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Clinicians' views regarding caesarean section rates in Switzerland: A cross-sectional web-based survey

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ABSTRACT

Objective: The caesarean section (CS) rate in Switzerland is currently 32 %, well above the WHO recommended rate of 15 %. The study aims were three-fold: to explore the perception of this high rate among Swiss obstetrics-gynecology (Ob-Gyn) professionals; to assess the factors associated with a perception of a too high national CS rate; and to describe professionals' opinions on measures to reduce this rate.

Study design: A cross-sectional study was conducted between 1 May and 30 June 2021 using an online questionnaire sent to Ob/Gyn physicians and midwives at a university hospital and members of the Swiss Conference of Heads of Ob/Gyn Divisions. Survey participation was voluntary. The main outcome was the belief that CS was high. Associations were explored between different factors and the main outcome with logistic regression. Results were presented as odds ratios (OR) with 95 % confidence intervals (CIs). Multivariate logistic regression included adjustments for age, gender, place of work and profession.

Results: Of 226 health professionals invited, 188 completed the questionnaire (83.2 % participation rate). Among respondents, 50.3 % (n = 94) were Ob/Gyn physicians and 49.7 % were midwives (n = 93); 77.1 % were women (n = 145). Most participants (74.7 % [n = 139]) considered the Swiss CS rate as too high and that it should be reduced (79 % [n = 147]) but, notably, they considered their own CS rate as correct (71.9 % [n = 123]). Improving patient education (57.5 % [n = 108]) and professional training (54.8 % [n = 103]) were considered as strategies to reduce this rate. In multivariate analysis, only length of professional experience was significantly associated with a higher likelihood of considering the CS rate as too high (OR 3.07, 95 % CI 1.01–9.30; p = 0.047). When specialty was added in the model, the length of professional experience disappeared and the perception of having a too high CS rate was associated with being a midwife and obstetrician rather than a gynecologist (OR 3.62, 95 % CI 1.72–7.63; p = 0.001).

Conclusions: Clinicians, particularly obstetricians, believed that the current rate of CS in Switzerland was too high and that actions were needed to reduce this rate. Improving patient education and professional training were considered as the main strategies to be explored.

1. Introduction

Caesarean section (CS) is a surgical intervention of proven efficacy to reduce the mortality of mothers and unborn children in the presence of obstetric complications [1]. The use of CS with no medical indication has not shown any benefits and can be even considered as harmful, as well as a waste of human and financial resources [2]. However, an important increase in the use of CS has been observed over the last decades. In 1985, the World Health Organisation (WHO) stated that the maximum rate of CS should be around 10–15 % [3]. Despite this recommendation, the use of CS has continued to increase significantly, even doubling between 2000 and 2015 [2,4]. The average use of CS worldwide as mode of birth is now estimated at approximately 30%, with peaks exceeding 50% in Brazil, Bangladesh, Cyprus, Turkey, Egypt and the Dominican Republic [2,4,5].

Unfortunately, no consensus exists about the optimal rate of CS

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within the scientific community as it is clearly linked to local case mix. In addition, the ideal threshold established by WHO has been highly criticised as the cut-off was determined at country level and not at the level of each individual healthcare facility, which would reflect more accurately the case mix. A recent analysis of maternal and foetal outcomes by birth mode concluded that a CS rate > 20 % was no longer associated with a benefit in reducing maternal and neonatal morbidity and was shown to even negatively impact on maternal and neonate outcomes [6].

In Switzerland, the latest official data from the Federal Office of Public Health reported that 32.0 % of births were performed by CS in 2019 [7]. This route of delivery was used more frequently among women with private health insurance (45.6 %) and those over 40 years old (50.7 %) [8]. There were also cantonal disparities with large variations in the CS rate, ranging from 19.5 % in Jura to 39.1 % in Zug. Of note, Scandinavian countries have recorded CS rates < 20 % and similar numbers for maternal and neonatal health outcomes as in Switzerland [9].

CS overuse represents an important economic burden. With the rise in healthcare costs and health insurance premiums exerting increasing financial pressure on Swiss households, the Federal Council mandated the Swiss Society of Gynecology and Obstetrics (SGGG) in 2013 to draw up interdisciplinary recommendations related to evidence-based indications for CS delivery [10]. In response to this mandate, the SGGG published a comprehensive report in 2015 on Swiss practices and concluded that 70–90 % of CS performed were based on poor indications. Current recommendations for obstetric professionals encourage the establishment of an inter-hospital monitoring system to favour benchmarking, thus potentially leading to a decrease in unnecessary CS [11].

The rate of CS is affected by multiple intertwined factors such as population characteristics (maternal age, body mass index, comorbidities, etc.), local resources, training on complex deliveries, hospital protocols, political decisions, the health system, cultural background, medico-legal climate, and threshold tolerance to risk taking [12–14]. The importance of individual factors varies according to the context of reference. For example, lack of resources is the main factor in developing countries, while in developed countries such as Switzerland, the population characteristics and hospital policy choices are more relevant [4,15].

This study aims to evaluate the perception of obstetric-gynecology (Ob/Gyn) health professionals regarding the rate of CS in Switzerland, to assess the factors associated with the perception of a too high CS rate and, finally, to describe professionals' opinions regarding possible strategies to improve the situation.

2. Materials and methods

This cross-sectional study was conducted between 1 May and 30 June 2021 among Ob/Gyn physicians and midwives of Geneva University Hospitals and members of the Swiss Conference of Heads of Ob/Gyn Divisions, which represent all maternity facilities nationwide. We used an online questionnaire including 13 questions about CS rate perception, CS indications, and possible actions to reduce the CS rate (supplemental material). The questionnaire was created with *SurveyMonkey*® (Momentive Inc, San Mateo, CA, USA) and sent via email. The study was approved by the Swiss Ethics Committee (project-ID 2021–02364) and conducted according to the protocol, Swiss legal requirements, the World Medical Association Declaration of Helsinki, and the principles of Good Clinical Practice.

2.1. Main outcome

The main outcome was the perception that the current CS rate in Switzerland was too high (binary outcome). Secondary variables were main reasons for performing a CS and possible measures to reduce the current rate. We also collected data on age, gender, years of experience as a professional (less or more than 10 years), place of work, and specialty (midwife, gynecologist, obstetrician and both [Ob/Gyn]) as important covariates to include in the regression model.

2.2. Statistics

We aimed to invite 200 participants to take part in the survey with the hypothesis that 75 % of respondents would consider the CS rate as too high. With a 5 % type 1 error, we estimated to have a precision of +/- 6 % around an estimated 75 % of perception of a too high rate. Using the rule of 10 events per variable allowed to test a maximum of five factors associated with the consideration that CS was too high in a multivariate model. All variables were categorical and described by their frequencies and relative percentage. We compared variables between participants considering the CS rate as too high and those considering the CS rate as correct using Chi-2 tests. We reported the odds ratios (OR) and 95 % confidence intervals (CIs) for all factors tested and the main outcome using logistic regression analysis. We first performed univariate analyses, followed by multivariate analysis by selecting either place of work or specialty as the main independent variables. We adjusted the analysis for the following confounders: age, gender, and years of experience. All analyses were performed using STATA IC, version 17.0 software (StataCorp, College Station, TX, USA). P-values < 0.05 were considered as significant.

3. Results

Of 226 healthcare professionals invited, 188 completed the survey (response rate 83.2 %). Among these, 94 were physicians (total 110; response rate 86.3 %) and 93 were midwives (total 116; response rate 80.2 %). Most participants were women (77.1 % [n = 145]), with a varied number of years of experience, and who mainly worked in a university hospital (70.2 % [n = 132]). Participants' characteristics are presented in Table 1.

Regarding the main outcome, 74.7 % (n = 139) of participants believed that the CS rate in Switzerland was too high (95 % CI 67.9–80.8), but when asked about their own CS rate, 71.9 % (95 % CI: 64.6–78.5 %) (n = 123) of respondents considered it as being correct (Table 2). Univariate analysis showed that factors associated with a perception of a too high CS rate were working in a university hospital

Table 1
Characteristics of study participants.

	N (%)
Gender	43 (22.9)
Male	145 (77.1)
Female	
Age categories (years)	54 (28.9)
< 35	47 (25.1)
35–44	56 (30.0)
45–55	30 (16.0)
> 55	
Professional experience (years)	32 (17.0)
< 5	35 (18.6)
5–10	49 (26.1)
11–20	48 (25.5)
21–30	24 (12.8)
> 30	
Place of work	132 (70.2)
University hospital	35 (18.6)
Private hospital	21 (11.2)
Other hospital	
Specialty	93 (49.7)
Midwife	6 (3.2)
Gynaecologist	17 (9.1)
Obstetrician	71 (38.0)
Ob/Gyn	

Ob/Gyn: obstetrician and gynaecologist

Table 2
Clinicians' views on the caesarean section rate in Switzerland, most frequent indications, and ways to reduce it.

	N (%)
CS rate in Switzerland is high	
No	47 (25.3)
Yes	139 (74.7)
Indications for CS	
Advanced maternal age	71 (37.8)
Maternal morbidities	108 (57.5)
Antenatal & foetal complications	99 (52.7)
Antenatal & obstetric complications	129 (68.6)
Intrapartum complications	143 (76.1)
Maternal request	79 (42.0)
Fear of litigation	51 (27.1)
CS upon maternal request should be accepted?	
Yes	85 (45.2)
No	65 (34.6)
Do not know	38 (20.2)
Do you think there is a need to reduce the CS rate?	
Yes	147 (79.0)
No	17 (9.1)
Do not know	22 (10.9)
Means of reducing the CS rate? (several answers possible)	
Improve professional training	103 (54.8)
Presence of two obstetricians in the labour suite	30 (16.0)
Improve patient education	108 (57.5)
Reduce litigation	27 (14.4)
Perception of the personal rate of CS is:	
Correct	123 (71.9)
High	48 (28.1)

CS: caesarean section

compared with other settings and being an obstetrician or midwife compared with other physicians (gynecologists and Ob-Gyn) (Table 3). Other variables were not significantly associated with the perception that the current rate was too high. In multivariate analysis, after adjustment for age, gender, place of work and profession (midwives vs physicians), only the length of professional experience was significantly associated with a three-fold higher likelihood of considering the CS rate as too high (Table 4). When the specialty was added in the model, the length of professional experience disappeared and the likelihood of considering the CS rate as too high was approximately four-fold higher among midwives and obstetricians compared with gynecologists and Ob-Gyn physicians.

Table 3
Characteristics associated with the perception of the caesarean section rate as high and/or correct.

	CS is high (n = 139) N (%)	CS is correct (n = 47) N (%)	p-value
Categories of age (years)	77 (55.8)	23 (48.9)	0.415
< 45	61 (44.2)	24 (51.1)	
> =45			
Gender, n (%)	109 (78.4)	35 (74.5)	0.576
Woman	30 (21.6)	12 (25.5)	
Man			
Professional experience (years)	48 (34.5)	18 (38.3)	0.641
< 10	91 (65.5)	29 (61.7)	
> =11			
Place of work,	34 (24.5)	21 (44.7)	0.009
Non-university hospital	105 (75.5)	26 (55.3)	
University hospital			
Specialty	3 (2.2)	3 (6.4)	0.009
Gynaecologist	77 (55.8)	15 (31.9)	
Midwife	14 (10.1)	3 (6.4)	
Obstetrician	44 (31.9)	26 (55.3)	
Ob/Gyn			
Specialty	47 (34.1)	29 (61.7)	0.001
Gynaecologist or Ob/Gyn	91 (65.9)	18 (38.3)	
Midwife or obstetrician			

Ob/Gyn: obstetricis-gynecology physician; CS: caesarean section

Participants' views on CS practices are presented in Table 2. The main indication for a first CS was considered to be to be intrapartum complications (57.6 % [n = 106]), whereas a prior CS was the main indication for a recurrent one (46.7 % [n = 84]). Maternal request (non-medical) was considered to be a marginal indication (3.8 % [n = 7]), with 45.2 % (n = 85) of responders stating that it should be accepted. Fear of legal litigation was considered as the first most important reason for practicing CS for 6.5 % (n = 12) of responders. Most participants (79.0 %; 95 % CI: 72.5–84.6 % [n = 147]) considered that there was a need to reduce the CS rate in their hospital. Regarding suggestions for actions to decrease the CS rate, participants selected improvement of patient education (57.5 % [n = 108]) and professional training (54.8 % [n = 103]) as the leading priorities.

4. Discussion

Our study showed that most of the surveyed clinicians considered that the current CS rate in Switzerland was too high (74.7 %) and that there was a need to reduce it (79.0 %). To our knowledge, this is the first study analysing healthcare professionals' perception of the CS rate in Switzerland, a country with the second highest expenditure in health after the USA and a mixed health system with approximately 16 % of patients with private insurance [10]. This awareness of CS overuse is the crucial starting point for change in the future.

Respondents believed that improving patient education and professional training would be key actions to reduce the CS rate in Switzerland. The perception that the CS rate was too high is similar to several other studies where approximately 80 % of healthcare professionals considered the number of CS performed to be excessive and the increasing trend worrisome. [12–14,16,17].

The perception of a too high rate was greater among professionals working in university hospitals. This was consistent with Swiss national statistics that showed a higher CS rate in private (41.6 %) compared with public facilities (30.8 %) [10], similar to other countries such as Brazil (90 % private vs 40 % public [14]) or the USA (30.4 % private vs 21.2 % public [15]). Several studies have evaluated the reasons for such results and concluded that physicians in private settings may be encouraged to perform more CS by financial incentives, convenience, or a lower tolerance to risk [12–14]. Interestingly, even though most clinicians found that the current rate was too high, most believed that their own personal rate was correct, which might be related to self-enhancement bias [18], i.e., the tendency of individuals to evaluate their actions more favourably than those of others. Exploring the reasons for this type of bias and how to mitigate it might be important to evaluate in order to implement effective strategies to reduce the CS rate.

The most frequent indication for a first CS was considered to be intrapartum complications, whereas for a repeated CS it was the history of having experienced a prior CS. These results are consistent with the existing literature [10,19–21]. Although the expression "once a C-section, always a C-section" is controversial nowadays, our study showed that it still is the main reason for a repeated CS. Of note, we did not assess whether it was the women who made the request or the clinician who indicated it. CS upon maternal request was considered an acceptable practice, which is in line with the statements of the American College of Obstetricians and Gynecologists and the Society of Obstetricians and Gynecologists of Canada, as well as with the principle of respect for patient autonomy [22–25]. Nevertheless, CS performed only upon maternal request is relatively infrequent and was reported at around 5% in 2008 in Switzerland [18] and at 2.6 % in Belgium [24].

Factors found to influence the CS rate were physician's lack of training, difficulty to identify the appropriate clinical indication, financial and convenience incentives, and a cultural background leading to a higher maternal request [15–17,26]. Respondents in our study believed that improving patient education and professional training could reduce the rate of CS. Indeed, lack of experience can translate in

Table 4
Multivariate analysis concerning characteristics associated with the perception of the caesarean section rate as high and/or correct.

	Univariate analyses			Multivariate analysis (model 1)			Multivariate analysis (model 2)		
	Odds ratio	95 % CI	p-value	Odds ratio	95 % CI	p-value	Odds ratio	95 % CI	p-value
Age categories	1.00	-	0.416	1.00	-	0.283	1.00	-	0.142
< 45 years	0.76	0.39–1.47		0.58	0.21–1.57		0.49	0.19–1.27	
> =45 years									
Gender	1.00	-	0.576	1.00	-	0.445	1.00	-	0.575
Female	1.25	0.58–2.69		0.70	0.27–1.76		0.77	0.31–1.91	
Male									
Professional experience (years)	1.00	-	0.641	1.00	-	0.047	1.00	-	0.137
< 10	1.18	0.59–2.33		3.07	1.01–9.30		2.14	0.79–5.85	
> =11									
Place of work	1.00	-	0.010	1.00	-	0.114	-	-	-
Non-university hospital	2.49	1.25–4.99		2.57	0.80–8.26				
University hospital									
Specialty	1.00	-	0.005	1.00	-	0.119	-	-	-
Physician	2.69	1.34–5.42		2.14	0.82–5.59				
Midwife									
Specialty	1.00	-	0.001	-	-	-	1.00	-	0.001
Other physician	3.12	1.57–6.19					3.62	1.72–7.63	
Midwife or obstetrician									

Physician: obstetrician, gynaecologist or obstetrician-gynaecologist): Other physician: gynaecologist or obstetrics-gynaecology physician

relying upon CS as a low-risk option where the professional believes to have the control [13]. Being able to request a second opinion from a more experienced obstetrician or additional training from a local expert has been shown to reduce the rate of CS by 7.2 % and 13.1 %, respectively [14]. Promotion of trial of labour after a first CS, external cephalic version, or breech delivery when appropriate have been shown to be effective measures to lower CS by up to 6 %, but they require medical training [12].

Improvement of patient education was the second selected action. Currently, there is a growing demand for security and predictability in labour and patients often perceive CS as the safest and more predictable option [16,22]. Patients and relatives should be aware that a CS rate > 20 % does not offer any maternal or neonatal benefit and that its overuse is not a guarantee of security, but rather associated with a higher risk of adverse maternal and neonatal outcomes. Birth preparation and counselling might play an essential role in better educating pregnant women. Indeed, a Cochrane meta-analysis showed that adequate preparatory courses, including workshops on physiological delivery, can increase the rate of vaginal deliveries by 30% in specific groups [14].

Unfortunately, patient education and physician training alone are not sufficient to tackle the rate of CS in practice. They need to be completed and complemented by an appropriate organisational culture, reforms in health insurance conditions for practicing CS based on clear and justified indications, and the development of some legislative policies regarding organisational aspects in maternity care institutions and services [14–16]. Factors of convenience, in particular for those who work in the private sector, lead to peaks of CS on Fridays or in the days before holidays. Two studies have yielded uncertain results as to what may be effective strategies to reduce CS rates in private clinics, e.g., by reducing the margin of gain of the CS by comparing it to that of vaginal delivery [27,28]. Most participants in our study believed that they had a correct CS rate, which might make them less receptive to interventions aiming to reduce the rate. Improving self-perception and self-criticism, as well as continued medical education, might help in reducing the CS rate by implementing strict rules and indications for delivery by CS.

It is interesting that fear of legal litigation was not perceived as a major indication for performing CS among Swiss professionals (1.1 %) compared to those in other countries such as Ireland (67 %), Italy (72.7 %), Brazil (73.9 %) or the USA (93 %) [13,29–31]. CS is used as a defensive procedure in those countries where the legal standards of medical malpractice leave the providers unprotected, e.g., in the USA [30–33] where leading practitioners increased their CS rate by 8 % following a complaint [34]. In Switzerland, there are fewer medical malpractice complaints, which can be explained by the poor economic return in the case of a successful outcome and high lawyer expenses [35].

Our study has several strengths. Participants were obstetricians, gynecologists and midwives working in public and private hospitals across all regions of Switzerland, which has many cultural differences, and the response rate was high. The population was very mixed regarding age and length of experience, which allowed for a generalisation of the results among pregnancy caregivers in the country. A limitation is the standardisation of the questions (closed questions) that prevented an investigation of the professional philosophy and personal perception of risk, which might play a fundamental role in the decision to perform CS.

5. Conclusion

Swiss clinicians believe that the current CS rate in the country is too high. Improvements in medical training and patient education are considered as the main strategies to lower the rate. Self-enhancement bias among professionals must also be addressed in order to implement effective measures. A call-to-action among clinicians is urgently needed to support reversal of this trend.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Further reading

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