



The impact of the mass media on obstetricians' behavior in Norway



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ABSTRACT

Little is known about how physicians and hospitals respond to the risk of being negatively exposed in the mass media. We assume that newspapers will cover events more closely in the areas where they have most of their circulation. Within such areas the likelihood of negative publicity increases. The research question is whether obstetricians respond to negative newspaper coverage by choosing the least risky method of delivery, i.e. Caesarean section. This was tested on a large set of data from the Medical Birth Registry of Norway for the period 2000–2011. The Registry contains detailed medical information about all deliveries, for both the mother and the infant. This set of data was merged with a set of data that contained information about newspaper coverage for the municipalities in which all hospitals were located. Altogether, more than 620 000 deliveries in 46 municipalities were included in the study. The data were analyzed using a hospital fixed effects regression. The main result was that newspaper coverage had a significant positive effect on the probability of having a Caesarean section. Several supplementary analyses supported the main finding. Altogether, our results indicate that obstetricians are sensitive to the risk of being exposed in the mass media. This is likely to be because obstetricians care about their reputation.

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1. Introduction

Health care is regularly a top story in the news. Often, we see that physicians, hospital managers and elected politicians are publicly criticized for lengthy waiting times, low quality of services, and malpractice. The mass media appear to be a key mechanism for keeping physicians, hospital managers and elected politicians accountable. Yet little is known about how physicians and hospitals respond to the risk of being negatively exposed in the mass media.

At the same time, an expanding literature on political economy has addressed the impact of mass media on various policy outcomes. For example, Strömberg showed that access to radio induced US state governors to allocate greater amounts of New Deal spending [1]. Similar results have been obtained for newspapers. Snyder and Strömberg found that counties in the USA that were well covered by newspapers during the period 1991–2002 received more federal funding [2]. Similar results have been reported from other countries. Bruns and Himmler showed that an increase in

local newspaper circulation induced Norwegian municipalities to improve efficiency in public service provision [3]. Based on data from India, Besley and Burgess indicated that newspaper circulation was positively related to calamity relief expenditure [4].

The key hypothesis in these studies derives from the political economy literature. We have used that literature as a starting point for our study. The underlying idea is that physicians care about their reputation, and therefore they want to avoid negative publicity in the mass media. One way to avoid negative publicity is to practice defensive medicine. Defensive medicine has been studied extensively in the USA. The focus in most of the studies has been to examine whether physicians deviate from sound medical practice because they fear malpractice claims. In that case, physicians supply medical services of no or only marginal value because they want to reduce the risk of adverse outcomes [5]. For example, they may order more tests than are medically necessary or choose types of treatment with little risk of making errors.

We examined the effect of newspaper coverage on the probability of having a Caesarean section when giving birth. The setting for our study was the maternity services in Norway. We expect that obstetricians respond to negative publicity by choosing the least risky method of delivery, i.e. a Caesarean section. Following Snyder and Strömberg [2] and Bruns and Himmler [3], the key idea is that newspapers will cover events more closely in those areas where

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newspapers have most of their circulation. Within such areas the likelihood of negative publicity increases.

The choice of Caesarean section as our outcome measure was triggered by numerous studies that have shown that obstetrics is a specialty that is particularly impacted by defensive medicine [6–11]. In the case of a birth injury, the obstetrician is more likely to be suspected of negligence when the baby is delivered vaginally compared to by Caesarean section. For example, in one study from the USA failure to deliver the baby by Caesarean section was cited 10 times more often as the reason for a malpractice claim than failure to deliver vaginally [12]. Caesarean section is meant to be a safer mode of delivery, mainly because the obstetrician has more control of the progress of the birth. In particular, the chances of asphyxia are greater when the mother has a vaginal delivery. Asphyxia is a risk factor for brain damage and perinatal death [13,14]. The most important allegations of obstetric claims are for infants who are neurologically impaired, and for stillbirth and perinatal death [15]. Therefore, in a situation where the baby may be at risk, the obstetricians often follow the rule: “when in doubt, cut it out” [16]. In that case, concern about negative publicity may influence obstetricians to perform more Caesarean sections than are medically indicated.

Below, we first describe the main characteristics of the study population. We then describe the data and the empirical model. Finally, the results are presented and discussed.

1.1. Institutional setting

There are two advantages of using data from Norway for our study. First, Norwegians are avid newspaper readers [17]. Nearly 80% of people in the age group 15–79 years read at least one newspaper daily. The mean number of newspapers people read is 1.7, and each reader spends about 40 min per day reading newspapers. Nearly 80% of people subscribe to at least one newspaper. The newspaper landscape is diverse, with a few national newspapers and many local newspapers. The latter, encompassing nearly 200 newspapers, play a primary role in providing local information, including events at local hospitals [18]. Norway ranks among the top countries in terms of press freedom. This means that the newspapers are not restricted in what they want to report, even if they are critical of the system/hospitals.

Second, births take place within a standardized institutional health care setting with public funding. There are no incentive-based payment systems for maternity care. Obstetricians receive a fixed salary, and there are no user fees. In that way, neither the obstetricians nor the women who give birth have any personal economic advantage of the type of delivery (Caesarean section or vaginal delivery). This reduces the possibility for bias in our results. For a detailed description of the organization and financing of the maternity services in Norway see: [19,20].

2. Material and methods

2.1. Data and key variables

In this study we used several sets of data to construct our key variables and to perform our analyses. A detailed description of the two main data sources and how our key variables were constructed is given below.

2.1.1. Data for construction of newspaper coverage

Our key independent variable, *newspaper coverage*, was derived from the database *Aviskatalogen*, which is maintained by *Mediebedriftenes Landsforening* (www.aviskatalogen.no). For each municipality, the database contained circulation figures per edition for nearly all local newspapers, national newspapers and tabloids in Norway from 2000 and onwards. Bruns and Himmler

have made a data file, which they generously made available to us, with the relevant circulation figures for newspapers for the period 2001–2005 [3]. We extended that file to include data for the period 2000–2011. Altogether, the data file then included 158 newspapers for 2000–2011.

The variable *newspaper coverage* was constructed in three steps. First, similar to Bruns and Himmler, we defined a new variable, termed *reach*, as: $\sum_n \text{circulation}_{ni} / \text{households}_i$ where n denotes newspapers and i denotes municipality [3]. Second, we defined a weighting variable *reader share* as the share of readers that newspaper n had in its municipality i : $\text{circulation}_{ni} / \sum_i \text{circulation}_{ni}$. Third, we multiplied *reach* by *reader share*, and denoted the new variable *newspaper coverage*. The latter variable takes into account that newspapers will give most cover contextually to events in municipalities where the sale is large. Conversely, there will be less reporting from municipalities where there is little sale. Snyder and Strömberg have given convincing evidence that this is the case [2].

2.1.2. Data on Caesarean section and risk factors

The core set of data for our analyses was the Medical Birth Registry of Norway (MBRN) (www.fhi.no). MBRN contains detailed medical information about all deliveries in Norway – further details are given below. Maternity units report all births to MBRN [21]. During the period 2000–2011, MBRN encompassed more than 620 000 deliveries in the 48 hospitals. MBRN was merged with the set of data that contained information about *newspaper coverage* for the municipalities in which the hospitals were located. Three hospitals were located in the same municipality, hence our set of data encompassed 46 municipalities.

2.2. Main analysis – empirical specification

Our outcome variable was the occurrence of Caesarean sections as opposed to vaginal deliveries. Let $C_{ijt} = 1$ if a mother delivered her infant by Caesarean section in hospital j in year t , and let $C_{ijt} = 0$ otherwise. The most comprehensive model specification can be written as:

$$\Pr(C_{ijt} = 1) = \alpha \text{Newspaper coverage}_{jt} + \sum_j \delta_j \cdot \text{Hospital}_j + \text{Controls}_{ijt} + \sum_t \delta_t \text{Year dummy}_t + \varepsilon_{ijt} \quad (1)$$

In order to take account of potentially confounding effects, Eq. (1) includes several controls. First, the equation includes fixed hospital effects. This was done in order to control for all time-invariant heterogeneity between hospitals, for example differences in the quality of obstetric care. In that way, unobserved characteristics that vary cross-sectionally between hospitals, are cancelled out. Second, the equation includes year dummies for each of the years 2001–2011. These were included to take account of events that can vary from year to year, but that affect all hospitals equally. Third, the equation includes controls for several risk factors of the infant and the mother. Previous research has shown that the prevalence of the risk factors has changed over time [22]. Unless these factors are properly controlled for, our estimates for the effects of media coverage may be biased. The risk factors of the infant and the mother are well described in the literature, and have been shown to be correlated with Caesarean section.

Several medical conditions and socio-demographic factors are correlated with slow or no progress in labour or sign of fetal distress (for a review see: [23–25]). A Caesarean section is then indicated to prevent damage to the infant. The following risk factors of the mother were included in the analyses: age and the presence of predisposing factors such as preeclampsia and whether the mother had a chronic disease or not. The mothers were classified as hav-

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