



uOttawa

l'Université canadienne
Canada's university

**FACULTÉ DES ÉTUDES SUPÉRIEURES
ET POSTDOCTORALES**



**FACULTY OF GRADUATE AND
POSTDOCTORAL STUDIES**

Juan Vazquez

AUTEUR DE LA THÈSE / AUTHOR OF THESIS

M.Sc. (Epidemiology)

GRADE / DEGREE

Department of Epidemiology and Community Medicine

FACULTÉ, ÉCOLE, DÉPARTEMENT / FACULTY, SCHOOL, DEPARTMENT

**The Opinions and Attitudes of Obstetricians in the City of Havana,
Cuba towards Use of Cesarean Section**

TITRE DE LA THÈSE / TITLE OF THESIS

Mark Walker

DIRECTEUR (DIRECTRICE) DE LA THÈSE / THESIS SUPERVISOR

Brenda Wilson

CO-DIRECTEUR (CO-DIRECTRICE) DE LA THÈSE / THESIS CO-SUPERVISOR

EXAMINATEURS (EXAMINATRICES) DE LA THÈSE / THESIS EXAMINERS

Jamie Brehaut

Timothy Ramsay

Gary W. Slater

Le Doyen de la Faculté des études supérieures et postdoctorales / Dean of the Faculty of Graduate and Postdoctoral Studies

**The Opinions and Attitudes of Obstetricians in the City of
Havana, Cuba towards Use of Cesarean Section**

Juan C. Vazquez

**Thesis submitted to the Faculty of Graduate and
Postdoctoral Studies in partial fulfillment of the
requirements for the M.Sc. in Epidemiology and
Community Medicine**

**Department of Epidemiology and Community Medicine
Faculty of Medicine
University of Ottawa
Ottawa, Ontario, Canada**

Juan C. Vazquez, Ottawa, Canada, 2008



Library and
Archives Canada

Bibliothèque et
Archives Canada

Published Heritage
Branch

Direction du
Patrimoine de l'édition

395 Wellington Street
Ottawa ON K1A 0N4
Canada

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

ISBN: 978-0-494-48516-3

Our file Notre référence

ISBN: 978-0-494-48516-3

NOTICE:

The author has granted a non-exclusive license allowing Library and Archives Canada to reproduce, publish, archive, preserve, conserve, communicate to the public by telecommunication or on the Internet, loan, distribute and sell theses worldwide, for commercial or non-commercial purposes, in microform, paper, electronic and/or any other formats.

The author retains copyright ownership and moral rights in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

AVIS:

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, publier, archiver, sauvegarder, conserver, transmettre au public par télécommunication ou par l'Internet, prêter, distribuer et vendre des thèses partout dans le monde, à des fins commerciales ou autres, sur support microforme, papier, électronique et/ou autres formats.

L'auteur conserve la propriété du droit d'auteur et des droits moraux qui protègent cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.

Abstract

Cesarean section rates have increased worldwide in the last decades. It has had important implications for the health system, such as the increase in maternal morbidity and mortality.

An anonymous survey was administered to 132 obstetricians in the City of Havana to identify their opinions regarding the cesarean section rates; to determine what are the causes for such increase and what possible interventions could stop that trend; and the obstetricians' preferences when facing some clinical situations.

Most of participants considered the cesarean section rate to be high. Previous caesarean sections, administrative pressures and new technologies were pointed out as possible causes. Asking for a second opinion, the use of the partograph and try a VBAC are interventions probably useful to reduce such rates.

Future research should investigate the ideal cesarean section rate and potential measures to decrease it, as well as the barriers that hinder professionals in implementing such interventions.

Acknowledgements

I would like to express my deepest appreciation to my supervisors, Dr. Mark Walker and Dr. Shi Wu Wen, for their guidance and support. I would like to thank Dr. Brenda Wilson for her invaluable advice and patience. Furthermore, I would also like to express my thanks to Dr. Ian Graham for his assistance in the development of the protocol and the questionnaire, and to MSc. Jorge L. Calero for his continued help, support and friendship during all this time. I would, in addition, like to acknowledge the Strategic Training Initiative in Research in the Reproductive Health Sciences (STIRRHS) and the WHO Special Programme of Research, Development and Research Training in Human Reproduction for jointly funding my training to obtain the Master Degree and carry out this project. Finally, I would like to thank my family for their love and encouragement.

Table of Contents

List of Tables	6
List of Figures	9
List of Appendices	10
Chapter 1. Introduction and Literature Review	11
Introduction	11
The Cuban health care system	12
Effectiveness of attempts to reduce cesarean section rates	13
Literature review	16
Studies exploring women's preferences about mode of delivery	16
Behaviour theories relevant to promoting evidence-based practice	17
Knowledge translation	23
Rationale for the current study	25
Research questions	27
Hypothesis	27
Chapter 2. Systematic Review on Care Providers' Opinions and Attitudes Towards Cesarean Section	29
Objectives	29
Methods	29
Search strategy	29
Inclusion and exclusion criteria	31
Language restrictions	33
Study selection	33
Data abstraction	34
Data analysis	35
Results	36
Description of the studies	37
Obstetricians' opinions and attitudes on current cesarean section rates	39
Opinions and attitudes regarding the main causes of the increase in cesarean section rates	39
Subgroup analyses	42
Discussion	48
Limitations	49
Conclusions	50

Systematic Review. Figures and Tables	51
Chapter 3. Survey of Cuban Obstetricians' Opinions and Attitudes Towards Cesarean Section	61
Study objectives	61
Methods	61
Study design	61
Participants and recruitment	62
Sampling procedure	62
Instrument	63
Questionnaire testing	65
Variables of interest	66
Data collection	67
Statistical analysis	67
Multivariate analysis	70
Sample size calculation	71
Ethical approval	73
Results	74
Socio-demographic characteristics of the study population	74
Description of answers to questions related to attitudes and opinions	76
Bivariate analysis: association between selected demographic characteristics of respondents and opinions on cesarean section rates	87
Logistic regression	122
Description of open questions	125
Chapter 4. Discussion	128
Study limitations	140
Conclusions	144
References	146
Appendix 1: Tables and Graphs	165
Appendix 2: Questionnaire	169
Spanish version	169
English version	173
Appendix 3. Ethical approvals	178

List of Tables

Table 2.1: Characteristics of included studies	53
Table 2.2: Subgroup analysis by gender. Answer “Yes” to personal decision of performing a cesarean section for yourself/your partner without medical indication	60
Table 2.3: Subgroup analysis by gender. Answer “Yes” to patient demand of performing a cesarean section without medical indication	60
Table 2.4: Subgroup analysis by parity. Answer “Yes” to personal decision of performing a cesarean section for yourself/your partner without medical indication	60
Table 2.5: Excluded studies	60
Table 3.1: Socio-demographic characteristics of the obstetricians surveyed	75
Table 3.2: Association between selected demographic variables and respondent’s opinion on the cesarean section rate in their own hospital	88
Table 3.3: Association between selected demographic variables and respondent’s opinion on how the cesarean section rate should be in their own hospital	90
Table 3.4: Association between selected demographic variables and respondent’s opinion on increase in obstetric dystocias as a possible cause of the increase in cesarean section rate	93
Table 3.5: Association between selected demographic variables and respondent’s opinion on the introduction of new technologies as a possible cause of the increase in cesarean section rates	95
Table 3.6: Association between selected demographic variables and respondent’s opinion on great volume of cases to assist when on call as a possible cause of the increase in cesarean section rates	97
Table 3.7: Association between selected demographic variables and respondent’s opinion on the increase in maternal age as a possible cause of the increase in cesarean section rates	99
Table 3.8: Association between selected demographic variables and respondent’s opinion on great number of previous cesarean sections as a possible cause of the increase in cesarean section rates	101

Table 3.9: Association between selected demographic variables and respondent's opinion on administrative pressures as a possible cause of the increase in cesarean section rates	103
Table 3.10: Association between selected demographic variables and respondent's opinion on patient/relative request as a possible cause of the increase in cesarean section rates	105
Table 3.11: Association between selected demographic variables and respondent's opinion on fear of litigation as a possible cause of the increase in cesarean section rates	107
Table 3.12: Association between selected demographic variables and respondent's opinion on using the partograph as an intervention to decrease cesarean section rates	109
Table 3.13: Association between selected demographic variables and respondent's opinion on asking a second opinion as an intervention to decrease cesarean section rates	111
Table 3.14: Association between selected demographic variables and respondent's opinion on performing an external cephalic version as an intervention to decrease cesarean section rates	113
Table 3.15: Association between selected demographic variables and respondent's opinion on trying a vaginal delivery in a patient with a previous cesarean section as an intervention to decrease the cesarean section rates ..	115
Table 3.16: Association between selected demographic variables and respondent's opinion on making decisions regardless patient / relative demand as an intervention to decrease cesarean section rates	117
Table 3.17a: Answers to the hypothetical clinical situation " <i>Would you choose/ recommend an elective cesarean section for yourself or your partner without a medical indication?</i> "	119
Table 3.17b: Answers to the hypothetical clinical situation " <i>Would you choose/ recommend an elective cesarean section for a patient (not your-self or your partner) without a medical indication?</i> ".....	120
Table 3.17c: Answers to the hypothetical clinical situation " <i>Would you consider trying a vaginal delivery in a patient with a previous cesarean section?</i> "	121
Table 3.18: Logistic regression. Association between selected variables and possible causes for the increase of cesarean section rates	123

Table 3.19: Logistic regression. Association between selected variables and potential useful interventions to decrease cesarean section rates	124
Table 3.20: Other causes for the increasing cesarean section rate	125
Table 3.21: Other potentially useful interventions to decrease the cesarean section rate	125
Table 3.22a: Decision of performing a cesarean section without any medical indication (on her/his partner). Answer NO	126
Table 3.22b: Decision of performing a cesarean section without any medical indication (on her/his partner). Answer YES	126
Table 3.23a: Decision of performing a cesarean section without any medical indication (on unrelated patient). Answer NO	126
Table 3.23b: Decision of performing a cesarean section without any medical indication (on unrelated patient). Answer YES	127
Table 3.24a: Decision of trying a vaginal delivery in a patient with a previous cesarean section. Answer NO	127
Table 3.24b: Decision of trying a vaginal delivery in a patient with a previous cesarean section. Answer YES	127

List of Figures

Figure 2.1: Study flow diagram	52
Figure 3.1: The cesarean section rate is	76
Figure 3.2: The cesarean section rate should	76
Figure 3.3: Obstetricians' opinion about the appropriate cesarean section rate ..	77
Figure 3.4a: The increase in CS rates is due to the increase in obstetrics dystocias	79
Figure 3.4b: The increase in CS rates is due to the introduction of new technologies	79
Figure 3.4c: The increase in CS rates is due to the great volume of cases when on call	79
Figure 3.4d: The increase in CS rates is due to the great number of previous cesarean section	79
Figure 3.4e: The increase in CS rates is due to the increase in women's age	80
Figure 3.5a: The increase in CS rates is due to administrative pressures	80
Figure 3.5b: The increase in CS rates is due to women/relatives demand	80
Figure 3.6: The increase in CS rates is due to fear of litigation	81
Figure 3.7a: The partograph is a useful intervention to reduce the CS rates	83
Figure 3.7b: Asking for a second opinion is a useful intervention to reduce the CS rates	83
Figure 3.7c: To try a labour in a woman with a previous cesarean section is a useful intervention to reduce the CS rates	83
Figure 3.7d: To make your decisions regardless women/relatives opinion is a useful intervention to reduce the CS rates	83
Figure 3.7e: To perform an external cephalic version is a useful intervention to reduce the CS rates	84
Figure 3.8: Obstetricians' attitudes on performing a caesarean section under specific clinical situations	86

List of Appendices

Appendix 1: Tables and graphs	165
Table 1.1: Cesarean section rates in Cuba, from 1990 to 2006	166
Table 3.1: Sources of selected variables	168
Graph 1.1: Cesarean section rates in Cuba, from 1990 to 2006	166
Graph 1.2: Births in Cuba, from 1990 to 2006	167
Appendix 2: Questionnaires	169
Appendix 3: Ethical approvals	178

Chapter 1. Introduction and Literature Review.

Introduction

Cesarean section rates have increased worldwide in the last few decades. Reported rates vary from less than 20% ^(1, 74, 96) to more than 40% ^(12, 101). Rates also vary depending on the countries' socioeconomic development, access to health care facilities and the type of health care (private, public, insurance) ^(28, 85, 90, 97). Even within the same country or region, great variations may be found ^(19, 27, 90). Causes of the increasing rates are multiple, among them: new risk criteria classifying a greater number of pregnant women into high risk groups ⁽⁷⁶⁾; influence of technologies such as cardiotocography ⁽²⁾; economic incentives ⁽⁶⁸⁾; increases in the number of cesarean sections performed on demand ^(87, 93); increases in legal claims due to malpractice ^(32, 87, 103); increases in the indication of cesarean section because of the progressive rise in previous cesarean sections ^(9, 11, 87,); new indications for elective delivery (induction) ⁽⁹³⁾; changes in perceptions of physicians and patients regarding cesarean section, where it is seen as a "normal" procedure ⁽⁶⁸⁾; and, technical and anesthetic safety ⁽²⁸⁾.

The situation in Cuba regarding the increase in cesarean section rates is very similar to the situation in the rest of the world. Cuba shows rates higher than those in developed countries ⁽³⁴⁾. Table 1.1 and Graph 1.1 (see *Appendix 1*) show the gradual increase in cesarean section rates over the past 17 years. In 1990, the cesarean section rate was 19.4%, and by 2006 it was 37.2%.

The Cuban health care system

The Cuban healthcare system is managed by the Ministry of Public Health, the body in charge of supervising and controlling the implementation of government policy related to public health. One of the most important characteristics of health care in Cuba is that it is socialized and each aspect is controlled by the State through specific government bodies (National Assembly, State Council and Ministers' Council). All medical services are free and accessible to any citizen. Expenses assumed by individuals include outpatient prescriptions, prosthetics, wheel chairs or similar devices, and lenses. However, people with low incomes are able to receive free access to these items, as well as additional economic support. The Cuban healthcare system has a preventative orientation, with a well-structured primary care network. Another important aspect is the centralized policy making and the executive decentralization. Cuba has the best physician/population ratio in the world, with one medical doctor for every 150 people ⁽¹¹²⁾.

One of the priority programs has been the Maternal and Child Care Program. Many indicators related to maternal and child health are comparable to those from developed countries. However, the reduction in infant mortality rates has not been equivalent to the decrease in maternal mortality rates. The cause for this is multifactorial, with one of the most important factors being the morbidity and mortality related to cesarean sections.

The Cuban Handbook of Procedures for Diagnosis and Treatment in Obstetrics and Perinatology ⁽²⁵⁾ is the document that includes all the recommended diagnosis and treatment procedures to be performed during pregnancy. It is a standard document for the entire country. Included in the handbook, are guidelines on when to perform a cesarean section, as well as favorable and unfavorable conditions for a vaginal birth in a breech presentation. Regarding the vaginal birth after a cesarean delivery (VBAC), the handbook does not clearly define the conditions for which a vaginal delivery can be attempted after a cesarean section. It states that if the cause of the previous cesarean section is still the same (i.e., breech presentation, cephalo-pelvic disproportion), the method of delivery should again be by cesarean section.

Effectiveness of attempts to reduce cesarean section rates

At present, the main indications for cesarean section worldwide are ^(1, 23, 70, 74, 76, 96) previous cesarean section, fetal distress, induction failure, cesarean section “on request,” cephalo-pelvic disproportion, delivery progression failure, breech presentation, antepartum haemorrhage, cord pathology, and multiple pregnancy.

The increase in the number of cesarean sections has important implications for the health system, both for the individual as well as for the system as a whole ^(23, 74, 76, 99). Maternal morbidity and, more importantly, mortality are increased ^(53, 101, 107) with cesarean sections. There is also an increase in haemorrhage, infection

and thromboembolic complications ^(53, 67, 92), as well as anesthetic complications ^(48, 81). In addition, there are increased costs to the health care system ^(3, 84), especially in countries with limited and finite resources to deal with large numbers of cesarean deliveries. There are psychosocial implications as cesarean sections may result in lower satisfaction with the childbirth experience, more postnatal depression and potential interference with mother-baby bonding ⁽²⁴⁾, as well as a longer hospital stay ^(67, 84). The woman's subsequent pregnancies are at increased risk as there is the potential for uterine rupture, and life-threatening urgent surgical interventions like hysterectomy are more likely to be performed ^(3, 10, 71, 81, 89, 92, 107).

While the increase in the number of cesarean sections is universally accepted and receives much media attention ⁽⁶⁸⁾, few interventions have been proposed to reduce the number unnecessary sections. A systematic review by Horey et al. ⁽⁵⁰⁾ included randomized controlled trials (RCTs), non-RCTs and controlled before-and-after studies. Two RCTs involving 1,451 women were included. The objectives in both trials were to reduce cesarean births by encouraging women to attempt vaginal delivery. However, results were not combined in a meta-analysis because of heterogeneous study populations. The review found no differences in cesarean section incidence between intervention and control groups. Another systematic review by Villar et al. ⁽¹⁰¹⁾ included randomized trials comparing programs of antenatal care with different frequencies and timing of visits, as well as different types of care providers. Ten, mostly good quality, trials involving over 60,000 women were included. The review showed that a reduction in the number of antenatal visits was not associated with an increase in

any of the negative maternal and perinatal outcomes reviewed, including cesarean section rates. A large, Latin-American, multicenter RCT looked at the ability of a mandatory second opinion to reduce rates of cesarean sections ⁽⁵⁾. The authors found that a mandatory second opinion policy was associated with a small but significant reduction in rates of cesarean section, mostly in intrapartum sections. Other maternal and neonatal outcomes, and other outcomes relating to the mother's perception and satisfaction with the process of care, were similarly distributed between groups. Althabe et al. concluded that 22 intrapartum cesarean sections per 1,000 deliveries could be prevented if hospitals used a second opinion policy, without affecting maternal or perinatal morbidity, and without affecting mothers' satisfaction with the care process.

Beyond the quantitative analysis of the evolution and impact of cesarean section on individual and health system outcomes, there has been a considerable interest in knowing the opinions and attitudes of health care providers (midwives, family physicians, and obstetricians) as determinants or influences on cesarean section rates. There is a general perception that health care providers' perspectives have changed in recent years, and that these changes are leading to a greater tendency towards performing more cesarean sections. "Cesarean on demand" is another issue that has come up as a matter of both clinical and ethical controversy, being most evident when the woman's right to choose the mode of delivery and the physicians' judgment are in conflict with each other. Some studies have shown that health care providers' opinions change when facing different personal settings and clinical situations ^(87, 94).

Literature Review

Studies exploring women's preferences about mode of delivery

Eden et al. ⁽³³⁾ conducted a systematic review to summarize the evidence related to women's preference for delivery. Authors reviewed controlled trials, case-control studies, and descriptive studies containing original patient data on the preferred mode of delivery among women who have had a previous cesarean delivery, published in The Cochrane Database of Systematic Reviews and Registry of Controlled Trials and the MEDLINE, HealthSTAR, PsycINFO, and CINAHL databases from 1980 to August 2002. According to this review, women with a previous vaginal delivery were more likely to select trial of labour than women who did not have a previous vaginal delivery. The most commonly-cited reason for selecting trial of labour was ease of recovery and desire to return quickly to caring for other children. Safety for the mother and/or infant was cited as an important reason for delivery choice in some studies. Important ethnic differences were reported. Compared with white women, non-white women were more likely to identify their provider as an important influence (39% versus 19%), and perceived labour as something to be avoided if another option resulted in a healthy baby. White women perceived labour as a challenge and an experience not to be missed. The authors concluded that a woman's choice for delivery was often based on family obligations, such as the need for a shorter recovery so that she could care for her infant and children at home, rather than on the safety of herself or her

unborn child. It remains unclear if education on vaginal birth after cesarean increases the proportion of women who choose trial of labour.

Behaviour theories relevant to promoting evidence-based practice

It is important to discuss some basic concepts and behaviour theories which could be acting to influence the answers given by obstetricians to personal questions, such as whether they would perform a cesarean section on a pregnant woman (either themselves or their partners [if male], or an unrelated pregnant woman) if she requested it without a clear medical reason, or, for example, their opinions on current cesarean section rates, the implications of such rates, and potential interventions to reduce them.

Attitudes are defined as the opinions, beliefs and feelings predisposing us to respond in a specific manner to different objects, persons and events, which are basically learned through the experiences and the relationships during our life (with parents, teachers, friends, etc). Attitudes can be measured using Likert scales, psychophysical measures, social distancing and the semantic differential method.

(41)

Behaviour, on the other hand, is a group of external activities which are observable in individuals, as well as internal phenomena, like goals, motivations, and emotions. Behaviour may be adapted to the norms existing in the region where the individual is located (hospital, home, industry, office), as well as to the

audience (supervisor, peer, family). It can be modified according to either the individual's interpretation of norms and regulations, or the need to reinforce or remove some attitudes, according to context (supervision, education, training, routine activities). It is also important to recognize "backstage" behaviour, which refers to attitudes and behaviours that individuals show in their usual environment, where they don't respond to norms, but respond to their natural impulses or personal conveniences. ⁽⁴¹⁾ Behaviour depends on the stimuli, baseline physiologic status and the general past training of the organism. ⁽⁹⁵⁾

It has been recognized that evidence-based knowledge, particularly that coming from RCTs and systematic reviews, provides the best source to promote change in behaviours among health professionals. ⁽⁴⁴⁾ However, evidence-based knowledge is often not implemented effectively, so that optimal health outcomes are not achieved. This may be due to a lack of theoretical understanding of the processes involved in changing the behaviour of healthcare professionals. ⁽⁷⁵⁾ Several theories have tried to explain the change in behaviour both in non-professionals and professionals. The following models are examples of some of such theories: ^(17, 83)

The Health Belief Model defines two related appraisal processes undertaken by the practitioner in partnership with the client: the threat of illness and the behavioural response to that threat. Threat appraisal involves consideration of the individual's perceived susceptibility to an illness and its anticipated severity. Behavioural response involves considering the costs and benefits of behaviours

likely to reduce the threat of disease. It can be useful for the practitioner to establish the client's perception of risk and implications of his or her behaviour when discussing the reasons for testing. It is also important to discuss the likely impact of the test result on lifestyle and behaviour.

Protection Motivation Theory expands the Health Belief Model to include four components that predict behavioural intentions to improve health-related behaviour, or intention to modify behaviour: self-efficacy, responsive effectiveness, severity and vulnerability. Self-efficacy is the belief in one's ability to control personal actions. It is based on past experience and evokes behaviour concordant with an individual's capabilities. Self-efficacy is distinct from unrealistic optimism and does not elicit unreasonable risk-taking. The second component that predicts behavioural intention is the individual's perceived benefits of taking control of his or her actions, known as responsive effectiveness. Behavioural intention can also be predicted by severity. The fourth predictor of behavioural intention is vulnerability, which may be the likelihood of a disease to occur. A fifth component, fear in response to education or information, has been suggested as a predictor of behavioural intention.

The Social Cognition Theory (SCT) considers self-efficacy, outcome expectancy (an individual's estimate that a given behaviour will lead to certain outcomes) and individuals' goals in explaining behaviour, including proximal goals (such as intentions). ⁽³⁹⁾

The Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) build upon the proposition that many behaviours that an individual performs can be predicted simply from a person's intentions to perform those behaviours. Such intentions are called behavioural intentions. In general, behavioural intentions tend to be good predictors of future behaviour, although there are scenarios in which this is not the case. There are two main variables influencing the strength of an intention: the expected value of behavioural performance (an individual's perceptions about the advantages and disadvantages of performing a particular behaviour) and subjective norms (made up of two components, the normative beliefs about the behaviour and the individual's degree of motivation to comply with the different referents). TPB also measures self-efficacy beliefs, also known as perceived behavioural control, which refers to the individual's perception that he or she can carry out the behaviour and overcome the obstacles that stand in the way of implementing it.

These three components (the expected value of behavioural performance, the subjective norms and the self-efficacy beliefs) are accepted by Fishbein et al, ⁽³⁸⁾ who also state that the relative importance of the three psychosocial mediators as determinants of intentions can vary as a function of both behaviour and the respondent. For example, one behaviour may be under attitudinal control (e.g., a function of positively or negatively valued outcomes), whereas another may be under normative or self-efficacy control (e.g., a function of one's perception of the ability to perform the behaviour). It is also possible that although attitudes are most

important in one population or culture, perceived norms or self-efficacy may be most important in others. The intention could also be different according to gender.

In implementing change, Ferlie et al. ⁽³⁷⁾ suggest four levels of change:

- the individual
- the group or team
- the overall organization
- the larger system or environment in which individual organizations are embedded

However, it is necessary to consider all four levels of change in order to maximize the probability of success.

In a study aiming to look at the implementation of evidence-based practice and develop strategies for effective implementation, Michie et al ⁽⁷⁵⁾ identified 12 domains to explain behaviour changes:

- (1) Knowledge
- (2) Skills
- (3) Social/professional role and identity
- (4) Beliefs about capabilities
- (5) Beliefs about consequences

- (6) Motivation and goals
- (7) Memory, attention and decision processes
- (8) Environmental context and resources
- (9) Social influences
- (10) Emotion regulation
- (11) Behavioural regulation
- (12) Nature of the behaviour

Knowledge translation

Knowledge translation is defined as "the synthesis, exchange and application of knowledge by relevant stakeholders to accelerate the benefits of global and local innovation in strengthening health systems and improving people's health." ⁽⁹⁸⁾ Although a great number of studies have been conducted to determine the best intervention for a given health problem, most people in developing countries have no access to the best available evidence. Some barriers have been identified that hinder practitioners from adhering to evidence-based practices. ^{(13, 37,}

⁹⁸⁾ Such barriers may act at different levels:

- Non-health care sector (mass media, culture)
- Health system level (resistance to adopt the intervention)
- Organizational level (administrative / political pressures, information systems, lack of physician involvement, insufficient leadership)
- Professional / provider (knowledge about the best available evidence, fear of an unfavourable outcome, time pressures, peer judgment, self-efficacy / self-confidence)
- Public / family (beliefs about the intervention, relative's experience)
- Individual (language limitations, ignorance of risks and benefits)

The gaps between health care providers' knowledge and how they practice have been well recognized. In a study of the introduction of the Reproductive Health Library in Mexico and Thailand, Gülmezoglu et al. ⁽⁴⁶⁾ found important

differences between the reported and actual use of antibiotics for cesarean section. Participants claimed that use of antibiotics was a routine intervention, but the study determined that antibiotics were used only in 0.5%-0.7% of the cesarean sections performed in that hospital.

Different strategies have been tested to improve professional practice with variable effectiveness. These strategies have been summarized in different systematic reviews, including educational meetings ⁽⁷⁸⁾, educational outreach ⁽⁴³⁾, local opinion leaders ⁽³¹⁾, audit and feedback ⁽⁵⁵⁾, printed educational materials, reminders and multifaceted interventions. ⁽⁴³⁾ In general, such interventions have had a modest, if any impact on professional practice, with reminders being the most consistently effective. However, there are still many interventions available that could improve providers' performance and patient outcomes, if well-designed studies are implemented. ⁽⁸⁰⁾

Rationale for the Current Study

We planned to carry out a study in order to identify the opinions and attitudes of obstetricians working in five hospitals in the City of Havana, Cuba, regarding the increasing cesarean section rates, as well as their attitudes and preferences towards the form of delivery when facing some specific clinical situations. We were also interested in determining what the obstetricians consider to be the main causes of the increase in cesarean section rates and what possible interventions or procedures they believe could be used to stop or reverse that trend.

Before applying the survey, we performed a systematic review in order to identify the articles published on the topic. The results of the systematic review are presented in Chapter 2 of this paper.

We hypothesised that the answers given by the obstetricians would likely be influenced by several factors, including their previous learning and personal experience, either as parents or in assisting deliveries, their age, the number of years spent working and their medical expertise. Other factors that were included as potentially affecting the obstetricians' responses were the analysis of risks and benefits involved in making decisions, the objective and subjective pressures they face from the environment, as well as the available resources and other characteristics of their workplace.

The main achievements of this study will be to identify the opinions and attitudes of a group of obstetricians from the City of Havana, Cuba, regarding cesarean section rates, to determine how they would act in a number of specific clinical situations, and to obtain their ideas on how to reduce and eventually eliminate the increase in cesarean section rates (assuming they consider the rate to be overly high). Sometimes regulations and guidelines come from decision-makers who have little active involvement in the specialty and are faced with various political or administrative pressures. Physicians working “hands on” in the field are rarely asked about important issues such as cesarean section rates.

It is important to conduct this study because it has been well recognized that cesarean section rates have significantly increased in recent decades. Although this increase has followed a regular trend in the past 15 years in Cuba (see Graph 1.1), it has been greater in the past 6 years (11% from 2001 to 2006). If this trend continues, we would expect to reach cesarean section rates of about 45% in the next 5 years. On the other hand, stopping this trend (i.e., the same rates with the current decreasing trend in the birth rate), would translate into about 20,000 fewer cesarean deliveries in the next 5 years. The risks associated with a surgical delivery, to both the mother, the fetus, and the newborn, have been well established ^(84, 102), as has the economic burden that cesarean sections represent, mainly for countries with limited and finite resources.

The results from this survey will provide the basis to develop hypotheses for future intervention studies in order to identify strategies which could be

implemented, and the segment of the obstetricians' population on which they should have a greater impact. The results will be also published and the corresponding authorities will be informed, focussing on specific interventions aimed to decrease the current cesarean section rates. Knowledge about obstetricians' opinions regarding such interventions could be helpful to maximize their acceptance and improve their impact.

Research questions

1. Are obstetricians in the City of Havana aware of the increasing cesarean section rates in their institutions?
2. Do they consider such increases appropriate?
3. Do they consider the rates to be modifiable?
4. To what extent do patients' and relatives' requests influence the medical decision to perform a cesarean section?
5. To what extent do obstetricians' personal and professional experience influence the medical decision to perform a cesarean section?
6. Are the reasons to perform a cesarean section in the City of Havana similar to those in the rest of the world?

Hypothesis

Based on the current evidence, it is hypothesized that answers to the questions related to obstetricians' personal opinions and attitudes regarding

cesarean section will differ according to respondents' age, sex, professional status, parity of respondents or their partners, and form of previous delivery of the respondents or their partners.

Chapter 2. Systematic Review on Care Providers' Opinions and Attitudes towards Cesarean Section

We conducted a systematic review to summarize the findings of studies examining the opinions and attitudes of health care providers regarding the use of cesarean section. The review objectives were:

- To determine care providers' knowledge and views regarding cesarean section rates
- To determine what health care providers consider to be the main causes influencing the increasing cesarean section rates
- To determine the interventions health care providers consider the most useful to stop or decrease the increasing cesarean section rates
- To identify the health care providers' attitudes and preferences towards the mode of delivery when facing some specific clinical situations

Research question

What are the care providers' opinions and attitudes regarding some issues related to cesarean section?

Methods

Search strategy

The following databases were searched: Medline (1966 - first week of October 2007), EMBASE (1980 - first week of October 2007) and CINAHL (1982 – first week of October 2007)

Databases were searched using a comprehensive and sensitive search strategy aimed at identifying as many studies as possible. Appropriate filters were applied and terms such as questionnaire, survey, cesarean and c-section were used, as follows:

1 epidemiologic studies/

2 (observational adj (study or studies)).tw.

3 longitudinal.tw.

4 retrospective.tw.

5 cross sectional.tw.

6 cross-sectional studies/

7 or/1-6

8 (cesarean or c-section or c section).tw.

9 (mode of delivery or labour or delivery).tw.

10 or/8-9

11 (questionnaire or survey).tw [mp=title, original title, abstract, name of substance word, subject heading word]

12 (obstetr\$ or gynecol\$).tw.

13 or/11-12

14 and/7,10,13

15 remove duplicates from 14

The studies' references were cross-checked in order to identify any potential study.

Electronic messages were sent to some authors to clarify specific study details and to collect additional information about the questionnaires used in the study.

Inclusion and exclusion criteria

Inclusion criteria

Types of studies

Cross-sectional studies (surveys) published or unpublished (if possible) from 1966 to the first week of October 2007, where one or more of the following issues were analyzed, were included:

- The health care providers' opinions about the current cesarean section rates
- The health care providers' opinions about the main causes underlying the increase in cesarean section rates
- The health care providers' opinions about possible intervention(s) or procedure(s) that could be used to stop or reverse this increase

- The health care providers' preferences and behaviours in hypothetical clinical situations where he (or his partner) or she were directly involved

Types of participants

Care providers (obstetricians, general practitioners or midwives)

Types of instruments

Surveys

Types of outcome measures

Care providers' opinions and attitudes regarding:

- The current cesarean section rates
- The main causes of the increase in cesarean section rates
- Possible interventions or procedures that they believe could be used to stop or reverse the increase
- The preferred mode of delivery when faced with some specific clinical situations

Exclusion criteria

- Studies investigating opinions/attitudes relating to previous cesarean section (e.g., VBAC)
- Studies investigating opinions/attitudes relating to breech presentation
- Studies addressing the opinions of pregnant women or women who do not work in the health care system
- Studies not addressing the questions of interest
- Articles in languages other than English, French, Portuguese or Spanish

Language restrictions

Only articles in English, French, Portuguese or Spanish were considered due to practical and time limitations relating to translation of articles in other languages.

Study selection

All potential studies were assessed for eligibility according to pre-specified criteria (see section above entitled “Types of studies”) and data were extracted from each publication by one reviewer. In addition to the main outcome measures listed above, the following information was collected as well: year and setting of the study (country, type of population), a detailed description of the instrument used

(survey, interview), number and percentage of participants and respondents, definitions of the outcomes (if provided) and results.

The studies were considered as appropriate for this review only if there was not any clinical indication for performing a cesarean section. Questions involving decision-making with respect to clinical situations where any kind of risk for the mother/baby could be present (e.g., failure to progress in the second stage of labour, history of perineal damage, estimated fetal weight higher than 4000 g, delivery before 37 weeks of pregnancy [preterm]) were not considered in this review.

Study titles and abstracts were screened and duplicates were removed. Full texts of studies likely to meet the inclusion criteria were retrieved and analyzed.

Data abstraction

Data were abstracted by a reviewer (JCV) using a data abstraction form with the following items:

- 1- Study number
- 2- Year of publication
- 3- City
- 4- Country
- 5- Principal author

6- Country

7- Participants' characteristics (age, gender, type of institution, professional status)

8- Number of participants in sample frame

9- Number of respondents

10-Response rate (%)

11-Methods of the study

12-Studied variables

13-Outcomes measured: Care providers' opinions and attitudes (if provided) on:

- a) Current cesarean section rates
- b) Main causes of the increase in cesarean section rates
- c) Possible intervention or procedures they believe could be used to stop or decrease such tendencies
- d) Preferred form of delivery when facing some specific clinical situations

Data analysis

Data from different studies were grouped. Frequency, percentage, means, standard deviation, range and median were used where appropriate.

When heterogeneity became apparent by visual inspection of data, a probable explanation was investigated (if possible) in order to determine if it was

related to the year of publication; type, gender and professional status of participants; proportion of respondents; country or any other studied variable.

Temporal trends in proportion of respondents and proportion of different answers are described.

Results

The search strategy yielded 408 articles (see Figure 2.1. Study flow diagram). Seven articles were identified by cross-referencing, reference lists, and letters to authors. Two duplicate articles were removed. The total number of articles identified was: 413 articles

After reviewing titles and abstracts:

- 381 were rejected (reasons: questionnaires to non-health care providers, e.g. pregnant or non-pregnant women; addressed to patients of VBAC or elective cesarean section for breech presentation; investigating administration of antibiotics during cesarean section; epidemiology of cesarean section; comments to the editor; letters; comments on another publication)
- 32 full articles were retrieved for detailed review

- 4 studies were excluded (see Table 2.5. Excluded studies)

- 28 studies were included

In the excluded studies, 62.9% of those surveyed (as average) answered the questionnaires. This response rate was higher than those for the included studies (56.7%) and the difference was statistically significant ($\chi^2 = 34.7$; $p < 0.001$).

Description of the studies

Twenty eight studies that met the inclusion criteria of the study were identified. All 28 studies used questionnaires. A list of the included studies is provided in Table 2.1. Characteristics of included studies.

Ten studies were conducted in the United Kingdom, 6 in the United States of America (USA), and 12 in 12 other countries. Twenty-six studies were conducted in upper/middle income countries according to World Bank classification. Two studies^(22, 79) were conducted in countries classified as low/middle income countries (South Africa and Brazil, respectively). The year of publication ranged from 1986 to 2007.

In 25 studies, the questionnaires were either sent or given to the obstetricians/ gynecologists. In Johanson's 2001 study⁽⁵⁶⁾ the survey was also given to other health professionals. Farrell's 2005 study⁽³⁶⁾ also surveyed other

health professionals, but the authors stated that most of them were obstetricians. In Lavender 2005 ⁽⁶⁴⁾ a postal survey was sent to obstetricians and midwives.

For the proposal of the review, answers to different clinical situations were grouped as follows:

- 1) Answer “Yes” to patient demand of performing a cesarean section without any medical indication
- 2) Answer “Yes” to personal decision of performing a cesarean section for yourself/your partner without any medical indication

Fourteen studies asked the first question and 16 studies asked the second question. Six studies formulated both questions in their questionnaires.

A total of 17,752 subjects participated in the 28 included studies (range 100-2106), and 10,062 answered the questionnaires (range 78-1530), representing 56.7% of all the participants. The response rate ranged between 26.2% and 90% (median 67.8%).

The average response rate showed an increasing trend over the years, from 54.6% in 1986 to 62.5% in 2007, and this difference was statistically significant ($\text{Chi}^2 = 4.93$; $p < 0.027$).

The studies of Ghetti 2004 ⁽⁴⁰⁾, Gonen 2002 ⁽⁴²⁾ and Habiba 2006 ⁽⁴⁷⁾, presented more than one clinical situation and participants were allowed to give more than one answer to the question on patient demand. Since the answers were not provided separately, it was not possible to group them; therefore, an average of the answers “Yes” to the different situations was calculated and added to the pooled analysis. Specifically, Habiba 2006 ⁽⁴⁷⁾ provided data only in percentage.

Obstetricians' opinions and attitudes on current cesarean section rates

Only one study (Chalmers 1992) investigated the health care providers' estimate of the ideal cesarean section rate. The rate obstetricians considered as “ideal” ranged from, on average, 16.2% in teaching hospitals (range 5%-35%) to 19.8% in private practice (range 5%-75%).

Opinions and attitudes regarding the main causes of the increase in cesarean section rates

Two studies ^(100, 106) analyzed possible causes for the increasing cesarean section rates. Usha-Kiran 2002 ⁽¹⁰⁰⁾ found that forty participants (37%) considered that all doctors, midwives, media and women were responsible for the high rates; 46 participants (45.6%) considered that women were responsible; and 31 (28.7%) considered the midwives to be responsible for the increasing rates. This study also asked for some potential measures to decrease this tendency and 82 participants (75.9%) considered that patient education would be helpful, while 46 (42.6%)

believed that media coverage could be useful to meet that objective. Weaver 2007⁽¹⁰⁶⁾ found that consultants in the United Kingdom considered maternal requests as the main cause for the increasing rates (n = 603; 76.8%). Other causes were: litigation/defensive practice (527 [67.1]); issues around doctors' training (294 [37.5]); previous cesarean section (191 [24.3]; breech births (162 [20.6]); how pregnancy/birth is now managed (103 [13.1]; and evidence/changes in obstetric practice (88 [11.2]).

Preferred forms of delivery when facing some specific clinical situations

Answered “Yes” to patient demand of performing a cesarean section without medical indication

A total of 4,178 participants (range 71-782) were asked if they were willing to perform a cesarean section without any clinical indication other than request by the patient. Of these, 2,073 (range 1-509) provided a positive answer to this question (49.6% [range 0.7%-84.5%, median 56.8%])

With regards to the trend over the past decade, 8.9% of those surveyed in 1986 answered that they would accept to perform the procedure under those circumstances, while 40.2% of those surveyed in 2006 formulated a similar answer. The difference was highly statistically significant ($\text{Chi}^2 = 36.1$; $p < 0.001$).

Answered “Yes” to personal decision of performing a cesarean section for yourself/your partner without medical indication

From a total of 5,582 participants (range 71-783), 873 (range 4-225) answered “Yes” to this question (15.6% [range 1.5%-28.7%; median 14.1])

The answer “Yes” to the personal decision of performing a cesarean section for yourself/your partner without medical indication did not follow the same trend over the past decade as the question above. The percentages who answered “Yes” to this question were very similar in 1997 and 2007 (17% and 17.7%, respectively); the difference was not statistically significant ($p > 0.05$).

Overall, participants were much more likely to answer “Yes” to performing a cesarean section due to patient demand (49.6%, range 0.7%-84.5%) than for themselves/their partners (15.6%, range 1.5%-28.7%). Differences were statistically significant ($p < 0.001$).

Three studies ^(47, 72, 105) analyzed the reasons to accede to patient demand. They were: avoidance of anal/urinary incontinence, adverse previous birth experience, fear of damage to baby, fear of childbirth, preservation of sexual function, fear of perineal damage, convenience, avoidance of possible legal consequences and the consideration that the woman has the right to request an elective cesarean delivery without a medical indication.

Several studies documented the reasons respondents gave for recommending a cesarean section for themselves/their partners. They were: fear of perineal damage ^(4, 45, 63, 105, 110); avoidance of anal/urinary incontinence ^(63, 105), fear of damage to baby ^(45, 63, 105), fear of childbirth ^(45, 105, 110), adverse previous birth experience ⁽¹⁰⁵⁾, preservation of sexual function ^(4, 63, 105), convenience ^(4, 45, 105, 110) and the ability to feel in control ^(45, 105, 110)

Subgroup analyses

Several studies performed subgroup analysis in order to examine if the answers were influenced by different variables, for example, gender, parity, professional status, type of institution and age. Only gender and parity were analyzed in more than one study; therefore numbers could be grouped only for these two variables.

Cotzias 2001 ⁽²⁷⁾ and Mancuso 2006 ⁽⁷²⁾ reported that responses were not significantly influenced by demographic characteristics, but data were not provided.

Gender

Answered "Yes" to personal decision of performing a cesarean section for yourself/your partner without medical indication

Seven studies ^(4, 45, 54, 63, 64, 73, 110) analyzed possible differences in care providers' answers according to gender (see Table 2.2). Two studies ^(4, 73) found statistically significant differences between genders. Both studies showed that women were more likely to recommend a cesarean section without any clinical indication than men in this scenario. However, the other studies with data relating to gender failed to show statistically significant differences. Such differences remained non-significant when the studies were grouped ($\text{Chi}^2 = 0.79$, $p = 0.38$).

Bettes 2007 ⁽¹⁵⁾ reported that female respondents were significantly more negative toward a woman's right to request and obtain a cesarean delivery on maternal request than males ($p < 0.001$), and were less likely to agree to do it ($p < 0.05$) (data not provided).

Answered "Yes" to patient demand of performing a cesarean section without medical indication

Three studies ^(42, 47, 100) analyzed this question by gender (see Table 2.3). Gonen ⁽⁴²⁾ and Usha-Kiran ⁽¹⁰⁰⁾ found no differences between gender, and such differences remained non-significant when studies were grouped ($\text{Chi}^2 = 0.88$, $p = 0.35$). However, Habiba ⁽⁴⁷⁾ used logistic regression and found that being a female doctor decreased the probability of accepting a patient's request for a cesarean section, but the effect was statistically significant only among physicians who had children (OR 0.29, 95% CI 0.20–0.42) (raw data not provided).

Parity

Answered “Yes” to personal decision of performing a cesarean section for yourself/your partner without medical indication

Two studies ^(56, 69) examined possible differences between nulliparous and parous women when asked for personal preferences regarding the mode of delivery (see Table 2.4). Johanson 2001 ⁽⁵⁶⁾ failed to show differences between these two groups ($\text{Chi}^2 = 2.49$, $p = 0.11$), but MacDonald 2002 ⁽⁶⁹⁾ did find statistically significant differences ($\text{Chi}^2 = 6.78$, $p = 0.009$). In the latter study, participants without children were more likely to choose a cesarean section for themselves/their partners than those with children. Such differences remained significant when the studies were grouped ($\text{Chi}^2 = 8.89$, $p = 0.003$)

Answered “Yes” to patient demand of performing a cesarean section without medical indication

Only one study ⁽³⁵⁾ examined this question regarding parity. No significant differences were found ($\text{Chi}^2 = 2.22$, $p = 0.14$).

Professional status

Answered “Yes” to personal decision of performing a cesarean section for yourself/your partner without medical indication

McGurgan 2001 ⁽⁷³⁾ examined how professional status may influence the answer to this question and did not find significant differences between consultants and registrars. However, Lavender 2005 ⁽⁶⁴⁾ showed that obstetricians are more likely to choose an elective cesarean section for themselves/their partners than midwives ($\text{Chi}^2 = 32.7$, $p < 0.001$). Wu 2005 ⁽¹¹¹⁾ also found that members of the American Uro-Gynecology Society (AUGS) were more likely to make this choice than their colleagues from the Society of Maternal and Fetal Medicine (SMFM) ($\text{Chi}^2 = 130.9$, $p < 0.001$).

Answered "Yes" to patient demand of performing a cesarean section without medical indication

Faas-Fehervary 2005 ⁽³⁵⁾ found that physicians currently practicing obstetrics were more likely to accede to patient demand than their non-practicing colleagues ($\text{Chi}^2 = 22.4$, $p < 0.001$). Wu 2005 ⁽¹¹¹⁾ found that members of the AUGS were more likely to accede to patient demand than members of the SMFM ($\text{Chi}^2 = 50.8$, $p < 0.001$).

Type of institution

Answered "Yes" to personal decision of performing a cesarean section for yourself/your partner without medical indication

McGurgan 2001 ⁽⁷³⁾ examined whether working in hospitals with different cesarean rates may influence the answer to this question. Authors found no differences in the answers of care providers who worked in hospitals with cesarean rates less than 16% and those working in hospitals with rates of 16% or higher ($\text{Chi}^2 = 0.01$, $p < 0.94$)

Answered “Yes” to patient demand of performing a cesarean section without medical indication

Usha-Kiran 2002 ⁽¹⁰⁰⁾ also found no differences between care providers working in high-risk institutions and those working in low-risk centers ($\text{Chi}^2 = 0.80$, $p < 0.37$) regarding this question. However, Habiba ⁽⁴⁷⁾ found that professionals working in university-affiliate units were more likely to perform a cesarean section on patient demand ($\text{OR} = 2.05$, 95% CI: 1.35–3.09).

Age

Answered “Yes” to personal decision of performing a cesarean section for yourself/your partner without medical indication

Two studies ^(54, 105) addressed this question, but they used different cut-off points; therefore, data were not grouped.

Jacquemyn 2003 ⁽⁵⁴⁾ found no differences between health care providers greater than and less than 30 years of age ($\text{Chi}^2 = 0.00$, $p < 0.97$), while Wax 2005 ⁽¹⁰⁵⁾ found that physicians less than 35 years of age were more likely to recommend a cesarean section ($\text{Chi}^2 = 14.5$, $p < 0.01$).

Discussion

This review showed that there was important variability in the results among the different studies. The range of answers to the questionnaires was very wide.

Positive answers to the question “Would you recommend a cesarean section for yourself/your partner without any clinical indication?” did not demonstrate a significant change over the past 10 years, being very similar between the first study in 1997 and those conducted in 2007. This could reflect physicians’ knowledge about the short and long-term consequences of the procedure, as well as its complications and costs. However, the positive answer to the question “Would you recommend a cesarean section for a patient requesting it without any clinical indication?” showed an important and significant change in the past decade, with the answer “Yes” to this question being about 7 times more frequent in 2007 than it was in 1986. Since none of the included studies focused on the possible causes of this remarkable increase, possible explanations remains speculative. It has been suggested that the rise in legal claims due to malpractice in recent years, physicians’ fear of facing legal process and administrative measures, fear of loss of prestige, patient pressure, and even the increase of evidence-based medicine ^(27, 57) could be behind this attitude. The sustained increase in cesarean section rates may play a role in this attitude. Since the procedure is becoming more and more frequent and safe ^(25, 27, 69), care providers and the general population may consider it a “normal” obstetric procedure.

Overall, answers were not influenced either by gender or type of institution. Participants without children were more likely to perform a cesarean section, as well as obstetricians (compared to midwives), uro-gynecologists (compared to maternal and fetal medicine specialists) and practicing physicians (compared to non-practicing doctors). In all cases, only one study was represented. Regarding age, results from two studies were contradictory and the numbers were too small to draw firm conclusions about the influence of this variable.

Limitations

There was considerable variability among the included studies in terms of response rates, which in some cases were very low (less than 50%), as well as in the response to the different clinical situations. Some studies provided no data at all or the data were only in percentages, making it impossible to include the absolute numbers in the pooled analysis. Few studies addressed important questions such as obstetricians' opinions about current cesarean section rates, reasons for the increase of such rates and potential interventions to reduce them. As a retrospective study, this review may be biased by publication bias, even when all efforts were made to identify any published or unpublished study. All the studies but one were conducted in high-income countries, so that the findings of this review should be analyzed in that context.

Conclusions

Future research should focus on trying to explain these issues and other important aspects, such as the ideal cesarean section rate from the obstetricians' point of view. The rate of 15% proposed by the World Health Organization ^(WHO1985) could be out of date at this time, because a number of new indications are arising almost daily as a result of technological developments.

Obstetricians' opinions regarding potential measures to decrease this trend should also be a subject of investigation. RCTs conducted to date have failed to show an effective intervention to reduce cesarean section rates.

Systematic Review

Figures and Tables

Figure 2.1. Study flow diagram

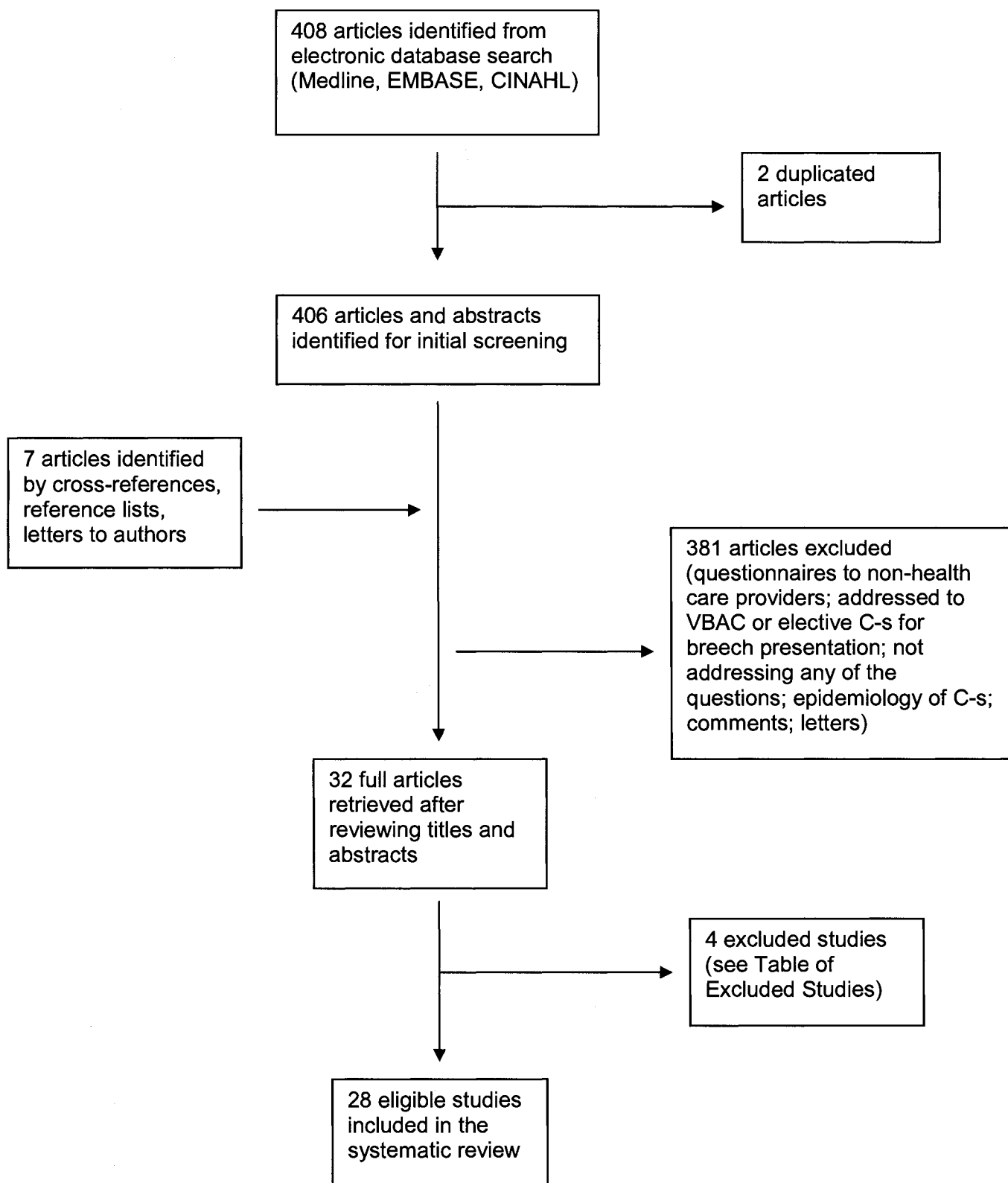


Table 2.1. Characteristics of included studies

Study	Participants	Methods	Outcome
Johnson 1986, USA ⁽⁵⁷⁾	205 obstetricians in university settings and in private practice.	Questionnaire with description of situations in which a discussion of the method of delivery occurred and the patient requested a cesarean section.	Respondents 112 (54.6%). Answer "Yes" to patient's request: At term in labour with no medical problems: 2%.
Cepicky 1990, Czechoslovakia ⁽¹⁹⁾	390 heads of the inpatient obstetrical departments.	Anonymous questionnaire.	Respondents: 311 (79.6%). For normal labour, 287 (92.6%) obstetricians considered the patient wish irrelevant.
Chalmers 1992, South Africa ⁽²²⁾	515 practicing obstetricians.	Questionnaires in English. Reminder sent a few months later.	Respondents: 203 (45.2%). Causes of CS: lack of training, (24.7%), doctor's convenience (21.3%), fear of litigation (18.3%), patient demand (15.7%), financial incentives (10.1%). Estimates for ideal CS rates (mean): Private practice 19.8%, teaching hospitals 16.2%.
Al-Mufti 1997, UK ⁽⁴⁾	282 obstetric consultants, senior registrars and registrars.	Structured anonymous postal survey.	Respondents: 206 (73%). 33 (17%) obstetricians chose elective CS in the absence of any clinical indication. Significantly more female (23, 31%) than male (10, 8%) obstetricians requested elective CS ($p < 0.001$). Of those who chose CS, 88% did so out of fear of perineal damage, 19 (58%) were also concerned about the long-term effect of vaginal delivery on sexual function, and 13 (39%) cited other reasons.
Cotzias 2001, UK ⁽²⁷⁾	243 obstetricians in England and Wales.	Every fifth consultant on an alphabetical list of obstetricians was surveyed by post. Anonymous. No reminders were sent.	Respondents: 155 (63%). 104 (69%) consultants circled "Yes" to "maternal request" question. Responses were not significantly influenced by age, sex, year of appointment.
Irvine 2001, UK ⁽⁵²⁾	201 consultant obstetricians and gynecologists in the North Thames region.	Postal questionnaire to obstetricians and gynecologists identified from the database of the RCOG.	Respondents: 168 (83.6%). Only 1 consultant would offer an elective CS to all women. 83 (61.9%) considered that maternal request has significantly increased their CS rates.

Table 2.1. Characteristics of included studies (continued)

Study	Participants	Methods	Outcome
Johanson 2001, UK ⁽⁵⁶⁾	An unselected group of 88 health professionals agreed to complete the questionnaire.	Anonymous questionnaire.	Respondents: 88 (100%). A higher number of nulliparous answered "yes" to the questions regarding the right to demand a CS, (52.5% vs. 17%) and if they would choose a CS (20% vs. 8.5%).
Land 2001, Australia ⁽⁶³⁾	1824 Australian and New Zealand fellows, members and Australian trainees.	Structured questionnaire sent out with the November 1999 edition of The Australian and New Zealand Journal of Obstetrics and Gynecology.	Respondents: 478 (26%). 54 (11.3%) answered Yes when asked is they would chose an elective CS, assuming the fetus was less than 4000 g, they would. Reasons: fear of fecal incontinence/anal sphincter damage 45 (83.3%), fear of urinary incontinence 44 (81.5%), fear of perineal damage 37 (68.5%), preserve sexual function 32 (59%), fear of damage to baby 13 (24%). When asked if they would agree to an elective CS for a patient when there was not clear indication, 67% answered Yes.
McGurgan 2001, Ireland ⁽⁷³⁾	234 obstetricians working in the Republic of Ireland.	Participants were identified from a database an sent a postal questionnaire.	Respondents: 165 (70.5%). 12 (7%) Irish obstetricians said yes to the question about cephalic presentation (7 female and 5 male). 63 (38%) said yes to the question about the fetal weight (24 female and 39 male). Analysis showed no statistically significant influence by gender or type of hospital.
Wright 2001, UK ⁽¹¹⁰⁾	365 specialist registrars from northern Ireland, Scotland, England, Mersey, Yorkshire, Midlands, Wessex and Thames.	Questionnaire sent by post. Names and trainees obtained from 10 regional Royal College databases. No follow-up occurred.	Respondents: 279 (76%). 42 (15%) obstetricians opted for elective CS without a clinical indication. Reasons: fear of damage to pelvic organs/perineum (93%); convenience (39%); to feel in control (39%); apprehension (27%). Of those preferring vaginal delivery, 46% wanted to have a natural experience; 42% preferred to avoid intervention, 38% wished to avoid any longer consequence of CS; 13% to be in control.
Gonen 2002, Israel ⁽⁴²⁾	650 Israeli obstetricians (approximately 60% of the obstetricians in Israel). Lower representation of residents.	Anonymous questionnaires. No reminders were sent to non-respondents.	Respondents: 257 (39.5%). Obstetricians with a high-ranking academic teaching were significantly more prone to consent to perform CS than those with a low-ranking or not grade (49% versus 31%, $p < 0.2$). Attitude towards women's right to choose elective CS without indication: 116 (45%) were in favor, 122 (48%) opposed, 19 (7%) undetermined. Respondents with a high-ranking academic teaching were significantly more prone to support patient's choice to CS than those with a low-ranking or not grade (64% vs. 41%, $p < 0.001$). Personal preference: of the 206 responders to this question, 19 (9%) chose CS for themselves or their partners.

Table 2.1. Characteristics of included studies (continued)

Study	Participants	Methods	Outcomes
Groom 2002, UK ⁽⁴⁵⁾	592 obstetricians of specialist registrar, subspecialty trainee and consultant grade.	Anonymous questionnaire. Name and addresses were obtained from The RCOG. Random selection was done using a computer program.	Respondents: 321 (54%). 45 (15%) selected elective CS as their preferred mode of delivery for their first pregnancy with an uncomplicated singleton cephalic presentation at term. 14% were male and 21% female. Statistically significant differences were seen for the type of hospital (District General Hospital vs. Teaching Hospital ($p<0.05$)). Main reasons: fear of damage to the perineum during vaginal delivery (63%), and, in them who selected it, fear of long term morbidity (89%).
MacDonald 2002, UK ⁽⁶⁹⁾	100 female obstetricians at registrar level and above practicing in Scotland.	An anonymous questionnaire by post. Tick boxes. The names were obtained from the RCOG and cross-checked by telephone.	Respondents: 90 (90%). When asked if women should be allowed to choose elective CS if there is no obstetric indication, 59 (54%) answered yes. 14 (15%) answered yes when they were asked if they would choose an elective CS for themselves. Reasons: fear of perineal trauma, convenience and avoiding birth trauma to the baby. 7% of those who had children chose elective CS for non-medical reasons vs. 26% of those who had no children (chi square 5.59, $p=0.019$).
Usha Kiran 2002, UK ⁽¹⁰⁰⁾	150 consultant obstetricians and gynecologists covering England, Wales and Scotland.	Postal questionnaire sent to Ob/Gyn chosen after systematic random sampling from the RCOG list. A repeat questionnaire was sent to those who failed to respond.	Respondents: 108 (72%). 102 (94.4%) agreed that the CS rate was rising and 40 (37%) accepted that doctors were responsible for this trend in conjunction with other people (midwives, media, women themselves). 60 (55.6%) did not feel that the patient's right to autonomy was being misused. 82 (76%) agreed that patient education was important in decreasing CS rates. 46 (42.5%) were of the opinion that media coverage was essential to achieve this aim.
Jacquemyn 2003, Belgium ⁽⁵⁴⁾	672 obstetricians and gynecologists.	Anonymous questionnaire sent to 672 Ob/Gyn registered as members of the Flemish Society of Obstetrics and Gynecology.	Respondents: 295 (44%). Six (2%) of respondents choose elective CS. No statistically significant differences in gender. Reasons: minimize perineal damage, pain and risk of long term sequel; minimize the risk of an eventual secondary CS; daytime obstetrics. With the multiple regression using sex, age and section for oneself, the model could only explain 14% of the variance in the number of CS on demand.

Table 2.1. Characteristics of included studies (continued)

Study	Participants	Methods	Outcome
Bergholt 2004, Denmark ⁽¹⁴⁾	455 Danish Ob/Gyn	Postal questionnaires sent to Ob/Gyn identified from the records of the Danish Society of Ob/Gyn. A reminder was sent to the non-responder two months later. Handled anonymously.	Respondents: 401 (88.1%). 98.9% of Danish Ob/Gyn would prefer to await the onset of spontaneous labour in an uncomplicated pregnancy with single cephalic presentation at term and normal weight. 1.1 % would prefer an elective CS. Risk of sexual dysfunction was the reason for CS in 25-33.3% of the cases. Regarding the women's right to choose elective CS, 206 (56.6%) said yes, 137 (37.6%) said no.
Ghetti 2004, USA ⁽⁴⁰⁾	255 Ob/Gyn in a metropolitan area, identified using the American Medical Association Registry.	Self-administered questionnaire pretested in 22 residents and sent by mail. Non-responders received a reminder three months later. Physician's willingness to concede patient's wish was measured using a Likert scale.	Respondents: 170 (67%). For cases with no medical indication, most of practitioners did not agree to perform a CS. For cases with unclear medical indication responses were divided. 92% agreed to perform CS in the case of a previous rectovaginal fistula repair and only 37% agreed in CS for a previous 4 th degree laceration. Male gender was significantly associated to perform a CS ($p=0.031$), for a woman reporting concern on future urinary (29% vs. 9%) incontinence or history of prior stillbirth (24% vs. 4.5%).
Faas-Fehervary 2005, Germany ⁽³⁵⁾	2106 board-certified gynecologists.	Anonymous questionnaire concerning influencing factors on the attitude towards CS on demand.	Respondents: 719 (34%). General approval for CS on demand 59%. Highest approval rate (70%) in the youngest age group (up to 40 years of age). 47% of gynecologists who/whose partners had experienced both vaginal delivery and CS were in favour of CS on demand versus 60% of obstetricians who/whose partners had experienced spontaneous vaginal delivery exclusively. 67% of nulliparous obstetricians considered CS on demand as an option and physicians (or heir partners), who had delivery by CS only, in 69%. 54% of physicians who were not actively practicing approved CS on demand, in a much lower extent that active obstetricians (72%). Majority of obstetricians opted for vaginal delivery when asked for their preference regarding delivering in a low risk setting. Parents were less in favour of CS compared to colleagues without children ($p=0.44$). Active obstetricians would chose spontaneous vaginal delivery in 89% only, compared to 95% of not active obstetricians ($p=0.002$).

Table 2.1. Characteristics of included studies (continued)

Study	Participants	Methods	Outcome
Farrell 2005, Canada ⁽³⁶⁾	237 health professionals attending the 58 th annual meeting of the Society of Obstetricians and Gynecologists of Canada.	An author-compiled questionnaire. Questions answered on a five-point Likert scale.	Respondents: 162 (68%). Proportions of participants who offer elective cesarean delivery in the absence of obstetrical indication: never, 18%; rarely, 38%; sometimes, 20%; usually, 15% and; always, 8%. Respondents who chose "never" or "rarely" considered that risks of cesarean delivery outweigh the benefits, the increase of costs and the fact that that offering elective cesarean delivery is not a standard practice. Those who chose "sometimes" or "usually" were concerned about the pelvic floor. Male, obstetricians and health care professionals practicing in centers with more than 3000 deliveries / year were more likely to offer cesarean section on demand. Logistic regression analysis found that sex (male) ($P=0.04$) and working in a center with more than 3000 deliveries ($P=0.026$) were independent factors associated with the likelihood to offer elective cesarean delivery.
Kenton 2005, USA ⁽⁵⁹⁾	500 Ob/Gyn attending 2 obstetrics and gynecology comprehensive review courses.	Questionnaire.	Respondents: 304 (61%). 59% of physicians would perform a primary elective CS, and 67% would perform a primary elective CS to prevent pelvic floor disorders at the patient's request. More commonly reported reasons for not offering primary elective CS: increased risk associated with CS (30%) and CS is not the standard of care (13%).
Lavender 2005, UK ⁽⁶⁴⁾	1093 health care providers, 924 consultant obstetricians and 169 heads of midwifery practicing in England.	Structured questionnaire to all consultant obstetricians and heads of midwifery. Preliminary report.	Respondents: 783 (71.6%). 49% (321) of obstetricians and 27% (33) of midwives believed that a woman should choose her method of delivery. 33% (216) of obstetricians would consider a CS for themselves or their partners vs. only 7% (9) of the midwives. Female obstetricians were less likely to answer yes to both questions.
Wax 2005, USA ⁽¹⁰⁵⁾	110 American College of Obstetricians and Gynecologists Fellows and Junior Fellows-in-practice practicing obstetrics in Maine.	Anonymous unpiloted questionnaire distributed in a single mailing. Questions answered by checking-off boxes, except for a final space allowing comments.	Respondents: 78 (70.9%). Sixty (84.5%) of 71 respondents were willing to perform patient choice cesarean. 15 obstetricians (21.1%) desired a cesarean delivery for themselves or their partners. Reasons: avoiding injury to the anal continence mechanism, pelvic organ prolapse, and preservation of sexual functioning. Women under age of 35 were more likely to opt for a cesarean delivery themselves than their older female colleagues (2 of 4 [50%] versus 2 of 31 [65%]; $p=0.04$).

Table 2.1. Characteristics of included studies (continued)

Study	Participants	Methods	Outcome
Wu 2005, USA ⁽¹¹¹⁾	1479 members of the American Urogynecologic Society (AUGS) and the Society for Maternal–Fetal Medicine (SMFM) with e-mail addresses and residing in the United States or Puerto Rico.	A web-based questionnaire. The first e-mail targeted 1,579 addresses (644 to AUGS and 935 to SMFM members). Second and third e-mails were sent to non-respondents over the next month. Physicians could respond “Definitely Yes,” “Probably Yes,” “Probably No,” or “Definitely No”.	Respondents: 782 (52.9%). 509 (65.4%) of responders would agree to perform an elective cesarean. A higher percentage of AUGS members would agree to perform an elective cesarean than would SMFM members (80.4% versus 55.4%, respectively, $P < .001$). Members of AUGS were more likely to believe that a woman has the right to have an elective cesarean (84.6% versus 67.6%, $P < .001$) and to choose/recommend an elective cesarean for themselves or their partners (45.5% versus 9.5%, $P < 0.001$). Male physicians were also more likely to believe that a woman has a right to an elective cesarean delivery (78.7% versus 66.9%, respectively, $P < .001$). AUGS members (OR 3.4, 95% CI 2.3–4.9) and male physicians (OR 1.8, 95% CI 1.2–2.6) were significantly more likely to support elective cesareans. Reasons for agreeing: patient request, concern for perineal damage, long-term sequelae of urinary incontinence, fecal incontinence, and pelvic organ prolapse. Reasons for not agreeing: concern for potential complications in future pregnancies, an increase in maternal morbidity and mortality, and the feeling that elective cesareans will not prevent pelvic floor disorders.
Habiba 2006, Europe ⁽⁴⁷⁾	1987 obstetricians from eight European countries: France, Germany, Italy, Luxembourg, Netherlands, Spain, Sweden and UK.	Anonymous and self-administered structured questionnaires developed in English and translated into the language of each participating country.	Respondents: 1530 (77.0%). The compliance with this hypothetical woman’s request was lowest in Spain (15%), France (19%) and The Netherlands (22%); highest in Germany (75%) and UK (79%) and intermediate in the remaining countries. Woman’s autonomy was the most frequently quoted reason for performing a cesarean section in this case. Professionals working in university-affiliate units, were more likely to perform a cesarean section on patient demand (OR= 2.05, 95% CI: 1.35–3.09). Being a female doctor and having children herself decreased the probability of accepting a patient’s request for a cesarean section (OR 0.29, 95% CI 0.20–0.42).
Mancuso 2006, Italy ⁽⁷²⁾	400 obstetricians working in university or public hospitals.	Postal anonymous questionnaire with three parts: demographic data, questions regarding the rate of CS and physicians’ opinion about CS on request.	Respondents: 271 (67.7%). 162 specialists (59.8%) affirmed that they do not always fulfil the maternal request, while 109 (40.2%) respect maternal choice. 156 (57.6%) physicians were in favor of the woman’s right to choose the kind of delivery. No significant differences were found among specialists’ opinions, stratified according to demographic data.

Table 2.1. Characteristics of included studies (continued)

Study	Participants	Methods	Outcome
Osis 2006, Brazil ⁽⁷⁹⁾	215 Brazilian doctors participating in the Latin American Cesarean Section Study (ELAC).	Care providers were asked to fill out an anonymous self-administered structured questionnaire designed in two pre-tested versions.	Respondents: 142 (66%). 50% in intervention hospitals and 65% in control hospitals evaluated the second opinion strategy to be effective or very effective in their institutions. Reasons to consider the second opinion strategy of little or no effectiveness: Intervention hospitals: there is no doubt about cesarean indication (31%); all CS are necessary (28%); Control hospitals: 17% and 4%, respectively, for the same reasons.
Bettes 2007, USA ⁽¹⁵⁾	1031 ACOG Fellows.	Mailed questionnaires. Descriptive statistics were computed for measures used in secondary analyses..	Respondents: 699 (67.8%). 102 (17.8%) would recommend a cesarean section for them / their partner, due to concerns for mother's (64.8%) or neonate's (19.4%) wellbeing, while 15.7% would chose the surgery for convenience. Female doctors were significantly more negative towards women's rights, and were more likely to agree to do a cesarean section on request.
Weaver 2007, UK ⁽¹⁰⁶⁾	1344 obstetricians.	Obstetricians were contacted by letter and by means of their secretaries. Quantitative and qualitative methods. All interviews were tape-recorded and transcribed.	Respondents: 785 (58.4%). Most obstetricians reported few requests for cesarean section, but cited maternal request as the most important factor affecting the rising cesarean section rate. Reasons for this rising: maternal requests (76.8%), litigation/defensive practice (67.1%); issues around doctors' training (37.5%); previous cesarean section (24.3%); breech births (20.6%); how pregnancy/birth is now managed (13.1%); and evidence /changes in obstetric practice (11.2%).

CS: cesarean section

RCOG: Royal College of Obstetricians and Gynecologists

Table 2.2. Subgroup analysis by gender. Answer “Yes” to personal decision of performing a cesarean section for yourself/your partner without medical indication.

Study	Female		Male		Chi ²	p
	Yes	N	Yes	N		
Al-Mufti 1997 ⁽⁴⁾	23	74	10	125	17.9	0.001
Land 2001 ⁽⁶³⁾	9	117	45	355	2.81	0.09
Mc Gurgan 2001 ⁽⁷³⁾	7	47	5	125	6.2	0.01
Wright 2001 ⁽¹¹⁰⁾	21	144	21	128	0.17	0.68
Groom 2002 ⁽⁴⁵⁾	18	107	24	175	0.51	0.48
Jacquemyn 2003 ⁽⁵⁴⁾	2	107	4	188	0.02	0.88
Lavender 2005 ⁽⁶⁵⁾	35	84	180	468	0.31	0.58

Table 2.3. Subgroup analysis by gender. Answer “Yes” to patient demand of performing a cesarean section without medical indication.

Study	Female		Male		Chi ²	p
	Yes	N	Yes	N		
Gonen 2002 ⁽⁴²⁾	3	53	16	153	1.08	0.30
Usha Kiran 2002 ⁽¹⁰⁰⁾	14	23	41	51	3.17	0.08

Table 2.4. Subgroup analysis by parity. Answer “Yes” to personal decision of performing a cesarean section for yourself/your partner without medical indication.

Study	Nulliparous		Parous		Chi ²	p
	Yes	N	Yes	N		
Johanson 2001 ⁽⁵⁶⁾	8	40	4	48	2.49	0.11
MacDonald 2002 ⁽⁶⁹⁾	11	42	3	48	6.78	0.009

Table 2.5. Excluded studies.

Study	Reasons for exclusion
Vimercati 2000 ⁽¹⁰³⁾	Data only as percentage, no absolute numbers were provided.
Kravitz 2003 ⁽⁶⁰⁾	Not addressing any of the questions of interest for this review.
Kwee 2004 ⁽⁶²⁾	Not addressing any of the questions of interest for this review.
Reime 2004 ⁽⁸⁶⁾	All the situations pertinent to the review involved preterm pregnancies.

Chapter 3. Survey of Cuban Obstetricians' Opinions and Attitudes towards Cesarean Section. Objectives, Methods and Results.

Study Objectives

1. To determine knowledge and views about cesarean section rates of obstetricians from the City of Havana
2. To determine the main causes obstetricians consider are influencing the increasing cesarean section rates
3. To determine the interventions obstetricians consider most useful to stop or decrease the increasing cesarean section rates
4. To identify obstetricians' attitudes and preferences towards the form of delivery when facing some specific clinical situations

Methods

Study design

An exploratory, descriptive cross-sectional study was carried out in 5 maternity hospitals in the City of Havana, Cuba (America Arias, Eusebio Hernandez, Enrique Cabrera, 10 de Octubre and Ramon Gonzalez-Coro), covering approximately 15 000 births per year.

The questionnaires were applied in the five proposed maternity hospitals between February 13th and February 28th, 2007.

An anonymous self-reported survey was administered to the obstetricians working in these hospitals, in order to collect the necessary information to meet the study objectives.

Participants and recruitment

The investigator visited each hospital according to a schedule previously coordinated with the hospitals' authorities. The objectives of the study were explained to all the selected subjects (see *Sampling procedures* below), emphasizing that physicians were free to choose whether to participate in the study; and that their decision would not affect their professional status in any way.

Sampling procedure

Obstetricians were distributed by maternity hospital (approximately) as follows:

HOSPITAL	N ¹	n ²
America Arias	60	30
Eusebio Hernandez	60	30
Enrique Cabrera	30	15
10 De Octubre	50	25
Ramon Gonzalez-Coro	60	30
TOTAL	260	130

¹ total number of obstetricians working in each hospital

² the proportional sample to be taken from each hospital

A simple random sampling was performed for each hospital, using a random number table (two digits). Numbers were selected reading the table horizontally, from left to right, until obtaining the number of subjects estimated for each centre. Such numbers were matched with the professional record number provided by the Human Resources department in each hospital and the survey was applied to the selected subjects. If any of these subjects were not able or willing to participate, the next random number was selected from the same table until obtaining the calculated number of subjects.

Instrument

A questionnaire was developed to meet the study objectives. This was structured in four sections (See Appendix 2):

1. Demographic and professional data
2. Statements to investigate opinions about cesarean section rates

3. Views on the possible causes of the increase in cesarean rates in Cuba and possible interventions to stop/decrease such rates
4. Obstetricians' preferences for performing cesarean section under specific clinical situations

Open and closed-ended questions were included, as well as response categories, including a ranking scale.

The questionnaire was developed by the author (JCV), one supervisor (MW) and two advisers (Ian Graham, Jorge L. Calero). Consensus was reached by informal methods (discussion between author and supervisor/advisers). After analyzing the available literature and the results from the systematic review, decisions were made about which and what type of questions should be included (open, binary, multiple options, Likert scales).

Questions were selected from other questionnaires aimed to study similar situations and adapted to the study objectives (see Table 3.1, Appendix 1). The question about possible causes for the increase in cesarean section rates (Question 14) was framed into the theoretical domains adapted from Michie's model ⁽⁷⁰⁾, which is the one that best fits this study. Most of the constructs are related to the "environmental context and resources" domain, for example, the introduction of new technologies and the high number of cases to assist when on call (Items 14.2 and 14.6), as well as some characteristics in the population like presence of obstetric dystocias, high number of previous cesarean deliveries and

increase in maternal age (Items 14.1, 14.7 and 14.8). The constructs related to administrative pressures and patient/relative demand (Items 14.3 and 14.4, respectively) were framed into the domain “social influences”. Fear of litigation (item 14.5) was included in the domain “Beliefs about consequences”.

The questionnaire was not validated. None of the studies used as a source for the questions described any formal validation.

Questionnaire testing

In order to ensure its face validity, the questionnaire was pre-tested in 10 individuals who are practicing obstetrics from one of the participant hospitals, including both residents and specialists. From this test, minor modifications were made in order to make the questionnaires easier to understand and answer.

After the pre-test, the following modifications were made and included in the final version of the questionnaire:

Question 8 was reformulated.

Question 11: if the answer to the question was either “I do not know” or “About right”, the respondent was asked to go to Question 14, instead of Question 16.

Question 14 was reformulated, adding a brief statement about the increase of cesarean rates from 1999 to 2004.

Variables of Interest

Dependent variables corresponding with study objectives:

1. Obstetricians' personal opinions about the cesarean rate in their particular hospitals
2. Obstetricians' opinions about the possible cause of the increase in cesarean section rate
3. Obstetricians' knowledge about the current evidence-based information about interventions aimed to reduce the cesarean section rate
4. Obstetricians' attitudes in specific clinical situations related to the decision of performing an elective cesarean section

Independent variables

1. Age
2. Gender
3. Professional status
4. Years licensed as a MD
5. Years certified as a specialist in obstetrics/gynaecologic
6. Parenthood
7. Form of delivery in previous birth(s) (if any) (whether their own or their partners')

Data collection

The investigator met the subjects selected to participate in a room with adequate comfort and privacy, where they answered the questionnaire. The survey was administered after the morning meeting held every day in the forenamed hospitals.

Participants were asked to complete the questionnaire as honestly as possible. It was emphasized that they should not write their names on the survey to prevent them from being identified.

Participants were asked to complete the survey during time set aside after their daily morning meeting. The instructions emphasised the importance of responding to the questions as honestly as possible, and of not providing any identifying data. Accommodation was set aside for the purpose, and the investigator was present. The completed questionnaires were collected by the investigator.

Statistical analysis

Demographic and professional characteristics of obstetricians were analyzed using appropriate descriptive statistics (absolute and relative frequencies, mean, standard deviation, median, and minimum and maximum values).

According to the study objectives, we used the following statistical approaches:

To assess obstetricians' views about cesarean section rates, we used bivariate (2x2) tables of each independent variable according to the different alternatives. The possible associations were analyzed using a chi-squared test with a level of significance (p value) of 0.05.

To determine what obstetricians consider to be the predominant factors influencing the increasing cesarean section rates, as well as the interventions they consider as effective for decreasing section rates, we used the absolute and relative frequencies of professionals responding "strongly disagree", "disagree", "neutral", "agree" and "strongly agree", according to a Likert scale. Due to the small numbers in the different categories of the Likert scale, the five components were first grouped for analysis in three categories, "agree", "neutral" or "disagree", and subsequently in two categories, "disagree" and "agree", where "agree" included the categories "agree" and "neutral".

To determine the interventions obstetricians consider effective to stop or decrease the increasing Cesarean section rates, we also used the proportion that responded "agree" or "disagree".

To identify the obstetricians' attitudes and preferences towards the form of delivery when facing some specific clinical situations we used the proportion

responding yes. Chi-square analysis with a level of significance of 0.05 was used to show the possible association between yes answers and demographic and professional characteristics. Multivariate analysis (logistic regression) was used to determine which of the variables were associated with the dichotomous dependent variables.

The content of answers to open questions was analyzed qualitatively ⁽⁶¹⁾ in order to group them into closed categories. To do this, an inductive technique was used, consisting of listing one by one the answers provided by the participants. The responses to open questions were inspected by two independent observers and similar responses were grouped into categories. ⁽¹⁸⁾

When appropriate, independent variables were recoded into binary variables as follows:

Age: < 45 / ≥ 45 years old

Sex: Female/Male

Years licensed as MD: < 15 / ≥ 15 years

Years licensed as specialist: < 20 / ≥ 20 years

Professional status: Resident / Specialist

Teaching grade: Yes / No

Parenthood: Yes / No

Form of delivery of previous birth (if any): Vaginal / Cesarean section

Decision-maker status: Yes / No

In the cases of age, years licensed as MD and years licensed as specialist, means were chosen as cut-off points, since the distribution of these variables followed a normal-like pattern.

Decision-maker status was defined as the person who has the possibility of making decisions about performing a cesarean section in an institution or service, for example, head of team, head of obstetrics service, experienced specialists.

Multivariate analysis

Selection of variables

To conduct the multivariate analysis, we selected the independent variables showing a statistically significant association ($p < 0.05$) with the dependent variables, previously recoded as binary (*the rate is about right/high; the rate should stay the same/decrease*) and with those primarily binary (*Would you choose/recommend an elective Cesarean section for yourself or your partner / a patient, assuming a term, uncomplicated, singleton, cephalic pregnancy with weight ≤ 3600 g [yes/no]?; and Would you consider to try a vaginal delivery in a patient with a term, uncomplicated, singleton, cephalic pregnancy with weight ≤ 3600 g, with a previous cesarean section [yes/no]?).* The same procedure was followed to conduct the logistic regression analysis when dependent variables were the answer [yes/no] to the questions related to the opinions about the cesarean section rates at the different institutions, as well as some interventions likely to

contribute to decrease such rates. Those variables were transformed and recoded into "Disagree" (strongly disagree, disagree) and "Agree" (agree, strongly agree and neutral). Other variables likely to be, in some way, related to the answer (according to common sense and experience) were selected, using $p < 0.10$ as the cut-off point for statistical significance. All these independent variables were entered into the logistic regression model, both alone and combined with each other, in order to find the best statistical model allowing prediction of the answer to the dependent variables.

All the information was processed and analyzed using the statistical package SPSS 11.5.

Sample size calculation

It was hypothesized *a priori* that about 15% of the obstetricians would choose an elective cesarean section for themselves/their partners. As previous data from Cuban obstetricians were not available, we did the sample size calculation based on the estimates from the literature. Using a standard formula:

(113)

$$n = \frac{N \times Z^2 \times p \times q}{N \times d^2 + Z^2 \times p \times q}$$

Where:

N = Size of the study population (260)

d = Bound of the error of estimation (0.05)

p = 0.15 (Theoretical prevalence of answer "YES" to the question "*Would you choose/ recommend an elective cesarean section for yourself or your partner, assuming a term, uncomplicated, singleton, cephalic pregnancy with weight <= 3600 g?*". It was estimated from the results of the systematic review, since there are not data available from Cuba)

$$q = 1 - p = 0.85$$

$$Z = 1.96$$

$$111.7 = 112$$

With a study population of 260 obstetricians, the sample size was chosen so that the bound of the error of estimation (i.e. width of the 95% confidence interval)

was less than 0.05 around an assumed point estimate of 0.15. Based on such assumption, it was calculated that the survey should be applied to 112 subjects. Considering the subjects potentially refusing to participate, the survey was applied to 132 subjects.

Ethical approval

The Principal Investigator visited the selected maternity hospitals before the beginning of the study to explain the objectives of the study to the corresponding authorities (Ethic Committees, Scientific bodies, etc.), in order to obtain permission to conduct the study in each maternity hospital. Such permissions were obtained (see *Appendix 3, Ethical Approvals*).

Results

Socio-demographic characteristics of the study population

In total, 140 subjects were invited to participate, and 8 (5.7%) declined to take part. Therefore, the acceptance rate was 94.6%. The number of respondents per hospital varied from 16 (Enrique Cabrera) to 34 (Ramon Gonzalez-Coro). Regarding socio-demographic variables, 68 (51.5%) of respondents were female. The mean age was 44.7 years old (S.D. 11.05; range 28 - 84). Most of the subjects (73 [55.3%]) were in the age group between 36 and 49 years old.

On average, obstetricians had been licensed as MD for 20 years (S.D. 10.66). The mean of years licensed as Specialists was 15.24 years (S.D. 9.93). For analytic purposes, "years licensed as MD" was divided into 4 categories. Most participants (43.9%) had been licensed as MD between 11 and 20 years ago. "Years licensed as specialist" was also divided into 4 categories. Most specialists (40.9%) had obtained their grade between 11 and 20 years ago.

Of all the subjects who completed the questionnaire, most were specialists and only 20 (15.2%) were residents. Of the specialists, 56 physicians (42.4%) had some teaching grade. Teaching grade was divided into 5 categories. In this survey, there was overlap between Consultant and Senior Professors; therefore the superior category (Consultant) was selected for those participants.

Table 3.1. Socio-demographic characteristics of the obstetricians surveyed (n = 132)

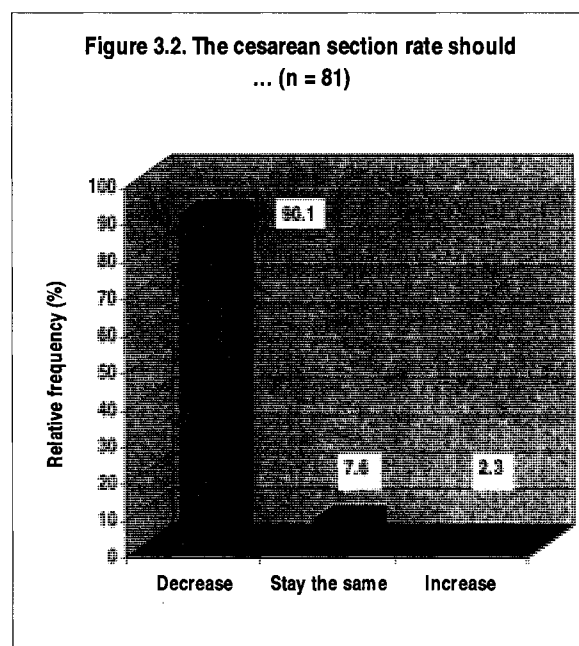
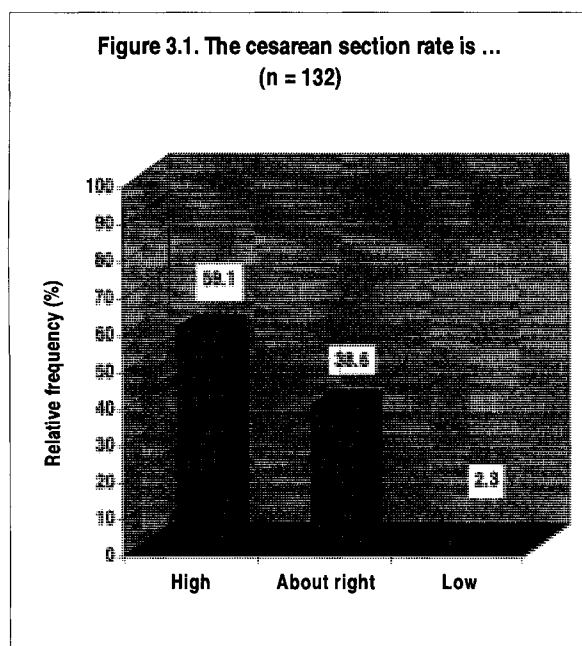
CATEGORIES	N	(%)
Hospital		
Ramon Gonzalez-Coro	34	25.8
America Arias	31	23.5
Eusebio Hernandez	25	18.9
10 de Octubre	26	19.7
Enrique Cabrera	16	12.1
Age groups (years)		
≤ 35 years	22	16.7
35-49 years	73	55.3
≥ 50 years	37	28.0
Years licensed as medical doctor		
≤9 years	20	15.1
10-29 years	57	43.2
20-29 years	31	23.5
≥30 years	22	16.7
Missing	2	1.5
Years licensed as specialist		
≤9 years	37	33.0
10-29 years	54	48.2
20-29 years	12	10.7
≥30 years	9	8.1
Not applicable	20	-
Form of delivery in respondent or respondent's partner's previous births (females/partners of those with children)		
Vaginal	57	55.9
Cesarean section	34	33.3
Both	11	10.8
Not applicable	30	-
Teaching grade		
Consultant	2	1.8
Auxiliary	7	6.2
Assistant	26	23.2
Instructor	21	18.8
None	54	48.2
Missing	2	1.8
Not applicable	20	-

Description of responses to questions related to attitudes and opinions

More than half of respondents (78 [59.1%]) considered the cesarean section rate in their institution to be high (Figure 3.1).

Similarly, most subjects (73 [90.1%]) responding that the rate was high stated that they considered the cesarean section rate in their institutions “should decrease” (Figure 3.2).

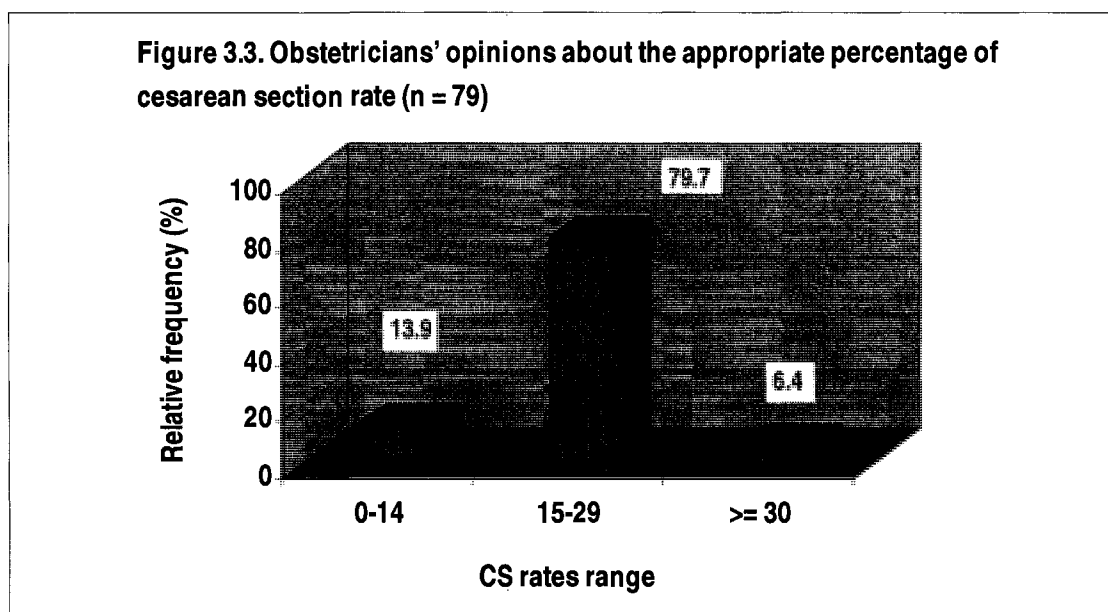
Figures 3.1 and 3.2



In the analysis, a statistically significant association was observed between the opinion that the cesarean section rate is high and the opinion that it should decrease ($\chi^2 = 28.4$; $p < 0.001$).

On average, obstetricians considered that the appropriate cesarean section rate should be about 20% (mean 20%, S.D. 7.23, range from 8 to 60). Eleven (8.3%) of the 79 subjects responding to this question considered that the cesarean section rate should be less than 14%, 63 (47.7%) that it should be between 15 and 29% and only 5 (3.8%) stated that such rate should be 30% or higher (Figure 3.3).

Figure 3.3.



Obstetricians were asked about some possible causes to explain the increase in the cesarean section rates during the last 15 years.

Figures 3.4 (a-e), 3.5 (a, b) and 3.6 show the different answers to each option, organized according to Michie's model domains ⁽⁷⁵⁾.

Figure 3.4. Domain: Environmental context and resources

Figure 3.4a

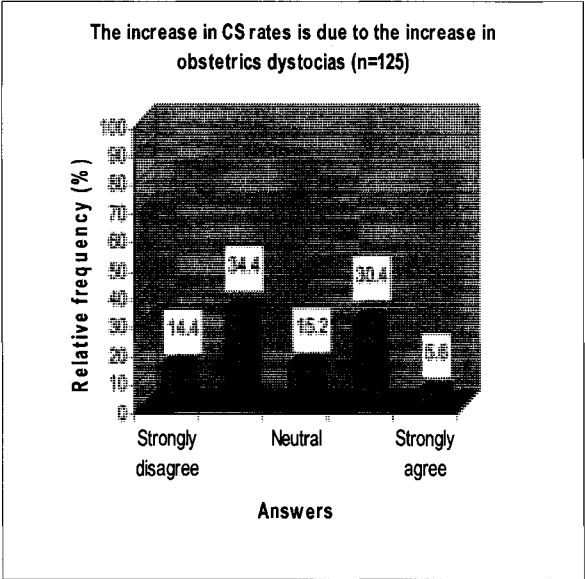


Figure 3.4b

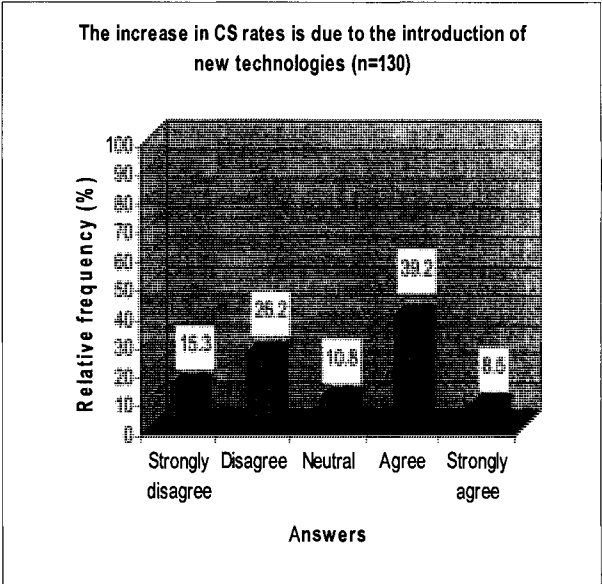


Figure 3.4c

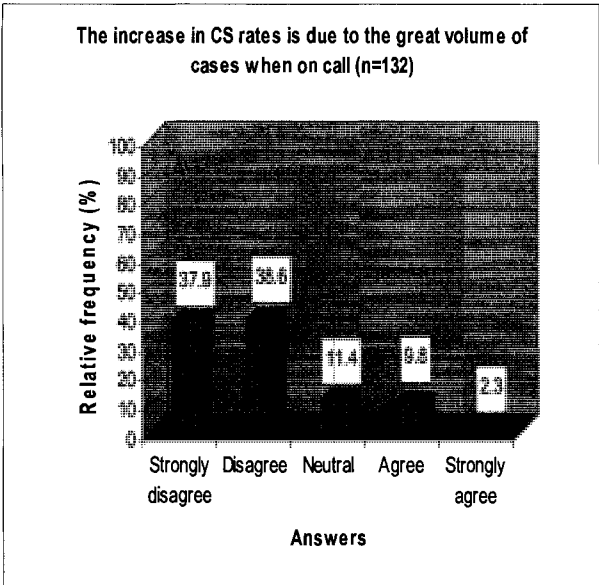


Figure 3.4d

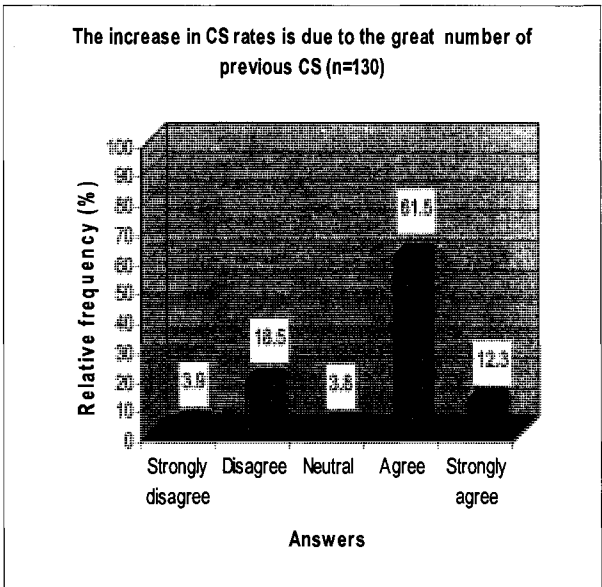


Figure 3.4e

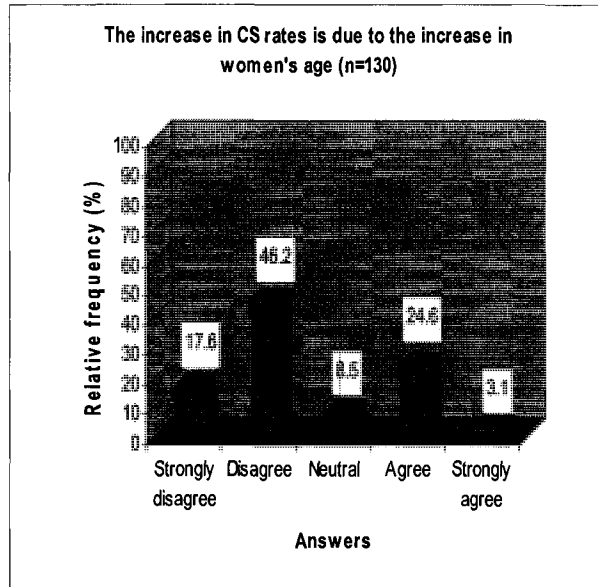


Figure 3.5 Domain: Social influences

Figure 3.5a

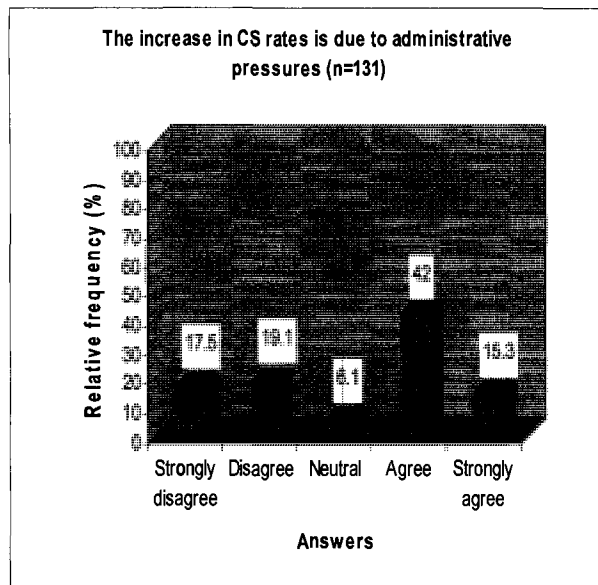


Figure 3.5b

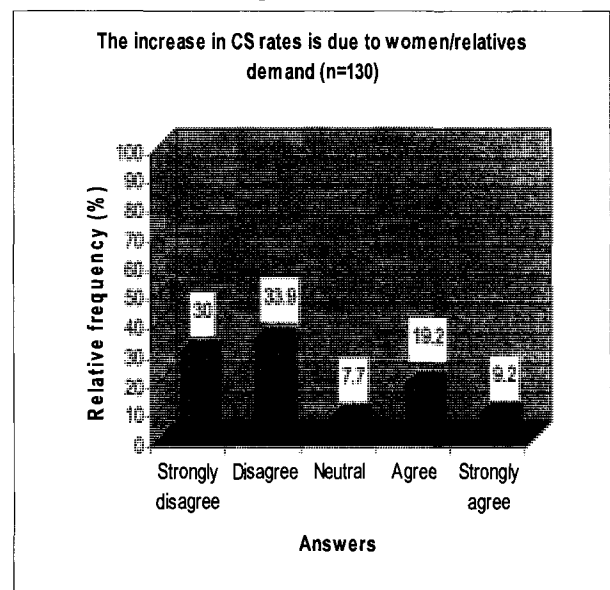
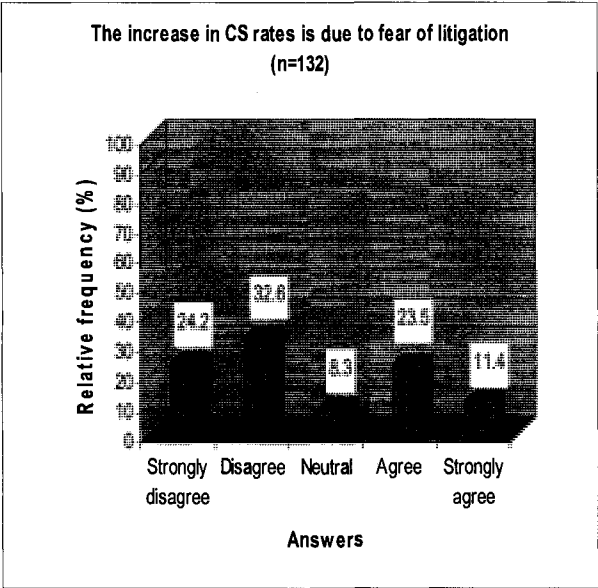


Figure 3.6. Domain: Beliefs about consequences

Figure 3.6



The responses to attitude items were categorised into “Disagree” (strongly disagree + disagree) and “Agree” (strongly agree + agree).

Of the factors suggested as contributing to increasing cesarean section rates, respondents were most likely to agree with the high number of previous cesarean sections (N = 96 [73.8%] agreeing), administrative pressures (N = 75 [57.3%] agreeing), and introduction of new technologies (N = 62 [47.7%] agreeing). Possible explanations with which respondents were less likely to agree were an increase in obstetric dystocias (N = 45 [36%] agreeing), fear of litigation (N = 44 [34.9%] agreeing), patient/relative demand (N = 37 [28.4%] agreeing), increase in maternal age (N = 36 [27.7%] agreeing) and large volume of cases to assist when on call (N = 16 [12.1%] agreeing).

Obstetricians were also asked about some possible interventions that could be useful to decrease the cesarean section rates.

Figures 3.7a to 3.7e display the frequencies of answers to the different options. Again, for descriptive purposes categories will be referred to as “Disagree” (strongly disagree + disagree) and “Agree” (strongly agree + agree).

Figure 3.7

Figure 3.7a

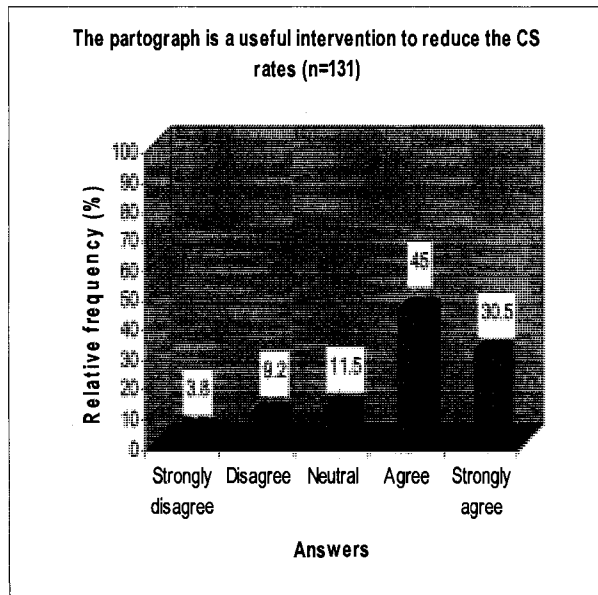


Figure 3.7b

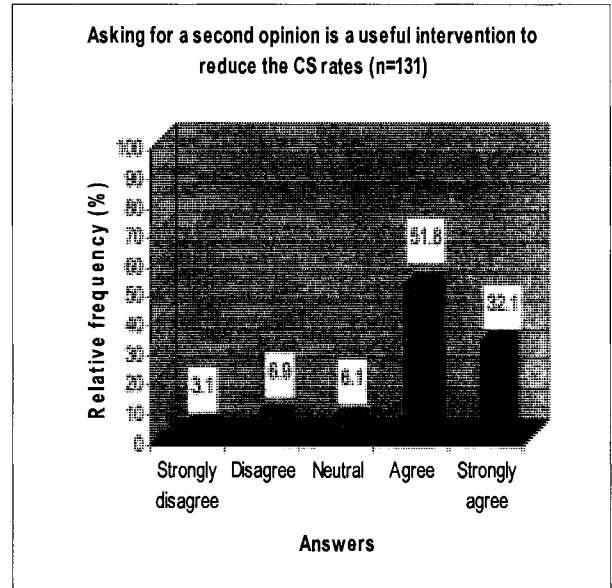


Figure 3.7c

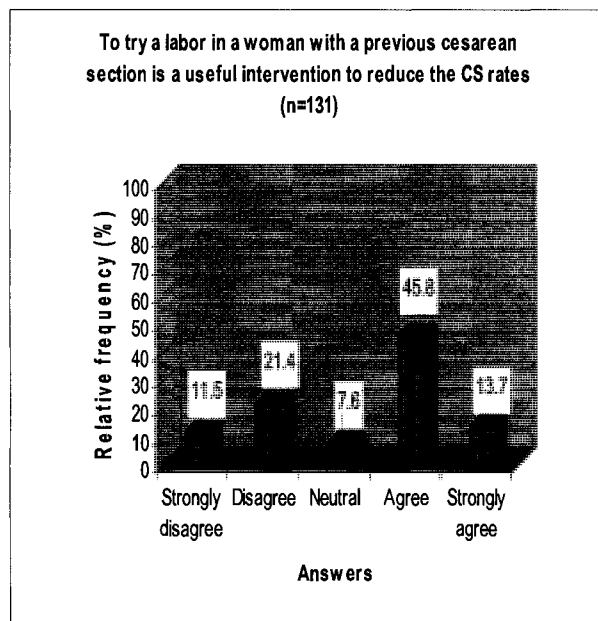


Figure 3.7d

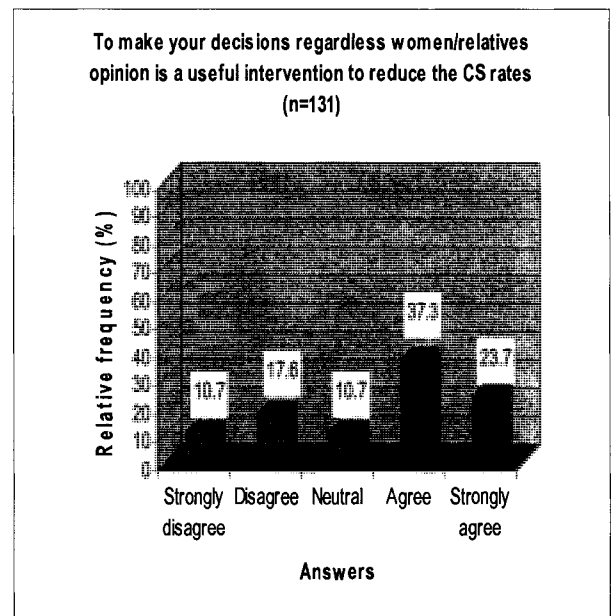
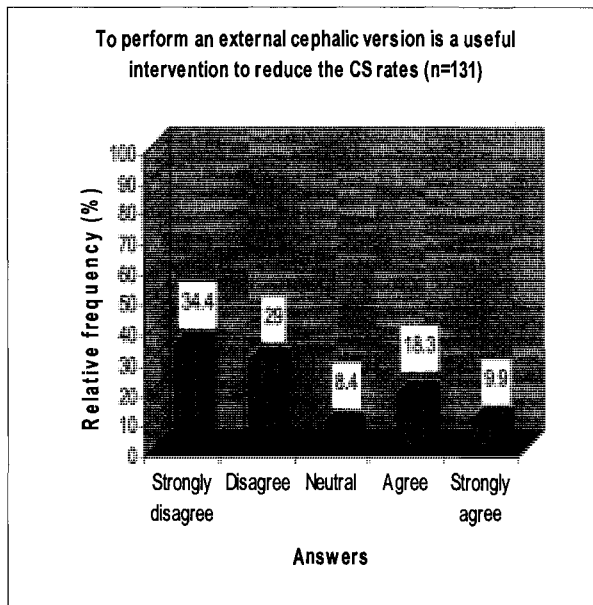


Figure 3.7e



Participants agreed that the following interventions are potentially useful to stop or decrease the current cesarean section rates:

- To apply the partograph in all deliveries (N = 99 [75.5%])
- To ask for a second opinion (N = 110 [84%])
- To make decisions regardless of patient/relative demand (N = 80 [61.1%])
- To try a vaginal delivery in patients with a previous cesarean section (N = 78 [59.5%])

On the other hand, only 37 physicians (28.2%) agreed with the statement that performing an external cephalic version (ECV) would be a useful intervention to achieve this aim.

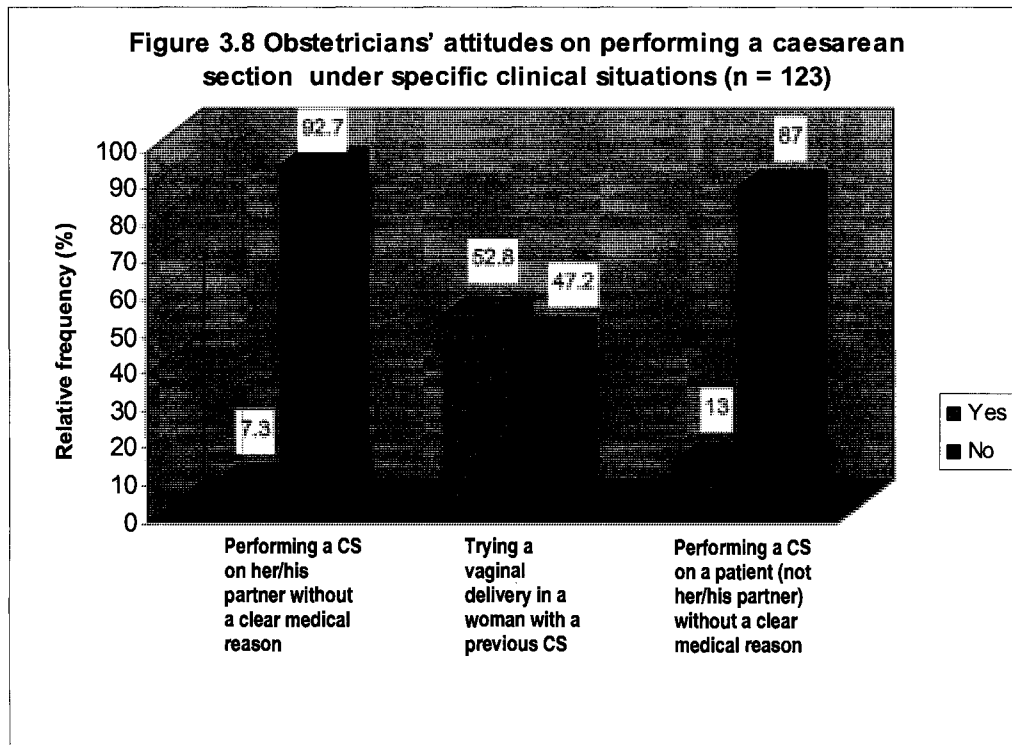
Obstetricians were asked about their attitudes in performing a cesarean section under specific clinical situations (Figure 3.8).

When asked about performing a cesarean section on them/their partners without a clear medical reason, only 9 (7.3%) of the 123 obstetricians responding to this question stated they were willing to undergo a cesarean section under such circumstances.

Similarly, few physicians (N = 16 [13%]) answered that they would perform a cesarean section on an unrelated patient asking for one without a clear medical reason.

However, more than half of the surveyed obstetricians answered they would try a vaginal delivery in a patient with a previous cesarean section (N = 56 [52.8%]).

Figure 3.8



Bivariate analysis: association between selected demographic characteristics of respondents and opinions on cesarean section rates

Opinions on the cesarean section rate in the respondent's own institution (Table 3.2)

Only three subjects answered that they considered the cesarean section rate to be "low". Therefore, such subjects were removed from the analysis.

Table 3.2. Association between selected demographic variables and respondent's opinion on the cesarean section rate in their own hospital

Socio-demographic variables		CS rate in their hospital is about right, n (%)	CS rate in their hospital is high, n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	40 (31)	33 (25.6)	4.96 (2.08 - 12.06)	0.00005
	≥45	11 (8.5)	45 (34.9)		
	Missing	3			
Gender N = 132	Female	29 (22.6)	37 (28.8)	1.46 (0.68-3.16)	0.29
	Male	22 (17)	41 (31.6)		
	Missing	2			
Has children N = 132	Yes	35 (27.1)	68 (52.7)	0.32 (0.12 - 0.85)	0.01
	No	16 (12.4)	10 (7.8)		
	Missing	3			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	20 (20.3)	35 (35.3)	1.36 (0.54-3.48)	0.47
	CS	13 (13.1)	31 (31.3)		
	Missing	3			
Professional status N = 132	Resident	12 (9.3)	7 (5.5)	3.12 (1.03 - 9.67)	0.02
	Specialist	39 (30.2)	71 (55)		
	Missing	3			
Years of licensed as MD N = 132	< 20	36 (28.2)	30 (23.4)	4.11 (1.79 - 9.57)	0.0002
	≥ 20	14 (10.9)	48 (37.5)		
	Missing	4			
Years of licensed as specialist N = 112	< 15	25 (22.7)	31 (28.2)	2.30 (0.96 - 5.59)	0.04
	≥ 15	14 (12.7)	40 (36.4)		
	Missing	2			
Teaching grade N = 132	Yes	17 (13.4)	39 (30.7)	0.64 (0.28-1.45)	0.24
	No	33 (26)	38 (29.9)		
	Missing	5			
Decision maker N = 132	Yes	44 (34.1)	63 (48.8)	1.50 (0.52-4.45)	0.42
	No	7 (5.4)	15 (11.6)		
	Missing	3			

Professionals less than 45 years old, not having children, being residents, with less than 20 years as MD and less than 15 years licensed as specialists and without a teaching grade were more likely to respond that the rate was about right.

Neither sex, form of delivery in previous birth, nor decision-making status were statistically associated with a specific answer to this question.

Regarding whether the cesarean section rate should decrease, stay the same or increase, only one subject answered that it should increase. Therefore, the subject was removed from the analysis (Table 3.3).

Table 3.3. Association between selected demographic variables and respondent's opinion on how the cesarean section rate should be in their own hospital

Basic-demographic variables		CS rate in their hospital should decrease, n (%)	CS rate in their hospital should stay the same, n (%)	OR (95% CI)	p-value
Age (years) N = 80	<45	30 (37.5)	4 (5)	0.52 (0.08 - 3.06)	0.4
	≥45	43 (53.7)	3 (3.8)		
	Missing	0			
Gender N = 80	Female	36 (45)	2 (2.5)	2.43 (0.38 - 19.5)	0.29
	Male	37 (46.2)	5 (6.3)		
	Missing	4			
Has children N = 80	Yes	63 (78.7)	7 (8.8)	--	0.29
	No	10 (12.5)	0 (0)		
	Missing	0			
Form of delivery in respondent / respondent's partner's previous births N = 68	Vaginal	33 (48.5)	4 (5.9)	0.88 (0.14 - 5.26)	0.88
	CS	28 (41.2)	3 (4.4)		
	Missing	0			
Professional status N = 80	Resident	5 (6.2)	3 (3.8)	0.10 (0.01 - 0.75)	0.002
	Specialist	68 (85)	4 (5)		
	Missing	1			
Years of licensed as MD N = 80	< 20	27 (34.3)	4 (5)	0.29 (0.03 - 2.05)	0.15
	≥ 20	46 (58.2)	2 (2.5)		
	Missing	2			
Years of licensed as specialist N = 72	< 15	29 (40.2)	2 (2.8)	0.74 (0.07 - 7.98)	0.77
	≥ 15	39 (54.2)	2 (2.8)		
	Missing	0			
Teaching grade N = 80	Yes	38 (48.1)	1 (1.3)	6.71 (0.73 - 1.55)	0.001
	No	34 (43)	6 (7.6)		
	Missing	1			
Decision maker N = 80	Yes	60 (75)	4 (5)	3.46 (0.53 - 21.8)	0.11
	No	13 (16.3)	3 (3.7)		
	Missing	0			

Residents were less likely to respond that the cesarean section rate should decrease (OR= 0.10, 95% CI: 0.01-0.75; p= 0.002).

Teaching grade was marginally associated with this option. Therefore, this variable was included in the multivariate analysis.

Opinions on possible causes for the increase of cesarean section rates

Socio-demographic characteristics were also examined with respect to their association with opinions regarding potential causes for the increase in cesarean section rates. Opinions were recoded into 3 categories (disagree, neutral, agree). As noted above (see section Methods), opinions were subsequently recoded into 2 categories, i.e. “disagree” and “agree”, where “agree” included “strongly agree”, “agree” and “neutral”.

Variables showing a p value < 0.10 were also included in the tables.

Results for this question will be presented grouped according to Michie's domains.

Domain: Environmental context and resources.

Females were more likely to agree with the statement that the increase in cesarean section rates is due to the increase in obstetric dystocias (Table 3.4).

Years licensed as specialist showed a marginal statistical association with this answer. Therefore, this variable was included in the multivariate analysis.

Table 3.4. Association between selected demographic variables and respondent's opinion on increase in obstetric dystocias as a possible cause of the increase in cesarean section rate

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p-value
Age (years) N = 132	<45	41 (32.8)	32 (25.6)	0.62 (0.28 - 1.35)	0.19
	≥45	23 (18.4)	29 (23.2)		
	Missing	7			
Gender N = 132	Female	38 (30.4)	24 (19.2)	2.25 (1.04 - 4.92)	0.02
	Male	26 (20.8)	37 (29.6)		
	Missing	7			
Has children N = 132	Yes	50 (40)	50 (40)	1.27 (0.48 - 3.36)	0.59
	No	14 (11.2)	11 (8.8)		
	Missing	7			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	27 (28.2)	25 (26)	0.93 (0.38 - 2.24)	0.85
	CS	22 (22.9)	22 (22.9)		
	Missing	6			
Professional status N = 132	Resident	12 (9.6)	7 (5.6)	0.56 (0.18 - 1.69)	0.26
	Specialist	52 (41.6)	54 (43.2)		
	Missing	7			
Years of licensed as MD N = 125	< 20	37 (30.1)	29 (23.6)	0.66 (0.30 - 1.43)	0.25
	≥ 20	26 (21.1)	31 (25.2)		
	Missing	2			
Years of licensed as specialist N = 112	< 15	32 (30.2)	23 (21.7)	2.16 (0.92 - 5.06)	0.05
	≥ 15	20 (18.9)	31 (29.2)		
	Missing	6			
Teaching grade N = 125	Yes	24 (19.5)	28 (22.8)	1.42 (0.65 - 3.11)	0.34
	No	39 (31.7)	32 (26)		
	Missing	2			
Decision maker N = 125	Yes	52 (41.6)	51 (40.8)	1.18 (0.43 - 3.26)	0.73
	No	12 (9.6)	10 (8)		
	Missing	0			

The introduction of new technologies was seen by obstetricians with a teaching grade as an important cause for the increase in cesarean section rates (Table 3.5). Professors were more likely to agree with this statement (OR= 2.74, 95% CI: 1.22-6.24; p= 0.007).

Table 3.5. Association between selected demographic variables and respondent's opinion on the introduction of new technologies as a possible cause of the increase in cesarean section rates

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	44 (33.8)	30 (23.1)	0.91 (0.42-1.95)	0.79
	≥45	32 (24.6)	24 (18.5)		
	Missing	2			
Gender N = 132	Female	41 (31.5)	26 (20)	0.79 (0.37-1.69)	0.51
	Male	35 (27)	28 (21.5)		
	Missing	2			
Has children N = 132	Yes	60 (46.2)	45 (34.6)	1.33 (0.5-3.63)	0.53
	No	16 (12.3)	9 (6.9)		
	Missing	2			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	31 (30.7)	25 (24.7)	1.21 (0.51-2.9)	0.64
	CS	27 (26.7)	18 (17.9)		
	Missing	1			
Professional status N = 132	Resident	14 (10.8)	6 (4.6)	0.55 (0.17-1.69)	0.26
	Specialist	62 (47.7)	48 (36.9)		
	Missing	2			
Years of licensed as MD N = 132	< 20	40 (31.2)	27 (21.1)	0.91 (0.42-1.95)	0.79
	≥ 20	35 (27.3)	26 (20.4)		
	Missing	4			
Years of licensed as specialist N = 112	< 15	30 (27.3)	26 (23.6)	1.26 (0.55-2.88)	0.55
	≥ 15	32 (29.1)	22 (20)		
	Missing	2			
Teaching grade N = 132	Yes	39 (30.5)	15 (11.7)	2.74 (1.22 - 6.24)	0.007
	No	36 (28.1)	38 (29.7)		
	Missing	4			
Decision maker N = 132	Yes	60 (46.2)	48 (36.9)	2.13 (0.71-6.66)	0.14
	No	16 (12.3)	6 (4.6)		
	Missing	2			

Male physicians, those with a previous vaginal birth (them or their partners) and people able to make decisions about performing a cesarean section, were more likely to agree with the statement that a great volume of cases to assist when on call is a possible cause for the increase in cesarean section rates. (Table 3.6)

Table 3.6. Association between selected demographic variables and respondent's opinion on great volume of cases to assist when at call as a possible cause of the increase in cesarean section rates

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	18 (13.7)	57 (43.2)	0.94 (0.38-2.27)	0.87
	≥45	13 (9.8)	44 (33.3)		
	Missing	0			
Gender N = 132	Female	11 (8.3)	57 (43.2)	0.42 (0.17 - 1.05)	0.04
	Male	20 (15.2)	44 (33.3)		
	Missing	0			
Has children N = 132	Yes	24 (18.2)	82 (62.1)	1.26 (0.42-3.67)	0.64
	No	7 (5.3)	19 (14.4)		
	Missing	0			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	19 (18.6)	38 (37.3)	4.00 (1.24 - 13.7)	0.009
	CS	5 (4.9)	40 (39.2)		
	Missing	0			
Professional status N = 132	Resident	3 (2.3)	17 (12.9)	1.89 (0.47-8.79)	0.33
	Specialist	28 (21.2)	84 (63.6)		
	Missing	0			
Years of licensed as MD N = 132	< 20	16 (12.3)	52 (40)	0.86 (0.35-2.13)	0.73
	≥ 20	13 (10)	49 (37.7)		
	Missing	2			
Years of licensed as specialist N = 112	< 15	17 (15.2)	40 (35.7)	0.59 (0.22-1.52)	0.23
	≥ 15	11 (9.8)	44 (39.3)		
	Missing	0			
Teaching grade N = 132	Yes	13 (10)	43 (33.1)	1.06 (0.44-2.60)	0.88
	No	18 (13.8)	56 (43.1)		
	Missing	2			
Decision maker N = 132	Yes	30 (22.7)	79 (59.8)	8.35 (1.11 - 173.6)	0.02
	No	1 (0.8)	22 (16.7)		
	Missing	0			

Obstetricians who have children were more likely to consider that the increase in maternal age is a cause of the increase in cesarean section rates. (Table 3.7)

Gender was marginally associated with this option. Therefore, this variable was included in the multivariate analysis.

Table 3.7. Association between selected demographic variables and respondent's opinion on increase in maternal age as a possible cause of the increase in cesarean section rates

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	30 (23.1)	44 (33.8)	0.64 (0.29-1.42)	0.23
	≥45	17 (13.1)	39 (30)		
	Missing	2			
Gender N = 132	Female	29 (22.3)	38 (29.2)	1.91 (0.87 - 4.23)	0.06
	Male	18 (13.8)	45 (34.7)		
	Missing	2			
Has children N = 132	Yes	33 (25.3)	72 (55.4)	0.36 (0.13 - 0.96)	0.02
	No	14 (10.8)	11 (8.5)		
	Missing	2			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	20 (19.8)	36 (35.6)	0.73 (0.29-1.85)	0.47
	CS	13 (12.9)	32 (31.7)		
	Missing	1			
Professional status N = 132	Resident	10 (7.7)	10 (7.7)	0.51 (0.18-1.46)	0.16
	Specialist	37 (28.5)	73 (56.1)		
	Missing	2			
Years of licensed as MD N = 132	< 20	29 (22.6)	38 (29.7)	0.55 (0.25-1.21)	0.1
	≥ 20	18 (14.1)	43 (33.6)		
	Missing	4			
Years of licensed as specialist N = 112	< 15	20 (18.2)	36 (32.7)	0.83 (0.35-1.97)	0.64
	≥ 15	17 (15.5)	37 (33.6)		
	Missing	2			
Teaching grade N = 132	Yes	20 (15.6)	35 (27.3)	0.97 (0.44-2.14)	0.93
	No	26 (20.4)	47 (36.7)		
	Missing	4			
Decision maker N = 132	Yes	38 (29.2)	70 (53.8)	1.28 (0.45-3.56)	0.61
	No	9 (7)	13 (10)		
	Missing	2			

There were no socio-demographic variables statistically associated with the option high number of previous cesarean sections (Table 3.8).

Table 3.8. Association between selected demographic variables and respondent's opinion on great number of previous caesarean section as a possible cause of the increase in cesarean section rate

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	58 (44.6)	16 (12.3)	0.91 (0.37 – 2.27)	0.83
	≥45	43 (33.1)	13 (10)		
	Missing	2			
Gender N = 132	Female	52 (40)	15 (11.5)	1.01 (0.41 – 2.49)	0.98
	Male	49 (37.7)	14 (10.8)		
	Missing	2			
Has children N = 132	Yes	80 (61.5)	25 (19.2)	1.64 (0.47 – 6.26)	0.4
	No	21 (16.2)	4 (3.1)		
	Missing	2			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	44 (43.6)	12 (11.9)	0.84 (0.30 – 2.36)	0.72
	CS	34 (33.6)	11 (10.9)		
	Missing	1			
Professional status N = 132	Resident	17 (13.1)	3 (2.3)	0.57 (0.12 – 2.30)	0.39
	Specialist	84 (64.6)	26 (20)		
	Missing	2			
Years of licensed as MD N = 132	< 20	52 (40.6)	15 (11.7)	0.97 (0.39 – 2.40)	0.94
	≥ 20	47 (36.8)	14 (10.9)		
	Missing	4			
Years of licensed as specialist N = 112	< 15	45 (40.9)	11 (10)	0.64 (0.24 – 1.68)	0.32
	≥ 15	39 (35.4)	15 (13.7)		
	Missing	2			
Teaching grade N = 132	Yes	42 (32.8)	13 (10.2)	1.10 (0.44 – 2.74)	0.81
	No	57 (44.5)	16 (12.5)		
	Missing	4			
Decision maker N = 132	Yes	83 (63.8)	25 (19.3)	1.36 (0.38 – 5.24)	0.61
	No	18 (13.8)	4 (3.1)		
	Missing	2			

Domain: Social influences

Physicians with a teaching grade were more likely to agree with the statement that administrative pressures are an important cause of the increase in cesarean section rates. (Table 3.9)

The association between professional status and this option showed a marginal significance; therefore, this variable was included in the logistic regression model.

Table 3.9. Association between selected demographic variables and respondent's opinion on administrative pressures as a possible cause of the increase in cesarean section rates

Socio-demographic variable		Agree n (%)	Disagree n (%)	OR (95% CI)	p-value
Age (years) N = 132	<45	47 (35.9)	27 (20.6)	0.98 (0.45 - 2.5)	0.97
	≥45	36 (27.5)	21 (16)		
	Missing	1			
Gender N = 132	Female	39 (29.8)	29 (22.1)	1.72 (0.79 - 3.78)	0.14
	Male	44 (33.6)	19 (14.5)		
	Missing	1			
Has children N = 132	Yes	67 (51.1)	39 (29.8)	1.03 (0.38 - 2.82)	0.94
	No	16 (12.2)	9 (6.9)		
	Missing	1			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	36 (35.3)	21 (20.6)	1.06 (0.43 - 2.58)	0.89
	CS	29 (28.4)	16 (15.7)		
	Missing	0			
Professional status N = 132	Resident	9 (6.9)	11 (8.4)	0.41 (0.14 - 1.18)	0.16
	Specialist	74 (56.5)	37 (28.2)		
	Missing	1			
Years of licensed as MD N = 132	< 20	44 (34.1)	23 (17.8)	0.77 (0.36 - 1.68)	0.48
	≥ 20	37 (28.7)	25 (19.4)		
	Missing	3			
Years of licensed as specialist N = 112	< 15	40 (36)	16 (14.4)	0.65 (0.27-1.54)	0.28
	≥ 15	34 (30.7)	21 (18.9)		
	Missing	1			
Teaching grade N = 132	Yes	43 (33.3)	12 (9.3)	3.22 (1.37 - 7.64)	0.003
	No	39 (30.2)	35 (27.2)		
	Missing	3			
Decision maker N = 132	Yes	71 (54.2)	37 (28.2)	0.57 (0.21-1.55)	0.22
	No	12 (9.3)	11 (8.3)		
	Missing	1			

Females were less likely to agree that patient/relative request was a cause of the increase in cesarean section rates. (Table 3.10)

Age was marginally associated with this option; therefore, this variable was included in the multivariate analysis.

Table 3.10. Association between selected demographic variables and respondent's opinion on patient/relative request as a possible cause of the increase in cesarean section rates

Socio-demographic variable		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	31 (23.8)	42 (32.3)	1.89 (0.85 - 4.25)	0.15
	≥45	16 (12.4)	41 (31.5)		
	Missing	2			
Gender N = 132	Female	19 (14.6)	49 (37.7)	0.47 (0.21 - 1.04)	0.04
	Male	28 (21.5)	34 (26.2)		
	Missing	2			
Has children N = 132	Yes	34 (26.2)	70 (53.8)	2.06 (0.79-5.37)	0.1
	No	13 (10)	13 (10)		
	Missing	2			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	18 (18)	37 (37)	1.03 (0.41-2.58)	0.95
	CS	15 (15)	30 (30)		
	Missing	2			
Professional status N = 132	Resident	8 (6.2)	12 (9.2)	2.12 (0.96-4.70)	0.69
	Specialist	39 (30)	71 (54.6)		
	Missing	2			
Years of licensed as MD N = 132	< 20	28 (21.8)	38 (29.7)	0.56 (0.25-1.23)	0.12
	≥ 20	18 (14.1)	44 (34.4)		
	Missing	4			
Years of licensed as specialist N = 112	< 15	23 (20.9)	32 (29.1)	0.57 (0.24-1.35)	0.16
	≥ 15	16 (14.5)	39 (35.5)		
	Missing	2			
Teaching grade N = 132	Yes	24 (18.8)	32 (25)	0.63 (0.28-1.38)	0.20
	No	23 (17.9)	49 (38.3)		
	Missing	4			
Decision maker N = 132	Yes	41 (31.5)	66 (50.8)	0.57 (0.18-1.70)	0.27
	No	6 (4.6)	17 (13.1)		
	Missing	2			

Domain: Beliefs about consequences

There were no socio-demographic variables statistically associated with the option fear of litigation as a cause for the increase in cesarean section rates (Table 3.11).

Table 3.11. Association between selected demographic variables and respondent's opinion on fear of litigation as a possible cause of the increase in cesarean section rate

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	34 (25.8)	41 (31.1)	0.82 (0.38 – 1.74)	0.57
	≥45	23 (17.3)	34 (25.8)		
	Missing	0			
Gender N = 132	Female	25 (18.9)	43 (32.7)	1.72 (0.81 – 3.66)	0.13
	Male	32 (24.2)	32 (24.2)		
	Missing	0			
Has children N = 132	Yes	43 (32.7)	63 (47.6)	1.71 (0.66 – 4.41)	0.22
	No	14 (10.6)	12 (9.1)		
	Missing	0			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	27 (26.5)	30 (29.4)	0.56 (0.23 – 1.34)	0.15
	CS	15 (14.7)	30 (29.4)		
	Missing	0			
Professional status N = 132	Resident	10 (7.6)	10 (7.6)	0.72 (0.25 – 2.07)	0.5
	Specialist	47 (35.6)	65 (49.2)		
	Missing	0			
Years of licensed as MD N = 132	< 20	31 (23.8)	37 (28.5)	0.81 (0.38 – 1.72)	0.55
	≥ 20	25 (19.2)	37 (28.5)		
	Missing	2			
Years of licensed as specialist N = 112	< 15	22 (19.6)	35 (31.3)	1.33 (0.58 – 3.02)	0.46
	≥ 15	25 (22.3)	30 (26.8)		
	Missing	0			
Teaching grade N = 132	Yes	26 (20)	30 (23.1)	0.83 (0.39 – 1.78)	0.61
	No	31 (23.8)	43 (33.1)		
	Missing	2			
Decision maker N = 132	Yes	48 (36.4)	61 (46.2)	0.82 (0.30 – 2.23)	0.67
	No	9 (6.8)	14 (10.6)		
	Missing	0			

Opinions on potential interventions that could be useful to decrease cesarean section rates

The possible association between socio-demographic characteristics and opinions regarding potential interventions to decrease cesarean section rates was investigated. As in the previous question, answers were recoded into 3 categories (disagree, neutral, agree), and subsequently recoded into 2 categories, i.e. “disagree” and “agree”, where “agree” included “strongly agree”, “agree” and “neutral”.

Regarding the use of the partograph, only professional status was marginally associated with this option ($p = 0.08$). Therefore, the variable was included in the logistic regression model (Table 3.12).

Table 3.12. Association between selected demographic variables and respondent's opinion on using the partograph as an intervention to decrease the cesarean section rates

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	65 (49.6)	9 (6.9)	0.85 (0.27 – 2.63)	0.75
	≥45	49 (37.4)	8 (6.1)		
	Missing	1			
Gender N = 132	Female	60 (45.8)	8 (6.1)	0.80 (0.26 – 2.47)	0.67
	Male	54 (41.2)	9 (6.9)		
	Missing	1			
Has children N = 132	Yes	90 (68.7)	16 (12.2)	4.27 (0.55 – 90.5)	0.14
	No	24 (18.3)	1 (0.8)		
	Missing	1			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	46 (45.1)	11 (10.8)	1.91 (0.55 – 6.98)	0.26
	CS	40 (39.2)	5 (4.9)		
	Missing	0			
Professional status N = 132	Resident	15 (11.4)	5 (3.8)	2.75 (0.72 – 10.13)	0.11
	Specialist	99 (75.6)	12 (9.2)		
	Missing	1			
Years of licensed as MD N = 132	< 20	58 (44.9)	9 (7)	1.05 (0.34 – 3.25)	0.93
	≥ 20	54 (41.9)	8 (6.2)		
	Missing	3			
Years of licensed as specialist N = 112	< 15	51 (45.9)	5 (4.5)	0.67 (0.17 – 2.58)	0.52
	≥ 15	48 (43.2)	7 (6.4)		
	Missing	1			
Teaching grade N = 132	Yes	51 (39.5)	5 (3.9)	0.5 (0.14 – 1.66)	0.21
	No	61 (47.3)	12 (9.3)		
	Missing	3			
Decision maker N = 132	Yes	96 (73.3)	12 (9.2)	0.45 (0.13 – 1.68)	0.17
	No	18 (13.7)	5 (3.8)		
	Missing	1			

Both having children and the form of delivery in previous birth were marginally associated with the intervention asking for a second opinion before performing a cesarean section ($p= 0.07$ and $p= 0.05$, respectively). Therefore, they were included in the logistic regression model (Table 3.13).

Table 3.13. Association between selected demographic variables and respondent's opinion on asking a second opinion as an intervention to decrease the cesarean section rates

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	64 (48.9)	10 (7.6)	2.81 (0.66 – 13.64)	0.12
	≥45	54 (41.2)	3 (2.3)		
	Missing	1			
Gender N = 132	Female	62 (47.3)	6 (4.6)	0.77 (0.21 – 2.77)	0.66
	Male	56 (42.8)	7 (5.3)		
	Missing	1			
Has children N = 132	Yes	93 (71)	13 (9.9)	--	■
	No	25 (19.1)	0 (0)		
	Missing	1			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	53 (52)	4 (3.9)	0.30 (0.07 – 1.19)	■
	CS	36 (35.3)	9 (8.8)		
	Missing	0			
Professional status N = 132	Resident	17 (13)	3 (2.3)	1.78 (0.35 – 8.14)	0.41
	Specialist	101 (77.1)	10 (7.6)		
	Missing	1			
Years of licensed as MD N = 132	< 20	59 (45.7)	8 (6.2)	1.55 (0.42 – 5.84)	0.46
	≥ 20	57 (44.2)	5 (3.9)		
	Missing	3			
Years of licensed as specialist N = 112	< 15	52 (46.8)	4 (3.6)	0.63 (0.14 – 2.72)	0.49
	≥ 15	49 (44.1)	6 (5.5)		
	Missing	1			
Teaching grade N = 132	Yes	51 (39.5)	5 (3.9)	0.80 (0.21 – 2.91)	0.70
	No	65 (50.4)	8 (6.2)		
	Missing	3			
Decision maker N = 132	Yes	99 (75.6)	9 (6.9)	0.43 (0.11 – 1.87)	0.18
	No	19 (14.5)	4 (3)		
	Missing	1			

Specialists, and especially those licensed for less than 15 years, as well as decision-makers, were less likely to consider performing an ECV as an intervention to decrease cesarean section rates. (Table 3.14)

Teaching grade showed a marginal statistical association with this option and was also included in the multivariate analysis.

Table 3.14. Association between selected demographic variables and respondent's opinion on performing an external cephalic version as an intervention to decrease cesarean section rates

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p-value
Age (years) N = 132	<45	27 (20.6)	47 (35.9)	1.02 (0.47 – 2.21)	0.97
	≥45	21 (16)	36 (27.5)		
	Missing	1			
Gender N = 132	Female	26 (19.8)	42 (32.1)	0.87 (0.40 – 1.88)	0.69
	Male	22 (16.8)	41 (31.3)		
	Missing	1			
Has children N = 132	Yes	41 (31.3)	65 (49.6)	0.62 (0.21 – 1.74)	0.32
	No	7 (5.4)	18 (13.7)		
	Missing	1			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	24 (23.5)	33 (32.3)	0.76 (0.31 – 1.83)	0.5
	CS	16 (15.7)	29 (28.5)		
	Missing	0			
Professional status N = 132	Resident	12 (9.2)	8 (6.1)	3.13 (1.07 - 9.30)	0.02
	Specialist	36 (27.4)	75 (57.3)		
	Missing	1			
Years of licensed as MD N = 132	< 20	24 (20.2)	43 (36.1)	1.54 (0.69 – 3.44)	0.73
	≥ 20	24 (20.2)	28 (23.5)		
	Missing	13			
Years of licensed as specialist N = 112	< 15	11 (9.9)	45 (40.5)	0.29 (0.11 - 0.74)	0.004
	≥ 15	25 (22.5)	30 (27.1)		
	Missing	1			
Teaching grade N = 132	Yes	26 (20.1)	30 (23.3)	2.01 (0.91 - 4.43)	0.03
	No	22 (17.1)	51 (39.5)		
	Missing	3			
Decision maker N = 132	Yes	34 (25.9)	74 (56.5)	0.30 (0.11 - 0.82)	0.008
	No	14 (10.7)	9 (6.9)		
	Missing	1			

Teaching grade was associated with the option of trying a vaginal delivery in patients with a previous cesarean section. Professionals with a teaching grade were more likely to agree that it could be a useful intervention to reduce cesarean section rates (OR= 2.18, 95% CI: 0.94-5.12; $p= 0.04$). Professional status was marginally associated with this option ($p= 0.07$) and was also included in the multivariate analysis (Table 3.15).

Table 3.15. Association between selected demographic variables and respondent's opinion on trying a vaginal delivery in a patient with a previous cesarean section as an intervention to decrease the cesarean section rates

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p-value
Age (years) N = 132	<45	50 (38.2)	24 (18.3)	0.96 (0.43 – 2.14)	0.91
	≥45	38 (29)	19 (14.5)		
	Missing	1			
Gender N = 132	Female	46 (35.1)	22 (16.8)	0.96 (0.43 – 2.12)	0.9
	Male	42 (32.1)	21 (16)		
	Missing	1			
Has children N = 132	Yes	70 (53.4)	36 (27.5)	1.32 (0.46 – 3.87)	0.57
	No	18 (13.8)	7 (5.3)		
	Missing	1			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	38 (37.3)	19 (18.6)	1.00 (0.40 – 2.49)	1.00
	CS	30 (29.4)	15 (14.7)		
	Missing	0			
Professional status N = 132	Resident	17 (13)	3 (2.3)	0.31 (0.07 – 1.23)	0.001
	Specialist	71 (54.2)	40 (30.5)		
	Missing	1			
Years of licensed as MD N = 132	< 20	45 (34.9)	22 (17.1)	0.95 (0.43 – 2.12)	0.90
	≥ 20	41 (31.7)	21 (16.3)		
	Missing	3			
Years of licensed as specialist N = 112	< 15	34 (30.6)	22 (19.8)	1.33 (0.57 – 3.12)	0.47
	≥ 15	37 (33.3)	18 (16.3)		
	Missing	1			
Teaching grade N = 132	Yes	43 (33.3)	13 (10.1)	0.46 (0.20 – 1.07)	0.047
	No	44 (34.1)	29 (22.5)		
	Missing	3			
Decision maker N = 132	Yes	72 (55)	36 (27.5)	1.14 (0.40 – 3.39)	0.79
	No	16 (12.2)	7 (5.3)		
	Missing	1			

There were no socio-demographic variables statistically associated with the option making decisions regardless of patient/relative demand (Table 3.16).

Table 3.16. Association between selected demographic variables and respondent's opinion on making decisions regardless of patient / relative demand

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	53 (40.5)	21 (16)	1.02 (0.44 – 2.35)	0.97
	≥45	41 (31.3)	16 (12.2)		
	Missing	1			
Gender N = 132	Female	48 (36.6)	20 (15.3)	0.64 (0.26 – 1.54)	0.76
	Male	46 (35.1)	17 (13)		
	Missing	1			
Has children N = 132	Yes	78 (59.5)	28 (21.4)	0.64 (0.23 – 1.78)	0.34
	No	16 (12.2)	9 (6.9)		
	Missing	1			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	43 (42.2)	14 (13.7)	1.01 (0.37 – 2.75)	0.99
	CS	34 (33.3)	11 (10.8)		
	Missing	0			
Professional status N = 132	Resident	15 (11.5)	5 (3.8)	0.82 (0.24 – 2.70)	0.73
	Specialist	79 (60.3)	32 (24.4)		
	Missing	1			
Years of licensed as MD N = 132	< 20	49 (38)	18 (14)	0.83 (0.36 – 1.91)	0.63
	≥ 20	43 (33.3)	19 (14.7)		
	Missing	3			
Years of licensed as specialist N = 112	< 15	39 (35.1)	17 (15.3)	1.16 (0.47 – 2.87)	0.72
	≥ 15	40 (36.1)	15 (13.5)		
	Missing	1			
Teaching grade N = 132	Yes	43 (33.3)	13 (10.1)	0.66 (0.28 – 1.56)	0.30
	No	50 (38.8)	23 (17.8)		
	Missing	3			
Decision maker N = 132	Yes	77 (58.7)	31 (23.7)	1.14 (0.38 – 3.59)	0.80
	No	17 (13)	6 (4.6)		
	Missing	1			

Obstetricians' attitudes when facing different hypothetical clinical situations.

Obstetricians were asked if they would recommend a cesarean section under three specific clinical situations. Two of them were related to performing a cesarean section assuming a normal pregnancy with no clinical reason for such surgical intervention. Of these two situations, one involved performing a cesarean section on themselves/their partners and the other one on a patient without any type of family relationship with the physician.

The third clinical situation explored the obstetricians' attitudes when assisting a pregnant woman who had undergone a cesarean section in a previous birth. Clinicians were asked if they would try a vaginal delivery in that situation.

Tables 3.17a and 3.17b show that in the scenarios related to a normal pregnancy without any clear indication to perform a surgical intervention, age was statistically associated with the answers. People less than 45 years old were more prone to choose a cesarean section, both for themselves/their partners, or an unrelated patient.

Regarding the hypothetical clinical situation involving a woman with a previous cesarean section (Table 3.17c), residents were more likely to try a vaginal delivery.

Table 3.17a. Answers to the hypothetical clinical situation “Would you choose / recommend an elective cesarean section for yourself or your partner without a medical indication?”

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	8 (6.5)	61 (49.6)	6.95 (0.83 - 153)	0.04
	≥45	1 (0.8)	53 (43.1)		
	Missing	9			
Gender N = 132	Female	5 (4.1)	59 (48)	0.67 (0.12 - 3.22)	0.58
	Male	4 (3.2)	55 (44.7)		
	Missing	9			
Has children N = 132	Yes	6 (4.9)	93 (75.6)	0.45 (0.09 - 2.51)	0.28
	No	3 (2.4)	21 (17.1)		
	Missing	9			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	2 (2.1)	54 (56.8)	0.44 (0.05 - 3.50)	0.38
	CS	3 (3.2)	36 (37.9)		
	Missing	7			
Professional status N = 132	Resident	3 (2.4)	17 (13.8)	2.85 (0.51 - 14.78)	0.15
	Specialist	6 (4.8)	97 (79)		
	Missing	9			
Years of licensed as MD N = 132	< 20	6 (5)	58 (47.9)	6.95 (0.83 - 153)	0.039
	≥ 20	2 (1.6)	55 (45.5)		
	Missing	11			
Years of licensed as specialist N = 112	< 15	3 (2.9)	49 (47.6)	0.98 (0.15 - 6.48)	0.98
	≥ 15	3 (2.9)	48 (46.6)		
	Missing	9			
Teaching grade N = 132	Yes	3 (2.5)	48 (39.7)	0.67 (0.12 - 3.22)	0.58
	No	6 (5)	64 (52.8)		
	Missing	11			
Decision maker N = 132	Yes	7 (5.7)	93 (75.6)	0.79 (0.13 - 5.96)	0.78
	No	2 (1.6)	21 (17.1)		
	Missing	9			

Table 3.17b. Answers to the hypothetical clinical situation “Would you choose/ recommend an elective cesarean section for a patient (not your-self or your partner) without a medical indication?”

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	13 (10.6)	56 (45.5)	3.95 (0.97 - 18.6)	0.03
	≥45	3 (2.4)	51 (41.5)		
	Missing	9			
Gender N = 132	Female	8 (6.5)	56 (45.5)	0.91 (0.28 - 2.92)	0.86
	Male	8 (6.5)	51 (41.5)		
	Missing	9			
Has children N = 132	Yes	10 (8.1)	89 (72.4)	0.34 (0.10 - 1.21)	0.05
	No	6 (4.9)	18 (14.6)		
	Missing	9			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	6 (6.3)	50 (52.6)	1.44 (0.29 - 7.86)	0.62
	CS	3 (3.2)	36 (37.9)		
	Missing	7			
Professional status N = 132	Resident	6 (4.9)	14 (11.4)	3.99 (1.08 - 14.58)	0.014
	Specialist	10 (8.1)	93 (75.6)		
	Missing	9			
Years of licensed as MD N = 132	< 20	10 (8.5)	54 (45.8)	3.95 (0.97 - 18.6)	0.25
	≥ 20	2 (1.6)	52 (44.1)		
	Missing	14			
Years of licensed as specialist N = 112	< 15	6 (5.8)	46 (44.7)	1.53 (0.35 - 7.01)	0.53
	≥ 15	4 (3.9)	47 (45.6)		
	Missing	9			
Teaching grade N = 132	Yes	4 (3.3)	47 (38.9)	0.41 (0.10 - 1.50)	0.14
	No	58 (47.9)	12 (9.9)		
	Missing	11			
Decision maker N = 132	Yes	11 (8.9)	89 (72.4)	0.44 (0.12 - 1.69)	0.17
	No	5 (4.1)	18 (14.6)		
	Missing	9			

Table 3.17c. Answers to the hypothetical clinical situation “Would you consider trying a vaginal delivery in a patient with a previous cesarean section?”

Socio-demographic variables		Agree n (%)	Disagree n (%)	OR (95% CI)	p value
Age (years) N = 132	<45	37 (30.1)	32 (26)	1.07 (0.49 – 2.33)	0.85
	≥45	28 (22.8)	26 (21.1)		
	Missing	9			
Gender N = 132	Female	33 (26.8)	31 (25.2)	0.90 (0.42 – 1.94)	0.77
	Male	32 (26)	27 (22)		
	Missing	9			
Has children N = 132	Yes	50 (40.7)	49 (39.8)	0.61 (0.22 – 1.66)	0.29
	No	9 (7.3)	15 (12.2)		
	Missing	9			
Form of delivery in respondent / respondent's partner's previous births N = 102	Vaginal	31 (32.6)	25 (26.3)	1.60 (0.65 – 3.98)	0.26
	CS	17 (18)	22 (23.1)		
	Missing	7			
Professional status N = 132	Resident	15 (12.2)	5 (4.1)	3.18 (0.98 – 10.90)	0.03
	Specialist	50 (40.6)	53 (43.1)		
	Missing	9			
Years of licensed as MD N = 132	< 20	35 (28.9)	29 (24)	1.17 (0.54 – 2.54)	0.68
	≥ 20	29 (24)	28 (23.1)		
	Missing	11			
Years of licensed as specialist N = 112	< 15	25 (24.3)	27 (26.2)	0.96 (0.41 – 2.24)	0.92
	≥ 15	25 (24.3)	26 (25.2)		
	Missing	9			
Teaching grade N = 132	Yes	30 (24.8)	21 (17.4)	1.43 (0.65 – 3.16)	0.34
	No	35 (28.9)	35 (28.9)		
	Missing	11			
Decision maker N = 132	Yes	52 (42.3)	48 (39)	0.83 (0.30 – 2.27)	0.69
	No	13 (10.6)	10 (8.1)		
	Missing	9			

Logistic regression

Possible causes for the increase in cesarean section rates (Table 3.18)

Increase in obstetric dystocias: It is more likely that specialists licensed for less than 15 years agree that the increase in cesarean rates is due to the increase in obstetric dystocias, when compared to specialists licensed for 15 years or more.

High volume of cases to assist when on call: Physicians with a previous vaginal birth (them/their partners) are more likely to agree that this is a cause for the increase in cesarean sections.

Administrative pressures: Physicians with a teaching grade are more likely to agree that the increase in cesarean section rates is due to administrative pressures.

Patient/relative demand: Males are more likely to agree that patient/relative demand is a cause for the increase in cesarean sections.

Table 3.18. Logistic regression. Association between selected variables and possible causes for the increase of cesarean section rates

Dependent variable (Odds / Cases)	Independent variable (in the model)	Other variables included in the model	Crude OR (95% CI)	P	Exp B (Adjusted OR (95% CI))	P
Increase in obstetric dystocias	Years licensed as specialist (<15 / ≥ 15)	Gender (Female / Male)	0.46 (0.20 – 1.08)	- 1.96	0.14 (0.26 – 0.76)	0.023
High volume of cases to assist when on call	Form of previous delivery (Vaginal / CS)	Gender (Female/ Male); Decision-maker status (Yes / No)	0.25 (0.07 – 0.81)	- 2.01	0.13 (0.04 – 0.48)	0.002
Increase in maternal age	--	Gender (Female / Male); Has children	--	--	--	--
Administrative pressures	Teaching grade (yes / no)	Professional status (Resident / Specialist)	2.44 (0.85 – 7.13)	- 1.18	0.31 (0.10 – 0.94)	0.04
Patient/relative demand	Gender (Female / Male)	Age (<45 / ≥ 45)	2.12 (0.96 – 4.70)	1.67	5.32 (1.66 – 17.0)	0.005

Potential interventions to decrease cesarean section rates (Table 3.19).

Physicians with a teaching grade answered more frequently that they agree that trying a vaginal delivery in a woman with a previous CS could be a useful intervention to decrease cesarean section rates.

Table 3.19. Logistic regression. Association between selected variables and potential useful interventions to decrease cesarean section rates

Dependent variable (Disagree/Agree)	Independent variable fitting the model	Other variables included in the model	Crude OR (95% CI)	χ^2	Exp B (Adjusted OR (95% CI))	P
To try a vaginal delivery in a woman with a previous CS	Teaching grade (Yes/No)	Professional status (Resident/Specialist)	0.46 (0.20 - 1.07)	- 1.93	0.15 (0.04 - 0.48)	0.001
To ask for a second opinion	--	Has children (Yes/No); Form of previous delivery (Vaginal/CS)	--	--	--	--
To perform an external cephalic version	--	Professional status (Resident/Specialist); Years licensed as specialist (<15/≥15); Decision-maker status (Yes/No); Teaching grade (Yes/No)	--	--	--	--

Description of open questions

When asked about other causes for the increasing cesarean section rate (other than those stated in the survey) (Table 3.20), 16 physicians gave an answer and there were 28 responses. Two people provided more than one answer.

Table 3.20. Other causes for the increasing cesarean section rate (n = 28)

Category	Absolute frequency	Relative frequency (%)
Administrative reasons	13	46.4
Causes related to obstetric work	4	14.3
Causes related to the reliability of technical resources	4	14.3
Increase in inductions	4	14.3
New indications	3	10.7

Fourteen professionals stated other potentially useful interventions to decrease the cesarean section rate (other than those stated in the survey) (Table 3.21), with a total of 14 responses.

Table 3.21. Other potentially useful interventions to decrease the cesarean section rate (n = 14)

Category	Absolute frequency	Relative frequency (%)
Improving the scientific analysis of cesarean sections	4	28.6
Improving the study of fetal wellbeing	3	21.4
Legal and administrative support for obstetricians	2	14.3
Decreasing inductions	2	14.3
Other	3	21.4

Regarding the question on recommending an elective cesarean section for themselves/their partner without any clear medical indication, there were 104 responses; 97 physicians stated they would not choose/recommend it (1 was not useful) and 7 considered they would choose/recommend it. (Tables 3.22a and 3.22b).

Table 3.22a. Decision of performing a cesarean section without any medical indication (on her/his partner). Answer NO (n = 96)

Category	Absolute frequency	Relative frequency (%)
Increase in risks and complications	67	69.8
There is no indication to perform a cesarean section	15	15.6
Vaginal delivery is more physiologic / Ideal	7	7.3
According to evolution	6	6.3
There is no evidence	1	1.0

Table 3.22b. Decision of performing a cesarean section without any medical indication (on her/his partner). Answer YES (n = 7)

Category	Absolute frequency	Relative frequency (%)
Avoiding risks to the fetus	2	28.6
It is safer	2	28.6
It has an indication	1	14.3
Wishing no vaginal delivery	1	14.3
Convenience	1	14.3

When asked about a similar clinical situation, but in a woman without any type of family relationship, 101 obstetricians answered; 88 stated they would not perform the cesarean section, and 16 stated they would. (Tables 3.23a and 3.23b)

Table 3.23a. Decision of performing a cesarean section without any medical indication (on unrelated patient). Answer NO (n = 88)

Category	Absolute frequency	Relative frequency (%)
It increases the maternal/fetal risk	39	44.3
It is a medical decision	16	18.2
There is no indication	14	15.9
It is not physiological	11	12.5
It is not regulated	5	5.7
Other	3	3.4

Table 3.23b. Decision of performing a cesarean section without any medical indication (on unrelated patient). Answer YES (n = 13)

Category	Absolute frequency	Relative frequency (%)
The woman has the right to choose	7	53.8
Convenience	1	7.7
According to obstetric conditions	1	7.7
Other	4	30.8

One hundred and four people answered the question about trying a vaginal delivery in a woman with a previous cesarean section. There were 105 responses (1 provided 2 responses); 53 physicians stated they would try it (2 reasons could not be classified) and 52 stated they would not try a vaginal delivery in a patient with a previous cesarean section (3 reasons could not be classified). (Tables 3.24a and 3.24b)

Table 3.24a. Decision of trying a vaginal delivery in a patient with a previous cesarean section. Answer NO (n = 49)

Category	Absolute frequency	Relative frequency (%)
Risk of uterine rupture and other complications	34	69.4
Lack of personnel / infrastructure to follow the labour	6	12.2
Unknown conditions in the previous cesarean section	5	10.2
Lack of administrative support	3	6.1
It is not routine practice	1	2.1

Table 3.24b. Decision of trying a vaginal delivery in a patient with a previous cesarean section. Answer YES (n = 51)

Category	Absolute frequency	Relative frequency (%)
It would be allowed if conditions are favorable	27	52.9
It decreases the maternal/fetal risk	10	19.7
There is evidence	8	15.7
There are no contraindications	4	7.8
Other	2	3.9

Chapter 4. Discussion

This is the first survey applied to Cuban obstetricians (specialists and residents) directly involved in caring for pregnant women in labour, regarding their opinion about current cesarean section rates and their attitudes when facing different clinical situations where they must decide whether to perform a cesarean section. There are a number of important issues arising from this study.

First, most surveyed people agreed that the current cesarean section rates are high in their institutions and also agreed that the main causes for this increase are the high number of previous cesarean sections, the introduction of new technologies, the increasing number of inductions, administrative pressures and new indications to perform a cesarean section. The estimate of an “ideal” cesarean section was about 20%, consistent with Chalmers ⁽²²⁾, who investigated the care provider’s estimate of the ideal cesarean section rate and found that it ranged from, on average, 16.2% in teaching hospitals to 19.8% in private practice.

The studies included in the Systematic Review failed to establish a theoretical framework to explain obstetrician behaviour regarding key facts like obstetrician opinions about the increase in cesarean section rates. In our study we framed the question related to the possible causes of the increase in cesarean section rates into the theoretical domains described in Michie’s model ⁽⁷⁵⁾, which is the one that best fits this study.

Using a theoretical framework before creating a questionnaire allows the questions to be mapped on to different domains and constructs. As well as assisting in the identification of important areas that might otherwise be missed, it also clarifies what specific aspects of physicians' behaviour that it might be possible to influence. There are some issues like the large number of previous cesarean sections and the increase in advanced maternal age which is not possible to influence change. However some variables, such as knowledge of the available evidence, and reactions to administrative and social pressures, could potentially be influenced by using educative programs addressed to physicians, such as audit and feedback, practice guidelines and television based education.

Identifying a suitable theory also allows us to develop a priori hypotheses and, therefore, use it in a predictive way. If such hypotheses were supported, there would be a stronger basis on which to develop interventions to alter key behaviours. It is important that the cost and effort that goes into developing interventions is directed towards those which are most likely to succeed, so some empirical evidence to support their theoretical rationale is valuable.

There are a number of potentially useful theories, such as the Health Belief Model, the Protection Motivation Theory, the Social Cognition Theory the Theory of Reasoned Action, and the Theory of Planned Behaviour. From these, Protection Motivation Theory which includes five components (self-efficacy, responsive effectiveness, severity, vulnerability and fear in response to education or information) seems to be the most

appropriate to predict behavioural intentions to improve health-related behaviour, or intention to modify behaviours.

The survey instrument sought opinions on a range of potential factors influencing cesarean section rates, some of which were not within the control of providers, and some of which might be modifiable. Most of the constructs related to possible causes for the increase in cesarean section rates were framed into the domain “environmental context and resources”, for example, the introduction of new technologies and the high number of cases to assist when on call, as well as some characteristics in the population like presence of obstetric dystocias, high number of previous cesarean deliveries and increase in maternal age. These domains are not under the control of the care providers and it is unlikely they could be modified by a change in behaviour. However, there are some constructs which could feasibly be modified, for example, those related to the domain “social influences”, in this case, administrative pressures and patient/relative demand. This is the case also for the domain “Beliefs about consequences”, which included the item fear of litigation.

The study showed that there are two groups of causes particularly important in explaining the increase in cesarean section rates and in giving us guidance for developing effective interventions, as they enhance the understanding of underlying processes leading to the decision of performing a cesarean section ⁽⁷⁵⁾. One group includes those causes related to environmental context and resources, where the introduction of new technologies and the high number of previous cesarean sections were identified as leading

reasons for the increase. The other group includes social influences, specifically administrative pressures, as one of the most important causes.

Most of the obstetricians stated that the volume of cases to assist at the delivery room when on call is not a determining cause to explain the increase in cesarean section rates in recent years. Recent demographic data from the Cuban population, shows a decrease in the number of births during the last 15 years (see *Graph 1.2 Appendix 1*).

Regarding other probable causes of increasing cesarean section rates, differences in teaching grade and age were noted. Specialists and respondents with a teaching grade were more likely to perceive the introduction of new technologies and administrative pressures as causes for the increase. On the other hand, respondents aged less than 45, licensed for less than 20 years as MDs, and less than 15 as specialists more frequently perceived patient/relative request as an important contributing factor to the rise in the cesarean section rates.

Obstetricians considered some administrative issues to be the most important causes. These include the obstetrician's responsibility for bad long-term outcomes during childhood (disability), lack of personnel to follow labour in women at risk, flaws in the bodies in charge of analyzing cesarean sections, and lack of appropriate technology to assess the risk during labour.

The question about potential interventions that could be useful in decreasing

cesarean section rates provided an indirect measure of obstetricians' knowledge of evidence-based interventions aimed at decreasing such rates.

The use of the partograph was considered as an intervention likely to reduce cesarean rates. The partograph is a simple, inexpensive tool used to provide a continuous pictorial overview of labour. It is a pre-printed form on which care providers record labour observations. Most partographs have three distinct sections where observations are entered on maternal condition, fetal condition and labour progress ⁽⁶⁵⁾. Based on the results of a study conducted in South East Asia, the World Health Organization recommended the partograph for obstetric care ⁽¹⁰⁹⁾. However, some practitioners have questioned its effectiveness, particularly when used in high-income countries, arguing that its evaluation was not rigorous. Furthermore, there are worries that what is appropriate in one place at one time is not necessarily appropriate at another time in the same place or in another setting, and that constant supervision is needed even when the partograph has been used for years ⁽¹⁰⁴⁾.

Asking for a second opinion before performing a cesarean section was the intervention that most professionals considered useful to decrease current rates. Chaillet et al ⁽²⁰⁾ note that this intervention has been demonstrated to be useful in reducing emergency cesarean rates, but has had no effect on elective cesarean rates. Althabe et al ⁽⁵⁾ pointed out that 22 intrapartum cesarean sections could be prevented per 1000 deliveries, an impact that could be considered as modest.

Performing an ECV was the only intervention that obstetricians did not consider to be useful to decrease cesarean section rates; however, differences in age were noted. It was more likely that specialists licensed for less than 15 years, respondents without a teaching grade, and self-reported decision-makers would not consider ECV as a potentially useful intervention. This could reflect a lack of training in a procedure that has been virtually banished from current Cuban obstetrical practice, even when in Cuba there is wide dissemination of the WHO Reproductive Health Library, where the intervention is recommended. In an extensive systematic review of ECV at or near term, Hofmyer ⁽⁴⁹⁾ found convincing evidence of a reduction in non-cephalic birth (relative risk [RR] 0.38, 95% confidence interval [CI] 0.18-0.80), as well as in cesarean sections (RR 0.55, 95% CI 0.33-0.91), without any difference in unfavorable events such as Apgar score less than 7 at one minute, low umbilical artery pH levels, neonatal admissions, perinatal death, nor time from enrolment to delivery. Although another systematic review of ECV before term ⁽⁵¹⁾ failed to find similar results, authors reported a 9.5% decrease in non-cephalic presentation at birth, as well as a 7.5% decrease in cesarean section when ECV was started early. External cephalic version has been recognized as a feasible and appropriate intervention in low and middle-income countries ⁽⁶⁶⁾, in settings with limited resources. The Cuban Handbook of Procedures for Diagnosis and Treatment ⁽²⁵⁾, defines the favorable and unfavorable conditions for a vaginal birth in a breech presentation, but usually the unfavorable conditions are predominant; therefore, a cesarean section is easily justifiable. Some individual, organizational, setting and social factors may be influencing this, as well as a lack of theoretical understanding of the processes involved in changing the behaviour of healthcare professionals ^(37, 75).

The high number of obstetricians who would try a vaginal delivery in patients with a previous cesarean section is remarkable, since in Cuba it is not routine practice. The Cuban Handbook of Procedures for Diagnosis and Treatment ⁽²⁵⁾, the guidelines ruling the general practice in obstetrics, does not clearly define the conditions under which to try a vaginal delivery after a cesarean section. It states that it is possible to try a vaginal delivery if the cause of the previous cesarean section remains the same and recognizes the risk of uterine disruption as at least 1%. While the American College of Obstetrics and Gynecology ⁽⁷⁾ supports Vaginal Birth After Cesarean Section (VBAC) as a safe and acceptable option, the systematic review by Dodd et al ⁽³⁰⁾ did not find randomized clinical trials and concluded that the evidence coming from observational studies is potentially biased, so that any recommendation should be taken cautiously. Authors also concluded that both repeat cesarean section and vaginal delivery after a cesarean section are associated with benefits and harms. The Clinical Guidelines for cesarean section published by the National Collaborating Centre for Women's and Children's Health ⁽⁷⁷⁾ drew the same conclusions and defined a number of guidelines to help decide the form of delivery after a cesarean section. It may be hypothesized that this is a field where Cuban obstetricians might be involved, based on the assumption that if the professionals are motivated and have the intention to change, it is reasonable to predict that behaviours may be modified, provided that appropriate strategies are implemented ⁽⁸³⁾.

Although the differences showed no statistical significance, physicians were more likely to perform a cesarean section in a patient asking for it without a clear medical indication, than to choose the procedure in the same situation for themselves (if female) or

their partners (if male). This finding is consistent with those of other authors. In our systematic review, the positive answer to questions equivalent to “Would you recommend a cesarean section for a patient requesting it without any clinical indication?” has shown an important and significant variation over the years, with the answer “Yes” to this question about 7 times more frequent in 2007 than in 1986 ^(35, 57, 64, 105, 111). The reasons for such differences are unclear and purely speculative. It could reflect the physicians’ perceptions of the associated risks, their knowledge about the short and long-term consequences of the procedure, its complications and costs and/or the fear of a legal claim if any adverse outcome occurs, associated with the childbirth. It has been published that the rise in legal claims due to malpractice in recent years, physicians’ fear of facing legal action and administrative measures, fear of loss of prestige, patient pressure, and even the increase of evidence-based medicine ^(27, 56) could be behind this attitude. Since the procedure is becoming more and more frequent and safe ^(27, 57, 69), care providers and the population may accept it as a “normal” obstetric procedure.

Maternal and fetal risks associated with the surgical procedure were the predominant reason for refusing to perform a cesarean section without a clear medical indication. A small number of obstetricians answered that they would agree to perform a surgery under such conditions, and the woman’s right to choose the form of delivery was the predominant reason to support that answer.

Another important finding, in some ways a matter of concern due to its potential future influence on cesarean section rates, was that younger professionals (i.e. residents,

licensed for less than 20 years as MDs and less than 15 years as specialists) were more likely to consider that cesarean rates are about right. Similarly, physicians under 45 years of age were more likely to perform a cesarean section without a clear medical indication. Reports from other studies are contradictory. Some studies have reported a statistically significant association between age of provider and likelihood of performing a cesarean section ⁽¹⁰⁵⁾, while others have not ⁽⁵⁴⁾.

Other interventions considered potentially useful in decreasing current rates included a better analysis of each cesarean section performed, improving the fetal wellbeing study and decreasing the number of inductions, closely related to surgical deliveries.

It is important to address not only the information needs of clinicians and organizations, but also the social and organizational factors that interfere with the application of knowledge ⁽¹⁶⁾, as well as to identify possible barriers influencing behaviour. Belizan et al ⁽¹³⁾ conducted a study in Argentina, which identified a number of barriers influencing the introduction of evidence-based knowledge. Even though the context and health systems are quite different in Argentina and Cuba, there are some common points that might serve to make some inferences about behaviour determinants. Belizan et al identified three principal levels of barriers to change: individual or group, hospital and environment. At an individual level, providers do not perceive problems or bad outcomes with their current practice, have problems understanding and assessing scientific literature and do not have the skills to perform a new practice (self-efficacy, i.e. one's perception of

the ability to perform the behaviour).⁽³⁸⁾ Language barrier is also a major issue.⁽⁴⁶⁾ At a hospital level, access to information and the Internet is difficult and limited, there is a lack of data analysis of utilized practices and their results, and time to study is scarce. At an environmental level, training in critical and scientific appraisal of the literature is absent from both the university and the residence programs. Economic constraints are also an important barrier at this level.

Women's attitudes are relevant to the overall research question although the plan is to address them separately in a future investigation.

The first issue is the population to be surveyed. It is conceivable to expect different response patterns when the survey is administered to pregnant women, women who had just had a baby, women who have had either a cesarean section or a vaginal delivery, women selected from sampling frames that have nothing to do with maternity or obstetrics (e.g. female members of professional organisations, church groups, etc). Even though our study showed no differences regarding gender, it would be interesting to study if female obstetricians respond differently when they are not acting as doctors but in a patient role.

Women's views should be investigated by using appropriate instruments and considering a priori covariates likely to be associated to a specific answer.

There are a number of available techniques. Validated questionnaires with closed and open questions, as well as questions with a Likert scale may be used. They will allow

us to explore specific questions of interest, for example, socio-demographic characteristics of target population, and also to obtain information on what they consider to be a cesarean section; why can a CS be done, the time of pregnancy when a CS can be done, the risks and benefits of normal delivery / CS, the women's sources of information about these topics (personal experience, relatives, friends, media, press, health care providers, etc.), and their preferences about the form of delivery. Covariates like age, parity, form of previous delivery (if any), school level, residence (urban / rural), occupation, etc. could influence the answers, so it is necessary to take them into account. Answers could be different depending on the moment in which the questionnaire is applied. Therefore, gestational age at the time of the study should be considered. Opinions and feelings about the form of delivery should be also explored after the delivery occurred, since this experience may change women's views. The outcome in the newborn (admission, complications, etc.) may also impact women's views.

Questionnaires may be complemented with qualitative methods to obtain further useful insights, because it is not always possible to assess in a single questionnaire all the important aspects related to women's opinion and knowledge about the caesarean section. Using techniques like focus groups and semi-structured interviews would be appropriate to achieve these goals.

There are some issues on relative risk and odds ratio that should be addressed.

Relative Risk (RR) is the probability that a member of a group receiving some exposure will develop an outcome (often a disease), relative to the chance of a member of an unexposed group will develop the same disease ⁽⁸²⁾. It is a relative measure of comparison based on the ratio of two measures of outcome frequency, which gives information about the strength of the relationship between exposure and outcome. If there is no relationship between exposure and outcome the numeric value of relative risk is 1.0 (i. e. the probability of outcome in the exposed and unexposed groups is identical) ⁽⁸⁾. This measure is preferred for etiologic research because it indicates how many times higher or lower disease risk is among the exposed individuals compared to the baseline risk among unexposed individuals.

Odds ratio is the odds of exposure among individuals with a particular outcome divided by the odds of exposure among those who do not have the outcome ⁽⁸²⁾. The odds ratio relates the odds of the exposure in the two populations. This measure has better statistical properties.

Relative risk and odds ratio are two different measures that attempt to explain the same phenomenon ⁽⁸²⁾, i.e. the strength of association between an exposure and an outcome. If the outcome of interest that defines the cases is rare, the odds ratio will be approximately equal to the relative risk. For common events, however, that can be quite different ⁽⁶⁾.

Study Limitations

Some results reached a marginal statistical significance, raising doubts about their true meaning, and the effects of random error due to insufficient sample size cannot be ruled out.

The study was conducted in the City of Havana. The fact that this is the capital of the country, and has specific characteristics, resources and access to information, might limit generalization of results to the rest of the country.

An information bias is likely to be present due to lack of either motivation or incentive for respondents.

Sampling is particularly advantageous in studies in which the resources are scarce and the use of samples in epidemiologic research reduces the cost of gathering data. Deciding on sample size is a design issue with either statistical or practical implications, and it improves the study efficiency in terms of both efforts and resources. There is an important issue related to the sampling frame that is important to address. According to Kalsbeek and Heiss ⁽⁵⁸⁾, most frame problems fall into one of three categories, i.e. undercoverage, overcoverage and multiplicity. In the case of this study a potential problem present could be the undercoverage, which occurs when some members of the population are not linked to any entry of the frame.

Because sample was chosen from professionals physically present at the time that the study was conducted, people abroad, on sick leave, and women on maternity leave, for example, were excluded from sampling and some of these groups are likely to be among the youngest obstetricians. All subjects, not just a convenience sample, should have been surveyed as it was feasible. In the future, this approach will be taken.

Another study limitation is the lack of pilot testing.

Pilot testing can be done to inform methodological aspects of a study, or help work out procedures, such as:

- Checking the presentation of the selected instrument (e.g. whether a questionnaire is understandable, translation has been done accurately, questions are written in a clear non-offensive style, logically arranged, not missing things, etc)
- Working out the logistics of recruitment and/or administration – e.g. better to mail it, do it in a meeting, etc
- Estimating likely response rate (though pilot studies are smaller than definitive studies, therefore statistically less precise).

Pilot testing is not the same as formal validation. Many of the questions used in the questionnaire were adapted from existing English-language surveys, but we did not

conduct a formal validation study. This means that, even with our best efforts, we cannot be sure of the validity of the survey we actually administered.

Pilot testing can help detecting questions with skewed responses, questions which tend to be skipped, issues related to open-ended questions and extremely high correlations.^(26, 29) It is very important that this form of testing is conducted with members of the target audience for the survey.

Review by colleagues would allow the identification of other necessary questions, elimination of some questions, and different formats and presentation of questions to improve their understanding.

Interviews with target respondents would help making the questions clear and the interpretation homogeneous and also include all possible alternatives of response.

The items in this instrument were drawn from other questionnaires that have been widely used but for which no validation data are available. Face and content validation of the questionnaire by informal evaluations would ensure we were measuring the behaviors we believed important to assess. It is important to address whether it measures what it purports to measure, and also to know to what extent the data it captures is actually reflecting the truth accurately.

The techniques used to obtain open answers may not have been appropriate. Other

methodological approaches such as in-depth interviews and focus groups might have provided more varied information and better insights into the opinions and attitudes of professionals regarding cesarean section rates. Given the nature of the study, qualitative components may not have been sufficiently explored.

The analysis would have been strengthened by the inclusion of other statistical techniques such as linear regression to look at the correlation between variables and covariates when both are continuous variables, e.g. ideal CS rates and age, years of licensed as MD and years of accreditation as specialist.

In the logistic regression analysis, collinearity seems to be present. Collinearity occurs when two or more of the explanatory variables are correlated to the extent that they convey essentially the same information about the observed variation in the dependent variable. In the regression models containing age, years since received MD and years of accreditation as specialist are highly correlated ⁽⁸²⁾. Collinearity makes it very difficult to separate the effects of these variables statistically and analyses yield model coefficients with very large variances so that effect estimates may be highly unstable ⁽⁸⁸⁾.

Conducting multiple analyses may have led to inflated alpha levels and statistically significant results by chance, not because a bona fide association is present.

Conclusions

Future research should focus on trying to determine the ideal cesarean section rate. The WHO proposed rate of 15% ⁽¹⁰⁸⁾ could be out of date at this time, because a number of new indications are arising almost daily as a result of technological developments.

Obstetricians' opinions regarding potential measures to decrease this trend should also be a subject of investigation, even though the potential difficulties to conduct such trials are widely recognized. Randomized controlled trials conducted so far ^(5, 50, 101) have failed to show a truly effective intervention to reduce cesarean section rates to clinically significant levels.

One of the most important steps in changing behaviour is identifying barriers that hinder professionals in implementing interventions aimed at improving health care and patient outcomes. Future studies should focus on identifying the most important barriers and developing strategies to overcome them. According to the evidence, the effectiveness of tailored interventions remains uncertain and more rigorous trials are needed ⁽⁹¹⁾.

It is also important to design interventions to improve the knowledge translation into clinical practice. However, until new, well-designed and conducted trials are available, there are a number of interventions such as printed educational materials, educational outreach, audit and feedback, reminders and local opinion leaders that, if used

appropriately, could lead to important improvements in professional practice and patient outcomes.^(21, 43, 80)

References

1. Akasheh HF, Amarin V. Caesarean sections at Queen Alia Military Hospital, Jordan: a six-year review. *Eastern Mediterranean Health Journal* 2000;6(1):41-5.
2. Alfirevic Z, Devane D, Gyte GML. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. *Cochrane Database of Systematic Reviews* 2006, Issue 3. Art. No.: CD006066. DOI: 10.1002/14651858.CD006066.
3. Allen VM, O'Connell CM, Farrell SA, Baskett TF. Economic implications of method of delivery. *Am J Obstet Gynecol* 2005;193(1):192-7.
4. Al-Mufti R, McCarthy A, Fisk NM. Survey of obstetricians' personal preference and discretionary practice. *Eur J Obstet Gynecol Reprod Biol* 1997;73(1):1-4.
5. Althabe F, Belizan JM, Villar J, Alexander S, Bergel E, Ramos S, Romero M, Donner A, Lindmark G, Langer A, Farnot U, Cecatti JG, Carroli G, Kestler E; Latin American Caesarean Section Study Group. Mandatory second opinion to reduce rates of unnecessary caesarean sections in Latin America: a cluster randomised controlled trial. *Lancet* 2004;363(9425):1934-40.

6. Altman DA. Practical statistics for medical research. London: Chapman and Hall 1990. Chapter 10:229-76.
7. American College of Obstetricians and Gynaecologists. ACOG Committee on Obstetric Practice: Induction of labour for vaginal birth after caesarean delivery. Obstetrics & Gynecology 2002;99:679-80.
8. Aschengrau A, Seage GR. Essentials of epidemiology in Public Health. Boston: Jones and Bartlett Publishers 2003. Chapter 12:299-333.
9. Barros FC, Vaughan JP, Victora CG, Huttly SRA. Epidemic of caesarean sections in Brazil. The Lancet 1991;338:167-9.
10. Baskett TF, O'Connell CM. Severe obstetric maternal morbidity: a 15-year population-based study. J Obstet Gynaecol 2005;25(1):7.
11. Behague DP, Victora CG, Barros FC. Consumer demand for caesarean sections in Brazil: informed decision making, patient choice or social inequality? A population based birth cohort study linking ethnographic and epidemiological methods. BMJ 2002;324(7343):942-5.
12. Belizan JM, Althabe F, Barros FC, Alexander S. Rates and implications of cesarean sections in Latin America: ecological study. BMJ. 1999;319:1397-400.

13. Belizan M, Meier A, Althabe F, Codazzi A, Colomar M, Buekens P, Belizan J, Walsh J, Campbell MK. Facilitators and barriers to adoption of evidence-based perinatal care in Latin American hospitals: a qualitative study. *Health Educ Res.* 2007 Mar 29 [Epub ahead of print].
14. Bergholt T, Ostberg B, Legarth J, Weber T. Danish obstetricians' personal preference and general attitude to elective cesarean section on maternal request: a nation-wide postal survey. *Acta Obstet Gynecol Scand* 2004;83(3):262-6.
15. Bettes BA, Coleman VH, Zinberg S, Spong CY, Portnoy B, DeVoto E, Schulkin J. Cesarean Delivery on Maternal Request. Obstetrician–Gynecologists' Knowledge, Perception, and Practice Patterns. *Obstet Gynecol* 2007;109:57–66.
16. Borbas C, Morris N, McLaughlin B, Asinger R, Gobel F. The role of clinical opinion leaders in guideline implementation and quality improvement. *Chest.* 2000;118:24S-32S.
17. Browes S. Health psychology and sexual health assessment. *Nursing Standard* 2006; 21(5):35-39.
18. Calero JL, Santana F. Percepciones de un grupo de adolescentes sobre iniciación sexual, embarazo y aborto. *Rev. Cubana Salud Pública* 2001;27(1):50-7.

19. Cepicky P, Stembera Z, Zeman J, Lomickova T, Mandys F. When is it possible to meet the wish of a woman to terminate her labour by caesarean section? Eur J Obstet Gynecol Reprod Biol 1991;38(2):109-12.
20. Chaillet N, Dubé E, Dugas M, Audibert F, Tourigny C, Fraser WD, Dumont A. Evidence-based strategies for implementing guidelines in obstetrics: a systematic review. Obstet Gynecol 2006;108(5):1234-45.
21. Chaillet N, Dumont A. Evidence-based strategies for reducing cesarean section rates: a meta-analysis. Birth 2007;34(1):53-64.
22. Chalmers BE, McIntyre JA, Meyer D. South African obstetricians' views on caesarean section. S Afr Med J 1992;82(3):161-3.
23. Cisse CT, Faye EO, de Bernis L, Dujardin B, Diadhiou F. Cesarean sections in Senegal: coverage of needs and quality of services. Sante 1998;8(5):369-77.
24. Clement S. Psychological aspects of caesarean section. Best Practice & Research Clin Obstet Gynecol 2001;15(1):109-26.
25. Colectivo de autores. Manual de Diagnóstico y Tratamiento en Obstetricia y Ginecología. Ciudad de la Habana, Ciencias Médicas 1997: 480.

26. Collins D. Pretesting survey instruments: An overview of cognitive methods. *Quality of Life Research* 2003;12:229-38.
27. Cotzias CS, Paterson-Brown S, Fisk NM. Obstetricians say yes to maternal request for elective caesarean section: a survey of current opinion. *Eur J Obstet Gynecol Reprod Biol* 2001;97(1):15-6.
28. Devendra K, Arulkumaran S. Should doctors perform an elective caesarean section on request? *Ann Acad Med Singapore* 2003;32(5):577-81; quiz 582.
29. Dillman D. Mail and internet surveys: The tailored design. New York: John Wiley & Sons Inc. 2000. Chapter 3.
30. Dodd JM, Crowther CA, Huertas E, Guise JM, Horey D. Planned elective repeat caesarean section versus planned vaginal birth for women with a previous caesarean birth. *Cochrane Database of Systematic Reviews* 2004, Issue 4. Art. No.: CD004224. DOI: 10.1002/14651858.CD004224.pub2.
31. Doumit G, Gattellari M, Grimshaw J, O'Brien MA. Local opinion leaders: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 2007, Issue 1. Art. No.: CD000125. DOI: 10.1002/14651858.CD000125.pub3.

32. Dubay L, Kaestner R, Waidmann T. The impact of malpractice fears on caesarean section rates. *J Health Economics* 1999;18:491-522.
33. Eden KB, Hashima JN, Osterweil P, Nygren P, Guise JM. Childbirth preferences after cesarean birth: a review of the evidence. *Birth*. 2004 Mar;31(1):49-60.
34. Expert Advisory Group on Caesarean Section in Scotland. Report and recommendations to the Chief Medical Officer of the Scottish Executive Health Department. May 2001. Scottish Program for Clinical Effectiveness in Reproductive Health.
35. Faas-Fehervary P, Schwarz K, Bauer L, Melchert F. Caesarean section on demand: Influence of personal birth experience and working environment on attitude of German gynaecologists. *Eur J Obstet Gynecol Reprod Biol* 2005;122(2):162-6.
36. Farrell SA, Baskett TF, Farrell KD. The choice of elective cesarean delivery in obstetrics: a voluntary survey of Canadian health care professionals. *International Urogynecology Journal*. 2005 Sep-Oct;16(5):378-83.
37. Ferlie EB, Shortell AM. Improving the quality of health care in the United Kingdom and the United States: a framework of change. *The Milbank Quarterly* 2001;79(2):281-315.

38. Fishbein M, Hennessey M, Kamb M, Bolan GA, Hoxworth T, Iatesta M, Rhodes F, Zenilman JM, Project Respect Study Group. Using Intervention Theory to model factors influencing behavior change. *Evaluation and the Health Professions* 2001; 24(4): 363-84.
39. Foy R, Bamford C, Francis JJ, Johnston M, Lecouturier J, Eccles M, Steen N, Grimshaw J. Which factors explain variation in intention to disclose a diagnosis of dementia? A theory-based survey of mental health professionals. *Implement Sci.* 2007;2:31.
40. Ghatti C, Chan BK, Guise JM. Physicians' responses to patient-requested caesarean delivery. *Birth* 2004;31(4):280-4.
41. Goffman E. La presentación de la persona en la vida cotidiana. 1ª edición. Buenos Aires: Amorrortu 1997, Capítulo 3: 117-51.
42. Gonen R, Tamir A, Degani S. Obstetricians' opinions regarding patient choice in caesarean delivery. *Obstet Gynecol* 2002;99(4):577-80.
43. Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay C, Vale L, Whitty P, Eccles MP, Matowe L, Shirran L, Wensing M, Dijkstra R, Donaldson C.

Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Health Technol Assess* 2004;8(6):17-24.

44. Grimshaw JM, Santesso N, Cumpston M, Mayhew A, McGowan J. Knowledge for Knowledge Translation: The Role of the Cochrane Collaboration. *The Journal of Continuing Education in the Health Professions* 2006;26:55–62.
45. Groom KM, Paterson-Brown S, Fisk NM. Temporal and geographical variation in UK obstetricians' personal preference regarding mode of delivery. *Eur J Obstet Gynecol Reprod Biol* 2002;100(2):185-8.
46. Gülmezoglu AM, Langer A, Piaggio G, Lumbiganon P, Villar J, Grimshaw J. Cluster randomised trial of an active, multifaceted educational intervention based on the WHO Reproductive Health Library to improve obstetric practices. *BJOG* 2007;114(1):16-23.
47. Habiba M, Kaminski M, Da Frè M, Marsal K, Bleker O, Librero J, Grandjean H, Gratia P, Guaschino S, Heyl W, Taylor D, Cuttini M. Caesarean section on request: a comparison of obstetricians' attitudes in eight European countries. *BJOG* 2006;113(6):647-56.
48. Hess PE, Snowman CE, Wang J. Hypothermia after cesarean delivery and its reversal with lorazepam. *Int J Obstet Anesth* 2005;14(4):279-83.

49. Hofmeyr GJ, Kulier R. External cephalic version for breech presentation at term. Cochrane Database of Systematic Reviews 1996, Issue 1. Art. No.: CD000083. DOI: 10.1002/14651858.CD000083.
50. Horey D, Weaver J, Russell H. Information for pregnant women about caesarean birth. The Cochrane Database of Systematic Reviews 2004, Issue 1. Art. No.: CD003858.pub2. DOI: 10.1002/14651858.CD003858. pub2.
51. Hutton EK, Hofmeyr GJ. External cephalic version for breech presentation before term. Cochrane Database of Systematic Reviews 2006, Issue 1. Art. No.: CD000084. DOI: 10.1002/14651858.CD000084.pub2.
52. Irvine LM. Maternal request for caesarean section: is it obstetrician driven? J Obstet Gynaecol. 2001;21(4):373-374.
53. Jackson N, Paterson-Brown S. Physical sequelae of caesarean section. Best Practice & Research Clin Obstet Gynecol 2001;15(1):49-61.
54. Jacquemyn Y, Ahankour F, Martens G. Flemish obstetricians' personal preference regarding mode of delivery and attitude towards caesarean section on demand. Eur J Obstet Gynecol Reprod Biol 2003;111(2):164-6.

55. Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD. Audit and feedback: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 2006, Issue 2. Art. No.: CD000259. DOI: 10.1002/14651858.CD000259.pub2.
56. Johanson RB, El-Timini S, Rigby C, Young P, Jones P. Caesarean section by choice could fulfil the inverse care law. *Eur J Obstet Gynecol Reprod Biol.* 2001 Jul;97(1):20-2.
57. Johnson SR, Elkins TE, Strong C, Phelan JP. Obstetric decision-making: responses to patients who request cesarean delivery. *Obstetrics & Gynecology* 1986;67(6):847-50.
58. Kalsbeek W, Heiss G. Building bridges between populations and samples in epidemiological studies. *Ann Rev Public Health* 2000;21:147-69.
59. Kenton K, Brincat C, Mutone M, Brubaker L. Repeat cesarean section and primary elective cesarean section: recently trained obstetrician-gynecologist practice patterns and opinions. *Am J Obstet Gynecol* 2005;192(6):1872-5; discussion 1875-6.
60. Kravitz RL, Krackhardt D, Melnikow J, Franz CE, Gilbert WM, Zach A, Paterniti DA, Romano PS. Networked for change? Identifying obstetric opinion leaders and

assessing their opinions on caesarean delivery. Soc Sci Med. 2003 Dec;57(12):2423-34.

61. Krippendorff K. Content analysis: an introduction to its methodology. Newbury Park, CA, Sage 1980.

62. Kwee A, Cohlen BJ, Kanhai HH, Bruinse HW, Visser GH. Caesarean section on request: a survey in The Netherlands. Eur J Obstet Gynecol Reprod Biol 2004;113(2):186-90.

63. Land R, Parry E, Rane A, Wilson D. Personal preferences of obstetricians towards childbirth. Aust N Z J Obstet Gynaecol. 2001 Aug;41(3):249-52.

64. Lavender T, Kingdon C, Hart A, Gyte G, Gabbay M, Neilson JP. Could a randomised trial answer the controversy relating to elective caesarean section? National survey of consultant obstetricians and heads of midwifery. BMJ 2005;331(7515):490-1.

65. Lavender T, O'Brien P, Hart A. Effect of partogram use on outcomes for women in spontaneous labour at term. *Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD005461. DOI: 10.1002/14651858.CD005461.

66. Lede R. Versión cefálica externa: Comentario de la BSR (última revisión: 13 de Marzo de 2006). Biblioteca de Salud Reproductiva de la OMS, N° 9, Update Software Ltd, Oxford, 2006.
67. Liu S, Heaman M, Kramer MS, Demissie K, Wen SW, Marcoux S; Maternal Health Study Group of the Canadian Perinatal Surveillance System. Length of hospital stay, obstetric conditions at childbirth, and maternal readmission: a population-based cohort study. *Am J Obstet Gynecol* 2002;187(3):681-7.
68. MacCallum C. Explaining caesarean section in Salvador da Bahia, Brazil. *Sociology of Health & Illness* 2005;27(2):215-42.
69. MacDonald C, Pinion SB, MacLeod UM. Scottish female obstetricians' views on elective caesarean section and personal choice for delivery. *J Obstet Gynaecol* 2002;22(6):586-9.
70. MacKenzie IZ, Cooke I, Annan B. Indications for caesarean section in a consultant obstetric unit over three decades. *J Obstet Gynaecol* 2003;23(3):233-8.
71. Macones GA, Peipert J, Nelson DB, Odibo A, Stevens EJ, Stamilio DM, Pare E, Elovitz M, Sciscione A, Sammel MD, Ratcliffe SJ. Maternal complications with vaginal birth after cesarean delivery: a multicenter study. *Am J Obstet Gynecol* 2005;193(5):1656-62.

72. Mancuso A, Settineri S², Fanara G, De Vivo A, Caruso C, Fattori A, Lo Monaco I. Confidential survey on cesarean section on request: Obstetricians' personal experience in Sicily. *Acta Obstetricia et Gynecologica*. 2006; 85: 623-4.
73. McGurgan P, Coulter-Smith S, O' Donovan PJ. A national confidential survey of obstetrician's personal preferences regarding mode of delivery. *Eur J Obstet Gynecol Reprod Biol* 2001;97(1):17-9.
74. Mekbib TA, Teferi B. Caesarean section and foetal outcome at Yekatit 12 Hospital, Addis Abeba, Ethiopia, 1987-1992. *Ethiop Med J* 1994;32(3):173-9.
75. Michie S, Johnston M, Abraham C, Lawton R, Parker D, Walker A, "Psychological Theory" Group. Making psychological theory useful for implementing evidence based practice: a consensus approach. *Qual Saf Health Care* 2005;14(1):26-33.
76. Mugisho E, Dramaix M, Porignon D, Musubao E, Hennart P. Analysis of data routinely collected in the maternity ward of Rutshuru in the Democratic Republic of the Congo between 1980 and 1998. I. Maternal mortality and obstetrical interventions. *Sante* 2002;12(2):247-51.

77. National Collaborating Centre for Women's and Children's Health. Caesarean section. Clinical Guideline. April 2004. RCOG Press at the Royal College of Obstetricians and Gynaecologists, London:111-2.
78. O'Brien MA, Freemantle N, Oxman AD, Wolf F, Davis DA, Herrin J. Continuing education meetings and workshops: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews 2001, Issue 1. Art. No.: CD003030. DOI: 10.1002/14651858.CD003030.
79. Osis MJ, Cecatti JG, de Pádua KS, Faúndes A. Brazilian doctors' perspective on the second opinion strategy before a C-section. *Rev Saude Publica*. 2006;40(2):233-9.
80. Oxman AD, Thomson MA, Davis DA, Haynes RB. No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. *CMAJ* 1995 153:1423–31.
81. Oyegunle AO. Role of the anaesthetist in the prevention of maternal deaths in Caesarian Section. *Niger Med J* 1976 Jan;6(1):106-11.
82. Pagano M, Gauvreau K. Principles of biostatistics. California: Duxbury 2000. 2nd edition. Chapter 6:125-61.

83. Perkins MB, Jensen PS, Jaccard J, Gollwitzer P, Oettingen G, Pappadopoulos E, Hoagwood KE. Applying theory-driven approaches to understanding and modifying clinicians' behavior: what do we know? *Psychiatr Serv* 2007;58(3):342-8.
84. Petrou S, Henderson J, Glazener C. Economic aspects of caesarean section and alternative modes of delivery. *Best Practice & Research Clin Obstet Gynecol* 2001;15(1):145-63.
85. Puentes-Rosas E, Gomez-Dantes O, Garrido-Latorre F. Tendencias, niveles y factores asociados. *Salud Publica Mex* 2004 Jan-Feb;46(1):16-22.
86. Reime B, Klein MC, Kelly A, Duxbury N, Saxell L, Liston R, Prompers FJ, Entjes RS, Wong V. Do maternity care provider groups have different attitudes towards birth? *BJOG*. 2004 Dec;111(12):1388-93.
87. Robson MS. Can we reduce the caesarean section rate?. *Best Pract Res Clin Obstet Gynecol* 2001 Feb;15(1):179-94.
88. Rothman KJ, Greenland S. *Modern epidemiology*. Philadelphia: Lippincott Williams and Wilkins 1998. 2nd edition. Chapter 14:231-52.
89. Rowe-Murray HJ, Fisher JR. Operative intervention in delivery is associated with compromised early mother-infant interaction. *BJOG* 2001 Oct;108(10):1068-75.

90. Sanchez-Ramos L, Moorhead R, Kaunitz AM. Cesarean section rates in teaching hospitals: a national survey. *Birth* 1994;21(4):194-7.
91. Shaw B, Cheater F, Baker R, Gillies C, Hearnshaw H, Flottorp S, Robertson N. Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD005470. DOI: 10.1002/14651858.CD005470.
92. Simoes E, Kunz S, Bosing-Schwenkglenks M, Schmahl FW. Association between method of delivery and puerperal infectious complications in the perinatal database of Baden-Wurtemberg 1998-2001. *Gynecol Obstet Invest* 2005;60(4):213.
93. Simpson KR, Thorman KE. Obstetric "conveniences": elective induction of labor, caesarean birth on demand, and other potentially unnecessary interventions. *J Perinat Neonatal Nurs* 2005;19(2):134-44.
94. Skalkidis Y, Petridou E, Papathoma E, Revinthi K, Tong D, Trichopoulos D. Are operative delivery procedures in Greece socially conditioned? *Int J Qual Health Care*. 1996;8(2):159-65.
95. Skinner BF. *La conducta de los organismos*. 7ª edición. Barcelona: Fontanella SA 1975: 34-6.

96. Steyn PS, Odendaal HJ, Steyn DW. Trends in caesarean sections at Tygerberg Hospital, South Africa: a 20 year experience. *Cent Afr J Med* 1998;44(9):219-23.
97. Tangcharoensathien V, Lertiendumrong J, Hanvoravongchai P, Mills A, Bennett S. Caesarean Deliveries in Thailand: Cause for Concern Regional Health Forum WHO South-East Asia Region (Volume 6, Number 2).
98. Tugwell P; Robinson V; Grimshaw J; Santesso N. Systematic reviews and knowledge translation. *Bull World Health Organ* 2006;84(8):643-51.
99. Urrio TF. Maternal deaths at Songea Regional Hospital, southern Tanzania. *East Afr Med J* 1991;68(2):81-7.
100. Usha Kiran TS, Jayawickrama NS. Who is responsible for the rising caesarean section rate? *J Obstet Gynaecol.* 2002 Jul;22(4):363-5.
101. Villar J, Carroli G, Khan-Neelofur D, Piaggio G, Gülmezoglu M. Patterns of routine antenatal care for low-risk pregnancy. *The Cochrane Database of Systematic Reviews* 2001, Issue 4. Art. No.: CD000934. DOI: 10.1002/14651858.CD000934.

102. Villar J, Valladares E, Wojdyla D, Zavaleta N, Carroli G, Velazco A, Shah A, Campodónico L, Bataglia V, Faundes A, Langer A, Narváez A, Donner A, Romero M, Reynoso S, de Pádua KS, Giordano D, Kublickas M, Acosta A; WHO 2005 global survey on maternal and perinatal health research group. Caesarean delivery rates and pregnancy outcomes: the 2005 WHO global survey on maternal and perinatal health in Latin America. *Lancet* 2006;367(9525):1819-29.
103. Vimercati A, Greco P, Kardashi A, Rossi C, Loizzi V, Scioscia M, Loverro G. Choice of cesarean section and perception of legal pressure. *J Perinat Med* 2000;28(2):111-7.
104. Walraven GE. WHO partograph. *Lancet* 1994;344:617.
105. Wax JR, Cartin A, Pinette MG, Blackstone J. Patient choice cesarean--the Maine experience. *Birth* 2005;32(3):203-6.
106. Weaver JJ, Statham H, Richards M. Are There "Unnecessary" Cesarean Sections? Perceptions of women and obstetricians about cesarean sections for nonclinical indications. *Birth* 2007;34 (1): 32–41.
107. Wen SW, Rusen ID, Walker M, Liston R, Kramer MS, Baskett T, Heaman M, Liu S; Maternal Health Study Group, Canadian Perinatal Surveillance System. Comparison of maternal mortality and morbidity between trial of labor and elective

- cesarean section among women with previous cesarean delivery. *Am J Obstet Gynecol* 2004;191(4):1263-9.
108. World Health Organization. Appropriate technology for birth. *Lancet* 1985;2(8452):436–467.
109. World Health Organization. Partograph in the management of labour. *Lancet* 1994;343:1399-404.
110. Wright JB, Wright AL, Simpson NA, Bryce FC. A survey of trainee obstetricians preferences for childbirth. *Eur J Obstet Gynecol Reprod Biol* 2001;97(1):23-5.
111. Wu JM, Hundley AF, Visco AG. Elective primary cesarean delivery: attitudes of urogynecology and maternal-fetal medicine specialists. *Obstet Gynecol* 2005;105(2):301-6.
112. www.sld.cu/sistema_de_salud/ssalud.html (Infomed. Portal de Salud de Cuba; for details about the Cuban healthcare system).
113. Yamane T. Elementary sample theory. La Habana, Revolucionaria 1970:99-100.

APPENDIX 1

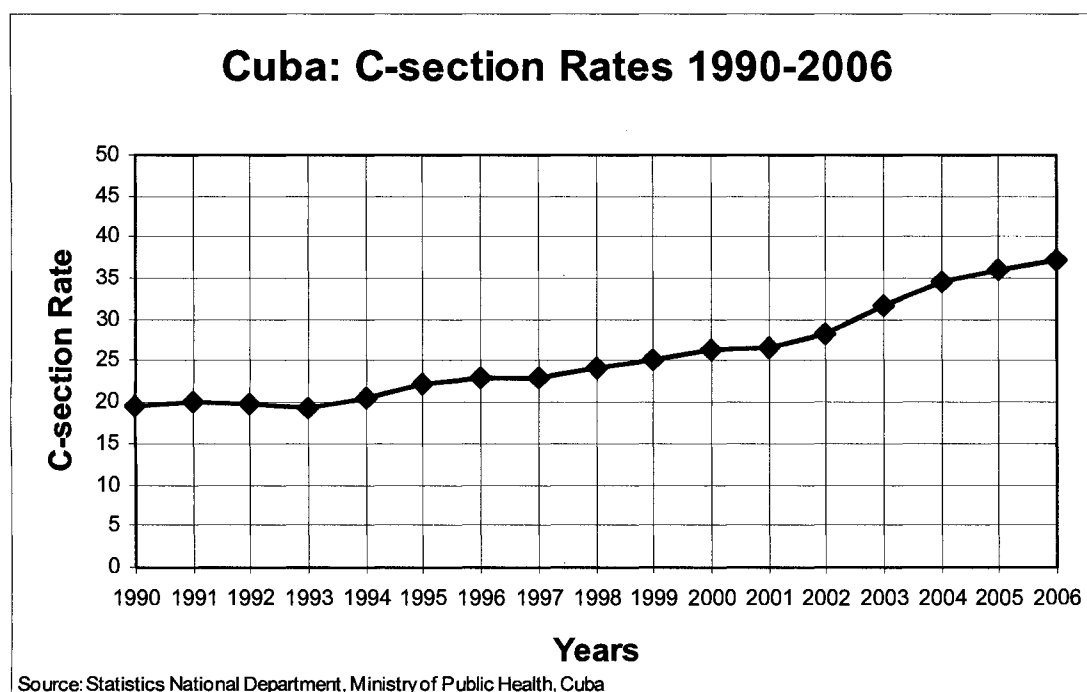
Tables and Graphs

Table 1.1. Cesarean section rates in Cuba, from 1990 to 2006

Year	1990	1991	1992	1993	1994	1995	1996	1997
Births	188373	175543	158789	153536	148493	148394	141335	153881
Vaginal	151730	140064	127443	123801	118049	115279	108924	118472
C-sections	36643	35367	31346	29735	30444	33115	32431	35409
C-sect. rate	19.45	20.15	19.74	19.37	20.50	22.32	22.95	23.01

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006
Births	152305	151973	144740	139711	142202	137671	127987	121475	111909
Vaginal	115564	113926	106473	102625	102169	94270	83783	77824	70335
C-sections	36741	38047	38267	37086	40033	43402	44204	43651	41574
C-sect. rate	24.12	25.04	26.44	26.54	28.15	31.53	34.54	35.93	37.15

Graph 1.1. Cesarean section rates in Cuba, from 1990 to 2006



Graph 1.2. Births in Cuba, from 1990 to 2006



Table 3.1. Sources for selected variables

Variable	Original Source
Gender, age	Al-Mufti ⁽⁴⁾ , Bergholt ⁽¹⁴⁾ , Cepicky ⁽¹⁹⁾ , Chalmers ⁽²²⁾ , Cotzias ⁽²⁷⁾ , Faas-Fehervary ⁽³⁵⁾ , Ghetti ⁽⁴⁰⁾ , Gonen ⁽⁴²⁾ , Groom ⁽⁴⁵⁾ , Jacquemin ⁽⁵⁴⁾ , Kenton ⁽⁵⁹⁾ , Kravitz ⁽⁶⁰⁾ , Kwee ⁽⁶²⁾ , Land ⁽⁶³⁾ , MacDonald ⁽⁶⁹⁾ , McGurgan ⁽⁷³⁾ , Reime ⁽⁸⁶⁾ , Usha Kiran ⁽¹⁰⁰⁾ , Vimercati ⁽¹⁰³⁾ , Wright ⁽¹¹⁰⁾ , Wu ⁽¹¹¹⁾
Type of institution	Al-Mufti ⁽⁴⁾ , Bergholt ⁽¹⁴⁾ , Cotzias ⁽²⁷⁾ , Faas-Fehervary ⁽³⁵⁾ , Ghetti ⁽⁴⁰⁾ , Gonen ⁽⁴²⁾ , Kenton ⁽⁵⁹⁾ , Kravitz ⁽⁶⁰⁾ , Land ⁽⁶³⁾ , McGurgan ⁽⁷³⁾ , Usha Kiran ⁽¹⁰⁰⁾ , Vimercati ⁽¹⁰³⁾ , Wu ⁽¹¹¹⁾
Professional status	Al-Mufti ⁽⁴⁾ , Gonen ⁽⁴²⁾ , Kenton ⁽⁵⁹⁾ , Kravitz ⁽⁶⁰⁾ , Kwee ⁽⁶²⁾ , Land ⁽⁶³⁾ , MacDonald ⁽⁶⁹⁾ , McGurgan ⁽⁷³⁾ , Reime ⁽⁸⁶⁾ , Usha Kiran ⁽¹⁰⁰⁾ , Vimercati ⁽¹⁰³⁾
Years licensed as GP	Ghetti ⁽⁴⁰⁾ , Kenton ⁽⁵⁹⁾ , McGurgan ⁽⁷³⁾ , Vimercati ⁽¹⁰³⁾
Years certified as ob/gyn specialist	Bergholt ⁽¹⁴⁾ , Cotzias ⁽²⁷⁾ , Gonen ⁽⁴²⁾ , Wright ⁽¹¹⁰⁾ , Wu ⁽¹¹¹⁾
Parenting	Bergholt ⁽¹⁴⁾ , Faas-Fehervary ⁽³⁵⁾ , MacDonald ⁽⁶⁹⁾ , Wu ⁽¹¹¹⁾
Current obstetrical practice	Kenton ⁽⁵⁹⁾ , Wu ⁽¹¹¹⁾
Knowledge about cesarean section rate	Usha Kiran ⁽¹⁰⁰⁾
About ideal cesarean section rate	Chalmers ⁽²²⁾
Causes of increase in cesarean section rate	Reime ⁽⁸⁶⁾ , Usha Kiran ⁽¹⁰⁰⁾
Proposed intervention to reduce cesarean section rate	Kravitz ⁽⁶⁰⁾ , Reime ⁽⁸⁶⁾ , Usha Kiran ⁽¹⁰⁰⁾
Attitudes towards cesarean section if obstetrician/his partner were pregnant	Al-Mufti ⁽⁴⁾ , Cepicky ⁽¹⁹⁾ , Chalmers ⁽²²⁾ , Gonen ⁽⁴²⁾ , Groom ⁽⁴⁵⁾ , Jacquemin ⁽⁵⁴⁾ , Johanson ⁽⁵⁶⁾ , Land ⁽⁶³⁾ , MacDonald ⁽⁶⁹⁾
Potential interventions to reduce cesarean section rate	Kravitz ⁽⁶⁰⁾ , Reime ⁽⁸⁶⁾ , Usha Kiran ⁽¹⁰⁰⁾
Attitudes towards cesarean section if obstetrician/his partner were pregnant	Al-Mufti ⁽⁴⁾ , Cepicky ⁽¹⁹⁾ , Chalmers ⁽²²⁾ , Gonen ⁽⁴²⁾ , Groom ⁽⁴⁵⁾ , Jacquemin ⁽⁵⁴⁾ , Johanson ⁽⁵⁶⁾ , Land ⁽⁶³⁾ , MacDonald ⁽⁶⁹⁾

APPENDIX 2

Questionnaire

(Spanish version)

ACTITUDES Y OPINIONES DE GINECOBSTETRAS SOBRE EL INCREMENTO DE LAS OPERACIONES DE CESÁREA.

HOJA 1

1- Hospital: ☐ 1) R. González-Coro
☐ 2) A. Arias
☐ 3) E. Hernández
☐ 4) 10 Octubre
☐ 5) Enrique Cabrera

2.- Edad: (años cumplidos).

3.- Sexo: ☐ 1) Femenino
☐ 2) Masculino

4.- Clasificación Profesional:
☐ 1) Residente (**SALTE A LA PREG. 6**)
☐ 2) Especialista 1^{er} grado.
☐ 3) Especialista 2^{do} grado.

5.- Categoría Docente:
☐ 1) Prof. Consultante
☐ 2) Prof. Titular
☐ 3) Prof. Auxiliar
☐ 4) Prof. Asistente
☐ 5) Prof. Instructor
☐ 6) Ninguna

6.- Años de graduado como Médico/a: (SI
ES RESIDENTE, SALTE A LA PREGUNTA 8).

7.- Años de graduado como Especialista:

8.-¿Cuántos hijos tiene? **ESCRÍBALO EN NÚMEROS,
USE 0 PARA INDICAR QUE NO TIENE HIJOS. (SI NO
TIENE HIJOS, IR A LA PREGUNTA 10).**

9.- Forma del parto (1= Sí; 2= No; 9= no
corresponde)

- ☐ 1) Vaginal Eutócico
☐ 2) Vaginal Instrumentado
☐ 3) Cesárea Primitiva
☐ 4) Cesárea Iterada

10.- ¿En la actualidad realiza personalmente y/o
participa en la toma de decisiones de
partos/cesáreas?

☐ 1) Si ☐ 2) No

11.- ¿Usted considera que la tasa de cesárea en su
Institución está:

- ☐ 1) No sé
☐ 2) Alta
☐ 3) Más o menos adecuada
☐ 4) Baja?

(Si la respuesta es "no sé" o "más o menos
adecuada", salte a la preg. 14).

12. - ¿Usted considera que la tasa de cesáreas en su
Institución debería:

☐ 1) Disminuir ☐ 2) Permanecer igual ☐ 3) Aumentar?

13.- ¿Cuál Usted considera debe ser la tasa "correcta"
de cesáreas? Por favor, escríbala en porcentaje.

14.- En el año 1990, la tasa de cesáreas en Cuba fue de
19,5% y en el año 2004, dicha tasa fue de 34,5%. Las
siguientes son razones potenciales para explicar este
aumento en las tasas de cesárea. Por favor, clasifique
cada ítem en una escala de 1 a 5.

14.1.- El aumento de las tasas de cesárea se debe al
aumento de las distocias obstétricas ☐ (1= **ESTOY MUY
EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3=
NEUTRAL, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY
DE ACUERDO**)

14.2.- El aumento de las tasas de cesárea se debe a la
introducción de nuevas tecnologías ☐ (1= **ESTOY MUY
EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3=
NEUTRAL, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY
DE ACUERDO**)

14.3.- El aumento de las tasas de cesárea se debe a
presiones administrativas ☐ (1= **ESTOY MUY EN
DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3=
NEUTRAL, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY
DE ACUERDO**)

14.4.- El aumento de las tasas de cesárea se debe a la
demanda de las mujeres/ los familiares ☐ (1= **ESTOY
MUY EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**,
3= **NEUTRAL**, 4= **ESTOY DE ACUERDO**, 5= **ESTOY
MUY DE ACUERDO**)

14.5.- El aumento de las tasas de cesárea se debe al
miedo a demandas legales ☐ (1= **ESTOY MUY EN
DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3=
NEUTRAL, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY
DE ACUERDO**)

14.6.- El aumento de las tasas de cesárea se debe al gran
volumen de casos a atender en el salón de partos cuando
esta de guardia ☐ (1= **ESTOY MUY EN DESACUERDO**,
2= **ESTOY EN DESACUERDO**, 3= **NEUTRAL**, 4= **ESTOY
DE ACUERDO**, 5= **ESTOY MUY DE ACUERDO**)

**ACTITUDES Y OPINIONES DE GINECOBSTETRAS SOBRE
EL INCREMENTO DE LAS OPERACIONES DE CESÁREA.**

HOJA 2

14.7.- El aumento de las tasas de cesárea se debe al gran número de cesáreas previas ☐ (1= **ESTOY MUY EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3= **NEUTRAL**, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY DE ACUERDO**)

14.8.- El aumento de las tasas de cesárea se debe al aumento de la edad de las mujeres ☐ (1= **ESTOY MUY EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3= **NEUTRAL**, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY DE ACUERDO**)

14.9.- Otra ☐ (1= **Sí**, 2= **No**)

14.10. – Si otra, por favor dé detalles

15. – Las siguientes, son intervenciones potenciales que pudieran ser útiles para disminuir las tasas de cesárea. Por favor, clasifique cada ítem en una escala de 1 a 5

15.1.- Aplicar el partograma en todos los trabajos de parto pudiera ser una intervención útil para disminuir las tasas de cesárea ☐ (1= **ESTOY MUY EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3= **NEUTRAL**, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY DE ACUERDO**)

15.2.- Solicitar una segunda opinión pudiera ser una intervención útil para disminuir las tasas de cesárea ☐ (1= **ESTOY MUY EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3= **NEUTRAL**, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY DE ACUERDO**)

15.3.- Realizar la versión cefálica externa pudiera ser una intervención útil para disminuir las tasas de cesárea ☐ (1= **ESTOY MUY EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3= **NEUTRAL**, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY DE ACUERDO**)

15.4.- Intentar el parto vaginal en pacientes con una cesárea anterior pudiera ser una intervención útil para disminuir las tasas de cesárea ☐ (1= **ESTOY MUY EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3= **NEUTRAL**, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY DE ACUERDO**)

15.5.- Tomar las decisiones independientemente de la demanda de las mujeres/los familiares pudiera ser una intervención útil para disminuir las tasas de cesárea ☐ (1= **ESTOY MUY EN DESACUERDO**, 2= **ESTOY EN DESACUERDO**, 3= **NEUTRAL**, 4= **ESTOY DE ACUERDO**, 5= **ESTOY MUY DE ACUERDO**)

15.6.- Otra ☐ (1= **Sí**, 2= **No**)

15.7. - Si otra, por favor dé detalles

16.- En el caso hipotético de que usted o su compañera estuviera embarazada por primera vez, ¿usted escogería/recomendaría una cesárea electiva para usted o su compañera, asumiendo que se trata de un embarazo a término, no complicado, con feto único en cefálica, con un peso fetal $\leq$ 3600 g?

☐ 1) Si☐ 2) No

16.1.- ¿Por qué?

17.- ¿Usted consideraría intentar un parto vaginal en una paciente con un embarazo a término, no complicado, con feto único en cefálica, con un peso fetal $\leq$ 3600 g, con una cesárea anterior?

☐ 1) Si☐ 2) No

17.1.- ¿Por qué?

18.- En el caso hipotético de que una paciente embarazada por primera vez, ¿usted realizaría una cesárea electiva si ella lo solicita, asumiendo que se trata de un embarazo a término, no complicado, con feto único en cefálica, con un peso fetal $\leq$ 3600 g?

☐ 1) Si☐ 2) No

18.1.- ¿Por qué?

Questionnaire

(English version)

**Survey on Attitudes and Opinions Regarding the Cesarean Section of Obstetricians
from the City of Havana, Cuba**

1- Hospital: ☐ R. Glez-Coro ☐ A. Arias ☐ E. Hdez ☐ 10 Octubre ☐ Enrique Cabrera

2. - Age: (last birthday)

3. - Sex: ☐ 1) Female ☐ 2) Male

4. - Professional Status:

☐ 1) Resident (*Go to Question 6*) ☐ 2) 1st Grade Specialist ☐ 3) 2nd Grade Specialist

5. - Teaching Grade:

- | | |
|--|---|
| ☐ 1) Consultant Professor | ☐ 4) Assistant Professor |
| ☐ 2) Titular Professor | ☐ 5) Instructor |
| ☐ 3) Auxiliary Professor | ☐ 6) None |
| ☐ 4) Assistant Professor | |
| ☐ 5) Instructor | |
| ☐ 6) None | |

6. - Years of licensed as Medical Doctor:
(If Resident, please go to Question 8)

7. - Years of received as Specialist:

8. - How many children de you have? Write in the number, use 0 to indicate no children
(if no children, please go to question 10)

9. - Form of delivery in previous birth (if any)

- ☐ 1) Vaginal eutocic
- ☐ 2) Vaginal instrumental
- ☐ 3) First Cesarean section
- ☐ 4) Iterative cesarean section

10. - At present, do you personally assist and/or take part in decision making regarding deliveries/cesarean section?

☐ 1) Yes

☐ 2) No

11. - Do you consider the cesarean section rate in your Institution to be

☐ 1) I don't know

☐ 2) High

☐ 3) About right

☐ 4) Low?

(If your answer is either "I don't know" or "about right", please go to Question 14)

12. - Do you consider the cesarean section rate in your Institution should

☐ 1) Decrease

☐ 2) Stay the same

☐ 3) Increase

13. - What do you consider to be the "appropriate" cesarean section rate? Please, write in percentage

%

14. - In 1990, the caesarean section rate in Cuba was 19.5%. In 2004, such rate was 34.5%. The following are potential reasons to explain the increase in cesarean section rates. Please, rank each item in a scale from 1 to 5, where:

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐

14.1 The increase in cesarean section rates is due to the increase in obstetric dystocias

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐

14.2 The increase in cesarean section rates is due to the introduction of new technologies

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐

14.3 The increase in cesarean section rates is due to administrative pressures

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐

14.4 The increase in cesarean section rates is due to women/relatives demand

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐

14.5 The increase in cesarean section rates is due to fear of litigation

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 14.6 The increase in cesarean section rates is due to the great volume of cases to assist at the delivery room when you are at call

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 14.7 The increase in cesarean section rates is due to a high number of previous cesarean sections

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 14.8 The increase in cesarean section rates is due to an increase in the women's age

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 14.9 Other

1) Yes

2) No

14.10 - If other, please be detailed

15. - The following are potential interventions that could be useful to decrease the cesarean section rates. Please, rank each item in a scale from 1 to 5

☐ 15.1 To apply the partograph in all the deliveries could be a useful intervention to decrease the cesarean section rates

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 15.2 To ask for a second opinion could be a useful intervention to decrease the cesarean section rates

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 15.3 To perform an external cephalic version could be a useful intervention to decrease the cesarean section rates

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 15.4 To try a vaginal delivery in patients with a previous cesarean section could be a useful intervention to decrease the cesarean section rates

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 15.5 To make your decisions regardless women/ relatives demand could be a useful intervention to decrease the cesarean section rates

1: strongly disagree 2: disagree 3: neutral 4: agree 5: strongly agree

☐ 15.6 Other

1) Yes

2) No

15.7. - If other, please, be detailed

16.- In the hypothetical case that you or your partner were pregnant for the first time, would you choose/recommend an elective cesarean section for yourself or your partner, assuming a term, uncomplicated, singleton, cephalic pregnancy with weight ≤ 3600 g?

☐ 1) Yes

☐ 2) No

16.1. - Why?

Page 3/417. - Would you consider to try a vaginal delivery in a patient with a term, uncomplicated, singleton, cephalic pregnancy with weight ≤ 3600 g, with a previous cesarean section?

☐ 1) Yes

☐ 2) No

17.1. - Why?

18. - In the hypothetical case that a patient were pregnant for the first time, would you perform an elective Cesarean section if she asks for it, assuming a term, uncomplicated, singleton, cephalic pregnancy with weight ≤ 3600 g?

☐ 1) Yes

☐ 2) No

18.1. - Why?

APPENDIX 3

Ethical Approvals

Ciudad de La Habana, 18 de Junio del 2006
"Año de la Revolución Energética en Cuba"

Aval

En la Ciudad de La Habana a los 18 días del mes de Julio del 2006. después de analizar y discutir en el Consejo Científico del Hospital Ginecobstétrico Docente "Ramón González Coro" con la asistencia del 66% de sus miembros el Proyecto **"Opiniones y Actitudes de los Especialistas en Ginecología y Obstetricia de la Ciudad de La Habana sobre la Operación Cesárea"** presentado por el Dr. Juan Carlos Vázquez del Instituto Nacional de Endocrinología, como responsable del mismo. Se determinó que el proyecto es importante para conocer algunos aspectos y opiniones sobre el tema de interés para el trabajo de la Especialidad, además de cumplir la metodología orientada por el CITMA por lo que se considera pertinente su realización.

Prof. Lema~~y~~ Valdés Amador
Presidente

Hospital Docente Gineco-Obstétrico "América Arias"
Vice-Dirección de Investigaciones

Ciudad de la Habana, 9 de agosto de 2006
"Año de la Revolución Energética en Cuba"

A quien pueda interesar:

El Comité Científico del Hospital Docente Gineco-Obstétrico "América Arias" revisó y analizó el Proyecto de Investigación "Opiniones y Actitudes de los Especialistas en Ginecología y Obstetricia de la Ciudad de la Habana sobre la Operación Cesárea", de los investigadores principales Dr. Juan Carlos Vazquez Niebla y MSc. Jorge Luis Calero Ricardo del Instituto Nacional de Endocrinología, que será aplicado en varios hospitales maternos de la provincia Ciudad de La Habana.

El Comité Científico consideró factible su aplicación en el Centro y no encontró inconvenientes ni recomendaciones que hacer para dicha aplicación.

Sin otro asunto que tratar,

Dr. Ubaldo Farnot Cardoso
Presidente Consejo Científico



Dr. Juan ~~Castell~~ Moreno
Secretario Consejo Científico

Ciudad de la Habana, 5 de octubre de 2006
"Año de la Revolución Energética en Cuba"

AVAL

En Ciudad de la Habana, a los 5 días del mes de octubre de 2006, después de analizar y discutir en el Consejo Científico del Hospital Gineco-Obstétrico Docente "Eusebio Hernández", con la presencia de sus miembros, el Proyecto "Opiniones y actitudes de los Especialistas en Ginecología y Obstetricia de la Ciudad de la Habana sobre la operación cesárea", presentado por el Dr. Juan Carlos Vazquez, del Instituto Nacional de Endocrinología, como responsable del mismo, se determinó que el proyecto es importante para conocer algunos aspectos y opiniones sobre el tema de interés para el trabajo de la Especialidad, además de cumplir la metodología orientada, por lo que se considera pertinente su realización.

Profesora Sonia Aguila Setien
Presidente

Ciudad de la Habana, 2 de octubre de 2006
"Año de la Revolución Energética en Cuba"

AVAL

En Ciudad de la Habana, a los 2 días del mes de octubre de 2006, después de analizar y discutir en el Consejo Científico del Hospital Docente Materno-Infantil "10 de Octubre", con la presencia de sus miembros, el Proyecto "Opiniones y actitudes de los Especialistas en Ginecología y Obstetricia de la Ciudad de la Habana sobre la operación cesárea", presentado por el Dr. Juan Carlos Vazquez, del Instituto Nacional de Endocrinología, como responsable del mismo, se determinó que el proyecto es importante para conocer algunos aspectos y opiniones sobre el tema de interés para el trabajo de la Especialidad, además de cumplir la metodología orientada, por lo que se considera pertinente su realización.

Profesora Norma Silva
Presidente

Ciudad de la Habana, 16 de noviembre de 2006
"Año de la Revolución Energética en Cuba"

AVAL

En Ciudad de la Habana, a los 16 días del mes de noviembre de 2006, después de analizar y discutir en el Consejo Científico del Hospital General Docente "Enrique Cabrera", con la presencia de sus miembros, el Proyecto "Opiniones y actitudes de los Especialistas en Ginecología y Obstetricia de la Ciudad de la Habana sobre la operación cesárea", presentado por el Dr. Juan Carlos Vazquez, del Instituto Nacional de Endocrinología, como responsable del mismo, se determinó que el proyecto es importante para conocer algunos aspectos y opiniones sobre el tema de interés para el trabajo de la Especialidad, además de cumplir la metodología orientada, por lo que se considera pertinente su realización.

Profesor Hector Machado
Presidente