

Availability and accessibility of perinatal data for the Robson classification of caesarean sections in Switzerland

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Caesarean section rates in Switzerland of over 33% are among the highest in Europe [1], which suggests that strategies to decrease these rates should be developed. Caesarean sections potentially protect mother and child from harm [2]; however, rates above 9–16% have not been found to decrease maternal and perinatal mortality outcomes and are not economically advantageous [3, 4]. Caesarean sections, particularly if performed without a clear medical indication, can be associated with severe maternal and infantile morbidities [5]. The risks of postpartum antibiotic treatment for the mother and of admission to the neonatal care unit for the child increased after caesarean sections in comparison with vaginal births [5]. Women also experienced lower fecundity after a caesarean section [6]. Additionally, being born by caesarean section, especially an elective procedure, may potentially affect the microbiome and the immunological status of the child [7, 8].

Accessing the total number of caesarean sections is usually easy, but very often the indications are difficult to define and to implement consistently, which makes comparisons between sites and countries impossible [2]. In order to decrease and maintain caesarean section rates, Robson et al. [2] proposed a Multidisciplinary Quality Assurance Programme involving collection of prelabour, intrapartum and postpartum information. The authors proposed audits looking at the outcomes in a standardised way, as well as a 10-group classification of the caesarean sections. Robson et al. [2] emphasised the importance of collecting data that are easily available, quality controlled and validated. The 10-group classification is based on three obstetric concepts, namely “category of pregnancy”, “previous obstetric record” and “course of labour and delivery”, as well as on “gestation”, and each concept contains clearly defined parameters. Robson et al. [2] also provided information about the groups in which caesarean section rates should be low in order to achieve and maintain appropriate caesarean section rates. However, the classification of caesarean sections according to Robson’s propositions requires the availability and accessibility of the necessary information. As a result of the implications of the mode of birth for the later health of mother and child [5] and in order to develop strategies to achieve appropriate caesarean section rates at

a national level, there is a necessity to have access to Swiss perinatal data that are representative of the whole country and that are available for everybody. Our aims were, therefore, to identify the information needed to apply Robson’s classification and to investigate the availability and accessibility of Swiss perinatal data.

We used literature and web research, as well as personal contacts. After researching the perinatal information that is required to classify the caesarean sections into Robson’s 10-group system [2], we investigated the availability and accessibility of these variables in the national dataset of the Federal Statistical Office and in the routinely, but voluntarily, collected data of the ASF (Arbeitsgemeinschaft Schweizer Frauenkliniken) [9]. It was of special interest to know if the variables necessary for Robson’s classification [2] were routinely collected. As both maternal and neonatal information for each caesarean section is needed for Robson’s classification, it was important to assess if all required variables were included in the same dataset and, if not, if different datasets could be clearly linked. Additionally, we investigated whether the data are publicly accessible and if not, what conditions must be fulfilled to obtain access to the data.

Robson’s classification of caesarean sections requires the availability of six obstetric history and perinatal characteristics: parity (nulliparous or multiparous), previous uterine scar (e.g., previous caesarean section), completed gestational weeks, pregnancy (single or multiple), fetal presentation (cephalic, breech, oblique or transverse) and onset of labour (none, spontaneous or induced). According to a personal communication with the Federal Statistical Office (e-mail correspondence with P. Schwab, FSO, 15 February 2017), national perinatal data in Switzerland include most of these variables, but they are partially in the maternal and partially in the neonatal dataset. Maternal and neonatal data cannot be linked because of the complete anonymisation of both datasets. It is therefore not possible to combine the data that are necessary to classify the caesarean sections according to Robson’s propositions. The questionnaire for the ASF statistics is publicly available in the internet [9]. All variables required to classify the caesarean sections into Robson’s groups are collected routinely. Information

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collection for the ASF database is, however, voluntary for the maternity hospitals. In 2008, 50 of 71 hospitals participated and data from 40% of all cases in Switzerland were available [10]. Private clinics mostly do not participate in the ASF and their data are therefore not collected and not accessible.

Public availability of national perinatal data is very limited because only a little information is published online (www.bfs.admin.ch). On request, more detailed aggregated or individual data are accessible for research purposes, with a data protection agreement. Data from the ASF database are not publically available. Hospitals have access to their own data, and students and universities receive access to overall data, which is fee-based, on request (personal communication Dr T. Hess).

Contributing voluntarily to the ASF statistics gives hospitals the opportunity to classify their caesarean sections and develop strategies to decrease caesarean section rates according to Robson's proposals [2, 9]. However, this data collection is incomplete from a national perspective [10]. Private clinics do not often contribute to the ASF statistics and very often have the highest caesarean section rates. The picture that can be presented on the basis of the ASF database is therefore biased with respect to the whole Swiss situation. This detailed information does not allow conclusions that can be generalised to the whole country. However, it must be emphasised that the ASF database is very useful for quality management in the participating hospitals, and comparisons between individual participating hospitals is possible. The development of strategies to achieve and maintain reasonable caesarean section rates as proposed by Robson et al. [2] is possible on a site level in the hospitals that participate voluntarily, and has been done, for example, by the University Hospital of Berne [11].

Our enquiries revealed that there is only limited availability of the Swiss perinatal data that is needed to classify the caesarean sections in Switzerland according to the Robson's classification system and to monitor the related health of mother and child. Furthermore, data are not publically accessible. Routine collection of linked maternal and neonatal data at a national level could provide representative data for the whole country to enable investigation of regional differences and international comparisons. Additionally, national data would be required to monitor factors that are relevant to the future life of the new-born child. Studies investigating the long-term outcomes of interventions and complications during the perinatal period are more frequently carried out in the northern countries, where data from public health systems can be used and data for mother and child are commonly routinely collected and linked together [7]. The lack of opportunity for long-term follow up of children born under certain conditions prevents research into the consequences of perinatal interventions and health complications. It also prevents evi-

dence-based medical and political discussion about maternity care systems.

Our research was based on web searches and personal communication, and might therefore be incomplete. However, as maternity care providers and maternity care researchers, we were able to investigate and reflect on the topic with an in-depth professional understanding of the problem. We therefore recommend that the limited availability and accessibility of Swiss perinatal data necessitates urgent efforts to link maternal and neonatal data in Switzerland on a national level and to make these data publically available.

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References

- 1 EUROPERISTAT. European Perinatal Health Report, Health and Care of Pregnant Women and Babies in Europe in 2010. 2013. http://www.europeristat.com/images/doc/EPHR2010_w_disclaimer.pdf. (Updated June 2017).
- 2 Robson M, Hartigan L, Murphy M. Methods of achieving and maintaining an appropriate caesarean section rate. *Best Pract Res Clin Obstet Gynaecol.* 2013;27(2):297–308. doi: <http://dx.doi.org/10.1016/j.bpobgyn.2012.09.004>. PubMed.
- 3 Ye J, Zhang J, Mikolajczyk R, Torloni MR, Gülmezoglu AM, Betran AP. Association between rates of caesarean section and maternal and neonatal mortality in the 21st century: a worldwide population-based ecological study with longitudinal data. *BJOG.* 2016;123(5):745–53. doi: <http://dx.doi.org/10.1111/1471-0528.13592>. PubMed.
- 4 Betran AP, Torloni MR, Zhang J, Ye J, Mikolajczyk R, Deneux-Tharaux C, et al. What is the optimal rate of caesarean section at population level? A systematic review of ecologic studies. *Reprod Health.* 2015;12(1):57. doi: <http://dx.doi.org/10.1186/s12978-015-0043-6>. PubMed.
- 5 Villar J, Valladares E, Wojdyla D, Zavaleta N, Carroli G, Velazco A, et al.; 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. doi: [http://dx.doi.org/10.1016/S0140-6736\(06\)68704-7](http://dx.doi.org/10.1016/S0140-6736(06)68704-7). PubMed.
- 6 Radin RG, Mikkelsen EM, Rothman KJ, Hatch EE, Sorensen HT, Riis AH, et al. Brief Report: Cesarean Delivery and Subsequent Fecundability. *Epidemiology.* 2016;27(6):889–93. doi: <http://dx.doi.org/10.1097/EDE.0000000000000553>. PubMed.
- 7 Stokholm J, Thorsen J, Chawes BL, Schjørring S, Krogfelt KA, Bønnelykke K, et al. Cesarean section changes neonatal gut colonization. *J Allergy Clin Immunol.* 2016;138(3):881–889.e2. doi: <http://dx.doi.org/10.1016/j.jaci.2016.01.028>. PubMed.
- 8 Sevelsted A, Stokholm J, Bønnelykke K, Bisgaard H. Cesarean section and chronic immune disorders. *Pediatrics.* 2015;135(1):e92–8. doi: <http://dx.doi.org/10.1542/peds.2014-0596>. PubMed.
- 9 Arbeitsgemeinschaft Schweizer Frauenkliniken. Erfassungsbogen ASF-Statistik. http://www.sevisa.ch/files/2714/8230/7839/Bogen_D.pdf. (Updated June 2017).
- 10 Hess TH. Entwicklungsmöglichkeiten und Voraussetzungen von der Statistik zum Qualitätssicherungsinstrument am Beispiel der ASF-Statistik der Schweizerischen Gesellschaft für Gynäkologie und Geburtshilfe. 2008. https://www.ksw.ch/Portaldata/1/Resources/FRA/Dokumente/Masterarbeit_ASF-Statistik_Dr_med_Th_Hess.pdf. (Updated June 2017).
- 11 Mueller M, Kolly L, Bauman M, Imboden S, Surbek D. Analysis of caesarean section rates over time in a single Swiss centre using a ten-group classification system. *Swiss Med Wkly.* 2014;144:w13921. doi: <http://dx.doi.org/10.4414/smw.2014.13921>. PubMed.