non-clinical interventions are those that are used in beyond the standard clinical encounters between a pregnant patient and a physician. Health care practitioners (clinical practice recommendations), women (birth preparation programs), or health organisations (various payment schemes for caesarean sections) could constitute the targets of the interventions. The suggestions are meant to guide the creation of national and subnational policies and procedures. To cut down on needless caesarean deliveries in nations with high, middle, and poor incomes. The new recommendations must be integrated and implemented in conjunction with other relevant WHO guidelines, such as those on prenatal and intrapartum care for a happy delivery experience.

Patient factors include women seeking maternity care who do not recognise the importance of recommended measures. Communities, families, or care. Sensitisation at the community level to spread knowledge about the dangers of unwanted caesarean sections and the advantage of following advised procedures is one proposed tactic to close this gap. Delivering such a strategy in a clear and consistent manner through locally relevant communication, education, and information resources and exercises.

The recommendations in the guidelines may be difficult to implement for a number of reasons. First, healthcare professionals' unwillingness to alter their methods, combined with ignorance of the benefits of recently suggested therapies. Among the strategies recommended to overcome the challenge are: enlisting local advocates or opinion leaders to encourage the application of the guidelines recommendations; offer information or instruction that enables the targeted healthcare providers to incorporate the suggested behaviour into their existing practices; and collaborate with professional associations and training institutions to implement

the guidelines so that the recommendations can be incorporated into preservice and in-service training curricula. Successful implementation strategies should be documented and shared as role models with other implementers. Second, the number of senior clinicians (obstetrician-gynaecologists) and their working arrangements may make it more difficult for requiring a second opinion before performing a caesarean section. One approach to overcoming this difficulty is to create local, case-specific protocols to guarantee by organising teams with clear duties and a common objective of lowering unnecessary caesarean procedures, as well as by promptly and appropriately reviewing senior clinicians for caesarean section indications. Third, patients can request caesarean sections, which would prevent them from following the advised evidence-based procedures, which might be resolved by offering specialised patient education resources and educating medical personnel concerning how to deliver patient education. Fourth, financial incentives such as greater compensation for caesarean sections than vaginal deliveries may make adherence more difficult for births. Removing or changing the financial incentive while incorporating important stakeholders could be one tactic to deal with this, such as policymakers and health insurance providers. Fifth, poor collaboration between healthcare professionals, including poor communication between maternity and operating room personnel, and occasionally, challenging interactions between obstetricians, midwives, and family physicians, might make it more difficult to follow recommended practices. A suggested strategy would be creating teams with clear responsibilities and a common objective of cutting down on redundant caesarean sections.

Health care organising factors include 4 major categories. The first is a shortage of personnel with the knowledge and abilities needed to carry out, oversee, and encourage suggested practices. Redistributing health care resources, where and when they are needed, is one potential approach to overcome this deficit as much as possible, and to think about role-shifting when necessary. Budgeting and strategic long-term planning should also be considered in order

to supply the required resources. The second is a lack of physical space, such as a location for counselling or training on birth preparation. Meetings and workshops for training. Adapting implementation tactics is one suggested way to get around this obstacle must adhere to the limitations of the current systems and use strategic long-term planning and budgeting in order to supply the required resources. Third, a shortage of necessary resources, such as locally relevant knowledge and instruction as well as communication resources to aid with training. Creating plans to enhance supply chain management in accordance with regional needs, like creating procedures for acquiring and keeping the supply inventory up to date, is one of the recommended remedies. Fourth, a lack of methods for managing health information that are intended to record and keep an eye on suggested practices, which might be resolved by offering suitable incentives to document the required data. Additionally, in this instance, smart long-term planning and budgeting to supply the required resources are necessary to invest in resources for health information management systems. To better understand the factors that influence birth choices, further research is required so that the structure and content of educational Interventions can be customised to address pertinent factors that influence caesarean deliveries.

2. METHODOLOGY

2.1. Factors considered for the development of the intervention include System factors:

To study the impact of the DBT-KCR kit on institutional births and the resulting rates of C-sections. Studies have been conducted to determine whether the DBT-KCR kit's promotion of institutional deliveries has also led to a corresponding rise in the rates of C-sections. Considered and invested in capacity building in enhancing the skills of employees in current locations through ongoing training initiatives and awareness of more recent advancements in the field.

Training and empowerment are required to manage the expectations of pregnant mothers and their families, as well as the provision of health care personnel at the community and primary levels. Provided physicians with assistance and training to do VBAC in circumstances involving prior C-sections.

Interventions aimed at women or families:

2.2.1. Workshops for childbirth education: Content included labor anxiety and discomfort, pharmacological and non-pharmacological pain management strategies, the benefits and drawbacks of vaginal delivery and C-sections, and the indications and contraindications of caesarean sections.

2.2.2. Programs for relaxation training: Content included Group discussions on pregnancy-related stress and anxiety concerns as well as the use of deep breathing and relaxation techniques.

2.2.3. Psychoeducation: Content included information about anxiety and worry, the fear of childbirth, the normalisation of personal reactions, the stages of labor, hospital procedures, the birth process, and pain management from a midwife and therapist.

2.2. Interventions aimed at healthcare professionals:

Using clinical guidelines, which required a second opinion for the indication of a C-section.

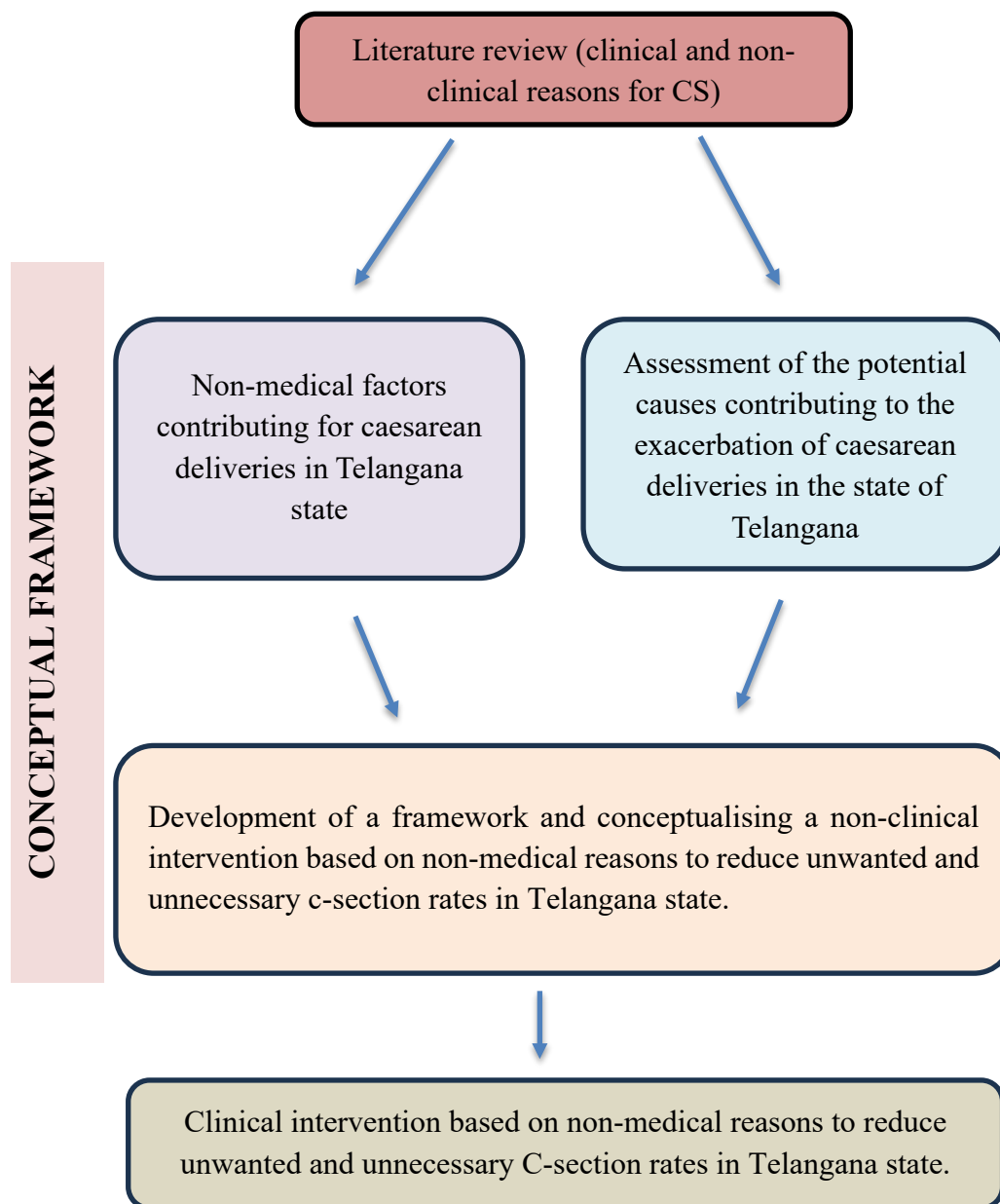
Audit and feedback about C-Section practices. Education to health care providers by Leaders (obstetrician/gynaecologist).

2.3. Interventions directed at medical facilities or organisations:

Opted for the Collaborative midwifery-labourist model. The sampling modality used to get representative samples among the high, medium and low 3 selected districts based on rates of C-section criteria was visited, and 30 mothers due for delivery in the next 6 months. After the implementation of the Interventions, Regular follow-up was done to assess the interventions effectiveness. Employed a combination of interventions and tactics that are specific to the local elements that influence inappropriate C-section use, such as perceptions of the procedure's effects, professional standards and incentives, and organisational and financial aspects. Monitored and assessed the C-section rates as well as maternal and perinatal outcomes during implementation.

2.4. MODEL DEVELOPED:

S/no	Material/resources	Execution	Target
1.	Health education (childbirth pain relief, relaxation and psychoeducation, exercises, nutrition).	Audio/Video Pamphlet (Individual)	Pregnant women & family (mother & husband)
2.	Follow-up training & empowerment to manage pregnant mothers and family.	Pamphlet	ASHA workers
3.	Education program	Pamphlet (Group Discussion)	ANM & midwifery
4.	Clinical guidelines and feedback about C Section practices	Discussion	Doctors



2.4.1. Health education included the following exercises/diet, and nutrition:

Material attached annexure number: ANNEXURE: H

3. DISCUSSION:

The global increase in caesarean section (CS) rates has generated concern within the medical and public health communities. While CS is a life-saving procedure when medically indicated, the growing proportion of non-medically justified caesarean deliveries has been associated with short- and long-term risks for mothers and infants, as well as increased healthcare costs (WHO, 2018). Addressing this challenge requires strategies beyond clinical interventions. Non-clinical interventions, defined as those applied independently of direct clinical encounters, have emerged as an important avenue to address the complex drivers of unnecessary CS.

Educational programmes for women during pregnancy represent a cornerstone of non-clinical strategies. Childbirth training workshops, nurse-led relaxation training, psychoeducation, and couple-based psychosocial programmes have shown potential in reducing women's fear of childbirth and empowering them to make informed decisions (WHO, 2018). Such interventions foster confidence in vaginal delivery, dispel misconceptions about CS, and promote shared decision-making. However, the evidence remains context-specific, with most studies conducted in high- and middle-income settings, limiting the generalizability to low-resource contexts. Additionally, effectiveness is influenced by cultural beliefs, health literacy, and the quality of programme delivery.

Healthcare providers play a central role in decision-making around CS. Evidence demonstrates that implementing clinical practice guidelines, combined with mandatory second opinions and structured audits with feedback, significantly reduces unnecessary caesareans (WHO, 2018). These interventions improve adherence to best practices, minimize provider biases, and mitigate the influence of non-medical factors such as defensive medicine and convenience. Their effectiveness, however, depends on adequate staffing, institutional support, and professional accountability structures.

At a systemic level, collaborative models of care between midwives and obstetricians, as well as financial reforms equalizing physician reimbursement for vaginal and caesarean deliveries, have been proposed. While theoretically promising, the certainty of evidence supporting these measures is low, and their feasibility varies across settings (WHO, 2018). Implementation challenges include stakeholder resistance, resource constraints, and potential unintended consequences such as underuse of medically indicated CS. Despite these limitations, organisational strategies highlight the importance of system-level alignment in reducing unnecessary surgical interventions.

Collectively, the evidence illustrates that no single non-clinical intervention is universally effective. Rather, a multifaceted approach tailored to the cultural, institutional, and economic context is required. Moreover, women consistently value both emotional support and factual information, underscoring the need for interventions that integrate psychosocial care with evidence-based education.

4. CONCLUSION:

Non-clinical interventions are an integral component of global strategies to reduce unnecessary caesarean sections. Evidence supports the use of antenatal education and psychosocial support programmes for women, as well as audits, feedback mechanisms, and adherence to clinical guidelines among healthcare professionals. Organisational-level approaches, including collaborative care models and financial reforms, show potential but require further rigorous evaluation before large-scale adoption.

The central conclusion is that reducing unnecessary CS is not only a clinical challenge but also a multidimensional issue shaped by women's perceptions, professional practices, and systemic

structures. Effective implementation demands context-specific adaptation, continuous monitoring, and integration with broader maternal health policies.

Future research should focus on evaluating these interventions in low- and middle-income countries, exploring the role of digital technologies in antenatal education, and assessing the long-term sustainability of system-level reforms. By combining non-clinical and clinical strategies, healthcare systems can ensure that caesarean sections are performed only when medically necessary, thereby safeguarding maternal and neonatal health while optimizing healthcare resources.

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CHAPTER 6

INTERVENTIONS FOR NON-MEDICAL REASONS TO REDUCE UNWANTED AND UNNECESSARY C-SECTION RATES IN TELANGANA STATE.

1. INTRODUCTION:

Caesarean sections (C-sections) are lifesaving surgical procedures when medically indicated, such as in cases of fetal distress, breech presentation, or maternal complications like preeclampsia. Nonetheless, worldwide patterns indicate an alarming increase in C-section rates, frequently surpassing the World Health Organisation's (WHO) suggested cutoff point of 10-15% for the best outcomes for mothers and newborns (WHO, 2015)¹. In many regions, rates surpass 30-40%, with Latin America and the Caribbean at 44.3%, East Asia at 28.8%, and parts of China reporting up to 50%². Unnecessary C-sections, those performed without medical justification, contribute significantly to this overuse, leading to unwanted procedures that impose avoidable risks and burdens. While clinical factors drive some increases, non-medical reasons, including financial, organisational, cultural, and psychosocial elements, are pivotal in perpetuating high rates. Addressing these non-medical drivers is essential to reduce unwanted and unnecessary C-sections, promoting equitable, sustainable maternity care.

One primary non-medical reason to curb unnecessary C-sections is the substantial economic and health system strain they impose. High C-section rates divert resources from essential services, exacerbating inequalities in access to care, particularly in low- and middle-income countries where underuse coexists with overuse³. For instance, financial incentives for healthcare providers, such as higher reimbursements for C-sections compared to vaginal births, encourage overuse. In China, fee-for-service models have been linked to inflated rates, with providers opting for C-sections to maximise income or avoid litigation fears⁴. Regulatory interventions, like equalising fees for vaginal and C-section deliveries, have shown mixed but promising results in reducing rates by 5-

10% in some studies⁵. Similarly, global budget payment systems, which allocate fixed funds to facilities, can disincentivise unnecessary procedures by removing profit motives⁶. Without addressing these financial drivers, healthcare systems risk inefficiency, with costs ballooning estimated at 1.5-2 times higher for C-sections than vaginal births potentially constraining investments in antenatal care or emergency services⁷.

Cultural and psychosocial factors also fuel unnecessary C-sections, often leading to unwanted outcomes for women and families. In many societies, C-sections are perceived as safer or more convenient, influenced by fear of labor pain, societal pressures for "perfect" birth timing (e.g., auspicious dates in some Asian cultures), or misconceptions about vaginal birth risks⁸. Qualitative evidence from China highlights how women's preferences shift toward C-sections due to antagonistic provider relationships, poor labor support, and beliefs in deteriorating intrapartum care quality⁴. Family members and health professionals reinforce these views, with partners or clinicians prioritising perceived safety over natural birth. This cultural normalisation not only increases rates but also undermines women's autonomy, leading to regret, postpartum depression, or reduced breastfeeding success³. Interventions like birth preparation classes, labor companionship, and midwife-led care have demonstrated efficacy in high-income settings by fostering positive experiences and reducing fear-driven requests, potentially lowering rates by 10-20%⁶. Extending these to low-resource contexts could empower women, aligning births with their preferences while mitigating psychosocial harms.

Organisational and systemic barriers further underscore the need for non-medical interventions. Hierarchical power differentials in healthcare facilities, where physicians dominate decision-making, often override evidence-based practices, perpetuating C-section overuse³. In facilities with inadequate staffing or resources, C-sections become a "convenient" default to manage workloads, especially in private sectors driven by profit⁹. Multi-faceted strategies, such as mandatory second opinions or clinical audits, can address these by promoting accountability and

stakeholder commitment³. Moreover, fear of litigation prevalent in litigious environments like the U.S. and China prompts defensive medicine, inflating rates unnecessarily⁶. Reducing these through legal reforms or insurance adjustments could foster a culture of trust and evidence-based care.

Non-medical reasons to reduce unwanted and unnecessary C-section rates encompass economic sustainability, cultural empowerment, and systemic equity. Overuse not only risks maternal morbidity (e.g., infections, hemorrhage) and neonatal issues (e.g., respiratory distress) but also perpetuates health disparities². Tailored interventions, financial reforms, educational programs, and organisational changes must be context-specific, drawing from qualitative and quantitative evidence to ensure effectiveness^{7&5}. Future efforts should prioritise multicomponent approaches to align stakeholder incentives with optimal birth outcomes, ultimately advancing global maternal health goals. In this study, we have given the intervention based on a framework developed in our previous work on the non-medical reasons to reduce unwanted and unnecessary c-section rates in Telangana state.

2. METHODOLOGY:

2.1. Method used in piloting interventions in 3 districts that have high, medium and low C-Section rates in the state of Telangana.

This study used a follow-up of a cohort study design. The Sample Size was 30 mothers in the 2nd and 3rd trimester, Sampling method used was Cluster sampling, Study Population were 3 districts (Karimnagar, Nalgonda, Mahbubnagar). Inclusion criteria was Primi due for delivery in the next 5 months, Exclusion criteria was other than Primi, Tools developed (open-ended questionnaire) and translated into the local language, pretested and piloted, Ethical approval was taken from Ethics committee the ethical clearance was obtained from the Institutional Ethics Committee of

the University of Hyderabad (Ref no: UH/IEC/2020/235), and permissions from Joint Director [MHN] C/o CH&FW, TS were obtained.

Non-clinical interventions targeting pregnant women (Primi) and families, included childbirth education workshops, relaxation training, and psychoeducation, addressing labor anxiety, pain management, and delivery options to reduce unnecessary C-sections. Interventions for healthcare professionals, such as clinical guidelines with mandatory second opinions, audits, and provider education, enhance adherence to best practices. Organisational strategies, like the collaborative midwifery-labourist model, were implemented across selected districts in Telangana, with regular follow-ups to assess effectiveness. These combined interventions tackle local factors like perceptions, professional incentives, and systemic issues influencing C-section rates. Continuous monitoring of C-section rates and maternal and perinatal outcomes ensures alignment with optimal health outcomes.

3. RESULTS:

Out of 30 in-depth interviews of mothers conducted, Minimum age of 18 years and Maximum age of 35 years; the majority of the mothers, i.e., 16 (53%), belonged to the 19 to 25 *age group* at the time of marriage, and mothers belonging to more than 25 age group were 4 (13%) and the mothers below 18 years age group were 18 (34%). Out of 30 mothers, the Minimum age of 19 years, and the Maximum age of 35 years; the majority of the mothers, i.e., 20 (67%), belonged to the 20 to 25 *age group* during their last birth and mothers belonging to more than 25 age group were 5 (17%) and below 19 years were 5 (16%). Around 3 (10%) had post-graduation, 10 (33%) of the mothers had under-graduation, and 8 (27%) of them had intermediate education and 9 (30%) of them had primary education. Out of 30 In-depth interviews of mothers, 13 (44%) of the mothers responded that they did not know any difference, 10 (33 % of them responded that they knew by themselves, family and neighbours and 7 (23%) of them knew through medical staff. 14 (47%) of the mothers

knew the pros of normal births, and on the other hand, 16 (53%) of the mothers knew the cons of the C-section. Around 14(46%) of the mothers did exercises daily, 5(17%) of the mothers did exercises 2-3 times a week, 9(30%) of them had not performed exercises regularly, and 2(7%) of them had not done any form of exercise. Finally, 14 (47%) of the mothers underwent normal births, and there was a decrease in the number of mothers, 16(53%), who had C-sections.

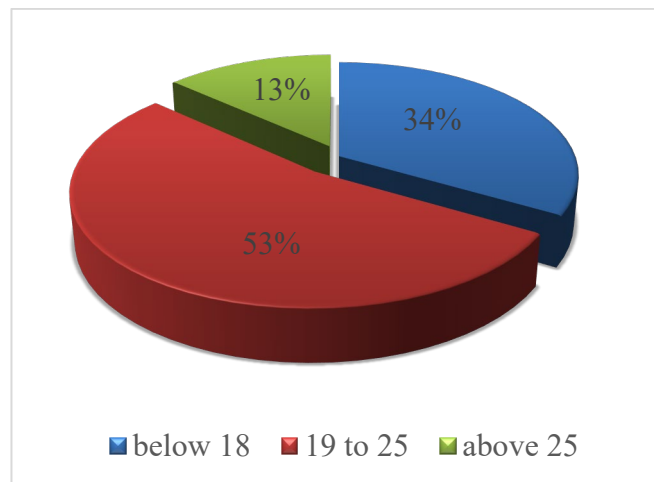


Fig. (a). Age at the time of Marriage

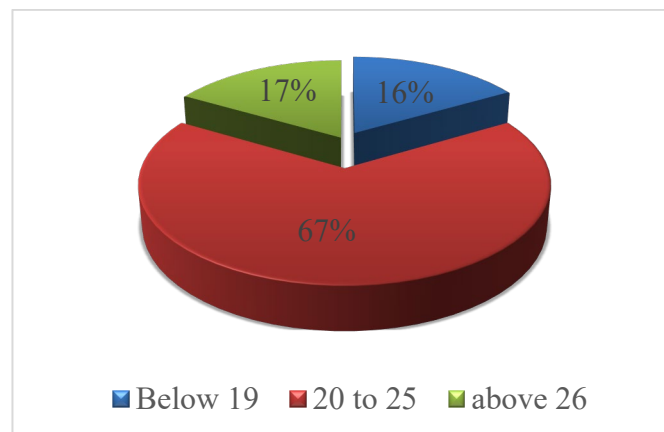


Fig. (b). Age at the time of delivery

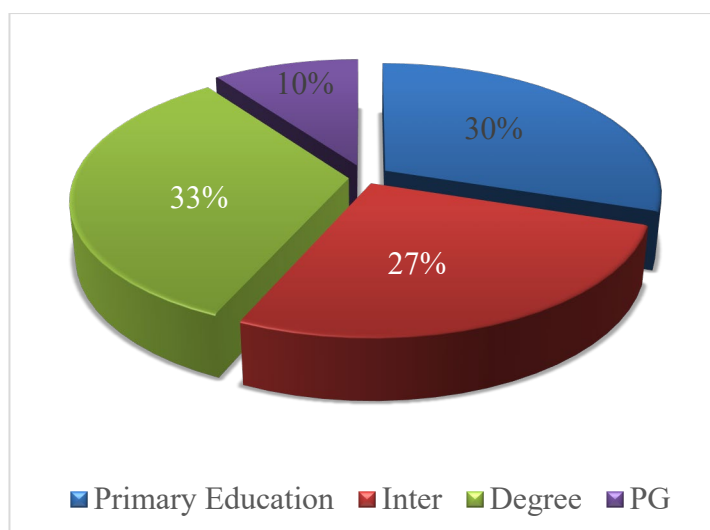


Fig. (c). Mother's Education

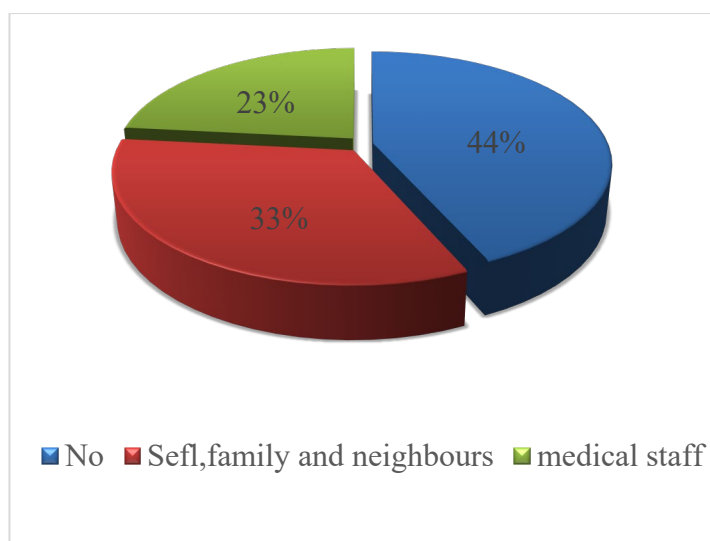


Fig. (d). Difference B/W Normal and CS

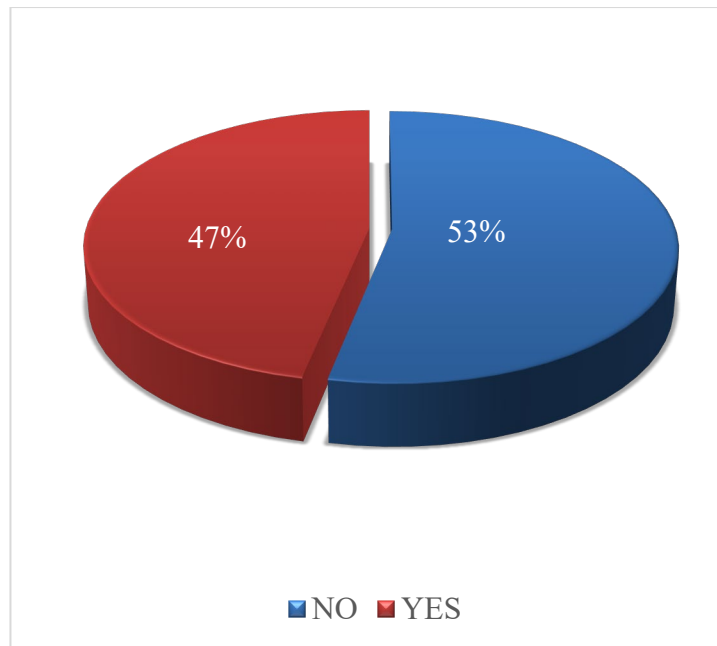


Fig. (e). Pros and Cons

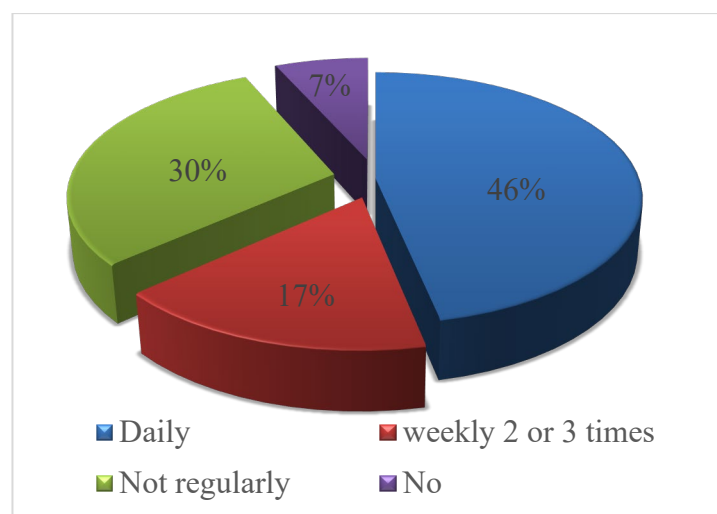


Fig. (f). Exercise frequency

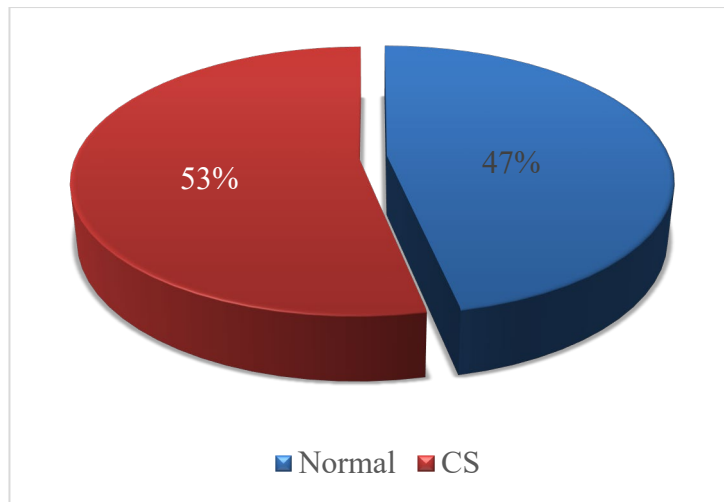


Fig. (g). Mode of delivery

3.1. REASONS FOR OPTING FOR NORMAL AND C-SECTION DELIVERY:

3.1.1. NORMAL DELIVERY:

During the interview, the mother shared her experience with prenatal exercises and their impact on her delivery. She mentioned that she was unaware of any exercises until the sixth month of her pregnancy and did not engage in any physical activity during that time. Although she received a document outlining exercises, she did not practice them initially. It was only in her eighth month, during a routine hospital check-up, that she inquired about exercises. The doctor advised her to follow the same document she had been given earlier. She then diligently practised nearly all the recommended exercises, which she credits for helping her achieve a normal delivery. Three days after giving birth, she returned home, reporting that both her health and her baby's health were good. She also noted that she has resumed her daily activities without issues, indicating a smooth recovery.

1. *From the beginning, I didn't know about the exercises till 6th month I did not do anything after you gave them, and I did not practice, but in the 8th month, I visited the hospital for a regular check-up and asked about the exercises, and doctor told me to follow the same document I*

practised almost all types I practised it helped me to go for Normal delivery. After 3 days, I returned home, and my health and the baby's health were good. I'm doing my daily work.

IDI 22

The mother recounted her experience with prenatal exercises during a hospital check-up. She explained that the doctor verbally instructed her to practice exercises but did not provide detailed guidance or resources. Following this, she took the initiative to research exercises online and reached out to the ASHA worker for further support. The ASHA worker promptly shared YouTube videos covering exercises and relaxation techniques, which the mother found helpful in preparing for her delivery.

2. *When I visited the hospital for a checkup, the doctor told me to practice the exercises, but they told me orally after that, I checked on the internet and asked ASHA, and she sent me some YouTube videos about exercises and relaxation techniques. IDI 26*

The mother described how she and her husband received a booklet with prenatal guidance, which proved valuable for her pregnancy. She noted that after consulting with the doctor for approval, her husband actively supported her in following the booklet's instructions. With his assistance, she grew accustomed to walking and practising squatting exercises, incorporating these into her routine. Additionally, she emphasized including all nutritious foods in her daily diet as recommended. She attributed these efforts, exercise, diet, and her husband's support, to contributing significantly to a healthy birth outcome.

3. *When the booklet was handed out, my husband and I were present. After getting approval from the doctor, **my husband assisted me in following its instructions**, which was beneficial. I became used to walking and exercising (squatting) with my husband's assistance, and I made sure to include all nutritious foods in my daily diet, which contributed to a healthy birth.*

The mother shared her initial uncertainty about prenatal exercises, having heard conflicting advice from neighbours and the internet. She explained that the provided booklets were instrumental in clarifying what exercises were appropriate, giving her the confidence to start. Initially, her mother was hesitant about her exercising during pregnancy, but after the mother explained the benefits, her mother became supportive and assisted her. The mother expressed enthusiasm about her decision to follow the booklet's guidance, crediting the exercises for enabling her to achieve her desired outcome of a normal delivery.

4. *I had heard from neighbours and the internet about the exercises that a pregnant woman should perform, but I wasn't sure what to believe. However, the booklets helped me understand. I started exercising. **My mother was a little apprehensive to start exercising at first, but once I helped her understand, she started to assist. I think it was a fantastic thing that I did since those activities helped me have a normal delivery, which I wanted.***

The mother discussed her experience with prenatal exercises, noting that she had been exercising sporadically from the start of her pregnancy. She mentioned that the ASHA worker provided guidance on exercises after receiving the instructions, which prompted her to adopt a more regular routine. She found the exercises very useful and sought confirmation from her doctor about the provided document. The doctor endorsed the same exercises, reinforcing her commitment to following them consistently.

5. *"From the beginning, I've been exercising but not so regularly. ASHA told me about the exercises after you gave the instructions, and I have been doing them regularly. **It is very useful.** I asked my doctor about your document, and she also told me to follow the same exercises."*

The mother has been exercising irregularly since the beginning. Following instructions provided by ASHA, they have adopted a regular exercise routine, which they find very useful. When we have consulted the doctor about the provided exercise document the doctor recommended continuing with the same exercises.

3.1.2. C- SECTION DELIVERY:

Out of 30 mothers, 16 (53%) had chosen C Section The mothers have shared their experiences and reasons (medical and non-medical), which are compiled and presented below:

1. *“I got motions and vomiting in the 9th month, it happened in the 7th month also, but after medication, it got cured. The same thing happened in the 9th month also when I visited the hospital, so the doctor checked, and my amniotic fluid was low, but the doctor told me to wait for normal delivery, but my **mother-in-law asked for CS.**” IDI 27*

During the interview, the mother explained that her parents and in-laws advised her against exercising during pregnancy, and she followed their guidance. Despite receiving clear instructions and explanations from a professional about prenatal exercises, her elders did not permit her to follow through. She expressed regret, believing that adhering to the booklet’s instructions could have enabled a normal delivery, as she attributed her C-section to the lack of exercise.

2. *My parents and in-laws told me not to exercise, and I did as they said. Sir gave me clear instructions and explained everything, but my elders did not give me permission to follow through, which may have led to my C-section. I would have had a normal birth if I had followed the book's instructions.*

In the interview, the mother described the booklet as highly educational, helping her understand the importance of a natural birth. She found the information valuable and, with the support of the ASHA worker, diligently followed the booklet's exercise and diet plan. Despite her commitment to the recommended exercises and her expectation of a normal delivery, she experienced a complication when her amniotic fluid spilled just before her due date, necessitating a C-section.

3. *The book was educational, and I understand the **significance of a natural birth**. Therefore, the book was informative. With the support of ASHA, I adhered to the entire exercise and diet plan. I was doing the exercises listed in the booklet. However, amniotic fluid spilled right before the due date, so I had to have a C-section. I anticipated having a normal birth.*

The mother reported that the book was highly educational and informative, particularly in highlighting the importance of natural birth. With guidance from the ASHA worker, she was able to follow the recommended exercise and diet plan consistently. She regularly practiced the exercises outlined in the booklet. Despite her preparation and anticipation of a normal delivery, she experienced amniotic fluid leakage just before her due date, which necessitated a caesarean section.

4. DISCUSSION:

Discussion on Maternal Delivery Preferences and Influencing Factors:

In the current intervention study, we have opted the guidelines from the World Health Organisation⁹ aimed towards the health care system factors, women and families, health care professionals and health care organisations and facilities to develop a model. To address the forementioned groups the model included the resources and materials like health education, follow up training and clinical guidelines in the form of audio-video training and Pamphlet which

included the exercises, diet and nutrition and piloted the intervention on 30 mothers by conducting in depth interviews. The findings from the in-depth interviews of 30 mothers aged 18-35 years provide valuable insights into the factors influencing their preferences for normal delivery versus C-section, as well as the role of education, exercise, and social support in shaping these outcomes. The data aligns with existing literature on maternal health and delivery choices, highlighting the interplay of socio-cultural, medical, and educational factors. This discussion synthesises the quantitative and qualitative findings, contextualises them within broader research, and explores implications for maternal healthcare interventions.

Age and Delivery Preferences:

The study revealed that the majority of mothers were aged 19-25 years at marriage, 16 (53%), and 20-25 years at their last birth, 20 (67%). Younger maternal age, particularly in the 20-25 age group, is associated with a higher likelihood of normal delivery due to better physical resilience and fewer obstetric complications¹⁰. However, 10 (34%) of mothers married below 18 years (interviewed at 18 or older) and 5 (16%) who gave birth below 19 years suggest early marriage and childbirth, which are risk factors for adverse maternal outcomes, including higher C-section rates¹. The qualitative data did not directly link early marriage to delivery mode, but the higher C-section rate of 16 (53%) compared to the normal delivery rate of 14 (47%) may reflect underlying socio-cultural pressures or medical necessities in younger mothers.

Educational Attainment and Knowledge:

Education levels varied, with 10 (33%) of the mothers holding undergraduate degrees, 9 (30%) having primary education, 8 (27%) having intermediate education, and 3 (10%) holding postgraduate degrees. Higher education is often correlated with better health literacy and informed

decision-making regarding delivery methods¹¹. However, 13 (44%) of mothers reported no knowledge of the differences between normal delivery and C-section, indicating gaps in health education. The 10 (33%) who learned from family, neighbours, or self-directed efforts, and the 7 (23%) informed by medical staff, underscore the critical role of both formal and informal education channels. The qualitative findings, particularly from IDI 3 and IDI 4, highlight the effectiveness of educational booklets in improving understanding and encouraging practices like exercise, which contributed to normal delivery. This aligns with studies showing that structured antenatal education programs enhance maternal confidence and reduce unnecessary C-sections¹².

Exercise and Its Impact on Delivery:

Exercise frequency was a significant factor, with 14 (46%) mothers exercising daily, 5 (17%) exercising 2-3 times a week, 9 (30%) exercising irregularly, and 2 (7%) not exercising at all. The qualitative data (IDI 22, IDI 26, IDI 5) suggest that regular exercise, particularly when guided by healthcare providers or educational materials, facilitated normal delivery. For instance, IDI 22 noted that hospital-recommended exercises in the 8th month aided her normal delivery, while IDI 26 benefited from YouTube videos and ASHA support. These findings are consistent with research indicating that antenatal exercise, such as walking and squatting, strengthens pelvic muscles and reduces the likelihood of C-section¹³. Conversely, mothers who underwent C-sections (e.g., IDI 2) often cited non-adherence to exercise due to family discouragement, highlighting the influence of socio-cultural barriers. This supports evidence that family dynamics can impede the adoption of healthy behaviours during pregnancy¹⁴.

Knowledge of Pros and Cons:

The study found that 14 (47%) of mothers knew the advantages of normal delivery, while 16 (53%) were aware of the disadvantages of C-sections. This knowledge influenced delivery preferences, as seen in the 14 (47%) who preferred normal delivery. Qualitative accounts (IDI 3, IDI 4) emphasised the role of booklets and medical staff in clarifying these benefits, such as faster recovery and lower risks compared to C-sections. However, the 16 (53%) C-section rate suggests that knowledge alone was insufficient to override medical or social factors. For example, IDI 27 underwent a C-section due to low amniotic fluid and family insistence, despite medical advice to wait for normal delivery. This reflects global trends where C-section rates are rising due to non-medical factors, including family preferences and perceived convenience¹.

Socio-Cultural Influences:

The qualitative data revealed strong socio-cultural influences on delivery choices. Support from husbands (IDI 3), mothers (IDI 4), and community health workers, such as ASHA (IDI 5, IDI 26), was instrumental in promoting exercise and normal delivery. Conversely, family opposition, as seen in IDI 2 and IDI 27, contributed to C-sections by discouraging exercise or favouring surgical intervention. These findings align with studies showing that family and community attitudes significantly shape maternal health behaviours in low- and middle-income settings¹⁵. The role of ASHA and educational materials in bridging knowledge gaps suggests that community-based interventions can counteract negative socio-cultural influences.

Medical Factors:

Medical complications were a key driver of C-sections, as evidenced by IDI 27 (low amniotic fluid) and IDI 3 (amniotic fluid leakage). These cases highlight the necessity of C-sections in certain high-risk pregnancies, consistent with WHO guidelines recommending C-sections only when medically indicated¹. However, the influence of non-medical factors, such as family pressure in IDI 27, suggests that some C-sections may have been avoidable with better education and support. This underscores the need for integrated care models that balance medical necessity with informed maternal choice.

Implications for Maternal Healthcare:

The findings suggest several strategies to promote normal delivery and reduce unnecessary C-sections:

1. **Enhanced Antenatal Education:** Educational booklets and digital resources (e.g., YouTube videos) were effective in improving knowledge and encouraging exercise. Scaling up such interventions, particularly in rural areas, could empower mothers to make informed choices¹¹.
2. **Community Engagement:** Involving family members, especially husbands and mothers-in-law, in antenatal education can address socio-cultural barriers and foster support for healthy practices¹⁴.
3. **Strengthened Healthcare Support:** The role of medical staff and ASHA in guiding exercise and delivery choices highlights the importance of training healthcare workers to deliver consistent, evidence-based advice¹².

4. **Targeted Interventions for Young Mothers:** The prevalence of early marriage and childbirth calls for targeted programs to support young mothers, who face higher risks of complications and C-sections¹.

5. LIMITATIONS:

The study limitations include a very small sample size (n=30 mothers), which limits generalizability, and the reliance on self-reported data may introduce recall bias. Additionally, the overlap in percentages for knowledge sources (Fig. d) suggests potential data inconsistencies, possibly due to multiple responses. Future research should use larger, representative samples and standardised data collection methods to validate these findings.

6. CONCLUSION:

The interplay of education, exercise, socio-cultural factors, and medical necessity shapes maternal delivery preferences and outcomes. While educational interventions and exercise promote normal delivery, family influences and medical complications often lead to C-sections. By addressing these factors through targeted education, community engagement, and healthcare support, maternal health programs can enhance informed decision-making and optimise delivery outcomes.

The in-depth interviews with 30 mothers who delivered in the past six months provide critical insights into the factors influencing delivery outcomes, particularly the interplay of education, exercise, and familial influence in shaping normal versus C-section deliveries. The study reveals a relatively balanced delivery outcome, with 14 (47%) of mothers achieving their preferred normal births and 16 (53%) undergoing C-sections, a marked improvement over higher C-section rates reported in broader studies. However, the data underscores persistent challenges, particularly

around knowledge dissemination and adherence to prenatal exercise regimens. While 20 (67%) of mothers were aged 20-25 during their last birth and 18 (60%) had at least intermediate or higher education, only 14 (47%) were aware of the benefits of normal deliveries, and 16 (53%) understood the drawbacks of C-sections. This knowledge gap, compounded by varied sources of information 7 (23%) from medical staff, 10 (33%) from family or self-research, and 13 (44%) unaware of differences between delivery modes highlights the need for standardised, accessible prenatal education to empower informed decision-making.

The role of prenatal exercises emerged as a significant determinant of delivery outcomes, with 14 (46%) of mothers exercising daily and 5 (17%) doing so 2-3 times a week, often crediting these efforts for facilitating normal deliveries. Testimonials revealed that booklets, ASHA workers, and doctors played pivotal roles in guiding mothers, particularly when initial uncertainty or familial resistance was overcome, as seen in cases where mothers convinced hesitant elders or sought online resources. However, barriers such as familial opposition (e.g., elders discouraging exercise) or medical complications (e.g., low amniotic fluid or premature amniotic fluid spill) led to C-sections despite mothers' efforts, as evidenced in cases where mothers regretted not following exercise protocols or faced unavoidable medical interventions. The influence of family, particularly mothers-in-law advocating for C-sections, underscores the need to engage household members in prenatal education to align their support with medical recommendations and maternal preferences.

In conclusion, this study calls for a comprehensive strategy to enhance maternal delivery outcomes by addressing knowledge gaps, promoting prenatal exercises, and mitigating sociocultural barriers. Health systems must prioritise the distribution of educational materials like booklets, coupled with proactive counselling from ASHA workers and doctors, to ensure mothers, especially those with primary education 9 (30%), understand the benefits of normal deliveries and the risks of unnecessary C-sections. Training programs for ASHA workers should emphasise their

role in countering misinformation and encouraging exercise adherence, given their influence in guiding 14 (46%) of mothers to daily routines. Engaging families through community outreach can reduce resistance to exercises, fostering a supportive environment for mothers' choices. Additionally, addressing medical complications through timely interventions and clearer communication about C-section necessity can align outcomes with maternal expectations. By integrating these efforts, India can further reduce C-section rates, empower mothers to achieve normal deliveries, and promote equitable maternal care that respects both medical necessity and personal preferences, ultimately improving health outcomes for mothers and newborns.

7. FUTURE SCOPE:

The findings of this study open several avenues for future research and intervention to enhance maternal healthcare in Telangana and similar settings. Larger-scale studies with diverse geographic and socioeconomic representation could validate and expand these findings, providing a more robust evidence base for policy interventions. Including perspectives from healthcare providers, particularly obstetricians and midwives, would elucidate provider-driven factors contributing to high C-section rates, such as defensive medicine or profit motives, and inform targeted training programs. Research exploring the impact of digital health interventions, such as mobile apps or video-based education, could build on the success of YouTube videos cited by mothers, offering scalable solutions for rural and low-literacy populations. Investigating the role of cultural practices, such as auspicious date preferences or tubal ligation decisions, could guide culturally sensitive counselling strategies to reduce non-medical C-sections. Additionally, longitudinal studies tracking mothers from early pregnancy through postpartum could provide deeper insights into how antenatal education and exercise adherence evolve and influence long-term maternal and neonatal health outcomes. Finally, evaluating the effectiveness of policy

interventions, such as incentives for vaginal deliveries or stricter C-section audits in private hospitals, could inform scalable models to achieve WHO-recommended C-section rates, ensuring equitable and safe maternal care across Telangana and beyond.

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CHAPTER 7

1. CONCLUSION AND SUMMARY:

A descriptive study on non-medical factors contributing for caesarean deliveries in Telangana state showed a significant rise in C-section rates in Telangana, from 57.7% in 2015-2016 to 60.7% in 2019-2020, driven by factors such as improved educational status, socioeconomic advantages, and the growing influence of private healthcare providers. Despite the preference for vaginal birth among many pregnant women, a lack of awareness about options like vaginal birth after caesarean (VBAC) and inadequate childbirth education, evidenced by 64% of mothers not being informed about the birth process, contribute to the high prevalence of C-sections. Maternal requests, often influenced by non-medical factors, and provider convenience further exacerbate this trend, particularly in the private sector, where over 0.9 million unwanted C-sections were estimated. To address this, implementing WHO-recommended educational and support programs, such as childbirth education, nurse-led relaxation training, and psychosocial couple-based interventions, is crucial. These initiatives, supported by tools like pamphlets, videos, and role-playing, can empower women and their families to make informed decisions, potentially reducing unnecessary C-sections and promoting safer, more natural birthing practices.

The potential causes contributing to the exacerbation of caesarean deliveries show the rising C-section rates in Telangana state from a complex interplay of personal, community, system, and policy-related factors. Personal preferences for smaller families, late pregnancies, and painless births, coupled with community influences like status symbols and peer experiences, drive demand. Systemic issues, including staff shortages, high caseloads, and a lack of clear protocols, limit the capacity to support vaginal births. Policy gaps and inadequate support for VBAC further

exacerbate the trend. Comprehensive childbirth education and systemic reforms are essential to curb unnecessary C-sections.

The global rise in non-medically justified caesarean sections underscores the urgent need for multifaceted non-clinical interventions to promote safe and informed birthing practices. Educational programs, such as childbirth workshops and psychoeducation, empower women by reducing fear and enhancing decision-making, though their effectiveness is context-dependent and limited in low-resource settings. Clinical practice guidelines, second opinions, and audits address provider-driven factors, but require robust institutional support to succeed. Systemic reforms, including collaborative care models and equitable reimbursement, show promise but face implementation challenges and low certainty of evidence. A tailored, culturally sensitive approach combining psychosocial support with evidence-based education is essential to reduce unnecessary C-sections while ensuring women's emotional and informational needs are met. The study in Telangana reveals a complex interplay of socio-cultural, medical, economic, and educational factors that drive the high C-section rate of 53%, surpassing the WHO's recommended rate of 10-15% for optimal health outcomes. Despite 47% of mothers preferring normal deliveries, gaps in childbirth education, with 44% lacking knowledge about delivery options, and familial influences, particularly from mothers-in-law and husbands, significantly shape outcomes. Supportive interventions, such as ASHA workers' guidance, educational booklets, and prenatal exercises, promote vaginal deliveries, but systemic issues like private hospitals' profit-driven practices, defensive medicine, and cultural preferences for auspicious dates or tubal ligation inflate C-section rates. Global evidence reinforces these findings, highlighting physiological, sociodemographic, and economic drivers, alongside misconceptions about C-section safety and convenience. To reduce unnecessary C-sections, targeted interventions integrating comprehensive childbirth education, family counselling, and systemic

reforms to address provider incentives and enhance skilled care for vaginal deliveries are essential to empower informed choices and optimise maternal and neonatal health.

2. SUMMARY:

This study, involving in-depth interviews with mothers and a synthesis of global evidence, reveals a multifaceted landscape of factors contributing to the high caesarean section (C-section) rates, which significantly exceed the World Health Organisation's recommended rate of 10-15% for optimal maternal and neonatal health outcomes. Key drivers include personal and family preferences for smaller families, late pregnancies, and painless births, alongside socio-cultural influences such as the perception of C-sections as a status symbol or safer option, often reinforced by family members like mothers-in-law. Systemic issues, such as acute staff shortages, high caseloads, and the absence of clear protocols for triaging and referral, exacerbate the reliance on C-sections, particularly in private hospitals where 81.5% of deliveries are surgical. This is driven by provider convenience, monetary incentives, and defensive medical practices aimed at avoiding litigation. Educational gaps are stark, with 44-64% of mothers not receiving adequate information about the birth process or delivery options, limiting their ability to make informed choices and contributing to the 14.3% of C-sections performed for non-medical or unexplained reasons.

Non-clinical interventions, such as childbirth education, prenatal exercise programs, and psychosocial support, emerge as critical strategies to reduce unnecessary C-sections. Educational initiatives, including booklets, ASHA worker guidance, and media like YouTube videos, have empowered mothers, with 46% of those who exercised daily attributing their normal deliveries to these efforts. However, barriers such as familial opposition to exercise, medical complications like low amniotic fluid, and cultural preferences for auspicious delivery dates or tubal ligation

often override maternal preferences for vaginal births. Community health workers, particularly ASHA and ANM, play a pivotal role in bridging knowledge gaps, yet their impact is limited by inadequate training and systemic constraints. Global evidence supports these findings, emphasising the efficacy of clinical practice guidelines, mandatory second opinions, and audits in reducing provider-driven C-sections, though their implementation is challenged by resource constraints and stakeholder resistance in low- and middle-income settings.

Systemic reforms are essential to address the high C-section rates, particularly in private facilities where scheduling patterns suggest convenience-driven practices. Regulatory measures, such as mandatory audits of C-section justifications and standardised protocols, can enhance accountability and ensure informed consent, addressing cases where mothers reported unclear explanations for surgical interventions. Financial reforms to equalise reimbursement for vaginal and C-section deliveries, alongside collaborative care models between midwives and obstetricians, show promise but require further evaluation for scalability. Socioeconomic barriers, with 26.8% of mothers resorting to loans for delivery costs and only 52% accessing schemes like the KCR kit, underscore the need for simplified access to financial support and public awareness campaigns to promote normal deliveries and dispel misconceptions about the safety and convenience of C-sections.

To achieve equitable maternal healthcare, a holistic strategy integrating education, community engagement, and systemic reforms is imperative. Strengthening the role of ASHA and ANM through targeted training can enhance their advocacy for normal deliveries and informed consent, particularly among younger (83.3% aged 20-25) and less-educated (47% with less than 10 years of schooling) mothers who are more vulnerable to external pressures. Engaging families through community outreach to align their support with medical recommendations, coupled with accessible counselling tailored to low-literacy populations, can empower mothers to navigate delivery choices confidently. By addressing these socio-cultural, systemic, and economic

challenges, India can reduce unnecessary C-sections, respect maternal preferences for normal deliveries, and improve health outcomes, ensuring a maternal healthcare system that prioritises autonomy, safety, and equity for mothers and newborns.

3. LIMITATIONS:

The limitations of the study include that the sample size of 30 mothers, while sufficient for qualitative depth, is relatively small and may not fully represent the diverse socio-cultural and economic contexts across Telangana. The study's focus on mothers aged 18-35 years excludes older mothers, who may face unique risks associated with advanced maternal age, a known factor for higher C-section rates. Furthermore, the use of self-reported data raises the possibility of recall bias, especially with relation to exercise frequency and information sources, which could compromise response accuracy.

The accuracy of responses may be impacted by memory bias introduced by self-reported data, especially with relation to exercise frequency and information sources. The qualitative data, while rich, may also be subject to social desirability bias, where mothers might overstate adherence to exercises or healthy behaviours to align with perceived expectations. The study's focus on mothers who delivered in institutional settings (97% institutional delivery rate in Telangana per NFHS-5) limits insights into home deliveries, which, though rare, may differ in outcomes and influences. Furthermore, the study does not explore the perspectives of healthcare providers or family members, which could provide a more holistic understanding of decision-making dynamics. The global evidence synthesis, while comprehensive, draws from diverse contexts, some of which may not fully align with Telangana's specific socio-cultural and healthcare system characteristics, potentially limiting the applicability of certain findings.

4. FUTURE SCOPE:

The findings of this study open several avenues for future research and intervention to enhance maternal healthcare in Telangana and similar settings. Larger-scale studies with diverse geographic and socioeconomic representation could validate and expand these findings, providing a more robust evidence base for policy interventions. Including perspectives from healthcare providers, particularly obstetricians and midwives, would elucidate provider-driven factors contributing to high C-section rates, such as defensive medicine or profit motives, and inform targeted training programs. Research exploring the impact of digital health interventions, such as mobile apps or video-based education, could build on the success of YouTube videos cited by mothers, offering scalable solutions for rural and low-literacy populations. Investigating the role of cultural practices, such as auspicious date preferences or tubal ligation decisions, could guide culturally sensitive counselling strategies to reduce non-medical C-sections. Additionally, longitudinal studies tracking mothers from early pregnancy through postpartum could provide deeper insights into how antenatal education and exercise adherence evolve and influence long-term maternal and neonatal health outcomes. Finally, evaluating the effectiveness of policy interventions, such as incentives for vaginal deliveries or stricter C-section audits in private hospitals, could inform scalable models to achieve WHO-recommended C-section rates, ensuring equitable and safe maternal care across Telangana and beyond.

APPENDIX -A

INFORMED CONSENT FORM

TITLE OF THE PROJECT: “IMPLEMENTATION RESEARCH TO REDUCE CAESAREAN SECTION RATES IN TELANGANA STATE”.

Participant’s Name: _____

Date of Birth/Age: _____

- (1) I confirm that I have read and understood the information sheet dated for the above study and have had the opportunity to ask questions.
- (2) I understand that my participation in the study is voluntary and that I am free to withdraw at any time, without any given reason, without my medical care or legal rights being affected.
- (3) I understand that the ethics committee and regulatory authorities will not need my permission to look at my records, both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the study. I agree to this access. However, I understand that my identity will not be revealed in any information released to third parties or published.
- (4) I agree not to restrict the use of any data or results that arise from this study, provided such a use is only for scientific purposes.
- (5) I agree to take part in the above study.

Signature of the Participant or Legally acceptable representative: _____

Signatory’s Name: _____

Signature of the Investigator: _____

Study Investigator’s Name: _____

Date: _____

APPENDIX -B
IDI MOTHERS
DEMOGRAPHIC DETAILS

Archival:

Site:

Interviewer:

Date:

Start:

End:

Name:

Age (in years):

Education:

Occupation:

Husband's Education:

Husband's Occupation:

Household Income:

Number of Children (including stillbirth if any):

Mode of delivery: Oldest to Youngest

Birth Order	Age	Mode of delivery	Comments

Answer the following questions based on your latest delivery

Nativity during delivery

- a) Parents' house
- b) In Lays House
- c) Other

How did the location of the birth affect your experience? Was it your personal preference to be here?

Did you have a baby during the weekdays or during the weekend? (Saturday and Sunday)

When did you have Delivery (Day or night, and what was the timing of Delivery?)

How was your pregnancy confirmed, and by whom was it confirmed?

Please explain the procedure to consult a doctor for medical check-ups during pregnancy and before delivery. Where did you have your 3rd and 4th medical check-ups before delivery?

Describe your experience before and during your delivery.

(When you were hospitalised, before delivery, your feelings and those of your family, the way the doctors and medical staff treated you, etc.)

Place of Delivery

- a) In the hospital
- b) at home

If institutional, answer the following questions

Distance of facility from place of residence before admission for delivery (in km)

Type of facility

- a) Government/Public facility
- b) Private facility

If it is a government facility

- a) Primary Health Centre (PHC)
- b) Community Health Centre (CHC)
- c) Regional Health Centre (AH)
- d) District Health Centre (DH)

Does choosing a hospital for your delivery depend on your income?

Yes/No

Did you consult any other hospitals before choosing one? How did you choose the doctor?**What factors influenced your choice of location for childbirth?****Does choosing a hospital for your delivery depend on your income?**

Yes/No

Expenditure incurred on delivery:

Sl. NO	HEAD	COST
1	Transport	
2	Medicine	
3	Procedure	
4	Loss of wages	
5	Gratuity	
6	Food, Boarding, Lodging	
7	For any postpartum care	
8	Any other	
9	Overall	

Funding sources provided for childbirth

- a) Savings/ own money
- b) Loans, including hand loans
- c) C. Mortgage or sale of assets such as jewellery, etc.
- d) insurance

If insured

- a) Private insurance policy
- b) State Support Scheme

What factors influenced the obstetric approach you chose?

Have you researched the method you chose anywhere?

Does choosing a birth control method depend on your income?

Yes/No

Are you aware of the pros and cons of normal delivery vs. CS delivery? How did you make this decision?

Were there any specific priorities for you or your family members in choosing a normal delivery or CS delivery? What role did your doctor play in making this decision?

Has anyone in your family or friends recently given birth? In what hospital/what kind of birth did it take place? Did their experiences have any impact on you?

Did you receive any reimbursement or KCR kit?

Yes/No

Did you register your pregnancy?

Yes/No

If yes, have you taken the following?

- a. Immunisation record
- b. Iron-folic drugs
- c. Counselling
- d. Antenatal care (ANC)

If you received prenatal care, how many times?

Did you take any medications to reduce pain during the delivery process? Did you have any other facilities to reduce pain during labor? (Epidural, water birth, etc.)

What is the mother's current health status (are there any problems after delivery?)

How did you prepare before, during, and after pregnancy? What resources did you use to learn about the birthing process? (Family, Internet, books, etc.)

Do you have any tips or exercises to follow on how to prepare yourself for childbirth?

How active were you during your pregnancy? What kind of eating habits and what nutrients did you take?

Do you believe that you or your family members have benefited from counseling, additional training programs, and awareness campaigns, etc.?

Why are you afraid of pregnancy/birth? How did you reduce that fear?

What kind of relationship did you and your family have with the obstetrician during your pregnancy? How often did you have medical checkups and how did the medical staff prepare you for your delivery?

Have you noticed any changes based on your maternity experience?

Please try to ascertain the sphere of influence on the mode of delivery during pregnancy and delivery from the mother's perspective. You may use the following format to capture the information

Stakeholder	Their Counselling on the mode of delivery	Reasons	Your perception of the counselling. Do you prefer their advice over your own opinion?	Rank of the Influencer (Most Important Influencer is ranked 1, and the least is ranked 11)
Spouse				
Mother				
Mother-in-Law				
Close Relatives				
ASHA				
ANM				
Staff Nurse/MO				
Gyn/Obs				
Media outlet				
Any other source of information				

APPENDIX -C

FOCUS GROUP GUIDE FOR MOTHERS AND MOTHER-IN-LAWS

Additional Directions

- Allot 45 to 60 minutes per focus group and screen between 8 to 10 (min 6 – max 12) participants.
- The role of the moderator is to facilitate the discussion, not lead it.
- Allow 10-20 minutes for each discussion topic. Announce to participants when both 5 minutes and 10 minutes remain so that they are aware of the time left to contribute their thoughts.
- Use your judgment to determine if the topic is providing valuable data and need to adjust the amount of time spent on that particular topic.
- Encourage each participant to speak equally. Call on participants that are not contributing as much to the discussion.
- Suggest to participants to speak up when they have difference of opinion, rather than agreeing with everyone else's opinions and views.
- Undertake an icebreaker initially and give opportunities for additional information that could be documented at the end of the focus group if participants wish to convey in person and not as a group.

FOCUS GROUP GUIDE FOR MOTHERS AND MOTHER-IN-LAWS

Archival:

Site:

Interviewer:

Date:

1. Target Audience:

- a) Mothers of women who delivered in the last 6 months
- b) Mothers-in-law of women who delivered in the last 6 months
- c) Both above (a&b) should have daughters/daughters-in-law who had normal and CS deliveries
- d) Include those mothers or mothers-in-law who had a stillbirth or loss of a baby of their wards in the recent pregnancy.

Attendees and Schedule

Date	Time	Participant Name/Identity

Start Time:

End Time:

1. Moderator Guide and Script:

1.1 Introduction - Explanation of Project:

First, I would like to thank all of you for participating in this focus group. The goal of this session is to obtain your individual and group feedback verbatim and to get your ideas for the identified discussion topic. The valuable comments and suggestions you provide today will shed light on this very important health care issue related to **“Implementation research to reduce caesarean section rates in Telangana state”**.

Directions:

In the next 45 minutes to 1 hour, I will be taking notes and recording your discussion. I would like everyone to talk and contribute as much as possible, as it will help to evaluate the quality of care given, preference and reasons of why your daughters or daughters in law prefer or preferred their modalities of delivery for their recent baby.

1.2 Ice Breaker – 1 Fact about Yourself

Each person thinks about 1 fact about themselves of being grandmothers. Each person then talks about this fact to the moderator and others in the group. This fact may or may not be directly related to the issue to be discussed. The first person then is asked to rate the best fact she has heard from the group and why?

1.3 Dialogue of Required Topics to Cover:

Issue 1: Quality of Care during the most recent pregnancy and delivery

Probe 1: What does the group think about the quality of care received during the most recent pregnancy and delivery for their wards? Elaborate

Probe 2: What does the group think are the good things about the experience? Why?

Probe 3: What did they not like about the care and why?

Probe 4: Any suggestions about the improvements in the quality of care?

Issue 2: Preference for the modality of the most recent delivery

Probe 1: Who decided on the mode of delivery in the most recent delivery?

Probe 2: How long they had to wait between admission and delivery?

Probe 3: As elders in the family, did they have a say in the preference for the delivery modality of their wards?

Probe 4: In those who had CS delivery was it decided beforehand that they will deliver by CS or was it a sudden decision? In the latter case, what was their reaction after hearing about it? Why?

Issue 3: Views on modality of delivery:

Probe 1: Allowing women to deliver normally or having planned CS is good? Elaborate on views

Probe 2: What do they think about women delivering through the normal route?

Probe 3: Should CS be a planned decision, or is it inevitable that sometimes a decision is made at the last moment, depending on the situation? Elaborate

Issue 4: Expenditures incurred on delivery:

SL.NO	HEAD	COST
1	Transport	
2	Medicine	
3	Procedure	
4	Loss of wages	
5	Gratuity	
6	Food, Boarding, Lodging	
7	For any postpartum care	
8	Any other	
9	Overall	

1.4 Closing Remarks:

The moderator summarises the key points discussed and some key issues that emerged and shares them with the group to get any comments.

Thanks to the group for the time and responses!

APPENDIX -D

FOCUS GROUP GUIDE FOR HUSBANDS/SPOUSE/CIVIL PARTNER

Archival:

Site:

Interviewer:

Date:

1.1 Target Audience:

a) Husbands/Spouse/Partners of women who delivered in the last 6 months

d) Include those Husbands/spouses/Partners of women who had a stillbirth or loss of a baby of their ward in the recent pregnancy.

Attendees and Schedule

Date	Time	Participant Name/Identity

Start Time:

End Time:

2. Moderator Guide and Script:

2.1.Introduction - Explanation of Project:

First, I would like to thank all of you for participating in this focus group. The goal of this session is to obtain your individual and group feedback verbatim and to get your ideas for the identified discussion topic. The valuable comments and suggestions you provide today will shed light on this important healthcare issue related to **“Implementation research to reduce caesarean section rates in Telangana state”**.

2.2 Directions:

In the next 45 minutes to 1 hour, I will be taking notes and recording your discussion. I would like everyone to talk and contribute as much as possible, as it will help to evaluate the quality of care given, preferences and reasons why your wife/partner prefers or preferred their modalities of delivery for their recent baby.

2.3 Ice Breaker – 1 Fact about Yourself:

Each person thinks about 1 fact about themselves of being a father. Each person then talks about this fact to the moderator and others in the group. This fact may or may not be directly related to the issue to be discussed. The first person then is asked to rate the best fact she has heard from the group and why?

2.4 Dialogue of Required Topics to Cover:

Issue 1: Impression of Quality of Care during last pregnancy & delivery

Probe 1: What does the group think about the quality of care received during the most recent pregnancy and delivery for their wives/partners? Elaborate

Probe 2: Did the husbands/Spouses have any say in where their wives/spouses should get their check-up during the pregnancy period? Elaborate

Probe 3: Did their own socio-economic status decide the place of checkup and delivery? Elaborate

Issue 2: Preference for the modality of the most recent delivery

Probe 1: Did you have a say in which place the wife/partner should deliver for the most recent delivery?

Probe 2: Did you have a say in what type of delivery your wife/partner should deliver for the most recent delivery?

Probe 3: Did you avail leave or was present during the delivery of your wife/partner? Elaborate

Issue 3: Perceptions about mode/route of delivery

Probe 1: What do husbands/partners think about the normal delivery process? Elaborate

Probe 2: Do they know about operation called Caesarean Section? If yes - What do they think about women delivering through this mode?

Probe 3: In those who had CS delivery was it decided beforehand that they will deliver by CS or was it a sudden decision? In the latter case, what was your reaction after hearing about it and did you have a say in the decision? Please opine.

Issue 4: Expenditures incurred on delivery:

SL.NO	HEAD	COST
1	Transport	
2	Medicine	
3	Procedure	
4	Loss of wages	
5	Gratuity	
6	Food, Boarding, Lodging	
7	For any postpartum care	
8	Any other	
9	Overall	

2.5 Closing Remarks:

The moderator summarises the key points discussed and some key issues that emerged and shares them with the group to get any comments.

Thanks, the group for the time and responses

APPENDIX -E

FOCUS GROUP GUIDE FOR ACCREDITED SOCIAL HEALTH ACTIVISTS (ASHA)

Archival:

Site:

Interviewer:

Date:

1.Target Audience

a) Accredited Social Health Activists (ASHA's) in the area of the selected units of the selected districts.

Attendees and Schedule

Date	Time	Participant Name/Identity

Start time:

End time:

2.Moderator Guide and Script

2.1.Introduction - Explanation of Project

First, I would like to thank all of you for participating in this focus group. The goal of this session is to obtain your individual and group feedback verbatim and to get your ideas for the identified discussion topic. The valuable comments and suggestions you provide today will shed light on this very important health care issue related to “**Implementation research to reduce caesarean section rates in Telangana state**”

2.2.Directions

In the next 30 to 45 minutes, I will be taking notes and recording your discussion. I would like everyone to talk and contribute as much as possible, as it will help to evaluate the quality of care given, preference and reasons of why your wife/partner prefer or preferred their modalities of delivery for their recent baby.

2.3.Ice Breaker – 1 Fact about Yourself

Each person thinks about 1 fact about themselves of being an ASHA. Each person then talks about this fact to the moderator and others in the group. The first person then is asked to rate the best fact she has heard from the group and why?

2.4.Dialogue of Required Topics to Cover:

Issue 1: Role in Care during Pregnancy

Probe 1: How do ASHA's contribute to Care during pregnancy in their field practice catchment area? Elaborate

Probe 2: What roles do ASHA's play to help women during the antenatal period and pregnancy? Elaborate

Probe 3: Do ASHA's give information about the modes of delivery and prepare the women? If yes? How? Elaborate

Issue 2: Role in modality of delivery

Probe 1: Do ASHAs accompany women when they go for delivery? If yes, please tell us...

Probe 2: What are the common questions or concerns asked about the modality of delivery by the women to the ASHA's while they accompany the pregnant women to facility? Please elaborate.

Issue 3: Post-delivery status of mothers

Probe 1: Do ASHA's visit the mothers after delivery in their areas? Why?

Probe 2: Are any concerns expressed by the mothers to the ASHA's about the experiences during delivery?

Probe 3: Any other aspect of care or delivery they would like to express with respect to pregnancy and delivery? Please opine.

Issue 4: Monetary aspects of delivery

Probe 1: What is the average spend by the family on a normal delivery? For what?

Probe 2: What is the average spend by the family on a caesarean delivery? For what?

Probe 3: What is the usual source of funding for delivery expenses?

Issue 5: Expenditures incurred on delivery as per their view:

SL.NO	HEAD	COST
1	Transport	
2	Medicine	
3	Procedure	
4	Loss of wages	
5	Gratuity	
6	Food, Boarding, Lodging	
7	For any postpartum care	
8	Any other	
9	Overall	

2.5.Closing Remarks:

The moderator summarises the key points discussed and some key issues that emerged and shares them with the group to get any comments.

Thank you, the group, for your time and responses.

APPENDIX -F

FOCUS GROUP GUIDE FOR STAFF NURSES (SN)

Archival:

Site:

Interviewer:

Date:

1. Target Audience

a) Staff Nurses (SN) in the OBG facility of the selected districts.

Attendees and Schedule

Date	Time	Participant Name/Identity

Start Time:

End Time:

2. Moderator Guide and Script:

2.1 Introduction - Explanation of Project:

First, I would like to thank all of you for participating in this focus group. The goal of this session is to obtain your individual and group feedback verbatim and to get your ideas for the identified discussion topic. The valuable comments and suggestions you provide today will shed light on this important healthcare issue related to **“Implementation research to reduce caesarean section rates in Telangana state”**.

Directions

In the next 30 to 45 minutes, I will be taking notes and recording your discussion. I would like everyone to talk and contribute as much as possible, as it will help to evaluate the quality of care given, preference and reasons of why your wife/partner prefer or preferred their modalities of delivery for their recent baby.

2.2 Ice Breaker – 1 Fact about Yourself

Each person thinks about 1 fact about themselves of being an SN. Each person then talks about this fact to the moderator and others in the group. The first person then is asked to rate the best fact she has heard from the group and why?

2.3 Dialogue of Required Topics to Cover

Issue 1: Role in Quality of Care during Pregnancy and modality of delivery

Probe 1: How do SN's contribute to Quality of Care during pregnancy and during the delivery? Elaborate

Probe 2: Have the Staff Nurses undergone any training with respect to following Standard Operating Procedures during delivery and postnatal period? Elaborate

Probe 3: Do they have or follow any guidelines or protocols during delivery or referral to obstetrician? Inform

Probe 4: Do SN's ascertain whether women follow instructions with respect to taking iron folic acid tablets, immunisation and adequate nutrition during the ANC period? Elaborate.

Probe 5: What is the role the SNs play during the time when mothers are admitted to labor ward/room? Elaborate

Probe 6: What are the common questions or concerns asked about the modality of delivery by the women to the SN's? Please elaborate

Issue 2: Post-delivery status of mothers and post-natal care

Probe 1: Do SN's have a role with the mothers after delivery? What all roles?

Probe 2: Are any concerns expressed by the mothers to the SN's about the experiences during delivery?

Probe 3: What do SN's themselves perceived and thinks about normal and CS deliveries? Elaborate

Probe 4: What kind of issues do SN's deal with in the mother's post-partum period generally and how do they deal with it? Elaborate the issues.

Issue 3: Expenditures incurred on delivery as per their view:

Sl.NO	HEAD	COST
1	Transport	
2	Medicine	
3	Procedure	
4	Loss of wages	
5	Gratuity	
6	Food, Boarding, Lodging	
7	For any postpartum care	
8	Any other	
9	Overall	

2.4 Closing Remarks:

The moderator summarises the key points discussed and some key issues that emerged and shares them with the group to get any comments.

Thanks to the group for the time and responses.

APPENDIX -G

FOCUS GROUP GUIDE FOR AUXILIARY NURSE MIDWIVES (ANM)

Archival:

Site:

Interviewer:

Date:

1. Target Audience

a) Auxiliary Nurse Midwives (ANMs) in the field practice area of the selected districts.

Attendees and Schedule

Date	Time	Participant Name/Identity

Start Time:

End Time:

2. Moderator Guide and Script:

2.1 Introduction - Explanation of Project:

First, I would like to thank all of you for participating in this focus group. The goal of this session is to obtain your individual and group feedback verbatim and to get your ideas for the identified discussion topic. The valuable comments and suggestions you provide today will shed light on this very important health care issue related to **“Implementation research to reduce caesarean section rates in Telangana state”**.

Directions

In the next 30 to 45 minutes, I will be taking notes and recording your discussion. I would like everyone to talk and contribute as much as possible, as it will help to evaluate the quality of care given, preference and reasons of why your wife/partner prefer or preferred their modalities of delivery for their recent baby.

2.2 Ice Breaker – 1 Fact about Yourself

Each person thinks about 1 fact about themselves of being an ANM. Each person then talks about this fact to the moderator and others in the group. The first person then is asked to rate the best fact she has heard from the group and why?

2.3 Dialogue of Required Topics to Cover

Issue 1: Role in Quality of Care during Pregnancy and modality of delivery

Probe 1: How do ANM's contribute to Quality of Care during pregnancy in their field practice catchment area? Elaborate

Probe 2: What is the schedule that ANM's follow play to provide antenatal period and pregnancy? Elaborate

Probe 3: Do ANM's ascertain whether women follow instructions with respect to taking iron folic acid tablets, immunisation and adequate nutrition during the ANC period? Elaborate.

Probe 4: Do ANM's give information about the modes of delivery and prepare the women? If yes? How? Elaborate

Probe 5: Do women who have delivered discuss the preferred mode of delivery with the ANM's? If yes, what kind of discussions?

Probe 6: Do ANM's accompany mothers during delivery or are asked to accompany them? If Yes, why?

Probe 7: What are the common questions or concerns asked about the modality of delivery by the women to the ANM's? Please elaborate.

Issue 3: Post-delivery status of mothers and post-natal care

Probe 1: Do ANM's visit the mothers after delivery in their areas? Why?

Probe 2: Are any concerns expressed by the mothers to the ANM's about the experiences during delivery?

Probe 3: What do ANM's themselves perceive and think about normal and CS deliveries? Elaborate

Probe 4: Are ANM's apprised about childcare, pain stress, difficulty in feeding child after delivery? Elaborate the issues.

Issue 3: Expenditures incurred on delivery as per their view:

SL.NO	HEAD	COST
1	Transport	
2	Medicine	
3	Procedure	
4	Loss of wages	
5	Gratuity	
6	Food, Boarding, Lodging	
7	For any postpartum care	
8	Any other	
9	Overall	

2.4 Closing Remarks:

The moderator summarises the key points discussed and some key issues that emerged and shares them with the group to get any comments.

Thanks, the group, for the time and responses.

APPENDIX -H

Benefits of Normal Delivery

1. The time spent in the hospital decreases, and recovery time is faster.
2. Risks associated with major surgery can be avoided.
3. Breastfeeding can be started for the baby more quickly.
4. Life-threatening risks during pregnancy can be significantly reduced.
5. Asthma and obesity in children can be reduced.
6. Delivery occurs at a lower cost.
7. Reproductive problems are greatly reduced.
8. Normal delivery enhances the baby's immunity against diseases.
9. During normal delivery, the fluid accumulated in the baby's lungs is cleared out.
10. The bond between mother and child strengthens quickly.

Drawbacks/Losses of Caesarean

Delivery

1. There is a risk of complications from the anesthesia given before the operation.
2. There is a risk of bleeding during the caesarean delivery or after delivery.
3. There is a risk of infection in the wound caused by the caesarean.
4. Injury to the bladder and urinary tract.
5. There is a possibility of blood clots forming inside the veins (thromboembolism).
6. There is a delay in starting breastfeeding from the mother to the baby after delivery.
7. It takes longer to recover and regain health after caesarean delivery.
8. More pain, discomfort, and excessive bleeding occur.
9. It takes at least 2 months for the pain and wound from the operation to subside.
10. Caesarean deliveries have 3 times more deaths compared to normal deliveries.
11. If the first delivery is caesarean, the chances of future deliveries also being caesarean increase.
12. Placental complications like adherent placenta.

SHORT AND LONG-TERM PROBLEMS

1. Scars and marks form on the skin due to the wound from the operation.
2. There is a possibility of long-term issues like back pain.
3. Short and long-term health problems for the baby.
4. Breathing problems.
5. Surgical wounds.
6. Unnecessary hospitalisations.
7. Children born through C-section have a risk of asthma up to 5 years of age and obesity up to 12 years of age.

EXERCISES/FOODS TO TAKE

Avoid heavy workouts in the third trimester, as lifting heavy weights can cause problems like leakage of large amounts of amniotic fluid.

1. Bhadrasana (Butterfly Position)

This pose stretches the bones in your pelvic area, facilitating normal delivery and reducing back pain.

How to do it: Hold your soles (or feet) and bring your heels as close to your groin as possible. Bend forward, hold the position, and take deep breaths.



2. Balasana (Pelvic Stretching)

Strengthening the pelvic floor muscles is crucial when preparing for a vaginal delivery. Kegel exercises (pelvic/bottom area) target the pelvic floor muscles and can serve as pregnancy exercises for a normal delivery. Exercises designed to tighten the muscles in the pelvic area are known as 'Kegel exercises.' These also help prepare the vaginal area firmly. During pregnancy, the ligaments in the mother's pelvic area relax to allow the baby's head to come out during labor. Hormones such as progesterone and relaxing play a role in this process. Similarly, the collagen

in that area also breaks down to assist in the birthing process. Kegel exercises help bring all these back to their previous state after delivery. Just like how we tighten that part when holding urine, hold it tight and then release it. Doing this is the Kegel exercise.

How to do it: Slow Kegel exercise: For 10 sets, hold the tightened muscles for 3-10 seconds. Fast Kegel exercise: Do four sets of 25-30 contractions and relaxations of the pelvic floor muscles, with five seconds of rest in between.

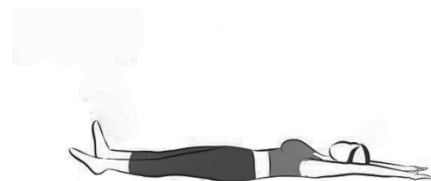


3. Yoga

Yoga is widely recommended for expectant mothers aiming for a normal delivery, and there are various asanas that help develop control and endurance for a mother expecting a normal delivery.

A. Yastikasana (Stick Pose)

Lie down with your hands and legs straight above your head. Keep your hands and legs as close together as possible. Hold for as long as it is comfortable.



B. Vakrasana (Twisted Pose)

Sit comfortably on the floor with your legs extended in front. Bend your left knee and place your left foot on the right knee. Inhale and raise your hands above your shoulders. Exhale, hold your right knee with your right hand, and twist gently as far as possible. Hold for a moment. Reverse the exercise. Sit comfortably on the floor. Slowly press your calves, slide them closer to your body. Lean forward gently as far as you can bend. Hold for five seconds.



4. Squats

Squats are excellent exercises for pregnancy because they help with the contraction and relaxation of pelvic muscles and also reduce labour discomfort. Taking a position with a gym ball or holder provides appropriate pressure on the pelvic area and thighs.

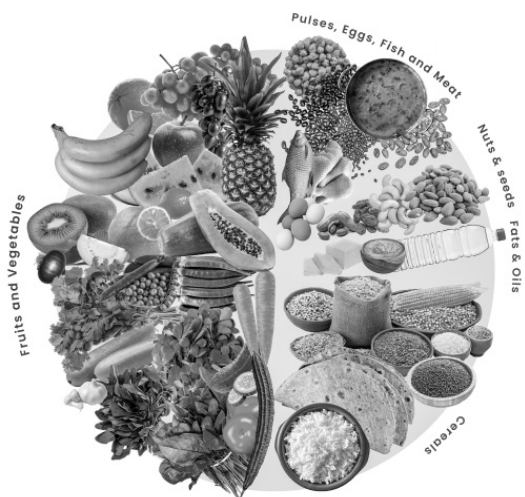
How to do it: To come into a sitting position, take a deep breath and bend down. After a second, return to your starting position. Repeat the squat, but this time place your hands on the inside of your thighs and aim to open your pelvis by pushing them back. With good support for your feet, slowly return to the standing position.



YOGA SQUAT

Three meals a day, two healthy snacks, and if possible, one additional meal is good. (Depending on your weight and doctor's advice)

- Drink 10 to 12 glasses of water a day.
- Grains
- Pulses: 2 cups per day
- 2 glasses of milk / 2 cups of yogurt / some paneer
- Seasonal fruits and vegetables
- Fish, boiled eggs, and cooked meat
- Use iodised salt



FOODS NOT TO EAT

- Fried and unhealthy foods.
- Drinking more than two glasses of coffee or tea per day.
- Refined flour, such as in white bread, biscuits, high-sugar items, sweets, and those with high salt content, should be avoided.
- Do not eat raw or undercooked eggs and avoid drinking raw milk.

HEALTHY BEHAVIOURS TO FOLLOW WHEN PREGNANT

Do's:

- Maintain good personal hygiene to prevent the spread of other illnesses.
- Sleep for 8 hours at night and 2 hours during the day mandatorily.
- Take iron, folic acid, and calcium supplements regularly as advised by your doctor.

Don'ts:

- Do not take any medication without consulting a doctor.
- Avoid lifting heavy weights or engaging in strenuous work.
- Stay away from tobacco, alcohol, or any harmful substances.

APPENDIX -I
IDI MOTHERS
DEMOGRAPHIC DETAILS

Archival:

Site:

Interviewer:

Date:

Start:

End:

Name:

Age (in years):

Education:

Occupation:

Husband's Education:

Husband's Occupation:

Household Income:

At what age did you get married?

How was your pregnancy confirmed, and by whom was it confirmed?

Did Asha or the nurse explain to you about normal delivery or C-section?

Do you know the pros and cons of normal delivery vs. CS delivery?

Did Asha or the nurse explain to you what kind of food you should eat or what kind of exercises you should do?

What kind of diet and exercise have you been doing so far?

Answer the following questions based on your latest delivery

Nativity during delivery

- a) Parents' house
- b) In Lax House
- c) Other

How did the location of the birth affect your experience? Was it your personal preference to be here?

Did you have a baby during the weekdays or during the weekend? (Saturday and Sunday)

When did you have Delivery (Day or night, and what was the timing of the Delivery?)

How was your pregnancy confirmed, and by whom was it confirmed?

Please explain the procedure to consult a doctor for medical check-ups during pregnancy and before delivery. Where did you have your 3rd and 4th medical check-ups before delivery?

Describe your experience before and during your delivery.

(When you were hospitalised, before delivery, your feelings and those of your family, the way the doctors and medical staff treated you, etc.)

Place of Delivery

- a) In the hospital
- b) at home

If institutional, answer the following questions

Distance of facility from place of residence before admission for delivery (in km)

Type of facility

a) Government/Public facility

b) Private facility

If it is a government facility

a) Primary Health Centre (PHC)

b) Community Health Centre (CHC)

c) Regional Health Centre (AH)

d) District Health Centre (DH)

Does choosing a hospital for your delivery depend on your income?

Yes/No

Did you consult any other hospitals before choosing one? How did you choose the doctor?

What factors influenced your choice of location for childbirth?

Does choosing a hospital for your delivery depend on your income?

Yes/No

Expenditure incurred on delivery:

Sl.NO	HEAD	COST
1	Transport	
2	Medicine	
3	Procedure	
4	Loss of wages	
5	Gratuity	
6	Food, Boarding, Lodging	
7	For any postpartum care	
8	Any other	
9	Overall	

Funding sources provided for childbirth

- a) Savings/ own money
- b) Loans, including hand loans
- c) C. Mortgage or sale of assets such as jewellery, etc.
- d) insurance

If insured

- a) Private insurance policy
- b) State Support Scheme

What factors influenced the obstetric approach you chose?

Have you researched the method you chose anywhere?

Does choosing a birth control method depend on your income?

Yes/No

Are you aware of the pros and cons of normal delivery vs. CS delivery? How did you make this decision?

Were there any specific priorities for you or your family members in choosing a normal delivery or CS delivery? What role did your doctor play in making this decision?

Has anyone in your family or friends recently given birth? In what hospital/what kind of birth did it take place? Did their experiences have any impact on you?

Did you receive any reimbursement or KCR kit?

Yes/No

Did you register your pregnancy?

Yes/No

If yes, have you taken the following?

- a) Immunisation record
- b) Iron-folic drugs
- c) Counselling
- d) Antenatal care (ANC)

If you received prenatal care, how many times?

Did you take any medications to reduce pain during the delivery process? Did you have any other facilities to reduce pain during labor? (Epidural, water birth, etc.)

What is the mother's current health status (are there any problems after delivery?)

How did you prepare before, during, and after pregnancy? What resources did you use to learn about the birthing process? (Family, Internet, books, etc.)

Do you have any tips or exercises to follow on how to prepare yourself for childbirth?

How active were you during your pregnancy? What kind of eating habits and what nutrients did you take?

Do you believe that you or your family members have benefited from counselling, additional training programs, and awareness campaigns, etc.?

Why are you afraid of pregnancy/birth? How did you reduce that fear?

What kind of relationship did you and your family have with the obstetrician during your pregnancy? How often did you have medical checkups, and how did the medical staff prepare you for your delivery?

Have you noticed any changes based on your maternity experience?

Please try to ascertain the sphere of influence on the mode of delivery during pregnancy and delivery from the mother's perspective. You may use the following format to capture the information.

Stakeholder	Their Counselling on the mode of delivery	reasons	Your perception of the counselling. Do you prefer their advice over your own opinion?	Rank of the Influencer (Most Important Influencer is ranked 1, and the least is ranked 11)
Spouse				
Mother				
Mother-in-Law				
Close Relatives				
ASHA				
ANM				
Staff Nurse/MO				
Gyn/Obs				
Media outlet				
Any other source of information				

APPENDIX - J



Institutional Ethics Committee University of Hyderabad

Justice TNC Rangarajan
Chairperson

Prof. Geeta K. Vemuganti
Member Secretary

Decision Letter of Institute Ethics Committee

IEC No.		Date of review	18-02-2020
Application No:	UH/IEC/2020/235		
Project Title:	Implementation Research to Reduce Caesarean Section rates in Telangana		
Principal Investigator/ Co-PI:	PI: Mr. Jirra Karthik CI: Prof. B.R. Shamanna		
Participating Institutes if any	----	Approval from Participating Institute	---
Documents received and reviewed	Protocol & ICF		
In case of renewal submission of update	----		
Decision of the IEC:	Approved after the conditions suggested at the IEC meeting were fulfilled on 04.03.2020 Duration: One year from date of approval		
Any other Comments Requirements for conditional Approval	----		
Members Present	Sri Justice Rangarajan, Prof. Geeta K. Vemuganti, Dr. C.T. Anitha, Dr. Savitri Sharma, Dr. Suvashisa Rana, and Dr. Insaf Ahmed		

Please note:

- Any amendments in the protocol must be informed to the Ethics committee and fresh approval taken.
- Any serious adverse event must be reported to the Ethics Committee within 48 hours in writing (mentioning the protocol No. or the study ID)
- Any advertisement placed in the newspapers, magazines must be submitted for approval.
- The results of the study should be presented in any of the academic forums of the hospital annually.
- If the conduct of the study is to be continued beyond the approved period, an application for the same must be forwarded to the Ethics Committee.
- It is hereby confirmed that neither you nor any of the members of the study team participated in the decision making/voting procedures.

Chairperson

Member Secretary

(Justice Rangarajan)

(Prof. Geeta K Vemuganti)

Address : School of Medical Sciences, University of Hyderabad, C.R. Rao Road, Gachibowli, Hyderabad - 500 046

Tel (O) : +91-040-23135470 / 23013279

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UNIVERSITY OF HYDERABAD
INSTITUTIONAL ETHICS COMMITTEE DECISION LETTER



IEC No.	UH/IEC/2020/235	Date of review	26-08-2021
Application No:			
Project Title:	Implementation research to reduce caesarean section rates in Telangana		
Principal Investigator/ Co-PI:	PI: Mr. Jirra Karthik CI: Prof. B.R. Shamanna		
Participating Institutes if any	----	Approval from Participating Institute	----
Documents received and reviewed	Protocol & ICF		
In case of renewal submission of update	----		
Decision of the IEC:	Approved Duration: One year from date of approval		
Any other Comments Requirements for conditional Approval	----		
Members Present	Dr. A.S. Sreedhar, Dr. P. Uday Kumar, Prof. B. R. Shamanna, Dr. M. Varalakshmi, Sri. A. Madhava Rao, Dr. Stalin Choudary, Prof. Pingali Sailaja, Dr. M. K. Aruansree, Dr. Deepa Srinivas and Ms. A. D. Shobhavathi		

Please note:

- Any amendments in the protocol must be informed to the Ethics committee and fresh approval taken.
- Any serious adverse event must be reported to the Ethics Committee within 48 hours in writing (mentioning the protocol No. or the study ID)
- Any advertisement placed in the newspapers, magazines must be submitted for approval.
- If the conduct of the study is to be continued beyond the approved period, an application for the same must be forwarded to the Ethics Committee.
- It is hereby confirmed that neither you nor any of the members of the study team participated in the decision making/voting procedures and declared conflict of interest.

A S Sreedhar
26/08/2021

Chairman
(Dr. A S Sreedhar)

B.R. Shamanna
26/8/2021

Member Secretary
(Prof. B.R.Shamanna)

M. Varalakshmi
26/8/2021

Convenor
(Dr. M. Varalakshmi)

Address: School of Medical Sciences, University of Hyderabad, C. R. Rao Road, Gachibowli, Hyderabad-5000046
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APPENDIX - K



AMRITA INTERNATIONAL PUBLIC HEALTH CONFERENCE

2nd & 3rd
DECEMBER 2022

Theme

**CLIMATE CHANGE:
A PUBLIC HEALTH THREAT**

Organized by
Dept. of Community Medicine &
Public Health, AIMS, Kochi





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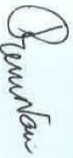
Awarded to

JIRA KARTHIK

for presenting Scientific Paper / Poster titled

*INCREASING LESAREAN SECTION RATES IN
TELANGANA STATE - AN EXPLORATORY STUDY*

during the 5th Amrita International Public Health Conference
held at Amrita Institute of Medical Sciences, Kochi, India



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Professor & HOD
Dept. of Community Medicine



Dr. Teena Mary Joy
Organizing Secretary
Associate Professor
Dept. of Community Medicine

5th

AMRITA INTERNATIONAL PUBLIC HEALTH CONFERENCE

2nd & 3rd
DECEMBER 2022

Theme
**CLIMATE CHANGE:
A PUBLIC HEALTH THREAT**

Organized by
Dept. of Community Medicine &
Public Health, AIMS, Kochi



Certificate of Appreciation

Awarded to

Jivakarthik

for participating as a **Delegate** in the

5th Amrita International Public Health Conference
held at Amrita Institute of Medical Sciences, Kochi, India.

KSMC has granted CME credit points of 3.5 hours vide letter dated

09/11/2022 Ref No: CI/19119/2022/MC-CME

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Dr. Prem Nair
Group Medical Director
Amrita Hospitals

Dr. Gireesh Kumar K. P.

Dr. Gireesh Kumar K. P.
Principal
Amrita School of Medicine

Dr. Aswathy S.

Dr. Aswathy S.
Organizing Chairperson
Professor & HOD
Dept. of Community Medicine

Dr. Teena Mary Joy

Dr. Teena Mary Joy
Organizing Secretary
Associate Professor
Dept. of Community Medicine



हैदराबाद विश्वविद्यालय
University of Hyderabad



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Central Lancashire
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DALHOUSIE
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GATES foundation



World Health
Organization

CERTIFICATE

This is to certify that Karthik Tirra has participated
in the "Re-JUDGE project: Partners and Stakeholders Meet" held on 7th and 8th September 2022 at
the University of Hyderabad.

SOO DOWNE

Chief Investigator
University of Central Lancashire

B.R. SHAMANNA

Co-Investigator
University of Hyderabad

DR. ANA PILAR BETRÁN

Co-Investigator
World Health Organization

ORIGINAL RESEARCH ARTICLE

Understanding The Reasons for High Rates of Caesarean Section Deliveries in Telangana, South India: An Explorative Study

Karthik Jirra¹, Surya Durga Prasad M², Shamanna B R³

^{1,2,3}School of Medical Sciences, University of Hyderabad, Hyderabad, India

DOI: 10.55489/njcm.141120233324

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Background: Telangana continues to top the list of the highest number of caesarean section (C-section) deliveries in the country for the financial year 2019-2020. As per NFHS-5 it is about 60.7% deliveries out of the total number of all institutionalized childbirths. This study aims to address the crucial research gap by qualitatively exploring the reasons for the high rates of unnecessary C-section rates in the state of Telangana.

Methodology: A purposive sampling was done across the health care facilities and geographies in the State & the districts were selected based on high, medium and low CS rates. A 360-degree stakeholder engagement approach was taken for a qualitative exploration to find out the reasons.

Results: Medical, behavioural, cultural, and infrastructure including health system related factors have contributed to the rise of C-sections, particularly unnecessary elective C-sections. Limited trained personnel for doing normal deliveries in the public sector, infrastructure and safety issues for mother and child, and a preference for painless deliveries, and prior CS delivery stood out.

Conclusions: As per the study's findings, it can be said that non-medical reasons account for a high percentage of C-sections in Telangana.

Key-words: Caesarean sections, Maternal health, institutional Births, Non-Medical Reasons, Telangana

ARTICLE INFO

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Page 704

Table 4: Summary of reasons for facilitators of CS

Determinants and Facilitators
Personal & Family reasons
• Having a smaller family • Having a late pregnancy and child • The primary concern of safety of mother and child • Inability to bear pains • Faster processes and personalised care at private facility • Mothers/Mothers in Law want painless births for their wards
Community reasons
• CS is considered normal by the community • Siblings and Peers in the community have had CS • Live Demonstration in the community • Higher SE status and Education Level • Status symbol to have CS in community
System reasons
• Acute Staff shortage & distribution at all care levels • High Case Loads; Managing OPD • Lack of training and enabling environment of health care staff • Limited time and capacity to attend to pregnant woman in labour • Absence of clear-cut protocols for triaging, referral and care • Empowering local health care staff for decision making • Managing expectations during false pains • Fear of medico-legal issues and own safety/protection • Specialists subjected to influence & pressure at work
Policy reasons
• Guidelines for 3rd & 4th ANC visits at higher facilities for all • Gap in interpretation of advice leads to lost to system • Increased registrations due to KCR kit – institutional births
Medical & Other reasons
• Previous LSCS surgeries is the biggest indication • Tentativeness and no support facilities for VBAC • Avoiding Consumer issues like violence and litigation

It was also observed that C-Sections were also influenced by the increasing cultural preference to deliver on an auspicious day. Grey literature from Indian context discusses on the increasing trend of “muhurat C-sections”.^{17,18} Evidence from other middle-income countries also highlight the impact of preference for delivering on an auspicious day.^{19,20}

The study findings report that the infrastructural challenges in public sector, distance from referral centres and non-availability of specialist gynaecologists impacted decision to undergo C-section in private facilities. Districts that had low rates of CS also had distance to higher facility as the reason while those with higher rates had few or no trained birth attendant to conduct deliveries. A study from Uttar Pradesh in India reported that distance from First Referral Unit (FRU), lack of transport, unfamiliarity with the facility prompted the women to seek institutional delivery from private facilities.²¹ A recent study reported that mothers delivering in private facilities have over 3 times odds of delivering through C-section.⁶ The recent NFHS-5 fact sheet reports that in Telangana, the prevalence of C-Section in private hospitals was 81.5% whereas the same in public hospitals was 44.5%.¹¹ While studies indicate several monetary and non-monetary reasons for high prevalence of C-section in private sector,²² recent evidence

estimates that over 0.9 million unwanted C-sections were performed in private sector alone.²³ With a higher number considering the increase in C-section numbers from 2015-2020.

CONCLUSION

Increase in C-section deliveries is driven by increased institutional deliveries, higher preference for smaller families, medical, behavioural, cultural and health infrastructural and systemic reasons. While each of the dimensions reported influenced decision-making towards C-section it may be noted that the above dimensions reinforce each other. Based on the study's findings and existing quantitative evidence (such as NFHS surveys) it can be argued that non-medical reasons account for a large number of C-sections in Telangana; this is reinforced by our thematic analysis which indicates that the perceptions related to unnecessary CS were the same amongst the key stakeholders of high, medium, and low rates of CS prevalence. Based on study results it can be said that interventions should focus on counselling and behavioural change communication to encourage the mothers and their families to opt for vaginal delivery.

ACKNOWLEDGEMENT

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APPENDIX - M

Implementation research to reduce caesarean section rates in Telangana state.

by Karthik Jirra

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Submission ID: 2801863071

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Word count: 29555

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