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ORIGINAL RESEARCH – QUALITATIVE

Can antenatal classes reduce the rate of cesarean section in southern Italy?

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ABSTRACT

Background: Among European Countries, Italy has the highest rate of cesarean section (36.8%), and in the Campania region this rate reaches 60.0%.
Question: We conducted a retrospective cohort study to evaluate whether participation in antenatal classes during pregnancy reduces the rate of cesarean delivery in southern Italy.
Methods: We selected three local health authorities, with the lowest, the highest, and an intermediate rate of cesarean delivery. The study included 1893 mothers who brought their children for vaccination and were interviewed about their participation in antenatal classes and their obstetric history.
Findings: The main causes of cesarean section given in the interview were clinical indications (61.0%), previous cesarean section (31.0%) and woman's request (8.0%). When we excluded emergency cesarean delivery, we found a moderate association between participation in antenatal classes and cesarean section reduction (relative risk = 1.27; 95% CI = 1.08–1.49; in percentage values from 49.3% to 38.8%). Private hospitals and the two local health authorities with higher baseline rates of cesarean section showed an enhanced reduction of these rates.
Conclusion: Our paper shows moderate efficacy of antenatal classes, which reduced the occurrence of cesarean section by about 10%. However, the cesarean section rate remained high. As it is possible that different classes have a different level of efficacy, a further study on a standardized model of an antenatal classes is in progress, to assess its efficacy in term of cesarean section reduction, with the purpose of its widespread implementation to the whole region.
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Statement of Significance:

Problem

Italy has the highest cesarean section rate among European countries, and Campania is the Italian region with the highest cesarean section rate in Italy.

What is already known

There are limited and sometimes contradictory evidence of the effectiveness of antenatal classes in reducing the rate of cesarean section.

What this paper adds

Given the heterogeneity of the classes, both in terms of content and duration, our paper showed only a moderate efficacy of antenatal classes in reducing cesarean section.

1. Background

In ecological studies the increase of cesarean section (CS) up to 10–15% is associated with decrease in maternal and neonatal mortality, but this benefit does not continue to rise with higher levels of CS.[1] Furthermore, cesarean section may lead to important complications, disability, or death, so it should be undertaken only when medically necessary.[2]

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Among all countries reported in Molina et al.,[3] Mexico and Chile has the highest CS rate, respectively 46.9% and 49.6%. Among European countries, Italy (36.8%) and Romania (36.3%) has the highest rate, whereas Cipro and Finland has the lowest (11.4% and 16.2%).[3] Among Italian region, Campania has the highest rate (60.0%) with an evident intra-regional variability between the 7 local health authorities (Aziende Sanitarie Locali [ASL]) in Campania, from a minimum CS rate of 39.8% in the ASL in Avellino (ASLAV) to a maximum of 65.1% in the ASL in Naples (ASLNA2).[4] Intra-regional differences are stable and appear not to be due to different population structures or features. Moreover, the CS rate is higher in private hospitals than public hospitals (71.9% versus 50.9%).[4] Therefore, the CS rate increases when the annual childbirth rate in private hospitals increases.[5] This relationship is particularly relevant because in the Campania region private hospitals assist in 45.6% of births versus 18.5% in the rest of Italy, which explains the high CS rate in Campania.[4]

While CS occurs for clinical reasons, there are a number of other causes in which have been identified: structural, organizational and functional shortages in services for the mother and baby, such as a complete maternity team not available 24 h a day; the impossibility of assuring sufficient assistance during the childbirth, related to incomplete integration between the ASL and the hospital; a poor physician–patient relationship based on defensive medicine[3,6]; and an opportunistic choice made by some hospitals and/or gynecologists.[7] Therefore, the choices made by physicians and hospital institutions in Campania do not always appear to be in line with local, national or international guidelines.[8–13] Moreover, these institutions recommend that pregnant women take part in antenatal classes (Corsi di Accompagnamento alla Nascita) to increase their capacity for autonomous management of their own health. Several clinical studies have provided limited and sometimes contradictory evidence of the effectiveness of antenatal classes in reducing the rate of CS.[14–19] However, these studies used different methods; in addition, the factors identified as affecting the effectiveness of antenatal classes in reducing the rate of CS differed in each study.

Therefore, we conducted a retrospective cohort study to evaluate whether participation in antenatal classes (exposed) during pregnancy reduced the use of CS (outcome).

2. Methods

2.1. Participants

The participants were mothers bringing their children for early routine vaccinations (1st, 2nd or 3rd doses of diphtheria, polio, tetanus and hepatitis B vaccinations that are completed within the first year of life of the child). Mothers bringing their children for other types of vaccinations administrated after 1 year of life (measles–mumps–rubella, Haemophilus influenzae type B, invasive pneumococcal disease, and Neisseria meningitidis group C) were excluded. Moreover, in the case of mothers with more than one child, the information about obstetric history was related to the last childbirth. However, if women were not primiparas, we took into consideration also the participation in antenatal classes related to a previous childbirth.

2.2. Setting

In the Campania region we selected three local health authorities (ASL): the ASL with the lowest rate of cesarean delivery (ASLAV: 39.8%); the ASL with the highest rate (ASLNA2: 61.5%); and the ASL with the largest number of women attending, which corresponded to the city of Naples, the regional capital (ASLNA1: 61.5%).[2] Then, we randomly selected one of the eleven vaccination centers of ASLNA1, one of the thirteen vaccination centers in ASLNA2, and one of twelve vaccination centers in ASLAV. At each center, two expert healthcare workers interviewed the mothers of the children brought in for the infant vaccinations. Written informed consent was obtained from each participant. Interviews were conducted immediately following the vaccinations 1–3 days each week and in different days of the week between July and December 2014, during all hours that the centers were open to the public.

2.3. Questionnaire

A questionnaire was developed, pilot-tested in a full day of interviews in ASLNA1, and consequently modified. The questionnaire sought recall data relating to antenatal classes and obstetric history. It included information about the number of pregnancies, number of abortions, presence of any diseases (yes/no), concerns about health and that of the child during pregnancy, experiences of anxiety during pregnancy on a five-point Likert scale, place of childbirth (public and private hospital), mode of birth (vaginal birth, CS, emergency CS), reasons for the use of cesarean delivery (clinical indication, previous CS, maternal choice), participation in antenatal classes (yes/no), attitude to this participation (usefulness: [yes/no], influence on mode of birth [yes/no], characteristics of these courses [public or private]). In addition, socio-demographic characteristics were collected (maternal age, nationality, marital status, education level). We considered emergency CS to be when women were referred for an emergency situation, such as maternal hemorrhage, cord prolapse, suspected uterine rupture.[20]

Before study initiation, the approval of the Ethics Committee of the Second University of Naples was obtained (n.509 29/71 2014).

2.4. Sample size

The target sample size of approximately 1800 subjects was obtained by assuming a relative risk of 1.25 between participation in antenatal classes and prevented CS, a ratio unexposed/exposed of 10:1, a 95% confidence level and a power of 80%.

2.5. Subgroups

The study was based on the assumption that participation in antenatal classes is a highly heterogeneous variable because in the Campania region there is a lack of standardization of these courses from central authorities. However, most of the classes were open to women between the 5th and the 6th month of pregnancy, were free of charge, and included a number of meetings between 6 and 10. As it was not feasible to analyze each course, two sets of subgroups were analyzed: the subgroups ASLNA1, ASLNA2 and ASLAV, and public hospitals versus private hospitals.

2.6. Statistical analysis

Descriptive analysis was performed for all the variables. Crude relative risk (RR) with 95% confidence intervals (CI) were calculated between mothers who participated/did not participate in antenatal classes and mothers who received/did not received CS (main outcome). Stratified analysis and Mantel-Haenszel weighted RR was performed for: public/private hospitals and ASLs (ASLNA1, ASLNA2 and ASLAV). Crude RR was also calculated between all the independent variables and the main outcome.

Only variables associated with the outcome with $p \leq 0.25$ were subsequently included in the multivariate regression model. Specifically, the included independent variables were: age ($<35 = 0$; $\geq 35 = 1$), educational level (up to high school = 0; college degree = 1), marital status (unmarried = 0; other = 1), nationality

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