

Research Article

Analysis of primary cesarean section in Minia Maternity university Hospital (MMUH) (A prospective descriptive study).

Abdlbaset F. Abdelbaset¹, Saad El Gelany¹, Ahmed B. Mousa¹ and Hagar O. Sediek Salem¹.
Department of Obstetrics & Gynecology, Faculty of Medicine, Minia University, Minia, Egypt

Abstract

Background: Analysis of primary cesarean section in Minia Maternity University Hospital (MMUH) (A prospective descriptive study). **Methods:** This is a prospective descriptive study in which the researchers analysed the women who gave birth by Iry CS in Minia Maternity university Hospital (MMUH) during period from June 2021 to December 2021. **Results:** there was a significant increase in primary CS rate in Minia Maternity university Hospital (MMUH) in this study it presents about 21.3%, higher primary CSR was observed in women 20-47 years of age, In PG (55.5%), In overweight women (44.90%) and in rural than *urban* area. **Conclusions:** In this study, primary CS was high, the most common reasons for primary CS were mal-presentation, hypertensive disorders with pregnancy, fetal distress, appropriate should be considered to decrease primary CS in this study.

Keywords: Primary caesarian section, causes, complication, risk factors ,Egypt.

Introduction

Primary CS is of particular interest because it has an influence on future modes of delivery. There is also a concern about the indication for the procedure in a woman who has never tried her pelvis for vaginal delivery. It is a global issue because CS births are increasing⁽¹⁾, with short and long term maternal and newborn complications. These include post-CS infection, dangerous bleeding, increased need for blood transfusion, breathing problems, thromboembolic events (DVT, PE) and deaths among newborns, long hospital stay, risk of problems for future pregnancies including uterine rupture and maternal deaths⁽²⁾.

The rate of CS procedures has dramatically increased with its indications being liberalized to include foetal distress, dystocia, placenta praevia, as well as Bad Obstetric History (BOH)⁽³⁾

Many factors have been cited for the increase in cesarean rate, including

delayed childbearing, multiple gestations, increasing maternal obesity, maternal request, and physicians' fear of litigation.

The World Health Organization (WHO) stated in 2015 that caesareans are effective in saving maternal and infant lives only when they are required for medically indicated reasons and that CS rates higher than 10–15% at a population level not associated with reduced maternal and newborn mortality rate.

Patients and methods

This prospective descriptive study was carried out from June 2021 to December 2021. In the department of Obstetrics and Gynecology, Minia Maternity University

Hospital (MMUH) after being approved by the local ethical committee. All cases of primary CS are done in MMUH (CS (cesarian section), BOH (bad obstetric history) during this study was recruited.

The following data will be collected from:

clinical, demographic data, Indications of primary CS, Operative details (Type of CS (elective or emergency), Type of anesthesia (general or spinal), Surgeon Level, Operative time, Estimated blood Loss, need for blood transfusion), Hospital stay and Intraoperative or post-operative complications.

Statistical analysis:

The collected data were coded, tabulated, and statistically analyzed using SPSS program (Statistical Package for Social Sciences) software version 25.

Descriptive statistics were done for parametric (normally distributed) quantitative data by mean, Standard deviation (SD) and minimum and maximum of range, while for qualitative data by frequency and percentage. Analyses were done between the two groups for Qualitative data using Chi square test . The level of significance was taken at (P value \leq 0.05).

Results

This prospective descriptive study was conducted in MUMH during the period from June to December 2021. Three thousand four hundred eighty six case gave birth by CS, and seven hundred forty six case from them is categorized as primary CS.

During the study period 5854 women gave birth at the facility, 3496 (59.7%) by CS. Primary CS presents 21.3%. women's sociodemographic characteristics included age, residence (i.e. rural/ urban), it's found that more in rural than urban area, Obstetric characteristics included birth order and the number of fetuses (single or multiple) as illustrated in Figure (2).

The demographic characteristics of women who had a primary cesarean differed by parity. Primiparous women were more likely to be younger, and thinner, than multiparous women as illustrated in Figure (1).

The data mapped the indications for primary cesarean delivery into 9 predefined categories as illustrated in Figure (3): Fetal Malpresentation, Hypertension

disorder with pregnancy (pre-eclampsia, Eclampsia and CHTN).

Fetal distress (nonreassuring fetal heartrate (FHR)tracing), APHge (placenta previa,, vasa previa, abruption), failure to progress (arrest of dilation in the first stage of labor or arrest of descent in the second stage of labor) and cephalopelvic disproportion, suspected, fetal Macrosomia, Elective category included maternal request, multiparity women desiring a tubal ligation, advanced maternal age, and social or religious concerns. "Other" indications included all maternal factors not elsewhere specified. prior uterine scar including hysterotomy or myomectomy, Medical disorder with pregnancy.

Of the three most common indications in our study, Fetal Malpresentation 26.4% Breech is the Commonest Malpresennation. The Second indication is Hypertensive disorder with pregenancy 19.8% Pre-eclampsia is the commonest so to reduce Primary CS done due to pre-eclampsia is to early detection and control BP.

Following Hypertensive disorder with pregnancy was coming Fetal distress 14.8% nonreassuring FHR tracing was the commonest, finding opportunities to lower the primary cesarean rate by targeting cesareans performed for this reason is difficult because the interpretation of nonreassuring FHR tracing is highly subjective and strongly influenced by obstetric practice.

Recognizing that 8.04% of women in our study had a primary cesarean delivery after induction of labor, it is tempting to assert that avoiding labor induction could reduce the rate of primary cesarean delivery.

Of all primary cesareans in our study, 7.2% underwent a primary cesarean were performed on a singleton fetus in cephalic presentation, in our cohort failure to progress is of particular interest as it strongly affected the cohort of primiparous women at term with a singleton gestation in cephalic presentation. for failure to progress when the cervix was less than 6

cm dilated. supporting prior findings that the cesarean rate among in a previous analysis of Consortium on Safe Labor data, Zhang et al., concluded that 6 cm should be considered the start of the active phase of labor⁽⁴⁾. From this we deduce that waiting longer for labor to progress could have a major effect on decreasing the primary cesarean rate. Of women in our study diagnosed with prolonged second stage, were delivered in less than 3 hours (for primiparous women) and less than 2 hours (for multiparous women) from the time of complete dilation this supports the idea that conservatively managing the second stage of labor, by allowing adequate time and encouraging operative vaginal delivery, when appropriate, may also have a major effect on decreasing the primary cesarean rate.

Elective cesareans are an obvious target for reducing the primary cesarean rate. A prior uterine scar was described and we were unable to determine the reason for the uterine scar. For primiparous women, it was assumed that the scars represented

prior myomectomies, but the higher rate among multiparous women suggests that some primary cesareans may have actually been repeat cesareans that were recorded incorrectly. Although the percentage of women who Elected a primary cesarean was relatively small about 6.3%, presumably many of these cesareans could have been avoided.

For suspected fetal macrosomia 97.3% of neonates had a birth weight of less than 5,000 grams. The American College of Obstetricians and Gynecologists does not recommend offering a cesarean until the suspected fetal weight is more than 4,500 grams in diabetics and more than 5,000 grams in nondiabetics (ACOG2012). Our findings highlight the well-described limitations of antenatal diagnosis of estimated fetal weight, both clinical and ultrasound (ACOG2012).

Turning to the less common indication is Medical disorder e pregenancy and cardiac indication is the commenest for cesarean delivery.

Table (1): Demographic and clinical data of women delivering by primary CS during study period.

		N=746
Age	<i>Range</i>	(15-46)
	<i>Mean ± SD</i>	26.6±6.7
BMI	<i>Range</i>	(20-47)
	<i>Mean ± SD</i>	28.4±4.4
	<i>Under wt</i>	4(.5%)
	<i>Normal wt</i>	146(19.57%)
	<i>Over wt</i>	335(44.90%)
	<i>Obese</i>	223(29.89%)
	<i>Morbid obesity</i>	38(5.09%)
Parity	0	7(0.9%)
	1	413(55.5%)
	2	66(8.9%)
	3	57(7.7%)
	4	86(11.6%)
	5	63(8.5%)
	6	29(3.9%)
	7	14(1.9%)
	8	8(1.1%)
	9	1(0.1%)

N: number, SD: standard deviation, wt: weight, BMI: Body Mass Index.

Highier primary CSR was observed in women:

- 20-47 years of age.
- In PG (55.5%).
- In over wt women(44.90%).
- ❖ The table showed Demographic and clinical data of women delivering by primary CS during study period.

Table (2): Medical Comorbidities:

		N=746
Medical Comorbidities	<i>No</i>	371(49.7%)
	<i>Cardiac</i>	8(1.1%)
	<i>SLE</i>	1(0.1%)
	<i>Thrombocytopenia</i>	2(0.3%)
	<i>Epilepsy</i>	2(0.3%)
	<i>Retinal detachment</i>	1(0.1%)
	<i>Anemia</i>	2(0.3%)

Table (2) showed Medical Comorbidities and cardiac problem was the most (1.1%).

Figure (1): Social characteristics of the studied patients.

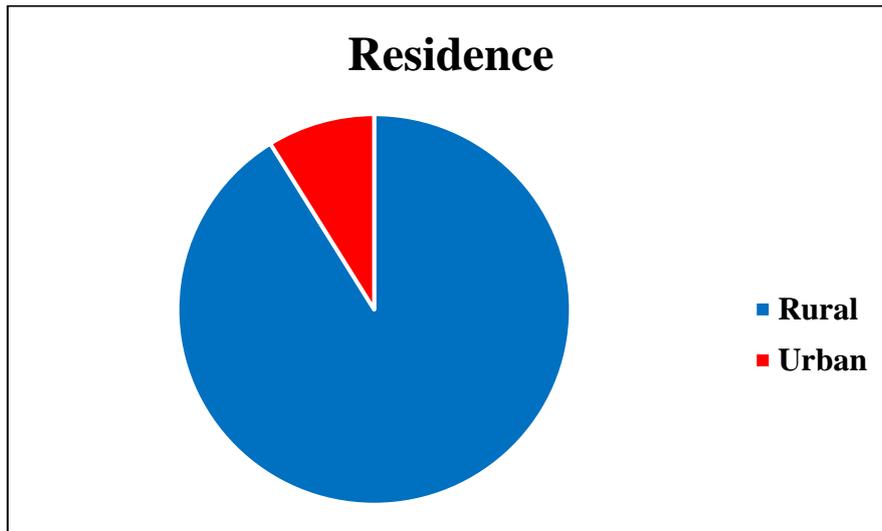


Figure (1) showed that primary CS rate was higher in rural area (91.2%) than urban area (8.8%).

Figure (2): Indications of primary CS.

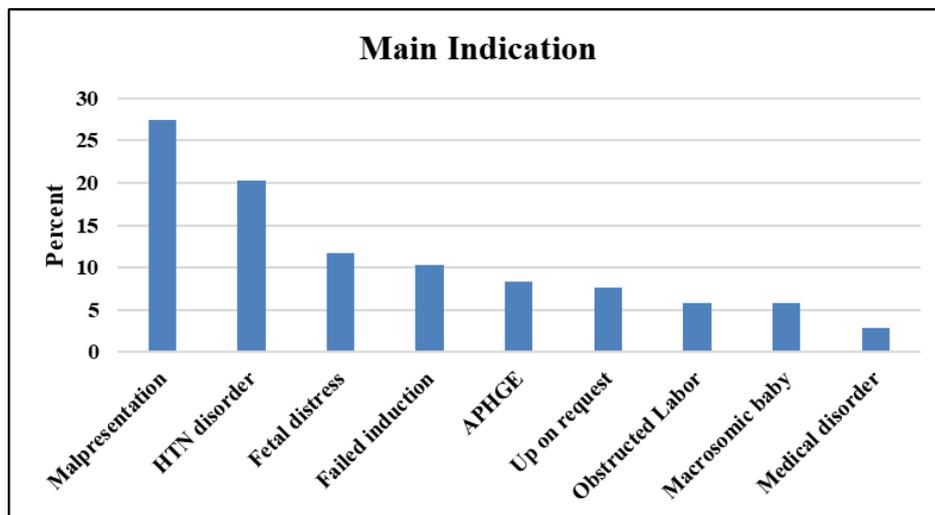
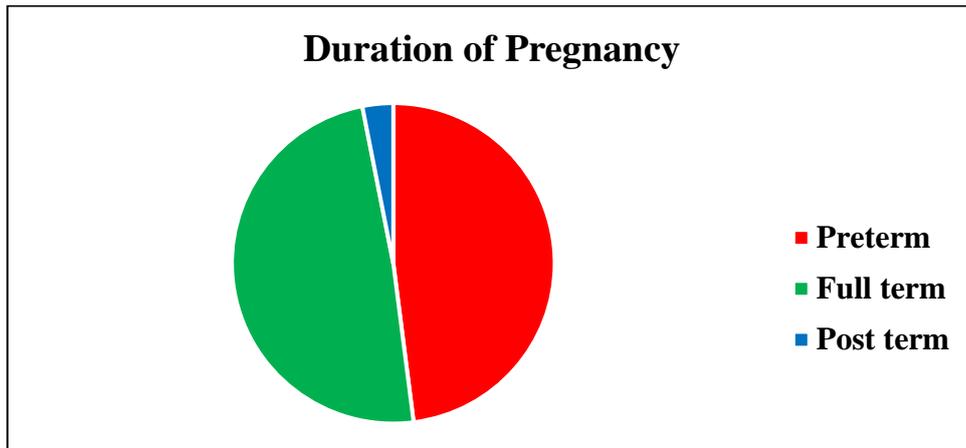


Figure (2) showed causes of primary CS in women delivering during study period it noticed that was malpresentation the highest one and medical disorder was the less common.

Figure (3): Duration of Pregenancy.



There a significant difference regarding duration of pregenancy.

Figure (4): Medical Comorbidities.

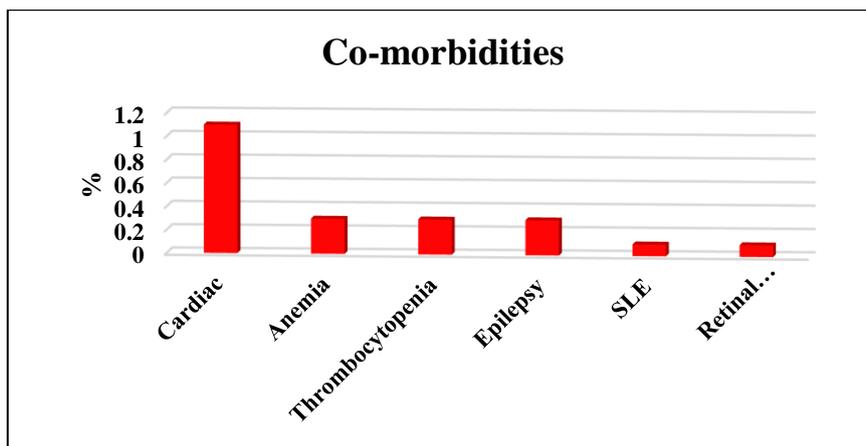


Figure (5): Types of Anathesia.

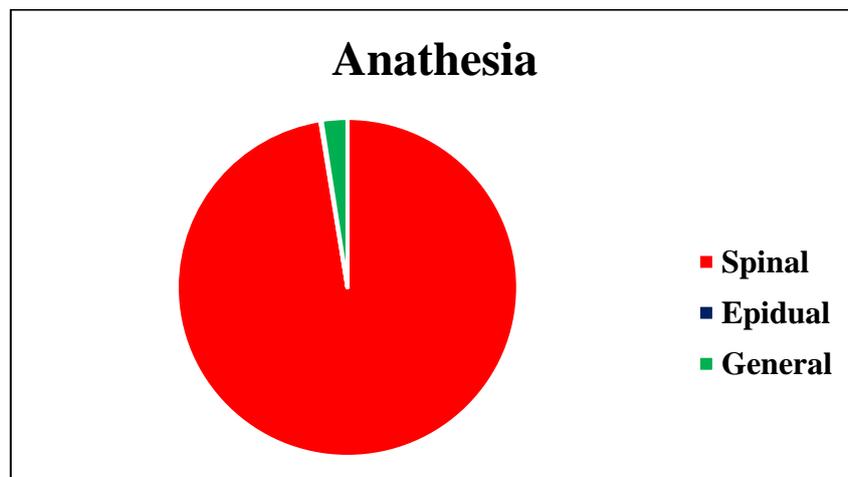
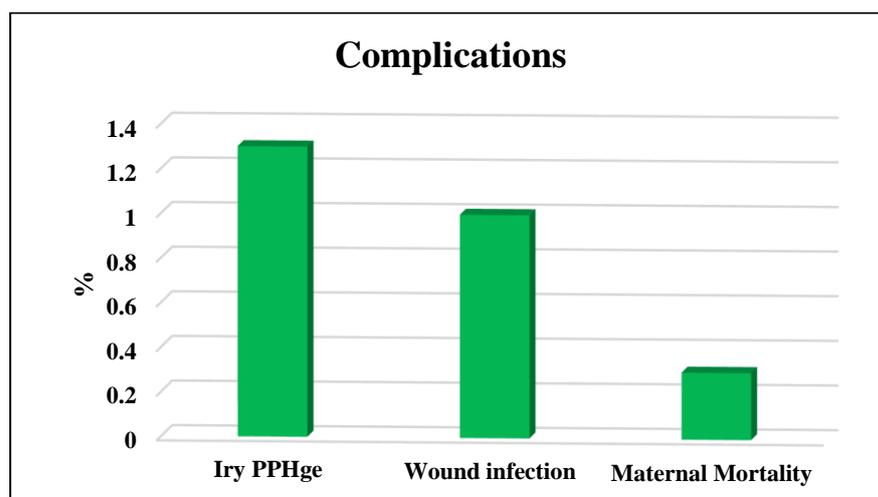


Figure (6): complications of primary CS.

Discussion

According to the World Health Organization⁽¹⁾ (WHO, 2015), at the population level, CS rates higher than 10 percent are not associated with reductions in maternal and newborn mortality rates.

Using Egypt Demographic and Health Survey (EDHS) 2014, several sociodemographic, obstetric, and institutional factors were found to be associated with CS delivery. Sociodemographic factors such as education, wealth, and place and type of residence predicted CS mode of delivery.

Institutional factors such as place of delivery and number of antenatal visits and obstetric characteristics such as birth order and multiple gestations were important determinants of CS.

In Egypt, the past decade has witnessed a sharp increase in the prevalence of CS with the most recent Egypt Demographic and Health Survey (EDHS) documenting a CS rate of 52 percent, which suggests that cesarean delivery might be overused or used for inappropriate indications, So the rate of unnecessary caesarean sections has been increased in mostparts of the world. According to Latest survey one in five women in the world now deliver by caesarean section (CS)⁽⁵⁾

According to the WHO data since 2012, Bosnia and Herzegovina have recorded a very low birth rate by Caesarean section of 15%. The lowest rate have been recorded in Afghanistan, Pakistan and India, while the highest rate was recorded in Cyprus (50.9%) and Brazil (52.3%). And in relation to the countries in the Bosnia and Herzegovina environment, there is a lower birth rate by Cesarean incidence, so in Slovenia we have recorded a rate of 18.2%, Croatia 18.7%, and Serbia 24.6%.⁽⁶⁾

The Eastern Mediterranean Region (EMR) with its twenty-two Member States (MSs) as it has been classified by the World Health Organization is of no exception in this respect.

Within the EMR, it is found that Egypt has recorded the highest CS rate of 52% (DHS, 2014). Variations in overall CS rate between different settings or over time it is difficult to interpret and compare because of infrastructure and intrinsic differences in hospitals (primary versus tertiary level), the difference in the characteristics of the obstetric population served (eg % of women delivered by previous CS) and difference in clinical management protocols⁽⁷⁾.

Although deliveries in private and public facilities witnessed an increase in CS rates

since 2008, the increase in private facilities has been more dramatic. Also, more pronounced has been the increase among younger women (<20 years), women who live in rural Lower Egypt and Frontier governorates, as well as women who were delivering their first child (EDHS, 2014).

In order to propose and implement the effective measures to achieve the accurate CS rates, it is first essential to detect what groups of women are contributing the most towards overall CS rate and study the underlying causes for rates in different settings. As many developing countries, health care facilities in Egypt have no such standard internationally accepted classification system in place to monitor and compare facility based CS rates in a consistent and action oriented manner⁽⁸⁾.

Policy makers and health organizations have suggested the significance of such classification system that can try to reach the best monitor and compare CS rates in a consistent, standardized and action oriented-manner⁽⁸⁾ (Whitcomb, 2020).

Although the lack of evidenced supporting improvement of maternal and perinatal outcomes, over-medicalization of child-birth is a growing problem in middle- and high-income countries. As shown, CS is increased in many high- and middle-income countries such as Dominican Republic, Brazil, and Egypt. At a rate of 52 percent, Egypt classified out among countries with the highest CS delivery rates in the world, following Dominican Republic (56.4 percent) and Brazil (55.6 percent)⁽⁹⁾

This is seen as one of the barriers in a better understanding of CS trends and underlying causes. In order to propose and implement effective measures to achieve optimal CS rates, it is first essential to identify what groups of women are contributing the most toward overall CS rate and investigate the underlying reasons for trends in different settings.

For the sole purpose of reducing unnecessary caesarean sections, financial

strategies (i.e. insurance reforms equalizing physician fees for vaginal births and cesarean sections) for healthcare professionals or healthcare organizations are recommended only in the context of rigorous research.

A strength of this study is inclusion of women from multiple institutions in MMUH.

Thus a limitation of this study is that we were unable to quantify cesarean deliveries that were performed for nonreassuring FHR tracing but were likely avoidable, incomplete medical records and reliance upon data entered into specified fields of electronic medical records.

To summarize, in this large cohort of women undergoing primary cesarean delivery, examination of indications as recorded in the medical record reveals potential targets to reduce the primary cesarean rate and, in turn, lower the total cesarean rate. Chief among these are decreasing the number of cesarean deliveries done for failure to progress by using 6 cm as the cutoff for active labor when assessing failure to progress and conservatively managing the second stage of labor by allowing adequate time and encouraging operative vaginal delivery, when appropriate. These actions may be particularly important in the primiparous woman at term with a singleton fetus in cephalic presentation. A step toward reducing the rate of cesarean delivery in this group could be the development of guidelines for VBAC in women.

This can be explained by the fact that Minia Maternity hospital is one of the largest tertiary referral hospitals where most of the population served by the hospital are high risk population, with the increased chance of preterm labour and maternal co morbidities.

Among the obstetric characteristics investigated in this analysis, multiple birth and low birth order were found to be associated with CS. A CS was 1.88 times more likely to occur to women delivering

multiples (e.g., twins or triplets). On the other hand, higher birth order babies (second to fourth and fifth or higher) had a lower likelihood of being born through a CS compared to first-order pregnancies and this agreed with our study.

Conclusion

In this study, the most common indications for primary CS is malpresentation, hypertensive disorders with pregnancy, fetal distress, Preventive measures to reduce the risk factors such as early start of antihypertensive therapy, use of low dose aspirin for hypertensive disorders, hydration and rest in left lateral position for oligohydramnios and other such measures should be advocated. allowing adequate time for the second stage of labor, and encouraging operative vaginal delivery.

Despite CS can be life-saving for mother and baby in emergency indications, overuse of CS was associated with maternal and fetal complications. Efforts should be done to reduce the rate of elective CS through proper antenatal care counseling, The study recommends women's health education and developing guidelines with medical audit of CD practice. Careful assessment of women during antenatal and intranatal period can improve maternal and perinatal outcome. More research is needed to understand the health effects of caesarean section on immediate and future outcomes. Improving ways to engage childbearing women and may be needed to reduce unwarranted cesarean birth.

Conflict of interest:

The authors declare no conflict of interest.

Acknowledgments

Authors are thankful for the Head of the department, All staff members of the department, the workers of IT in the department, The Statistics unit in the department, Minia University, Egypt, for assistance .

References

1. World Health Organization WHO Statement on Caesarean Section rates.

- Reproductive Health Matters; 2015; 23(45): 149–150.
2. Wang HC et al., Perioperative risk factors for postpartum pulmonary embolism in Taiwanese cesarean section women. *Asian Journal of Anesthesiology*. 2017; 55:35-40. DOI: 10.1016/j.aja.2017.05.002.
3. Mylonas I, Friese K 0: The indications for and risks of elective cesarean section. *Dtsch Arztebl Int* 2015; 112: 489–95.
4. Zhang J, Troendle J, Reddy UM, et al. for the Consortium on Safe Labor. Contemporary cesarean delivery practice in the United States. *Am J Obstet Gynecol*. 2010; 203: 326.e1–10. [PubMed: 20708166].
5. Betran AP, Temmerman M, Kingdon C, Mohiddin A, Opiyo N, Torloni MR, et al., Interventions to reduce unnecessary caesarean sections in healthy women and babies. *Lancet* 2015; 392(10155):1358–68.
6. Miseljcic, N., Basic, E., & Miseljcic, S. Causes of an increased rate of caesarean section. *Materia socio-medica*, 2018;30(4), 287.
7. Betran, A. P., Torloni, M. R., Zhang, J., Ye, J., Mikolajczyk, R., Deneux-Tharoux, C. & Gülmezoglu, A. M. What is the optimal rate of caesarean section at population level? A systematic review of ecologic studies. *Reproductive health*, 2015;12(1), 57.
8. Whitcomb, J. E. U.S. Patent No. 10, 561, 191. Washington, DC: U.S. Patent and Trademark Office, 2020
9. Betrán, A. P., Ye, J., Moller, A. B., Zhang, J., Gülmezoglu, A. M., & Torloni, M. R. The increasing trend in caesarean section rates: global, regional and national estimates: 1990-2014. *PloS one*, 2016;11(2), e0148343.
10. The American College of Obstetricians and Gynecologists. ACOG Practice Bulletin 13 External Cephalic Version. Available at: http://www.acog.org/ResourcesAndPublications/PracticeBulletins/CommitteeonPracticeBulletins-Obstetrics/external_Cephalic_Version. Retrieved November 26, 2012.