

**Main Reasons for Increased Cesarean Section Rate in Yerevan:  
Knowledge, Attitude, and Practice Analysis**

Masters of Public Health Integrating Experience Project  
Professional Publication Framework

by

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## *List of abbreviations*

AUA	American University of Armenia
AMD	Armenian Drams
CHSR	The Center for Health Services Research and Development
MOH	Ministry of Health
NIS	Newly Independent States
OCSC	Obstetric Care State Certificate
Ob/Gyn	Obstetrician-gynecologist
RA	Republic of Armenia
STD	Sexually transmitted diseases
USD	United States dollar
VBAC	Vaginal birth after Cesarean section
WHO	World Health Organization

## ***Abstract***

The high rate of cesarean sections (CS) is recognized worldwide as a major public health problem. CS rates exceeding the 15% standard recommended by the WHO have adverse effects on maternal and neonatal morbidity and mortality and carry financial losses which are felt more acutely in developing countries with scarce resources. Over the past ten years, Armenia has experienced a huge increase in its CS rate, from 7.2 to 18.6%. The current level, higher than that recommended by the WHO is the main reasons for investigating the factors contributing to this observed increase. Since there have been no studies about CSs in Armenia to date, qualitative research methods were chosen. In total, 12 in-depth interviews were conducted with intranatal and antenatal doctors, as well as with policy-makers working in the field of maternal health. Twenty seven cesarean, naturally delivered and first-time pregnant women participated in three focus group discussions. Directed content analysis was used for analyzing the data. The primary causes of the increased CS rate were identified; among them, a lack of explicit clinical indications for CS, increased number of medical indications, increased morbidity, and maternal requests for CS, and physicians' financial incentives. Educational programs, changes in standards and current guidelines, as well as implementation of internationally accepted practices of vaginal deliveries among women with cesarean section in the past, might play an important role in reducing the unnecessary CS rate. Further investigations are required for making improvements in the financial and regulatory strategy of CSs without indications and to assess the impact of the new reimbursement system and maternal requests for CS on its increased rate.

## ***Introduction***

### ***Background information***

Labor is a clinical diagnosis with three elements: uterine contractions, effacement and dilatation of cervix, and a bloody discharge.<sup>1</sup>

Cesarean section (CS) is “Delivery of a fetus via the abdominal route (laparotomy) requiring an incision into the uterus (hysterotomy)”.<sup>1</sup> There are absolute and relative indications for performing CSs. Absolute indications include maternal, utero-placental and fetal factors.<sup>1</sup> Most indications for CSs are relative and the decision to perform a CS versus normal delivery depends on the obstetrician’s judgment.<sup>1</sup> Moreover, in some countries a CS can be performed as a result of a woman’s request for the procedure.<sup>2</sup>

In the 20<sup>th</sup> century CSs became much safer as a result of improved surgical techniques, safer and more efficient anesthesia and better infection management.<sup>2</sup> In addition, indications for CSs have changed over the past few decades. According to some publications, the main indications for a CS in developed countries are repeat CSs ( 30%), dystocia or poor progress in labor ( 30%), breach presentation (11%), and fetal distress (10%)<sup>2</sup>.

According to the World Health Organization (WHO), 15% is considered as an upper limit level for CSs.<sup>3</sup> This rate was calculated based on the cesarean rates of those countries where mother and neonatal mortality is very low.<sup>3</sup> According to the WHO, a CS rate above 15% does not carry any additional benefit for mothers and infants.<sup>4</sup> In low income countries where the CS rate is less than one percent, it is associated with high maternal and neonatal mortality due to limited access to health services and the unavailability of CSs when they are needed.<sup>3</sup> CS rates above the WHO recommended rate are not justified and lead to unnecessary financial losses, maternal and neonatal morbidity and mortality<sup>4</sup>.

Performed intrapartum or antepartum, CSs double the risks of maternal mortality and morbidity such as hysterectomy, blood transfusion and admission to intensive care units.<sup>5,6</sup> Although CSs are associated with an overall benefit for infants in breech presentations, cesarean infants in cephalic presentation have increased risk of neonatal mortality and morbidity, even after adjusting for all possible confounders.<sup>6</sup> Labor is a physiological process necessary for lung postnatal adaptation. Lung compression during labor protects infants from respiratory distress which is quite common among cesarean infants.<sup>6</sup>

A meta-analysis of 20 published studies reveals a 20% increase in the risk of childhood asthma among children delivered by CS when compared to children delivered vaginally.<sup>7</sup> In the case of CSs; the development of gut flora important in the formation of the immune system is delayed. Consequently, the risk of asthma occurring is increased.<sup>7</sup> It is also proven that cesarean infants have moderately higher risk of allergic rhinitis, asthma, hospitalization for asthma, and food allergy.<sup>8</sup>

There is evidence that CSs, adjusted for all known confounders are associated with a 20% increase in childhood-onset type1 diabetes.<sup>9</sup> Attempting to explain this association, it is hypothesized that it is also related to differences in the micro biotic compositions in the guts between children born vaginally and by CS.<sup>9</sup>

Some differences exist in the psychological outcomes of delivery as well.<sup>10</sup> For example; mothers delivered vaginally and by CS differ in their breastfeeding practices, satisfaction with delivery, reactions toward the newborn just after delivery and interaction with infants at home.<sup>10</sup> A survey conducted by the WHO aimed to investigate the association between CS without medical indications and maternal short term adverse outcomes, such as maternal death, admission to intensive care units, blood transfusion and hysterectomy within the first seven days after delivery.<sup>5,11</sup> The evaluation of maternal risks of normal deliveries to CSs performed without medical indications shows an increase in adverse outcomes from 15 cases/1000 to 42 cases/1000, respectively.<sup>5</sup> The risk of infection is five times higher after both elective and



intrapartum CS.<sup>6</sup> A systematic review and meta-analysis of published data on placenta previa from 1950-1996, shows that there is association between having CS in the past and risk of placenta previa.<sup>12</sup> Furthermore, a dose response relationship exists between the risk of placenta previa and the number of prior CSs. Thus, advocating vaginal birth after CS (VBAC) is very important.<sup>12</sup>

The incidence of cesarean sections varies widely worldwide depending on the country's income level.<sup>3</sup> CS rates have increased globally in the last years, for example, from 15% in the 1970s to 43% in 2005 in Brazil, from 4.5% in 1965 to 31.1% in 2006, in the United States, from 5% in 1970 to 23.4% in 2003 in Scotland and from 15.2% in 1990 to 22.4% in 1996 in Thailand.<sup>4,13,14,15</sup>

### ***Patient and physician factors in rising trends of CS***

The U.S. National Institutes of Health defines CS on maternal request as “Cesarean delivery for a singleton pregnancy on maternal request at term in the absence of any medical or obstetric indications.”<sup>16</sup> In the United States, according to professional consensus, women can legitimately have CS without medical indications.<sup>17</sup> Moreover, as some insurance companies do not reimburse non-medical services, both women and doctors in the United States have financial incentives to justify CS by providing medical diagnoses in the case of absence of any medical indications.<sup>17</sup> According to an anonymous survey of obstetricians in Australia, they use the same approach because of regulations against CS without medical indications.<sup>16</sup> The reasons to deliver by CS vary.<sup>18</sup> Among them are established beliefs about the safety and benefits of operative delivery versus normal delivery.<sup>2</sup> The perceived advantages of a CS are having the flexibility to schedule the time of delivery, the avoidance of labor and the protection of a coital function which are likely to occur during vaginal delivery.<sup>18</sup>

In some clinical situations physicians tend to perform CSs guided by their own interests.<sup>2</sup> For example, in cases of previous low transverse uterine incisions, physicians prefer to perform

CSs as they are considered safe and convenient and reduce the risk of possible complications and subsequent litigation.<sup>2,19</sup> Other factors can influence the rate of CSs such as financial incentives, technological equipment, hospital ownership and status, and the physician's work schedule and professional skills.<sup>20</sup> Insured patients are more likely to undergo cesarean childbirth than uninsured.<sup>21</sup> The fear of malpractice suits also contribute to the increase in CS rate. Young physicians do not have commensurate skills in using forceps and vacuum extraction during labor and rely mainly on CS.<sup>2,21</sup>

### ***Biological and socio-economic factors***

#### ***Maternal age over 35 year***

There is a strong association between maternal age and CS rate.<sup>22</sup> A maternal age of over 35 is a risk factor for CS. For this age group the risk is 6.54-fold higher.<sup>22</sup>

#### ***Uterine scar***

Previous CS is a risk factor for CS.<sup>23</sup> Although many studies show that a vaginal delivery can be successful after a previous CS, some reluctance exists among physicians.<sup>4,24,25,26</sup> The main reason is the fear of complications and possible subsequent litigation.<sup>4,24</sup> Women with previous CS want to be engaged in decision- making about their mode of delivery but some of them avoid taking the responsibility for the decision and want to be guided by their physicians.<sup>13</sup> There is a need to provide detailed information about the delivery options for each specific case. This can help in making an informed decision.<sup>13</sup>

#### ***Parity***

Women who have already had a normal delivery are likely to go through normal delivery while women who are going to deliver their first baby are more likely to undergo CS.<sup>27</sup>

### ***Socio-economic and educational level***

Many studies indicate that there is a strong association between socio-economic status and CS rate.<sup>18,28</sup> The CS rate among women with high income levels is much higher than that among those whose income levels are low. Women in the highest wealth quintile are more likely to have CS although a study conducted in Brazil shows that there are no differences in women's preferences toward cesarean delivery, between high and low income level patients.<sup>18,28</sup> A positive association exists between maternal educational level and CS rate.<sup>14</sup>

### ***Situation in Armenia***

In Armenia, a significant increase in cesarean section rates was observed from 7.2% in 2000 to 18.6% .<sup>29</sup> That the CS rate more than doubled during the last decade in Armenia and that it is above the WHO recommended threshold is of public health concern and is the rationale for investigating the factors contributing to this observed increase.

In 2008, the Obstetric Care State Certificate (OCSC) Program was launched in Armenia.<sup>30</sup> The OCSC Program covers all expenses related to antenatal care, including treatment of complicated pregnancies, vaginal delivery and CS, as well as post delivery and postnatal care. All necessary laboratory tests and procedures, medicines, specialist consultations, hospital ward and personnel payments are also provided free of charge. Reimbursement of for vaginal delivery and CS depends on the geographic location and level of specialization of the hospital and varies from 70200 AD (approximately 190 USD) for vaginal delivery in the regions to 231800 AD (approximately 620 USD) for CS in hospitals with the highest level of specialization.<sup>30</sup> The rising CS rate puts a financial burden on the health care system which is especially significant in developing countries because of limited resources.<sup>31</sup> An investigation of factors leading to this increase in the CS rate will help find solutions to control it and minimize financial losses attributable to unnecessary CSs.

According to the RA MOH Order N927 of June 28, 2008 on monitoring the effectiveness of the Birth Certificate program, the CS rate is among the indicators of monitoring and evaluating the quality of birth services.<sup>32</sup> Reports on the daily CS rate are provided by phone or by mail to the Yerevan municipality, agency of health and social issues. Weekly data presented in the form of special completed tables is provided to the child and maternal health protection department of the Ministry of Health.<sup>32</sup>

The RA Law “On Medical Care and Services” of March 14, 1994 states the right of patients to choose the doctor, place and method of treatment, without specific reference to elective cesarean delivery without medical indications.<sup>33</sup> RA MOH Order N987 “On Establishment of Financing Standard of Care Rendered in the Framework of State Guaranteed Free Hospital Medical Care and Services” of May 23, 2011 states that all additional examinations and services performed without medical indications and/or by the patients request are on a paid basis.<sup>34</sup>

The Center for Health Services Research and Development, American University of Armenia (CHSR/AUA) conducted a study which aimed at evaluating the Obstetric Care State Certificate Program, identifying its strengths and weaknesses and making recommendations for its improvement.<sup>35</sup> The study highlighted the importance of further investigation and exploration of the main reasons for the increasing CS rate in Armenia.<sup>35</sup>

The Armenian Demographic Health Survey (2005) is the only available source which provides information about background characteristics of women delivered by CS in Armenia.<sup>36</sup> 28.5% of all live births are delivered by CS on women over 35 years and only 8.7% by CS on women between 20-34 years. The CS rate is 10.8% among first time pregnant women and only 7.1% among women delivering their second or third child. The CS rate increases proportionately from the lowest to the highest health quintile. It is 5.5% in the lowest and 14% in the highest health quintile. The percentage of CS differs by educational level: basic general-3.0%, secondary general-5.9%, specialized secondary-10.1%, higher-14.9%.<sup>36</sup>

While it is known that increased CS rate has a financial impact and unnecessary CSs have adverse effects on both maternal and infant health, as yet the factors contributing to the increase in the CS rate have not been studied in Armenia. Thus, an investigation of women's, physicians' and policymakers' perceptions about CS and the factors contributing to its increase is necessary.

### ***Aim of the study***

The aim of the study is to explain the forces causing the increase in CS rates in Yerevan and reveal what events; beliefs, attitudes, policies and behavior contribute to the high CS rate in Yerevan.

The more specific objectives are: 1) To investigate the knowledge, attitude and behavior toward CS of those women who had vaginal or cesarean delivery at least three months prior to the study in Yerevan or who are first-time pregnant at the time of the study 2) To investigate the knowledge, attitude and behavior of antenatal and intranatal health care providers toward the increased CS rate in Yerevan and 3) to investigate the knowledge and attitudes of policy-makers toward the increased CS rate in Yerevan.

### ***Methods and Materials***

#### ***Study Design***

Qualitative research methods have been selected for study purposes.<sup>37</sup> It is well fitted to the study objectives because: 1) the topic of the increased CS rate in Yerevan has not been studied yet; there is little known about the phenomenon. 2) Qualitative research methods allow for the exploration of personal experiences and behaviors, which is impossible to achieve by means of quantitative research methods.

#### ***Participant Eligibility and Recruitment***

Convenience sampling was used for participants' recruitment.

### ***Target population***

Women delivered in Yerevan, first-time pregnant women, obstetrician-gynecologists (ob/gyns) working in Yerevan, policymakers. First time pregnant women and women who gave birth at least three months prior the study either naturally or by CS were included in the study. Ob/gyns working in hospitals that assist on delivery and/or perform CS and Ob/gyns working in polyclinics and providing antenatal care and/or take duties in hospitals, as well as policymakers working in the field of maternal health, were eligible for the study. Women with inadequate knowledge of Armenian and women who delivered sick infants were excluded as having an infant with health problems may affect a woman's perception toward mode of delivery.

To meet study objectives, six groups of participants were targeted for recruitment: 1) Women who underwent CS at least three months before the study, 2) Women who had had vaginal delivery at least three months before the study in Yerevan, 3) First time pregnant women at the time of the study 4) Ob/gyns working in hospitals that assist on delivery and/or perform CS in Yerevan, 5) Ob/gyns working in polyclinics and providing antenatal care and/or take duties in hospitals in Yerevan. 6) Policymakers working in the field of maternal health.

To obtain maximal possible comprehensive data in a short period of time, three focus group discussions were conducted with three groups of women: naturally delivered cesarean and first-time pregnant. The cesarean group contained 10 participants, the naturally delivered group, 9 and first-time pregnant group, 8. In-depth interviews were conducted with doctors and experts as it was more feasible because of their overloaded schedule. Overall there were 12 in-depth interviews. The number of interviews was dependent on the availability of experts in the field of maternal health.

### ***Research Instruments***

Focus groups and in-depth interviews were used for data collection.<sup>38</sup> Both methods fit well with the objectives of the study. In-depth interviews provide opportunities for collecting

personal opinions and experiences.<sup>39</sup> Focus group discussions facilitate in obtaining data on peer perceptions and socio-cultural norms.<sup>39</sup>

Seven different guides including questions about attitude, knowledge and practice were developed for in-depth interviews and focus group discussions. The guides were developed in English and then translated into Armenian. In-depth interview guides were pre-tested and changes were made accordingly. Demographic information forms for women and physicians were developed and completed after interviews and focus group discussions. Information about the women's age, marital status, educational level, employment and parity, place and mode of delivery were obtained. Physicians' demographic forms contained questions about age, work experience, practice and workplace: hospital or polyclinic.

### ***Study procedures***

Data was collected from February to April 2011. Overall 39 participants were recruited in three focus group discussions and 12 in-depth interviews. Focus group discussions took place in the AUA and were conducted by a moderator and data recorder. Audio-recording devices were used only after obtaining the participants' approval. The mean age of women participating in the study was 29, ranging from 21 to 38. Most of them had higher education: 21 out of 27 had over 14 years of education, four had 10-13 years and two had 10 years. Seventeen of them were employed and were on maternity leave at the time of discussion. All of them were married. The number of children ranged from one to three, two on average. The mean age of the babies was nine months and ranged from three months to 18 months. The mean duration of focus group discussions was 65 minutes.

In-depth interviews took place at the participants' workplaces, by their choice. After obtaining the participants' agreements, audio-recording devices were used, except for three interviews with an intranatal doctor, an antenatal doctor and a financial expert who refused to be audio-recorded. In these cases only notes were taken. All the doctors were female. Their mean

age was 41, ranging from 32 to 56. Five doctors worked in the polyclinics and one of them also took duties in hospital. Four antenatal doctors provided only antenatal care while one of them also assisted on delivery and CS. All intranatal doctors also provided antenatal care, and assisted on deliveries. One hospital doctor performed CS and the others assisted on the operation. The mean work experience was 12 years, ranging from 4 to 25 years. The mean duration of interviews was 20 minutes, ranging from 11 to 35 minutes.

An application was submitted to the Institutional Review Board/Committee on Human Research (IRB) within the College of Health Sciences at the American University of Armenia and approval was obtained for the study for compliance with internationally and locally established standards for all research concerning human subjects. Development of the informed consent form was guided by universally accepted fundamental research ethics principles.<sup>39</sup>

## ***Analysis***

After data collection, transcripts were written in English and specially developed codes were assigned to participants indicating focus-group or in depth interview, women, antenatal doctors, intranatal doctors, and experts. Digits from one to ten define women in the groups, antenatal doctors-from one to five and intranatal doctors from one to five.

Content analysis was used for analyzing in-depth interview and focus group transcripts.<sup>39</sup> The study findings were presented in the following domains:

- 1) Doctors' perceptions about the CS rate in Armenia, 2) Main reasons for the increased CS rate. Main domains include some sub domains and categories.

## ***Results***

### ***1. Perception of increased CS rate***



*“ ... So CS rate has significantly increased but it is not the problem as this increase is justified and aimed to reduce maternal and perinatal mortality...”*

**Ob/gyn antenatal-1, In-depth interview**

*“It [high CS rate] is a problem as it affects women’s health and reproductive function in the future.”*

**Ob/gyn intranatal-3, In-depth interview**

*“... It [high CS rate] is a problem ...CS reimbursement is higher and unnecessary CS has an impact on financial system.”*

**Ob/gyn intranatal-2, In-depth interview**

Almost all doctors agreed that the CS rate has increased during the years they have been practicing. Antenatal and intranatal doctors expressed different attitudes toward this increase. While antenatal doctors thought that all CS are justified and aimed to improve maternal and neonatal outcomes, the majority of intranatal doctors worried about financial losses and the impact of CS on women’s health. The policy-maker stated that there is a huge potential for CS increase in Armenia, as the CS rate was very low ten years ago, which means that its increase is justified. Though the CS rate exceeds the 15% recommended by the WHO, the expert believed that it is associated with improved perinatal and maternal outcomes in Armenia.

## ***2. Main reasons for increased CS rate***

### ***2.1 Medical reasons***

*“... The number of medical indications has increased... now a CS can be performed in the case of myopia (more than 5d) and breach presentation...we even have some new relative indications for CS. Assisted reproductive technologies have developed in Armenia over recent years which lead to the introduction of new indications for CS which did not exist 10 years ago.”*

**Ob/gyn intranatal, In-depth interview**

*“Increased numbers of total premature detachment of placenta, hemorrhage, hypoxia have resulted in the increased CS rate.”*

**Ob/gyn intranatal-3, In-depth interview**

*“Active sex life results in an increase in STD and finally increases women’s morbidity and*

*the number of complicated pregnancies.”*

**Ob/gyn intranatal-2, In-depth interview**

*“The reason for the increase in the CS rate is early diagnosis of conditions due to developments and new achievements in medical science, such as Doppler, new clinical and laboratory tests...”*

**Ob/gyn antenatal, In-depth interview**

*“We can compare our list of relative indications to the list of other countries or to WHO recommendations. I do not think that there are huge differences. It was developed in 2000; before that time doctors used Soviet books or guides .”*

**Policy-maker, In-depth interview**

*“We follow WHO recommendations and they have not changed at all since my student time.” [1992-1997]*

**Intranatal-2, in-depth interview**

*“I know that the head doctor has just such a list of indications for CS...”*

**Intranatal-3, in-depth interview**

*“...Currently guidelines for CS are too liberal; it is possible to justify any CS without any violations.”*

**Policy-maker, In-depth interview**

The main reasons for the increased CS rate reported by participants are increased relative indications, better diagnoses of illnesses and increased morbidity as well as a lack of precise CS guidelines. Antenatal and intranatal doctors mentioned different reasons for the increased CS rate. All antenatal doctors reported that the main reason was the increase in the number of relative indications documented in guidelines, while intranatal doctors talked about increased morbidity and better diagnoses of illnesses. Some of them mentioned some new indications which have come with the development of assisted reproductive technologies in the last ten years. CS has become the preferred method of delivery for breach presentations. Some behavioral changes have occurred in Armenia in recent years: Sexual activity beginning earlier, before marriage, resulting in a high prevalence of STD, a lack of timely diagnosis and appropriate treatment, leading to developing complications during pregnancies, increasing the

CS rate and the fact that there is a strong relationship between STD and placental abruption which is one of the main indications for CS. Untreated somatic diseases, such as infantilism or neuro endocrine syndromes were also among the reasons for future CS. According to the policy-maker, a new list of relative indication for CS was developed in 2000 and did not differ significantly from the list of the other NIS countries or WHO recommendations. Only one doctor said that he/she had standard guideline provided by MOH, while the other doctors followed WHO recommendations. The financial expert reported that the list of relative indications was too broad and was not clarified, so a justification of any single case was possible without making any violations.

## **2.2 Demographic, social and behavioral factors**

### **2.2.1 Age at birth**

*“Women above 35 are less likely to insist on CS. Usually they say that they can deliver vaginally while some young women insist on CS.”*

**Ob/gyn antenatal-2, In-depth interview**

Almost all doctors said that they did not see any relationship between maternal age and CS rate. Furthermore they gave examples of women above 35 insisting on having natural delivery who, in spite of having a difficult delivery, were totally satisfied with the mode of delivery they had. Contrary to this, there were cases when young women insisted on CS without medical indications.

## 2.2.2 Social background and family

*“Family members have an influence on women. Some of them do not want to have a CS even in the case of indications because their relatives suggest they deliver vaginally. So she [woman] will do everything to avoid a CS”.*

**Ob/gyn antenatal-2, In-depth interview**

*“It is natural to listen to different people, but the doctor’s opinion is critical for me... I trust my doctor more than my yoga teacher or somebody else.”*

**First-time pregnant woman-3 Focus-group**

*“My husband also inclines toward a CS. May be it is due to some psychological factors. They know that it is a less painful way of delivery. Of course a man cannot understand what delivery is, but may be they think that the easier way is the right way.”*

**First-time pregnant woman-6, Focus-group**

*“It is unlikely that women from villages will require a CS or epidural anesthesia. The Father- in law of my patient said: “I want you to assist on delivery, but I will not let you do a CS, even if she dies.”*

**Ob/gyn antenatal-3, In-depth interview**

*“I think women from villages; the less educated usually have very easy deliveries.”*

**First-time pregnant woman-8, Focus-group**

Two antenatal doctors reported that friends’ and relatives’ opinions were influential for women. Contrary to this, women stated that although sometimes they had to listen to other people, they trusted and followed only their doctor’s advice. Most women said that they were the final decision-maker, but some of them emphasized the role of the husband in providing psychological support and decision making. Two first-time pregnant women said that they relied on their husbands’ opinions that a CS is preferable as an easier and harmless way of delivery. Mothers-in-law and fathers- in-law also exerted some influence in the decision-making. Representing the attitudes of an older generation they are inclined toward natural delivery and advise women to avoid a CS even in the case of indications. Doctors said that sometimes they

had to go through lengthy explanations to convince them that a CS in their case was only for the mother's or baby's benefit.

Only one doctor said that higher socio-economic status increased the likelihood of CS and one woman confirmed this statement by saying that women from villages usually had very easy natural births.

### **2.2.3 Behavioral factors**

#### **2.2.3. a Misinformation due to using different sources of information**

*“They [pregnant women] read more and are afraid more. They know that pelvic floor muscles can be injured which leads to possible prolapse and incontinence.”*

**Ob/gyn antenatal-1, In-depth interview**

*“I think that looking at the different information sources can also be misleading... I decided to have only one source, a reliable book and read only that.”*

**First-time pregnant woman-7, Focus-group**

*“You cannot find information in the policlinic. It would be better to talk with professionals and not try to find it somewhere else.”*

**Naturally delivered women-7, Focus-group**

*“Doctors in the policlinic only prescribe drugs [and do not provide counseling]...”*

**Naturally delivered women-3, Focus-group**

*“We discuss delivery options in the case of indications (high-risk pregnancy). I think specially trained person should provide physiological support and prepare women for delivery.”*

**Ob/gyn antenatal-3, In-depth interview**

*“It is difficult [for gynecologists to provide psychological support]; they also have to be psychologists...”*

**Naturally delivered women-4, Focus-group**

Doctors said that women insisting on a CS without indications read more and many women confirmed this statement. Even more women said that looking at different information sources, especially internet sources, was misleading. They found either controversial information or read

about rare complications which seemed to be common. As a result, misinformation took place which had an influence on final decision-making. Most women were interested in getting information and psychological support from their doctors during antenatal visits, which was not always possible either due to doctors' overloaded schedules or lack of skills in providing counseling. Most of the antenatal doctors' discussed delivery issues only with high risk pregnant women and not all antenatal facilities organized maternity classes for women.

### **2.2.3.b Westernization**

*“Women insisting on a CS without medical indications are first of all trying to protect their physical appearance. These women do not even breastfeed their infants, to stay in good shape.”*

*Ob/gyn ante, In-depth interview*

*“The influence of the family in preparing a woman for marriage and motherhood is very important. I think that giving birth is a situation where many aspects of women's behaviors are influenced by their family culture.”*

*Ob/gyn intranatal-1, In-depth interview*

The other types of women demanding a CS without medical indications were those who appreciate their appearance most of all, they did not breastfeed their children and were interested in staying in good shape. In this case family and the attitude developed toward delivery and the women's role as a mother were very important and could be shaped from an early age by involving schools, teachers and education.

## **2.3 Physician-driven factors**

### **2.3.1 Financial incentives**

*“Doctor receive 30,000 AMD (per CS surgery), which is insufficient given the complication of performing the operation. Stress related to performing the operation is so high that I think that a doctor who has some self-respect will not perform this surgery for 30,000 AD [approximately 80USD]. It is a huge responsibility. I do not think that it (the CS surgery*

*rate) is related to [higher reimbursements for CS].”*

**Ob/gyn intranatal-2, In-depth interview**

*“I think it is difficult to answer this question. As I am working in a policlinic, hospital doctors are more often dealing with this [higher reimbursement of CS].”*

**Ob/gyn antenatal-5, In-depth interview**

*“Taking into consideration the risk of complications after CS and the huge responsibility, I do not think that anyone would like to get into trouble. (Յ՛Օ՛Ի ·ÉáõĚ Ի՚»É օ՛ԻÇ Ի՛İ).”*

**Ob/gyn intranatal-5, In-depth interview**

*“We monitor the CS rate and we know that there is no increase in CS rates in the third level facilities where the most complicated cases are referred. On the other hand, we have observed that CS rates have increased in the second level facilities which, with their few numbers of births can be attributed to the physicians’ motivations to get more money. But these are only presumptions which I made by looking at the numbers”.*

**Policy-maker, In-depth interview**

*“For CS, where out-of-pocket payments exist and where they are higher than for natural delivery, patients may feel obligated to pay a doctor for the operation.”*

**Policy-maker, In-depth interview**

Almost all doctors participating in the study rejected the impact of the new payment system on the increased CS rate. Some antenatal doctors reported they did not know the answer, while the others said that there was no relationship. The amount of money usually received by a doctor for a CS was considered by both surgeons and other doctors as not commensurate to the risk carried by the operation and could not motivate them to perform a CS. On the other hand, experts did not exclude financial motivation as a reason for increased CSs. Some surgeons earn up to 1800000 AMD per months (approximately 4864 USD), which can be a reason. The policy-maker reported that physicians might have the motivation to perform more CSs to compensate reduced income due to the low birth rate. This assumption was based on CS and birth rates in different facilities. The other opinion was that physicians also might be interested in performing CSs as it was believed that patients usually felt an obligation to pay as gratitude to a doctor in the case of an operation rather than in the case of vaginal delivery.

### 2.3.2 Physicians malpractice

*“Forceps are more preferable in France. Professionally performed forceps delivery is preferable to CS. Now they [doctors] are not experienced and prefer the easier way [CS].”*

**Ob/gyn intranatal, In-depth interview**

*“If a CS was performed for a fetal indication, for example in the case of hypoxia, it is possible to have a vaginal delivery after a CS. Of course, in Armenia nobody will agree to do that, because of the risk of scar dehiscence, but it is acceptable. You should have a strong nervous system and be tough (нервы и выдержка).”*

**Ob/gyn intranatal, In-depth interview**

*“There is a fear of scar dehiscence among physicians. Even if a woman [who has had a previous CS delivery] wants to have a vaginal delivery, after a doctors’ explanation about potential risks, she is still convinced by the physician to have another CS.”*

**Ob/gyn antenatal, In –depth interview**

*“In my practice there were no women who wanted vaginal delivery after a CS. Women with a uterine scar prefer to have a CS.”*

**Ob/gyn antenatal, In-depth interview**

*“So if I could deliver vaginally after the first CS I would prefer that method.”*

**Cesarean women, Focus-group**

In spite of their potential to reduce the CS rate, instrumental deliveries were considered as very traumatic for the fetus, mainly due to the lack of appropriate skills among doctors. So all doctors agreed that it was more beneficial to the fetus for to have a CS instead of a vacuum extraction or forceps delivery. The other issue was repeated CS and doctors’ reluctance to go to the scar trial. In general doctors agreed that it was possible to have natural delivery after a previous CS of course, taking into consideration indications for the first CS. At the same time the majority of the doctors said that nobody (doctors) would like to go to natural delivery due to the potential risk of scar dehiscence. At the same time both antenatal and intranatal doctors said that they knew some doctors who were experienced in vaginal deliveries after previous CS, but in general there were few cases of vaginal deliveries after previous CS in Armenia. Almost all doctors



stated that women with uterine scars preferred to have repeated CSs and few of those who wanted to experience natural delivery agreed on having CS after doctors' explanations. Intranatal doctors emphasized the role of antenatal doctors in preparing women for repeated CSs. Controversial findings have been identified during focus group discussions with cesarean women. All women who had CS due to some indications wanted to experience natural delivery in the future.

#### **2.3.4 Fear of litigation**

*“There is a case in another hospital when a woman wanted a CS, but the doctor did not find any indications and did not do the CS. Later, the infant died and they blamed the doctor for refusal to perform a CS.”*

**Ob/gyn intranatal, In-depth interview**

*“I think if a woman wants it, it should be allowed and performed since if there are any problems, they will blame the doctor.”*

**First-time pregnant woman, Focus group discussion**

Fear of litigation was mentioned related to CS without medical indications. Refusal to perform a CS at the woman's request can have negative consequences in the case of an unpredictable adverse outcome, and lead to litigation and other problems. There was an opinion that obstetrics is a very vulnerable field of medicine. Performing CS simply at the mother's request is not stipulated by the law, but there is an unwritten law that in each clinical situation the doctor must make the appropriate decision and take responsibility. In the case of any complications, people blame the doctor, even if there is no evidence of his guilty. Therefore, fear of litigation can make doctors perform CS solely at women's requests. Women also confirmed this statement. They stated there was a need to perform CS without medical indications to avoid problems in case of developing complications.

### 2.3.5 Convenience of performing CS for “delivery on demand”

*“It is easier to perform a CS (by a surgeon), especially when it is a “delivery on demand” [заказные роды--where a doctor requested by the expectant mother is invited to assist in the delivery] and doctors have to work extra hours. If you are not a surgeon, natural delivery is preferable.”*

**Ob/gyn intranatal, In-depth interview**

*“You should know your doctor well. For the first delivery, it is very important as doctors can shout at you and be rude to you. It is their regular job-- you are not the first one, nor the last...”*

**Naturally delivered woman, Focus group**

The delivery on demand (special doctor is invited for assisting on delivery) was mentioned by one respondent as a reason for the increased CS rate. Sometimes it is easier to perform CS than spend extra working time for vaginal deliveries, which is an issue especially for surgeons.

Natural delivery can take hours, especially among first-time pregnant women, while CS takes only an hour. In contrast to this opinion, most women said that knowing a doctor in advance was very helpful for having easy delivery (natural).

### 2.4 CS on maternal request

#### 2.4.1 Doctors’ and women’s perceptions about CS without medical indications

*“My intranatal doctor was against performing a CS without medical indications. He said that there is no reason for it-- the baby is small [good for vaginal delivery]. I had a very easy delivery [vaginal delivery], with only one stitch. I wanted to have a CS. My antenatal doctor said that it [a CS without medical indications] is “vandalism”.*

**Cesarean woman, Focus group**

*“I decided to deliver vaginally as there is a cephalic presentation and the baby’s size was not too large...”*

**Cesarean women, Focus-group**

*“... if a woman insists on the CS in spite of all efforts to make her change her mind, it must be performed. Otherwise both mother and child can have more harm than benefit from natural delivery.”*

*First-time pregnant women, Focus-group*

*“If a woman wants a CS she starts to cry too much and it leads to developing complications and affects the fetal heart beat which suffers and finally she has a CS.”*

*Ob/gyn intranatal, In-depth interview*

*“The main advantage of CS is that you do not feel pain.”*

*First-time pregnant women, Focus-group*

*“You feel pain during natural labor but pain after a CS lasts much longer. You cannot move, take care of your newborn-- you have a scar. You cannot move freely—you are a post-operative patient with all the possible complications following surgery.”*

*First-time pregnant women, Focus-group*

*“I just want to say that it [post delivery recovery period] is very individual. When I delivered there was a woman with normal delivery, who could not move or walk, while I was ok on the 3th day. She had internal and external stitches and I was discharged, while she was staying in the hospital.”*

*Cesarean women, Focus-group*

*“You have a loose belly [after CS]. I have a well-healed scar, but it took a long time to get in good shape.”*

*Cesarean women, Focus-group*

*“Naturally delivered infants have better adaptation for future life.”*

*Cesarean women, Focus-group*

*“I think that a CS is safer for the infant as cesarean infants are pink and have soft skin.”*

*Cesarean woman, Focus group*

*“I thought that in the case of vaginal delivery the -likelihood of the infant being injured is higher, but now I know that the infant can be injured during CS as well.”*

*Naturally delivered woman, Focus group*

*“Natural delivery is necessary for women’s health...I heard that natural delivery protects from some oncologic diseases.”*

*Naturally delivered women, Focus-group*

Doctors reported that women's requests for CS without medical indications had increased and although they always tried to explain to women about the disadvantages of having CS without indications, they had to take women's preferences into consideration. Women expressed the same opinion and gave examples about when doctors refused to do a CS on their request as there were no indications for operation. All doctors and women believed that in special cases, when a woman insisted on CS even after receiving information about the advantages of a normal delivery, CS should be performed, as in these special cases natural delivery can lead to adverse outcomes for mothers and infants, such as fetal hypoxia in labor or mothers' post delivery psychological problems.

The vast majority of women preferred to have natural delivery. All women, including those who had had natural delivery, cesareans and first time pregnant thought that the natural way was the right way and CS should be performed only in case of indications. The majority of the respondents said that the main advantage of CS was avoidance of pain, while the main issue was that CS was an operation with all possible post operational complications and a long recovery period. Contrary to this point of view some cesarean women said that the duration of post delivery recovery was individual and did not depend on the mode of delivery. Later contact with the baby and difficulties in hugging and taking care of the newborn child were also mentioned among problems associated with CS. Natural delivery was considered as very important for infants' and women's health. Almost all participants agreed that stress associated with natural delivery was the first and necessary step for adaptation for future life. Natural delivery is perceived to have a protective effect from oncologic diseases. Most women agreed that the likelihood of being injured for infants did not differ by mode of delivery, but one cesarean woman believed that CS was safer for infants.

#### 2.4.2 Reasons for CS without indications

*“Natural birth can affect your sexual life in the future. I know that plastic surgery operations are available...Before being pregnant; it [affecting your sexual life in the future] was the first reason for having a CS. I have not decided yet...[what to choose: CS or natural birth]”.*

*First-time pregnant woman, Focus group*

*“They [women insisting on a CS without medical indications] want to avoid pain.*

*Women ask for a CS to avoid vaginal dilation or lacerations.”*

*Ob/gyn intranatal, In-depth interview*

*“I had a difficult labor [at first natural delivery]. Finally they [doctors] used vacuum extraction and I worried about the consequences for my child in the future, but everything is ok. So I did not want to experience similar stress for a second time... I did not want to worry about my baby as it was with my first child ... because she had asphyxia.”*

*Cesarean women, Focus-group*

*“I am thinking about CS as I have myopia (-2.5) and I am afraid that my vision may get worse after a natural delivery. And I have fear toward the pain to some extent as well.... I cannot decide what to choose...”*

*First-time pregnant women, Focus-group*

Doctors reported that the main reasons for CS without medical indications mentioned by their patients are avoidance of labor pain, post delivery lacerations and dilations and the desire to protect coital function. Women provided the same reasons for having CS without indications. Women with a history of difficult labor might insist on a CS to avoid problems which they had faced giving birth previously. Women with low myopia might insist on CS as it is believed that vision can get worse after a natural delivery.

#### 2.4.3 Common practice of CS without medical indications

*“In our hospital if women insist on CS we do it, it does not happen very often, but we do that...”*

*Ob/gyn intranatal, In-depth interview*

*“I had a normal delivery with my first child. It was a huge stress for me, so I decided to have CS during my next pregnancies. My doctor disagreed, as doctors believe that second deliveries are much easier...I insisted on CS and I do not regret it at all.”*

*Cesarean woman, Focus group*

*“CS is not performed without medical indications... There is a special part in the medical record named “indications” which must be filled in by the doctor...”*

*Ob/gyn antenatal, In-depth interview*

*“... they [hospital doctors] are writing something like hypoxia, placental abruption to justify CS [which is performed without medical indications]”*

*Ob/gyn antenatal, In-depth interview*

*“I do not think that they [CS without medical indications] should be reimbursed. We reimburse only CS with medical indications. I have never seen in medical records an indication like a woman’s request. In this case we do not give them money.”*

*Policy-maker, In-depth interview*

An few doctors reported that nowadays CS without medical indications were performed in some hospitals and one cesarean woman related that she had a CS without medical indications on her demand. The majority of doctors said that they did not practice it, as it was not allowed due to financial losses and strict control on the CS rate by the Ministry of Health. Some of the antenatal doctors said that they did not know the answer; the others expressed the opinion that either the head doctor’s permission was required for performing CS without indications or hospital doctors had to fabricate medical records to justify the CS. The last statement was confirmed by the expert participating in the study who said that he had not seen any medical record with the woman’s request as the only indication for the operation. Furthermore, he said that in such cases they would not reimburse the CS.

### ***Main findings***

1. Although almost all doctors agreed that the CS rate has increased during the years they have been practicing, there is no explicit perception about its impact on women's and infants' health.
2. The list of relative indications is too broad and is not clarified, so a justification of any single case is possible without committing any violations.
3. The number of relative indications has increased.
4. Morbidity has increased to some extent due to untreated STDs.
5. Although doctors reject the impact of higher reimbursement of CSs on its rate, experts made assumptions that it could be related, as the CS rate is high in facilities with low birth rate. Physicians' low incomes because of low birth rate and patients' obligation to express gratitude by paying in the case of a CS, can contribute to the increased CS rate.
6. Physicians' reluctance to go to the scar trial because of fear of scar dehiscence. Almost all women with previous CS want to experience natural birth in next pregnancies.
7. The "delivery on demand" when a special doctor, usually a surgeon, is invited to assist on delivery, was mentioned by one respondent as a reason for the increased CS rate. In contrast to this opinion, most women said that knowing a doctor in advance is very helpful for having an easy delivery (natural).
8. The majority of women prefer to have a natural delivery, while doctors said that women's requests for CSs have increased.
9. Both doctors and women consider natural delivery more appropriate in the case of absence of medical indications as natural delivery is necessary for the mother's and infant's health.
10. All doctors and women believe that in the case of a woman's stubborn demand for CS without indications, it should be performed, as it is believed that otherwise a natural delivery may lead to adverse outcomes for mothers and infants. The other reason for

performing CS by request is the physicians' desire to avoid litigation in case unexpected adverse outcomes should develop after a vaginal delivery.

11. Nowadays CSs without medical indications are performed in some hospitals, while in the others; doctors said that they do not practice it. One woman said that she had a CS without indications.
12. Doctors have to fabricate medical records of CS without medical indications by providing false indications to justify the operation. Furthermore, the financial expert said that he has not seen any medical record with the woman's request as the sole indication for the operation.
13. The main reasons for CS without medical indications: Desire to avoid labor pain, lacerations and dilations and to protect coital function, as well as a past history of difficult labor.
14. There are some difficulties in obtaining psychological support and information about delivery.

## ***Discussion***

Although the increased CS rate was acknowledged by all participants, its impact was interpreted ambiguously by doctors and experts. Antenatal doctors and policy-makers had a positive attitude toward this increase which is motivated mainly by improved perinatal outcomes. Official data shows that a decrease in perinatal mortality has been observed from 23.7 per 1000 births in 2000 to 20 per 1000 births in 2008. It is important that the CS rate in 2008 was 15% which is considered by WHO as an optimal level. Data on perinatal mortality since 2008, when the CS rate exceeded the WHO recommended threshold is not available. Further investigation should be done to find the association between the increased CS rate and perinatal outcomes.



The increased number of relative indications for CS, lack of explicit standards for performing CS, new technologies for diagnosing intrauterine fetal conditions, increased morbidity and number of complicated pregnancies, women's requests and financial incentives, physicians' fear of malpractice suits and convenience to perform CS instead of vaginal delivery are the main reasons for the increased CS rate, which are concordant with findings of other studies.<sup>2,20,21</sup>

Doctors reported that the number of relative indications has increased in the last years. There are some new indications for CS, such as breach presentation or assisted conception. The other issue highlighted by participants was that the list of relative indications is not explicit, which is a loophole whereby physicians can justify any CS without committing any violations. The last revision of the list of relative indications was made in 2000, according to the policy-maker. The new standards are considered comparable with WHO recommendations and other NIS countries. Anyway, only one doctor mentioned that she is familiar with them and follows this MOH guideline. So a revision of the CS guideline and its distribution among doctors in hospitals and policlinics will establish standard CS practice.

Based on doctors' responses, higher reimbursement on CS has not resulted in an increase in CS rate, while experts participating in the study mentioned that there may be a relationship between the high CS rate and the payment system. Second level facilities have high CS rate and low birth rate which can be a reflection of physicians' practice favoring CS over natural delivery, aimed to compensate for the reduced income due to the low birth rate. And finally, CS carries a higher risk of out-of-pocket payments compared to natural delivery, as patients feel an obligation to pay a doctor in gratitude in the case of a CS. Since there is no explicit evidence of the impact of higher reimbursement of CS on the increased CS rate, further investigations are required. By law, patients have a right to choose the place, treatment method and doctor. According to some physicians' and a woman there are some hospitals where doctors practice CS without medical indications. Although the State does not reimburse CS without medical indications,

reimbursement of CS without medical indications is not stipulated by the law. The study revealed that in these cases doctors usually fabricate medical records by providing justifications for the CS. These findings are consistent with the study by Robson et al.<sup>16</sup> Furthermore; the financial expert said that he has never seen a medical record with a woman's request as the only indication for the Cesarean section. So a woman's right to choose CS without medical indications and a lack of explicit payment mechanisms for CS without medical indications might motivate doctors to fabricate medical records and perform CS without medical indications. Further research is required to identify the best regulatory and financial strategy for CS without medical indications.

In contrast to the opinion expressed by doctors about increased requests by women for CSs, almost all women said that they prefer to have a natural delivery as they believe that the natural way is the right way.

Contrary to the study by Pang et al., this study did not find beliefs about the safety of the Cesarean operation for infants.<sup>27</sup> Most women agreed that natural delivery is necessary for the infant's health. On the other hand, the main reasons for CS without indications, such as desire to avoid labor pain, lacerations and dilations, protection of coital function, as well as the past history of difficult labor, are consistent with other publications<sup>18</sup> Myopia is the other reason stated for CS without medical indications. The study revealed that women who wished to find more information about delivery and pregnancy are likely to have CS without indications, which can be explained by increased fear due to misinformation. The wrong interpretation of information and misunderstanding develop fear toward a vaginal delivery, which is believed to be associated with some complications. Some barriers to getting qualified information in polyclinics and during antenatal visits have been identified, as well as a lack of special classes preparing women for delivery and providing psychological support. A cross-sectional survey investigating the attitude of reproductive age women toward mode of delivery can reveal whether maternal request is among the main driving forces of the increased CS rate.

This study's findings correspond to those of previous studies regarding doctors' attitudes toward VDACS.<sup>4,24</sup> Resistance to practice vaginal delivery after CS among doctors is apparently due to fear of scar dehiscence or uterine rupture. Providing and implementing international guidelines for practicing VDACS may reduce the number of unnecessary CSs, as almost all women with uterine scar participating in the study wanted to have labor trial in the future.

Fear of litigation following the possible development of unexpected adverse outcomes after a vaginal delivery is performed, following a doctor's refusal to perform CS without indications, is one of the physicians' main concerns. These findings are consistent with the study by Nilstun et al.<sup>19</sup>

### ***Recommendations***

- The list of indications for CSs provided by the MOH guideline should be reviewed and more explicit indications should be provided.
- International guidelines for practicing VDACS should be provided and implemented, as almost all women with uterine scar want to have labor trial in the future.
- The financial and regulatory mechanisms of CS without medical indications should be reviewed.
- Maternity classes providing consultations, trainings and psychological support should be organized as these can be very impactful.

The strength of the study is that we used triangulations between two instruments, focus group discussions and in depth interviews and different groups of participants. It is the first study investigating the problem of the high CS rate in Armenia.

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## Appendix

**Table 1. Demographic characteristic of first-time pregnant, naturally delivered and cesarean women participated on the focus group discussion.**

Women	N of women	Mean age	Marital status	Ed <14 years	Ed 10-13 years	Ed 10 years	Number Employed	Mean N of kids	Mean age of kids	Discussion time
First-time pregnant	8	26	8	6	1	1	5	-----	-----	64
Naturally delivered	9	28	9	7	0	2	4	2	10	66
Cesarean	10	30	10	8	1	1	8	1.5	8	67
Total	27	28	27	21	2	4	17	1.75	10	65

**Table 2. Demographic characteristics of intranatal and antenatal doctors participated in in-depth interviews**

Doctors	N*	Mean age (Range)	Female	Mean W. exp.* Years	Only Ant. Care*	Int and Ant.care	Perfom CS	Asisted on CS	Duration of interviews Minutes
Intranatal	5	41(36-49)	5	13(4-25)	0	5	1	4	21 (20-25)
Antenatal	5	41(32-56)	5	11(5-22)	4	1	0	1	14 (11-15)
Total	10	41	10	12(4-25)	4	6	1	5	18 (11-25)

\*Number

\*Work experience

\* Antenatal care

\* Intranatal care

### Guides for women who had SC

1. Please introduce yourself, how many children do you have.
2. I want to address my question to those who have more than one delivery. Please, tell about mode, time and place of your first deliveries? What affected you decision to have vaginal delivery or CS during your first pregnancies?
3. Please, tell when and where did you deliver last time? What affected your decision? Probe: antenatal physician, intranatal physician, medical indication, fear, pressure of the family, last (negative) experience of vaginal delivery, last experience of CS, others...
4. Did you or your relatives totally rely on doctor's decision to perform CS? Explain

5. Are you satisfied with actual mode of delivery which you had? Explain
6. I want to address my question to those who had repeated CS. Did you discuss possibility to have vaginal delivery after previous CS?
7. I want to address my question to those who had vaginal delivery in the past, how would you compare CS to vaginal delivery? What was similar and what was different? What did you like, what you didn't?
8. In your opinion what are advantages and disadvantages of CS?
9. In your opinion what are advantages and disadvantages of vaginal delivery?
10. What do you think about having CS without medical indications (by women request)? Should it be allowed or prohibited? Explain
11. Did you pay anything for birth or other services? Explain

### **Guide for women who had vaginal delivery**

1. Please introduce yourself, how many children do you have.
2. I want to address my question to those who have more than one delivery. Please, tell about mode, time and place of your first deliveries? What affected your decision to have vaginal delivery or CS during your first pregnancies?
3. Please, tell when and where did you deliver last time? Who influenced your decision to have vaginal delivery? Probe: antenatal physician, intranatal physician, absence of medical indication, pressure of the family, last experience of vaginal delivery, last experience of CS, others
4. Did you or your relatives totally rely on doctor's decision about mode of delivery? Explain
5. Are you satisfied with actual mode of delivery which you had? Explain
6. I want to address my question to those who had CS in the past, how would you compare CS to vaginal delivery? What was similar and what was different? What did you like, what you didn't?
7. In your opinion what are advantages and disadvantages of CS?
8. In your opinion what are advantages and disadvantages of vaginal delivery?
9. What do you think about having CS without medical indications (by women request)? Should it be allowed or prohibited? Why?
10. Did you pay anything for birth or other services? Explain

### **Guide for pregnant women**

1. Please introduce yourself and mention current gestational age
2. What mode of delivery ( CS or vaginal delivery) do you prefer to have?
3. Explain your choice. Who and/or what had influence on your preference toward vaginal delivery/CS? Probe: antenatal physician, intranatal physician, absence of medical indication, pressure of the family, fear, others
4. In your opinion, what are advantages and disadvantages of CS?
5. In your opinion, what are advantages and disadvantages of vaginal delivery?
6. What do you think about having CS without medical indications? Should it be allowed or prohibited? Why?

### ***Guide for intranatal physicians***

1. Generally speaking, do you think CS rate has increased over the years you have been practicing, or stayed about the same? Is it the problem for Armenia?
2. In your opinion what are main factors contributing to increased CS rate? Probe: women request westernization, increased number of complicated pregnancies, low-use of vacuum-extractions and forceps deliveries, other
3. In your opinion what impact has new payment system on CS rate?
4. In your opinion, should women and family members be involved in decision-making about mode of delivery and if yes to what extent?
5. What do you think about having CS without medical indications? Should it be allowed or prohibited? Why? Is there any law or decision about CS without medical indications in Armenia? If yes, please explain. If no, what are common procedures for performing CS without medical indications?
6. Why women do insist on CS without medical indications or in the case of low-risk pregnancy? Probe: protection of pelvic floor muscles, fear of pain, necessity of having planned delivery, other?
7. How you can characterize women who insist on CS without medical indications or in the case of low-risk pregnancy? Probe: do they have high educational level? Are they employed? Do they have high income level? Is it their first pregnancy? Are they in their thirties?
8. Do you think that it is more beneficial to use more often operative vaginal delivery instead of CS? Why?
9. What do you think about spontaneous delivery after previous CS?

10. Does some reluctance exist among women with previous CS to go through normal delivery during next pregnancies? If yes, what are main reasons for refusal? Your recommendations to increase vaginal delivery after CS?
11. Your suggestions to decrease CS rate?

### **Guide for policy- SHA expert (financial issues)**

1. According to data there is an increase in CS rate from 7.2% in 2000 to 17.4 % in 2009. In your opinion is this increase a problem for Armenia?
2. Has there been a change in Cesarean section practices since introducing birth certificate program? If so, how has it changed and why? Prob: Does the significantly higher reimbursement for CSs when compared to vaginal delivery lead to increased numbers of C-sections. How?
3. What do you think about performing CS without medical indications (by women request alone) or in case of low-risk pregnancies? Prob: Should it be allowed or prohibited? Why?
4. Are there any mechanisms to minimize the financial burden due to CSs in our country? If yes, what are they? What can you suggest to minimize financial losses due to unnecessary CS?
5. In your opinion should the state reimburse for CS without medical indications ( by women request)?
6. Are there other things that we did not discuss but you feel it is necessary to talk about?

### **Demographic form for women**

1. Year of birth: \_\_\_\_\_
2. Marital status:
  - 1.single
  - 2.married
  - 3.divorced
  - 4.widowed
3. Educational level
  - 1. less than 10 year
  - 2.10 year
  - 3. 10-13 year
  - 4. 14 year and more
4. Specialty \_\_\_\_\_

5. Number of children\_\_\_\_\_

6. Employment status

Yes

No

On maternity leave

7. Please, fill the table

Years of births	Mode of delivery	Place of delivery
1. _____	<input type="checkbox"/> Cesarean section <input type="checkbox"/> Vaginal delivery	_____
2. _____	<input type="checkbox"/> Cesarean section <input type="checkbox"/> Vaginal delivery	_____
3. _____	<input type="checkbox"/> Cesarean section <input type="checkbox"/> Vaginal delivery	_____
4. _____	<input type="checkbox"/> Cesarean section <input type="checkbox"/> Vaginal delivery	_____

### Demographic form for physicians

1. Age\_\_\_\_\_

2. Gender\_\_\_\_\_

3. Years of experience\_\_\_\_\_

4. You work in:  Maternity hospital

Policlinic

5. You provide:  Antenatal care only

Birth services only

Birth services and antenatal care

6. You:  Perform Cesarean section

Do not perform Cesarean section