MODELOS DE ORGANIZACIÓN DE LOS SERVICIOS DE ATENCIÓN AL PARTO: EFECTO SOBRE LA PROVISIÓN DE SERVICIO Y LOS RESULTADOS

Ramón Escuriet Peiró

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DIRECTOR DE LA TESI

Dr. Vicente Ortún Rubio, (*Departament d'Economia i Empresa. Centre de Recerca en Economia i Salut. Universitat Pompeu Fabra)*

DEPARTAMENT DE CIÈNCIES EXPERIMENTALS I DE LA SALUT

Dedicatoria

A mi familia, siempre.
A Miguel, el mejor compañero de viaje que jamás hubiera podido soñar.

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Mi suerte ha sido encontrar compañeras de profesión, ahora muchas de ellas amigas, que de forma incondicional han estado siempre a mi lado, ayudándome, enseñándome y animándome a mejorar siempre. Muchos son los que merecen mi gratitud por su soporte y ayuda, desde antes de iniciar este proyecto.

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Lurdes Martínez -siempre todo-; Aurora Fernández -mi "super" siempre-; Puri López -siempre alegre-; Araceli Santamaría -"pa" siempre-; Rosa Martínez -el inicio-; Javi Beneyto -desde siempre-; Rocío Rodríguez -los documentos-; Joanna White -la otra visión-; María Pueyo -los datos-; el equipo de Mapa Sanitari -la colaboración-; Isabel Salgado -la confianza-; Carme Ollé –la chispa de la vida-; los residentes de matrona – los que espero que sigan el camino.

Resumen

Existen diferentes modelos para la provisión de servicios de atención al parto y distintos factores relacionados con la organización de los servicios en los que se atiende a las mujeres.

En esta tesis se exploran los resultados de la atención al parto en Cataluña, y se comparan los resultados de 64 hospitales en base al tipo de financiación y también al volumen de partos anuales que se atiende en cada centro hospitalario. En este trabajo también se evalúa el impacto de una política sanitaria para implantar un modelo de atención al parto normal, basado en un concepto fisiológico y que promueve un uso racional de los recursos sanitarios disponibles.

Para contextualizar el trabajo se ha realizado una exploración de diferentes modelos de atención en varios países industrializados, se han buscado los indicadores más utilizados en Europa, para la evaluación de este tipo de atención, y se han elaborado indicadores específicos y adecuados al contexto catalán.

Para la exploración de los diferentes modelos de atención y de los indicadores para la evaluación más utilizados en Europa se ha realizado una revisión crítica de la bibliografía y de diferentes bases de datos. Además se han realizado entrevistas con expertos. Para la comparación de los resultados se han extraído los diagnósticos y procedimientos relacionados del Conjunto Mínimo Básico de Datos (CMBD) registrados en el *Servei Català de la Salut*. Además, se han agrupado los hospitales según el tipo de financiación y según el volumen de partos atendidos y se han comparado los resultados de todos los partos únicos de entre 37 a 42 semanas de gestación.

Las conclusiones más relevantes son que el tipo de financiación y el volumen de partos atendidos en los hospitales tienen un efecto significativo en las intervenciones

obstétricas investigadas en Cataluña. Por otra parte, la realización de episiotomía ha descendido de forma significativa y la incidencia de lesiones perineales graves se ha mantenido por debajo del 1% en todos los hospitales de Cataluña.

Summary

There are different models of maternity care and also other factors related to the organisation of services in which women are attended to.

In this thesis the results of delivery of birth care in Catalonia are investigated, and the outcomes of 64 hospitals are compared according to the type of financing and volume of births attended to in each hospital. This thesis also evaluates the impact of the undertaken maternity care policy for the implementation of the normal childbirth model of care and to promote a rational use of the existing health care resources.

For the contextualization of this work, some models of care in different industrialized countries are explored, and also it has been identified the most widely used indicators for the assessment of maternity care in Europe. Then specific and appropriate indicators for the Catalan context have been developed.

To get information on different models of care and to know what indicators are used in the European context, it has been conducted a critical review of literature, an exploration on several database and also interviews with experts. A number of selected diagnoses and procedures have been obtained from the Minimum Basic Data Set (MBDS) recorded in the Catalan Health Service for the comparison of outcomes. Hospitals have been grouped by type of financing and by the volume of births attended to. All singleton births between 37 to 42 weeks of pregnancy have been included on the analysis.

The most relevant conclusions are the type of funding and the volume of births in hospital have a significant effect on the obstetric interventions investigated in Catalonia. Also episiotomy has decreased significantly, and the incidence of severe perineal trauma has remained below 1% in all hospitals in Catalonia.

Prólogo

En los últimos años han aparecido numerosas publicaciones que muestran amplias diferencias tanto en los procedimientos que se utilizan para atender a las mujeres durante el parto, como en los resultados de esta atención. Esta información, cada vez más exhaustiva, también se refleja en las bases de datos que recogen indicadores de diferentes regiones y países. Así, esta realidad evidente, no siempre puede ser explicada por las condiciones clínicas de las mujeres que son atendidas y plantea la necesidad de explorar otras posibles causas que ayuden a explicar las diferencias en los procedimientos que se utilizan y en los resultados que se obtienen en este ámbito de la atención sanitaria.

Esta tesis nace de esta necesidad y de la de evaluar el programa para la implantación de buenas prácticas para la atención al parto normal en Cataluña. En este trabajo se exploran factores estructurales de los modelos de atención al parto y sus resultados en los hospitales materno-infantiles de Cataluña.

El trabajo está estructurado en tres capítulos y siete anexos, que recogen las fases de trabajo realizado e información adicional que se ha generado durante la tesis.

El capítulo 1 explora los resultados de la atención al parto en Cataluña durante el año 2011. Supone la primera parte del trabajo de tesis y se realiza en tres fases. Un primer análisis exploratorio de todos los partos, que sirve para identificar dos grupos diferenciados de hospitales, según la provisión de servicio público o privado, y estratificarlos según el volumen anual de partos atendidos. Una segunda fase en la que se explora el resultado de los indicadores en los partos únicos a término, y por último una tercera fase en la que se explora un indicador sensible en los partos vaginales únicos a término y sin instrumentar. La parte principal de este trabajo se ha publicado en *BMC Pregnancy and Childbirth (2014) 14:143*

y otra parte de los resultados obtenidos se presentó como comunicación en Marzo de 2013, en Ámsterdam, en el *I Intrapartum Care Congress.*

El capítulo 2 presenta la segunda parte del análisis, que incluye tres momentos en el tiempo y muestra el impacto de la política sanitaria en el ámbito de la atención al parto, que a su vez, se está impulsando desde la administración pública catalana. En esta etapa se explora la evolución de un grupo de indicadores en los dos grupos de hospitales. Además se analizan los resultados de los hospitales que se han adherido al programa del *Departament de Salut* de la *Generalitat de Catalunya* para implantar buenas prácticas en la atención al parto normal. Este trabajo se ha publicado en *BMC Pregnancy and Childbirth (2015) 15:23.*

El capítulo 3 explora la evolución, en los mismos tres momentos en el tiempo, de otro indicador para evaluar la implantación del programa. Puesto que una de las recomendaciones incluidas en el programa, promueve la realización de episiotomía de forma no rutinaria, se ha considerado sensible el indicador que muestra la realización de episiotomía en partos vaginales únicos a término y sin instrumentar. Esta es una de las recomendaciones sobre la que se ha hecho más énfasis desde la administración pública. En esta parte se ha querido también analizar un posible efecto no deseado, que podría emerger al implantar este tipo de práctica clínica. Este efecto indeseado es la lesión perineal grave, para lo cual, de acuerdo con la literatura consultada, se ha construido un indicador específico que agrupa las lesiones de 3 y 4º grado. Este trabajo se ha publicado en *BMC Health Services Research (2015) 15:95.*

Anexo I. Presenta la contextualización de la investigación realizada y de la información recopilada en las visitas formalizadas, a los 30 hospitales públicos adheridos al programa, para la implantación de buenas prácticas en la atención al parto normal en Cataluña.

Anexo II. Presenta el artículo publicado en la revista *Matronas profesión 2014; 15(2): 62-70. "La atención al parto en diferentes países de la Organización para la Cooperación y el Desarrollo Económico (OCDE)".* Este artículo se ha elaborado a partir de la información obtenida de informantes clave en diferentes países, de la revisión de la literatura y de la exploración de indicadores relacionados en la *OECD iLibrary.*

Anexo III. Se presenta el trabajo de revisión bibliográfica sobre los indicadores más utilizados para la evaluación de la atención a la maternidad en Europa. A partir de este trabajo se ha elaborado un artículo, en colaboración con la Dra. Joanna White del *Centro em Rede de Investigação em Antropologia* de Lisboa y otros autores, participantes en el proyecto Europeo ISCH COST *Action* IS0907. Se presenta el manuscrito enviado a *BMC Health Services Research*, que en este momento está en proceso de revisión.

Anexo IV. Comentario de artículo publicado en *Gestión Clínica Sanitaria 2015; 15(3-4):57*, sobre la utilidad del indicador de cesáreas en mujeres de bajo riesgo.

Anexo V. Indicador de compra de servicios, que ha incluido el *Servei Català de la Salut* en el año 2015, en la evaluación del contrato para la prestación de servicios de los proveedores asistenciales de servicios sanitarios. Este nuevo indicador se desprende de este trabajo de tesis.

Anexo VI. Se presentan como resultados adicionales las participaciones en actos científicos y la difusión de parte del trabajo, que se han generado durante este trabajo de tesis.

Anexo VII. Informe de la estancia (Short Term Scientific Mission) en *East Lancashire Hospitals NHS Trust*, financiada por el proyecto ISCH COST *Action* IS0907

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Capítulo 1

Obstetric interventions in two groups of hospitals in Catalonia: a cross-sectional study

Ramón Escuriet
María Pueyo
Herminia Biescas
Cristina Colls
Isabel Espiga
Joanna White
Xavi Espada
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Vicente Ortún

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Obstetric interventions in two groups of hospitals in Catalonia: a cross-sectional study

Ramón Escuriet[1*], María Pueyo[2], Herminia Biescas[2], Cristina Colls[3], Isabel Espiga[4], Joanna White[5,6], Xavi Espada[7], Josep Fusté[2] and Vicente Ortún[8]

Abstract

Background: Childbirth assistance in highly technological settings and existing variability in the interventions performed are cause for concern. In recent years, numerous recommendations have been made concerning the importance of the physiological process during birth. In Spain and Catalonia, work has been carried out to implement evidence-based practices for childbirth and to reduce unnecessary interventions.
To identify obstetric intervention rates among all births, determine whether there are differences in interventions among full-term single births taking place in different hospitals according to type of funding and volume of births attended to, and to ascertain whether there is an association between caesarean section or instrumental birth rates and type of funding, the volume of births attended to and women's age.

Methods: Cross-sectional study, taking the hospital as the unit of analysis, obstetric interventions as dependent variables, and type of funding, volume of births attended to and maternal age as explanatory variables. The analysis was performed in three phases considering all births reported in the MBDS Catalonia 2011 (7,8570 births), full-term single births and births coded as normal.

Results: The overall caesarean section rate in Catalonia is 27.55% (CI 27.23 to 27.86). There is a significant difference in caesarean section rates between public and private hospitals in all strata. Both public and private hospitals with a lower volume of births have higher obstetric intervention rates than other hospitals (49.43%, CI 48.04 to 50.81).

Conclusions: In hospitals in Catalonia, both the type of funding and volume of births attended to have a significant effect on the incidence of caesarean section, and type of funding is associated with the use of instruments during delivery.

Keywords: Obstetric intervention, Caesarean section, Variability, Hospital birth

Background

Provision of childbirth care is an important element of hospital activity. Quality and safety criteria have gradually been applied to birth, together with increasingly more technological resources. The current childbirth care model tends to consider normal birth in retrospect, i.e. a birth is regarded as normal once it is over and there has been no problem. This approach has contributed to the transformation of a physiological event into a medical and surgical process [1]. Support to women (both those with or without obstetric risk), is provided in a highly technological environment [2] and care is organised and applied systematically to the mother and the newborn. In the context of a normal labour, this mode of care could interfere with the physiological process and introduce risks arising from unnecessary interventions [3]. Moreover, there is growing concern about the existing variation in childbirth care practice and the possible costs, in both health and economic terms, of following an interventionist model when attending to women without any obstetric risk in a highly technological environment [4-9].

In recent years, scientific-based recommendations have emerged which promote a childbirth care model that respects the physiological process. In some countries these recommendations have been progressively and variously incorporated into health policies and documents of different

* Correspondence: rescuriet@catsalut.cat
[1]Directorate-General for Health Planning and Research, Ministry of Health of the Government of Catalonia, Pompeu Fabra University, Travessera de les Corts, 131-159, Pavelló Ave Maria, Barcelona, 08028, Spain
Full list of author information is available at the end of the article

professional organisations. Also policy makers have taken into consideration the demands made by many women's associations to de-medicalize childbirth. Access to information varies in each setting, but currently there is a broad dissemination of information related to best practice for normal childbirth care in most industrialised countries, including documents intended to help women take informed decisions about how they want to be treated during delivery [10-13].

The definition of "normal birth" varies depending on the context. Inclusion and exclusion criteria to consider when a labour and birth is "normal" may differ, making it difficult to study the process of normal birth care and outcomes. Most agreed definitions include women whose labour starts spontaneously, progresses spontaneously without drugs, and who give birth spontaneously [14]. In Spain a similar definition, with special additional mention of "respectful birth care", has been agreed by midwives associations and by obstetricians societies who have incorporated the concept of normality during pregnancy in their consensus definition [10,15].

In 2007, the *Strategy for Assistance at Normal Childbirth in the National Health System* (SANC) [16] was published in Spain, with a series of recommendations aimed at improving the support given to women during delivery and birth. While the SANC does not include an explicit definition of normal birth, t the strategy is founded on the principle that childbirth is a normal process that should only be intervened in when necessary. This guiding principle has enabled the transformation of the existing childbirth assistance model to one which focuses more on mothers' needs, and efforts have been made to involve women in decision-making about the type of assistance they want. Since its inception the SANC has promoted the training of professionals and the strategic adaptation of hospitals as measures to facilitate good practice in childbirth care. In Catalonia, a refocusing of maternity services towards a less interventionist approach was initiated in 2007 [17]. In line with SANC, this shift resulted in the progressive implementation of a more women-focused model predicated upon the minimal necessary intervention during delivery. This approach became the project for normal childbirth care, gradually introduced across the region. Currently, there are 44 hospitals in the public health network in Catalonia with maternity healthcare services. This public health network includes 6 publicly owned hospitals and also 38 state-assisted hospitals which provide public and private health services. The Ministry of Health of the Government of Catalonia provided financial support to 32 of these hospitals to improve their facilities and to adapt maternity wards where women labour and deliver in line with the normal birth approach.

Since its conception, this project has been monitored and coordinated by the Ministry of Health of the Government of Catalonia, a process requiring constant contact with the leaders of each health region, service providers and maternal health professionals responsible for childbirth assistance. This follow-up identified the need to develop appropriate indicators for evaluation, to update recommendations on best practice on a regular basis and to promote the dissemination of these recommendations among professionals and the wider population.

Work is currently ongoing in Catalonia to update the clinical practice guideline for normal childbirth assistance, disseminate updated recommendations, and conduct monitoring visits to the 32 hospitals that received economic support. Hospital discharge data from 2011 have also been explored and part of this analysis is presented in this current study. Furthermore, in 2010 the Ministry of Health, Social Services and Equality performed an internal evaluation of the implementation of the SANC in Spain overall. This assessment identified some improvements, but also highlighted the need for further work to be done in order to reduce the rates of certain obstetric interventions, which remain above recommended levels. Concrete recommendations for improvement include:

- Protocols must be updated periodically.
- All interventions during labour and birth should be recorded.
- Overall prevalence of instrumental births should decrease and vacuum should be used rather than forceps.
- The existing recommendation that episiotomy should not be used routinely needs to be reinforced.
- Overall C-section rates should decrease in most of the hospitals.

This countrywide evaluation provides useful context for the ongoing evaluation of childbirth care in Catalonia. For this purpose, and as far as SANC and the project for normal childbirth care in Catalonia are focused on model of care but do not provide a definition on "normal birth", in our study we have considered the same criteria as used in Minimum Basic Data Set (MBDS) for normal birth, when a woman with a straightforward pregnancy delivers at term, between 37 to 40 weeks of pregnancy, vaginally and without instrumentation a single newborn in cephalic presentation.

The MBDS includes information from all forty-four public hospitals and twenty private hospitals (out of 27), representing 98.9% of all deliveries in Catalonia (MBDS 2011: 78,570 registered; Catalan Statistics Institute 2011: 79,413 registered births). Funding of both public-owned and state-assisted hospitals is based on activity and paid by the Catalan Health Service according to the number of discharges. Regarding private hospitals, women are

responsible for all costs of childbirth care received either, most commonly, by purchasing private health insurance, or through direct payment to the company (or health care professional) providing the service. Private hospital charges can vary but are largely based on interventions and length of stay.

Objectives

To identify obstetric intervention rates (C-section, use of instruments for delivery and performance of episiotomy) in women giving birth in hospitals in Catalonia in the course of 2011.

To explore whether there were significant differences in intervention rates in single births between 37-42 weeks between hospitals according to type of funding, volume of births attended to and women's age.

Methods

Retrospective observational cross-sectional study of all births in 2011 identified in the hospital discharge register in Catalonia, the MBDS, a register of all acute care hospital discharges. The register is mandatory for all public hospitals and provides the basis for reimbursement. Each hospital discharge is registered with administrative information on the patient, hospital episode and the hospital identification. The diagnoses are coded according to the *International Classification Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM edition).

Given the need to measure available and comparable indicators when analysing "normal birth" we had to adopt the available reported code in Minimum Basic Data Set which best approximates to this concept, assuming its limitations, but in the assurance that when this code is used, no obstetric risk has been identified during pregnancy and birth.

The unit of analysis considered in this study was the hospital. For the analysis, hospitals were classified into two groups according to funding (public or private), and four strata were defined for each group according to the volume of births attended to *(stratum 1* (S1)*:* ≤ 600 births; *stratum* 2(S2): > 600 to ≤ 1200 births; *stratum* 3 (S3): > 1200 to ≤ 2400 births; *stratum* 4(S4) > 2400 births). Strata were defined following the same criteria used in the SANC. During data extraction a total of 1,444 births in public hospitals which were not publicly funded was identified. These were explicable due to the coexistence of private activity in some public hospitals, but were excluded from the analysis. A total if 252 births were also excluded due to inconsistent reporting.

To elaborate the indicators, the codes of the revised ICD-9-CM edition, which were used for the MBDS in 2011, were grouped together. The grouping of codes makes it possible to identify the dependent variables that correspond to the various obstetric interventions analysed (C-section, forceps, vacuum, unspecified instrument and episiotomy) and normal birth. Type of hospital funding, stratum according to volume of births and the mother's age were taken as independent or explanatory variables.

A three-phase analysis was performed to analyse hospital performance in terms of obstetric intervention, Figure 1. The first phase yielded the result of the indicators out of total births in Catalonia, the second phase gave the result of the indicators out of all births with a single newborn between 37-42 weeks of gestation, and the final phase gave the result of the indicators out of single births between 37-40 weeks of gestation coded as normal. The consideration of normal birth in the MBDS registry is defined as spontaneous onset of labour, cephalic presentation of the foetus and vaginal birth of a single live newborn between 37-40 weeks of gestation without obstetric risk [18]. This coding limitation on duration of pregnancy comes from the specific, standard coding proceedings utilised by the Catalan Health Service, and excludes deliveries beyond 40 weeks that could also be coded as normal.

The episiotomy intervention analysis was performed on non-instrumented vaginal births and normal births.

Groupings of diagnoses and main procedures

Caesarean section: (74.0-74.2, 74.4, 74.99)
Forceps: (72.0-72.6, 73.3)
Vacuum: (72.7)
Unspecified instrument: (72.8-72.9)
Episiotomy: (73.6)
Normal birth: 650, accompanied by secondary diagnosis **single live birth**: V27.0

Details of ethical approval

This study was exempt from Ministry of Health of the Government of Catalonia Ethics Committee review as it used publicly available, anonymised data.

Analysis

A descriptive analysis of the obstetric interventions was performed in each group and for each stratum, giving the mean and the confidence interval (95%) of each dependent variable.

A bivariate analysis was performed to obtain the probability of intervention. The explanatory variables considered were: type of funding, the hospital stratum attending the birth and the women's age. Caesarean section and the use of an instrument for delivery were regarded as dependent variables. This last variable grouped the use of forceps, vacuum and unspecified instrument together. The relationships between categorical variables were analysed using the chi-square method and between quantitative variables by the Student's t test.

A logistic regression analysis was performed on the population of full-term single births to determine the

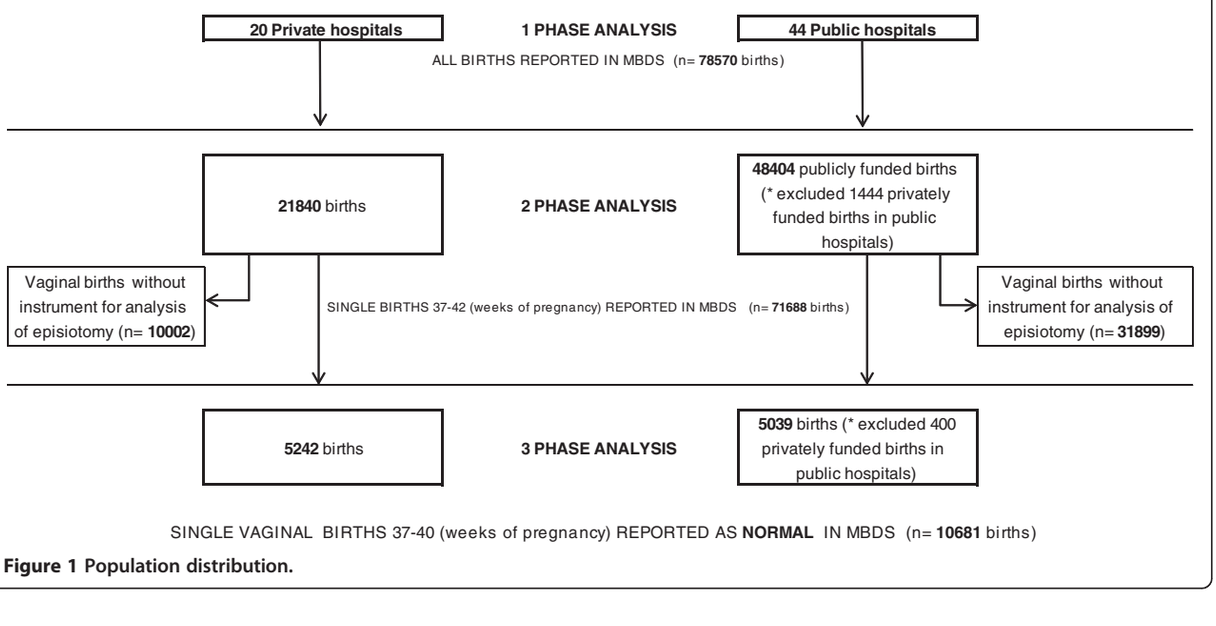

Figure 1 Population distribution.

association between caesarean section and the use of instruments with maternal age, type of funding and birth volume of the hospital where the delivery occurred. The odds ratio and the confidence interval were calculated for each variable.

When exploring episiotomies, we calculated the variation rate, ratio between the highest and the lowest observed average in strata for each group of hospitals.

PASW Statistic 18 statistical package was used for data analysis.

Results

The first phase identified a total of 78,570 births recorded in Catalonia in 2011: 24,155 in private hospitals and 54,415 in public hospitals.

The distribution of total births in Table 1 evinces a significant difference in mean age and mean days of stay between public and private hospitals. This difference is not significant in the distribution of full-term single births or normal single vaginal births analysed across the two types of hospital.

The table shows a greater number of full-term single births coded as normal births among births in private hospitals. The analysis of this distribution gives a rate of 24.0% (CI 22.89-25.12) of normal full-term single births among births in private hospitals and a rate of 10.41% (CI 9.57-11.25) among births in public hospitals This difference in distribution was found for all strata according to volume of activity with the exception of stratum 2. This phenomenon could be explained because public hospitals are particularly well prepared to attend women who present high obstetric risk and complex pathologies, and are receiving most of these women In Catalonia approximately 30% of all births occur in private hospitals every year.

With regard to the obstetric interventions analysed, Table 2 presents the rate of each intervention with their respective confidence intervals out of overall births in the MBDS in each stratum of the volume of births attended to. C-section and the use of vacuum were more frequent among hospitals with the lowest volume of activity. An examination of the rates of interventions that are mutually exclusive (C-section, forceps, vacuum and unspecified instrument), illustrates the level of intervention in each stratum, and reveals that in hospitals with a lower volume of activity (S1) some kind of surgical or instrumental intervention occurred in almost half of births.

Figure 2 includes caesarean section rates for disaggregated full-term single births in each hospital group according to the volume of births in each stratum. Both hospital groups present the highest caesarean rates in stratum S1, which is significantly different from other strata within each group. Private hospitals have substantially higher rates of caesarean section across all strata.

When analysing instrumental birth rates amongst 37-42 weeks of pregnancy (wp) single vaginal births we found a significant variation in instrumental birth rates in both groups of hospitals, but the overall range of instrumental vaginal births is narrow. Higher levels of vacuum deliveries can be observed in stratum S1 (15.6%) and stratum S2 (15.1%) in the private hospitals group.

As can be seen in Figure 3, the episiotomy rates reported in public hospitals are higher the greater the

Table 1 Birth distribution and characteristics according to type of hospital and type of funding

	Number of hospitals		Total births Catalonia, 2011			Single births 37-42 (wp)			Normal single vaginal birth 37-40 (wp)		
	(N)		(N)	Average maternal age (years) (CI)	Average length of stay (days) (CI)	(N)	Average maternal age (years) (CI)	Average length of stay (days) (CI)	(N)	Average maternal age (years) (CI)	Average length of stay (days) (CI)
Public hospitals											
			All births reported in MBDS			Publicly funded births in public hospitals					
Stratum S1	12		2814			2365			532		
Stratum S2	14	44	9145	54415	30.75 (30.71-30.80)	8124	48404	30.6 (18.9-42.4	1485	5039	28.9 (18.8-39.7
Stratum S3	17		26385			23790			2315		
Stratum S4	5		16071			14125		2.85 (0.56	707		2.40 (0.95-3.85
Private hospitals											
			All births reported in MBDS			Private funded births in private hospitals					
Stratum S1	9		2205			1931			703		
Stratum S2	3	20	2294	24155	33.68 (33.63-33.74)	2127	21840	33.6 (25.7-41.4)	387	5242	32.8 (25.5-40.1)
Stratum S3	2		3217			2988		3.43 (0.98-5.88)	479		2.74 (1.33-4.15)
Stratum S4	6		16439		3.56 (3.53-3.58)	14794			3673		

Table 2 All births

		Number of hospitals	Number of births	Caesarean section		Forceps		Vacuum		Unspecified instrument	
		(N)	(N)	(N)	Rate (CI)	(N)	Rate (CI)	(N)	Rate (CI)	(N)	Rate (CI)
Operative and instrumental births	All hospitals										
					All births reported in MBDS						
	Stratum S1	21	5019	1745	34.77% (33.45-36.09)	203	4.04% (3.50-4.59)	364	7.25% (6.53-7.97)	169	3.37% (2.87-3.87)
	Stratum S2	13	11439	2756	24.09% (23.31-24.88)	493	4.31% (3.94-4.68)	398	3.48% (3.14-3.82)	593	5.18% (4.78-5.59)
	Stratum S3	19	29602	7049	23.81% (23.33-24.30)	2381	8.04% (7.73-8.35)	1232	4.16% (3.93-4.39)	1447	4.89% (4.64-5.13)
	Stratum S4	11	32510	10093	31.05% (30.54-31.55)	2207	6.79% (6.52-7.06)	1525	4.69% (4.46-4.92)	1240	3.81% (3.61-4.02)
		64	78570	21643	27.55% (27.23-27.86)	5284	6.73% (6.55-6.90)	3519	4.48% (4.33-4.62)	3449	4.39% (4.25-4.53)

Obstetric intervention rates by stratum.

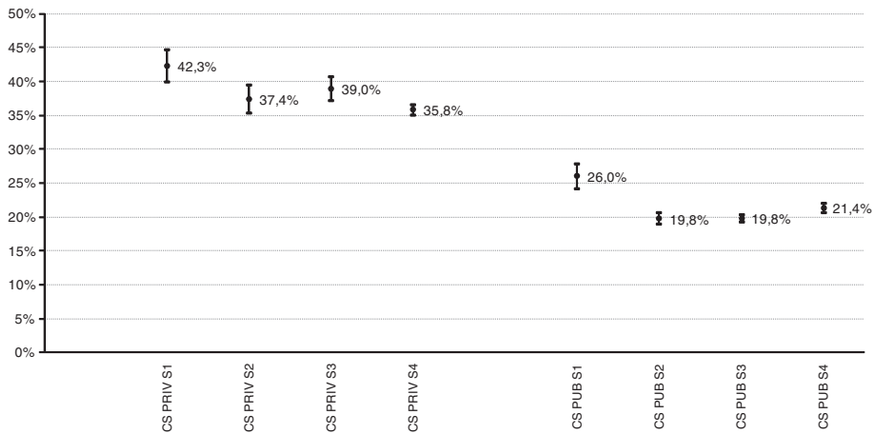

Figure 2 Single birth 37-42 weeks of pregnancy (wp). Volume-stratum C-section rates. Public and private hospitals.

volume of births attended to, although they always range from 20.93% to 27.83%, giving a variation rate of 0.75. With regard to episiotomy rates reported in private hospitals, the graph shows a wide range, from 6.50% to 68.9%, giving a variation rate of 10.6. Variation rate is a very simple data form but very intuitive and this result suggests that episiotomy may not be well reported in some private hospitals, and reinforces the existing government recommendation that all interventions should be properly recorded.

Table 3 shows the episiotomy rate amongst full-term single vaginal births that have been recorded as completely normal. The data are presented in aggregate form for each hospital group. The table shows a higher rate of episiotomy among deliveries in private hospitals, suggesting that the recommendation for not conducting episiotomy routinely has not been adopted by private hospitals. This is particularly important given, as noted earlier, that private hospitals currently attend a higher proportion of normal births (Table 4).

The logistical regression analysis indicates an association between the caesarean section dependent variable and the independent variables considered. This association shows that the likelihood of having a caesarean section decreases as the volume of births attended to in the hospital increases, OR 0.976 (95% CI 0.957-0.995). In contrast, the likelihood of caesarean section increases with increasing maternal age, OR 1.043 (95% CI 1.039-1.047) and private hospitals OR 2.014 (CI 1.940-2.090).

As for the instrumental birth variable, increased maternal age reduces the probability of having an instrumental birth overall, OR 0.98 (95% CI 0.976-0.984), whereas in

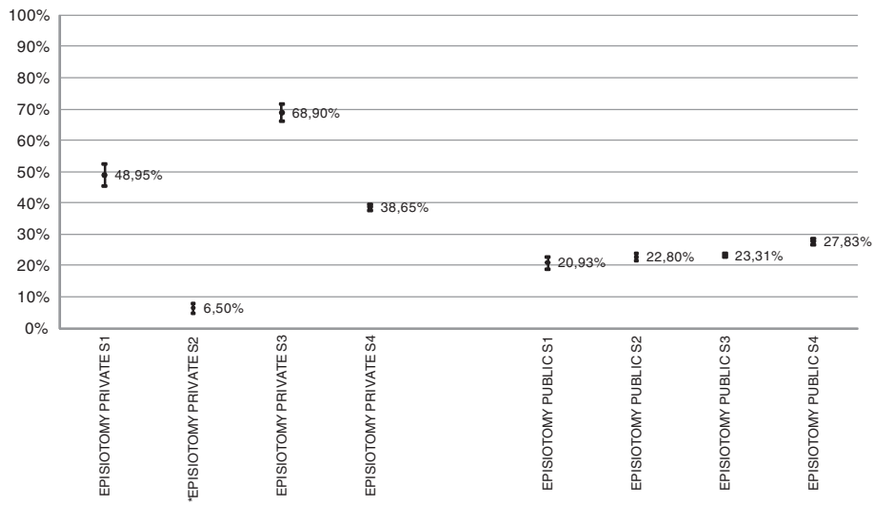

Figure 3 Single vaginal birth without instrument 37-42 weeks of pregnancy (wp). Volume-stratum episiotomy rates. Public and private hospitals.

Table 3 Normal birth 37-40 weeks of pregnancy (wp)

	Number of hospitals	Registered normal births	Episiotomies		
	(N)	(N)	(N)	Rate	CI
Public hospitals					
		Publicly funded births in public hospitals			
Normal single vaginal birth 37-40 (wp)	44	5039	1442	28.62%	27.28-29.95
Private hospitals					
		Private funded births in private hospitals			
Normal single vaginal birth 37-40 (wp)	20	5242	2003	38.21%	36.78-39.64

Episiotomy rate.

private hospitals this probability increases, OR 1.442 (95% CI 1.377-1.510). The relationship between the probability of having an instrumental birth and the volume of deliveries in the hospital is not clear.

Discussion

Clinical practices

Our study was conceived with the aim of defining indicators that permit a periodic assessment of normal childbirth in hospitals in Catalonia using the data systematically recorded in the MBDS. Parallel to the study, follow-up work was undertaken to analyse the situation in the 32 hospitals of Catalonia currently involved in the project for normal birth care. These follow-up visits are intended to collect information about the available infrastructure and resources, organisation of services and care and the nature of current activities. This work identified variations in the way certain procedures, such as amniotomy and medical induction of birth are recorded as well as the coding of "normal birth". It was observed, for example, that some healthcare professionals consider induction of birth and amniotomy as minor interventions, while in other cases there was a tendency not to use the code of normal birth, even if it fitted with the event, in other words when no intervention has been performed, which suggests there may be under-reporting of normal birth cases.

Data analysed in this study show how the prevalence of episiotomy and C-section are far removed from the standards agreed to at the SANC, which advocates a maximum rate of 15% in both cases. For this reason, these may act as important indicators of the successful implementation of best practice for normal childbirth.

Variations in the performance of caesarean sections and the factors influencing this disparity have become a major area of study in recent years. Research in Spain in 2009 showed that the increase in C-sections is due both to a rise in the number of elective primary caesarean sections as well as repeat caesarean sections. However, while in public hospitals the increased incidence of caesarean sections is proportionately lower than the overall increase in number of births, in private hospital settings the increase in C-sections far outweighs the total number of births [19]. This reported difference in the incidence of C-sections according to public or private hospital care is confirmed by our analysis, which identified the highest rates of caesareans occurring in private hospitals. This finding tallies with the results of various earlier comparative studies and suggests that factors such the profile of women who seek private care, the budgeting of private services and health professionals clinical experience may be relevant in elucidating the differences identified [20]. It is also striking to note, however, that private hospitals have both the highest rates of C-section and of normal births. This finding suggests the need for further research into the range of factors influencing care provision in private settings.

Other factors associated with the organisation of services that might cause intra-hospital variations also need to be taken into account [21]. Particular characteristics of hospitals with a low volume of activity, such as health professionals being on call, limited resources and problems in transferring problematic cases to larger hospitals due to their geographical situation may influence the increased C-section rate found in this stratum across both groups and should be taken into account when

Table 4 Single birth 37-42 weeks of pregnancy (wp)

	Maternal age			Type of financing			Volume-stratum		
	OR	CI (95%)	p value	OR	CI (95%)	p value	OR	CI (95%)	p value
Caesarean section	1.043	1.039-1.047	0.000	2,014	1.940-2.090	0.000	0.976	0.957-0.995	0.015
Instrumental vaginal birth	0.98	0.976-0.984	0.000	1,442	1.377-1.510	0.000	1.016	0.992-1.040	0.198

C-section and instrumental vaginal birth association with maternal age, type of financing and volume-stratum.

discussing how low-volume hospital maternity services are organised in Catalonia.

On the other hand the prevalence of obstetric interventions may be influenced by the use of certain procedures during birth, particularly in healthy, low-risk women, which trigger a cascade of subsequent interventions. The use of epidural analgesia or medical induction and stimulation, for example, may increase rates of instrumental birth with episiotomy and caesarean, also resulting in a rise in the cost of assistance [22-24]. The decision to use certain procedures may, in turn, be influenced by service providers' model of management based on specific planning criteria and the previous training of health professionals [25-27].

As for the type of instrumentation, this study found a greater use of vacuum in private settings, whereas in public hospitals forceps were used more frequently. This variation might not be due to clinical indications since, as stated in the results, we found that private funding increases the likelihood of having an instrumental birth per se. While the increase in maternal age appears to reduce the probability of instrumentation during birth, this could also be explained by the fact that an increase in age entails a greater likelihood of C-section, hence as maternal age increases the performance of a caesarean section may be prioritised.

Other studies have also identified further factors influencing intervention levels besides the funding characteristic of hospitals, such as the profile of the professional/s caring for low-risk women or the particular unit where the women give birth [28,29].

The distribution of the episiotomy rate found among vaginal full-term single births presents a different pattern between the two hospital groups studied. Episiotomy rates in public hospitals show a variation rate well below that demonstrated by private hospitals. This is difficult to explain. The lower rates observed in public hospitals may be due to the progressive introduction of the non-routine use of episiotomy recommendation, as detailed in the recent SANC evaluation, which reported a rate of 41.9% in vaginal, non-instrumental births of between 37 to 42 weeks in 2009. This reduction was also identified in the latest Euro-Peristat report, [30] which revealed a rate of 43.0% for Spain (data from included regions) in 2010, a significant reduction since 2004. While this current study reveals lower rates of episiotomy for single-term births reported as normal in Catalonia there is evidently ample room for improvement in the implementation of the recommendations for normal childbirth care.

Maternal age

Maternal age of above 40 years is associated with risk during birth and increases the likelihood of having a caesarean section. However, it cannot be asserted that increased C-section rates are due to a real increase in obstetric complications, as there may be other secondary factors influencing this outcome, which are related to the attitudes of clinicians and women themselves [31-33]. The comparison of C-section rates among different countries confirms this interpretation; the inconsistencies identified suggest that the relationship between the number of mothers aged above 40 and C-section rates may be due to factors other than obstetric risk [34]. Though this study was not designed to specifically study the relation between maternal age and caesarean section, this hypothesis might serve as a basis for further research to explore whether age, by itself, without other risk factors, influences clinical decision-making on delivery method, and if this is the case at what age the tendency towards a greater use of C-section begins or increases, and in what settings it is most prevalent.

Volume of activity in the hospitals

The hospital as an independent variable underlines the overall effect of the organisation in the likelihood of medical intervention occurring during delivery; [35] there is an assumed bias involved in analysing individual variables and effect variables subject to this "cluster" effect. In this current study, the analysis assumes this bias and therefore hospitals were grouped according to the volume of births attended to, enabling us to compare behaviour across the different strata of each hospital group.

The rates of obstetric intervention in full-term single births found in the settings studied show a higher rate of caesarean sections in hospitals with a lower volume of births, which conforms to the internal assessment of the SANC and other studies conducted in Spain [36]. In terms of instrumental births, higher intervention rates can be seen in the group of privately funded hospitals, and within this group the highest level of intervention was observed among those with fewer births. In view of the spiralling debate on obstetric outcomes in centres with a low volume of activity, it must be remembered that in the Catalonian context there are no "birth centres" or other specific units separate from hospitals which offer maternity care to women of low risk and which typically attend to a limited volume of births. This means that the results concerning the hospitals included in the current study cannot be compared to other types of units with a similar volume of births that are organised differently and have very different outcomes in terms of obstetric intervention [37,28,38,39].

Records

As outlined, the variability in obstetric intervention may be affected by factors such as user expectations, unnecessary or inappropriate assistance, the culture of medical

practice, the organisation of care provision and available resources. In addition to these issues, current variations in the recording of procedures [35,40-42] render it difficult to accurately evaluate all aspects maternal health services. Even so, most of the data contained in hospital discharge records on the mode of birth can be considered reliable for the purposes of evaluation. However, after comparing the data available from the MBDS to those obtained directly from each hospital service, poor recording of the performance of amniotomy and induction of labour was detected (of the 64 hospitals included, 8 do not record inductions and 31 do not record amniotomies), hence these data were explored but not included in this study.

Other factors

When attempting to explain variations in the rates of obstetric interventions in full-term single births, the type of funding in the hospital where the assistance is provided should be taken into account, as should the obstetric risks and clinical conditions that may arise during birth. The associations between type of hospital funding, other differential aspects between public and private hospitals, and other factors that may condition obstetric outcomes remain to be studied.

Limitations

The data analysed are those recorded in the hospital discharge reports. A deficient recording of episiotomies was detected in three of the private hospitals included in stratum S2, which explains the variation rate found in this group for this indicator.

Although the assignment of the corresponding code to the diagnosis of normal birth is assumed to be correct, under-recording of this diagnosis has been identified, together with the bureaucratic limitation that births surpassing 40 weeks of gestation cannot be recorded with this code. It is therefore likely that many of the births not assisted by C-section or instrumentation currently not recorded as normal within the MBDS could be recorded as such. It would be advisable to improve the coding system in order to facilitate consistent monitoring and assessment.

This study did not consider clinical conditions, as the objective was to analyse intervention rates. The standards recommended in the SANC on the different obstetric interventions discussed in this paper are assumed. These standards are useful as a reference to identify high intervention rates.

Parity and previous mode of delivery was not included in the data base and could not be considered for the analysis.

Conclusions

The volume of births attended to in hospitals and the type of funding of the institution has a significant effect on the incidence of caesarean sections in Catalonia; the type of funding of the hospital also influences the incidence of instrumental births.

Implications for research

The findings of this study suggest the need for further examination of factors associated with funding and the organisation of childbirth services which are influencing obstetric intervention.

Likely population distribution in the two groups of hospitals indicate the need for further research on factors, such as socio-economic status, that may be influencing women's choice of public or private childbirth care.

The variables of previous mode of delivery and parity could not be explored because they were not available on our database. Such variables could have an impact in outcomes in terms of obstetric intervention and could be explored in further research.

Implications for practice

The use of procedures and interventions in maternity service delivery should be reviewed, especially in hospitals that attend to a smaller volume of births.

Given the identification of a tendency to not record certain interventions, the consistent diagnosis and reporting of normal birth as well as procedures such as medical induction of birth and amniotomy should be improved.

Competing interests

The authors declare that they have no conflicts of interest.

Authors' contributions

RE conceived, designed and coordinated the study. MP and RE have been involved in acquisition of data and performed statistical analysis. RE and JW drafted the manuscript. HB, CC, IE and XE revised it critically for important intellectual content. JF and VO revised the manuscript and have given the final approval of the version to be published. All authors read and approved the final manuscript.

Authors' information

RE is coordinating the project for normal birth assistance in Catalonia that involves 32 public hospitals, and is also involved in the EU COST Action IS0907 *Childbirth Cultures, Concerns, and Consequences: Creating a dynamic EU framework for optimal maternity care.*

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Author details

[1]Directorate-General for Health Planning and Research, Ministry of Health of the Government of Catalonia, Pompeu Fabra University, Travessera de les Corts, 131-159, Pavelló Ave Maria, Barcelona, 08028, Spain. [2]Directorate-General for Health Planning and Research, Ministry of Health of the Government of Catalonia, Barcelona, Spain. [3]Catalan Agency for Health Information, Assessment and Quality, Barcelona, Spain. [4]Observatory on Women's Health, Subdirectorate for Quality and Cohesion, Ministry of Health, Social Services and Equality, Madrid, Spain. [5]Centre for Research in Anthropology (CRIA-IUL), Lisbon, Portugal. [6]Visiting Fellow, King's College London, London, UK. [7]Fundació Hospital Asil de Granollers, Granollers, Spain. [8]Faculty of Economic and Business Sciences, Pompeu Fabra University, Barcelona, Spain.

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Capítulo 2

Impact of maternity care policy in Catalonia: a retrospective cross-sectional study of service delivery in public and private hospitals

Ramón Escuriet-Peiró
Josefina Goberna-Tricas
Maria J Pueyo-Sanchez
Neus Garriga-Comas
Immaculada Úbeda-Bonet
Carmen Caja-López
Isabel Espiga-López
Vicente Ortún-Rubio

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Impact of maternity care policy in Catalonia: a retrospective cross-sectional study of service delivery in public and private hospitals

Ramón Escuriet-Peiró[1,2], Josefina Goberna-Tricas[3*], Maria J Pueyo-Sanchez[2], Neus Garriga-Comas[3,4], Immaculada Úbeda-Bonet[3], Carmen Caja-López[3], Isabel Espiga-López[5] and Vicente Ortún-Rubio[6]

Abstract

Background: As a result of the growing number of interventions that are now performed in the context of maternity care, health authorities have begun to examine the possible repercussions for service provision and for maternal and neonatal health. In Spain the *Strategy Paper on Normal Childbirth* was published in 2008, and since then the authorities in Catalonia have sought to implement its recommendations. This paper reviews the current provision of maternity care in Catalonia.

Methods: This was a descriptive study. Hospitals were grouped according to their source of funding (public or private) and were stratified (across four strata) on the basis of the annual number of births recorded within their respective maternity service. Data regarding the distribution of obstetric professionals were taken from an official government survey of hospitals published in 2010. The data on obstetric interventions (caesarean, use of forceps, vacuum or non-specified instruments) performed in 2007, 2010 and 2012 were obtained by consulting discharge records of 44 public and 20 private hospitals, which together provide care in 98% of all births in Catalonia. Proportions and confidence intervals were calculated for each intervention performed in all full-term (37–42 weeks) singleton births.

Results: Analysis of staff profiles according to the stratification of hospitals showed that almost all the hospitals had more obstetricians than midwives among their maternity care staff. Public hospitals performed fewer caesareans [range between 19.20% (CI 18.84-19.55) and 28.14% (CI 27.73-28.54)] than did private hospitals [range between 32.21% (CI 31.78-32.63) and 39.43% (CI 38.98-39.87)]. The use of forceps has decreased in public hospitals. The use of a vacuum extractor has increased and is more common in private hospitals.

Conclusions: Caesarean section is the most common obstetric intervention performed during full-term singleton births in Catalonia. The observed trend is stable in the group of public hospitals, but shows signs of a rise among private institutions. The number of caesareans performed in accredited public hospitals covers a limited range with a stable trend. Among public hospitals the highest rate of caesareans is found in non-accredited hospitals with a lower annual number of births.

Keywords: Obstetric interventions, Birth, Maternity care

* Correspondence: jgoberna@ub.edu
[3]Department of Public Health, Mental Health and Perinatal Nursing, Universitat de Barcelona, Bellvitge Health Sciences Campus, Pavelló de Govern, 3a planta, C/Feixa Llarga s/n, 08907 L'Hospitalet de Llobregat, Barcelona, Spain
Full list of author information is available at the end of the article

Background

Childbirth is one of the most common reasons for hospital admission in Spain [1]. One of the key responsibilities of health policymakers is to plan adequate maternity services and to provide the resources needed to ensure that care is both safe and of high quality.

Recent decades have seen an increasing medicalization of maternity care as a whole, most notably during labour, where various interventions may now be performed. [2] For some sectors of society, such developments are regarded as only to be expected and as a sign of progress. However, the observed outcomes in terms of health are beginning to be viewed with concern, since exposure to unjustified or unnecessary interventions may increase the risk of avoidable harm being caused to both mother and child [3-5]. In addition, our government is increasingly examining the economic costs and repercussions for health services of a non-rational use of resources [6].

Some research in this field has suggested that it would be helpful to establish a set of agreed criteria of 'normality', such that women who met these criteria could then receive maternity care in a setting that was less technologized and more geared towards normal childbirth, which could even be set apart from the conventional obstetric department. [7] Another topic of debate concerns the model of care provided. Some authors argue in favour of more person-centred care with a focus on the needs expressed by the pregnant woman [8,9] However, such concepts are not always applied or interpreted in the same way [10-12], and what is actually implemented may therefore differ across healthcare providers. Nevertheless, in recent decades women, as end users of these services, have become key protagonists when it comes to deciding the kind of maternity care they want, and they have called for greater respect to be shown towards their wishes; in this context, user groups have sometimes put considerable pressure on health policymakers to ensure that the care offered is more respectful of the physiology of labour [13].

In 2008, Spain's Ministry of Health, Social Policy and Equality published the *Strategy for Assistance at Normal Childbirth in the National Health System*, which marked a change of direction in the maternity care offered within the public health service [14]. Publication of this strategy paper was followed by a series of actions to promote maternity services which were more clearly centred on the woman's needs and were based on the concept of childbirth as a normal physiological process in which intervention was only required if problems were detected. In Catalonia, in the north-east of Spain the health authorities responded to the strategy paper by setting up a project designed to implement its recommendations in public hospitals.

Currently, the national health system in Catalonia comprises 44 public owned or state assisted hospitals and 43 reproductive health care units in the community. Antenatal and postnatal care for women not at risk is mainly given at these units by midwives, and delivery care is performed in hospitals staffed by teams of midwives and obstetricians. All women have access to these public services from the beginning of their pregnancy. Women who opt for private care take out private health insurance or contact professionals directly. Since the beginning of the project, the Department of Health has encouraged public hospitals to join; they are required to meet a number of conditions and undertake to implement the recommendations.

This project established three priority goals:

- Accreditation of hospitals, which would receive extra funding in order to adapt infrastructure within their maternity services;
- Training and awareness-raising for professionals;
- Involving women in decisions about their labour and treatment.

The requirements that the hospitals had to comply with included: establishing a system of coordination with the community care services, developing protocols for normal birth care, promoting the participation of women in decision-making and undertaking to adapt their infrastructure and provide space to care for women at low obstetric risk.

A series of workshops, sessions and courses on specific areas of childbirth care were held in order to train professional staff. To promote the participation of women, a "birth plan" was introduced.

Under the public health system, maternity care is available to all women living in Catalonia. This service includes provision of antenatal and postnatal care at community health centers and delivery care in maternity hospitals. Broadly speaking, midwives care for low-risk women throughout the process, and obstetricians take charge in the case of risk. Some women opt for private care; in such cases, care is provided by an obstetrician and the midwife works with the obstetrician during delivery care.

As several years have passed since this project was first implemented a process of evaluation is now underway, the aim of which is to assess the impact that the health policy set out in the 2008 strategy paper has had on maternity services in Catalonia. The evaluation process includes visits to accredited hospitals to determine the extent to which current practices promote a more woman-centred approach. In these visits we record information on the use of "birth plan", continuity of care and the initiatives introduced to encourage participation

and decision-making among women regarding the care they wish to receive during childbirth. We also analyse a series of indicators chosen to provide information about treatment practices within maternity services. These indicators examine aspects such as the use of obstetric interventions that are regarded as incompatible with normal childbirth (e.g. caesareans, the use of forceps, vacuum or unspecified instruments), as well as the kind of professional who takes the lead in the case of low-risk births. The category "unspecified instruments" includes the spatula, an obstetric instrument comprising two independent, non-articulated blades which adapt to the head of the fetus and which, unlike the forceps, act by pulsion rather than by traction. This type of instrument does not have a specific coding and so it is described here as "unspecified".

This paper presents the results from a part of this evaluation process, and includes information relating to both public and private hospitals. The specific objectives of this research were:

- To identify trends in the kind of obstetric interventions performed (caesarean, use of forceps, vacuum extractor or spatulas classified as non-specified instruments), taking as a reference the year prior to publication of the strategy paper on normal childbirth (i.e. 2007) and comparing the data with those for 2010 and 2012, two and four years after its recommendations were first implemented in Catalonia;
- To determine the distribution of obstetric professionals (i.e., obstetricians and midwives) who work in public and private hospitals in Catalonia and their terms of employment with their respective hospitals.

Methods

This was a descriptive study that aimed to examine changes in a series of indicators across three time points (2007, 2010 and 2012). The indicators considered concerned the use of caesarean section, forceps, a vacuum extractor or non-specified instruments during full-term (37–42 weeks) singleton births in Catalonia. These data were obtained by consulting the hospital discharge register, the Minimum Basic Data Set (MBDS). The register is mandatory for all public hospitals and is the basis for reimbursement. Each hospital discharge is registered with administrative information on the patient, hospital episode and hospital. The diagnoses are coded according to the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). Information is included from forty-four state assisted hospitals offering public services (public hospitals) and 20 of the region's 27 private hospitals.

In line with the second study objective, this paper also presents descriptive data regarding the distribution of obstetric staff in the two groups of hospitals. This information was extracted from an official government survey of hospitals that was published in 2010.

For the purposes of analysis, hospitals were classified as either public or private, and they were stratified (across four strata) according to the annual number of births recorded in their respective maternity service: S1: <600 births/year; S2: 600–1200 births/year; S3: 1201–2400 births/year; S4: >2400 births/year. Public hospitals were further classified according to whether or not they had been accredited to implement the recommendations of the 2008 strategy paper on normal childbirth. This classification (accredited vs. non-accredited) was made separately for the years 2010 and 2012. The unit of analysis in the present study is *the hospital*, it being assumed that this represents the overall effect of the organization on the likelihood of a given obstetric intervention being performed.

In order to observe any changes in the chosen indicators we took as a reference the year prior to publication of the strategy paper on normal childbirth (i.e. 2007) and compared the data with those for 2010 and 2012, two and four years after its recommendations began to be implemented in Catalonia. We first obtained an overview of any changes in the chosen indicators across the three time points. To do so, we examined the number of obstetric interventions performed at all hospitals. The aim here was to observe the trend for Catalonia as a whole across the study period.

A descriptive analysis was carried out for each group of hospitals. For each stratum we calculated proportions and confidence intervals (95%) for each indicator. We recorded the use (yes/no) of each obstetric intervention considered during full-term (37–42 weeks) singleton births. To determine whether the proportion of obstetric interventions had varied since the beginning of the project, a comparison of proportions was performed on the strata of the two groups of hospitals between 2007 and 2012 using the Z test (level of significance $\alpha = 0.05$).

Ethical approval

This study was exempt from review by the Ethics Committee of the Catalan Ministry of Health as it used publicly available, anonymised data. Furthermore, this paper forms part of the objectives set out in Project FEM2012-33067, *Maternity, Technology and Healthcare Relationships*", which has received approval from the Bioethics Committee of the University of Barcelona.

Results

This study includes all births attended during the years studied at 44 public hospitals and 20 private hospitals,

representing 98% of all births attended in Catalonia. During the study period the majority of full-term singleton births in Catalonia took place within public hospitals, although the proportion fell from 77% in 2007 to 69% in 2012. In 2010 a total of 27 public hospitals had been accredited to implement the normal childbirth initiative, and they provided care in 78% of births in public hospitals. By 2012 a further 5 hospitals had been accredited, and together these 32 institutions provided care in 88% of all full-term singleton births in the group of public hospitals (Figure 1).

Table 1 gives detail of women's age at the time of giving birth, the mean age of women who gave birth in public hospitals was lower at all three time points studied.

Table 1 Singleton births average maternal age in public and private hospitals

	Average maternal age	
Year	Public hospitals	Private hospitals
2007	29,89 (SD 5.47)	32.84 (SD 3.93)
2010	30,32 (SD 5,50)	33,38 (SD 3,90)
2012	30,75 (SD 5,60)	33,73 (SD 4,07)

Obstetric professionals

All hospitals in Catalonia have more obstetricians than midwives. The staff's employment situation depends on the type of hospital: public hospitals have a higher proportion of directly employed full-time or part-time staff, meaning that they are physically present at the hospital, whereas private hospitals have a higher proportion of associate health professionals, which generally means that they are not based at the hospital and only attend when required (i.e. "on call"). This pattern is observed for both obstetricians and midwives in both groups of hospitals. The greater number of obstetricians than midwives is found in all types of hospitals studied, regardless of whether they have more permanent or more associate staff, with just one exception: public hospitals classified as S3 (1201–2400 births/year) had more midwives than obstetricians (Table 2).

Obstetric interventions

The most common procedures carried out at the hospitals were caesareans: the proportions for the other kinds of intervention considered varied across strata and by year (Figure 2).

Hospitals classified as S1 (lowest number of births/year) performed the highest mean number of caesareans

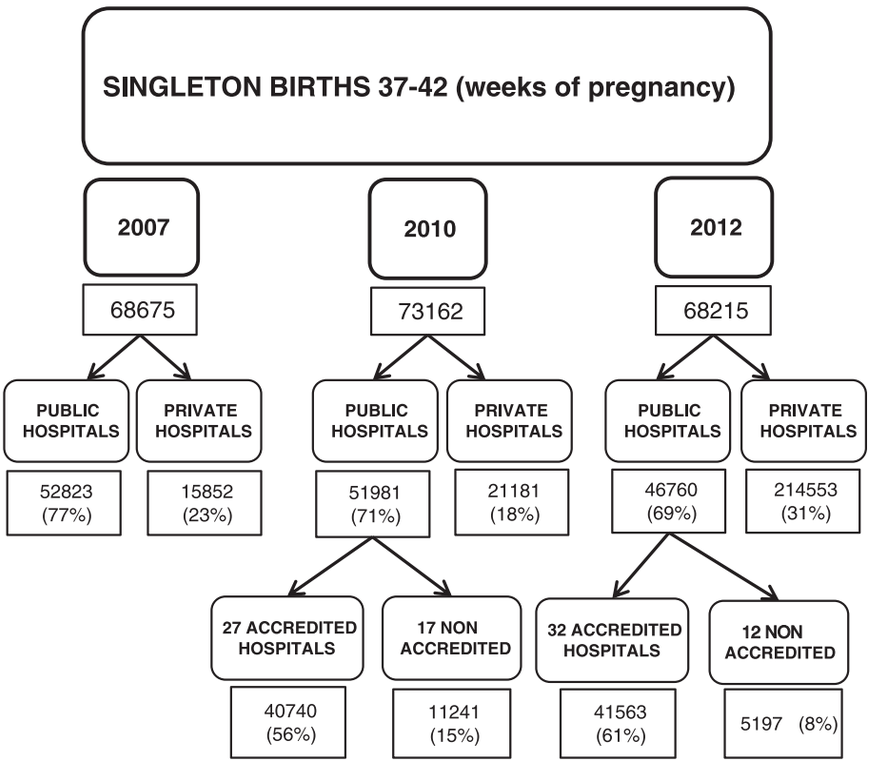
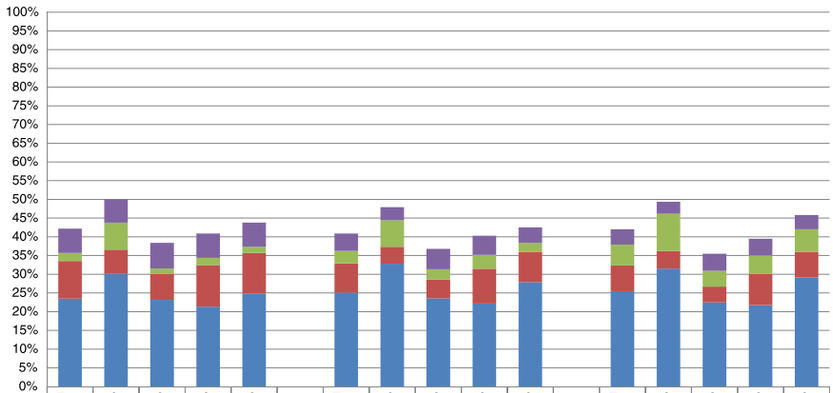


Figure 1 Distribution of singleton births in public and private hospitals.

Table 2 Health professional's distribution in public and private hospitals

		Hospital staff*		Associate health professionals	Hospital staff*		Associate health professionals	Hospital staff*		Associate health professionals	Hospital staff*		Associate health professionals
	Total	Total	N (%)	N (%)	Total	N (%)	N (%)	Total	N (%)	N (%)	Total	N (%)	N (%)
Stratum			S1			S2			S3			S4	
Number of public hospitals	**43**		**11**			**11**			**16**			**5**	
Obstetricians	**625**	**67**	66(98.50%)	1(1.49%)	**121**	119(98.34%)	2(1.65%)	**254**	254(100.00%)	0(0.00%)	**183**	181(98.90%)	2(1.09%)
Mildwives	**600**	**55**	52(5.45%)	3(5.45%)	**99**	98(98.98%)	1(1.01%)	**313**	307(98.08%)	6(1.91%)	**133**	133(100.00%)	0(0.00%)
Number of private hospitals	**16**		**5**			**3**			**3**			**5**	
Obstetricians	**493**	**94**	24(25.53%)	70(74.46%)	**52**	4(7.69%)	48(92.30%)	**77**	1(1.29%)	76(98.70%)	**270**	14(5.18%)	256(94.81%)
Midwives	**169**	**50**	28(56.00%)	22(44.00%)	**13**	1(7.69%)	12(92.30%)	**42**	5(11.62%)	38(88.37%)	**63**	25(39.68%)	38(60.31%)

Hospital Staff. includes health professionals working Full Time and Part Time.*



	Total	S1	S2	S3	S4	Total	S1	S2	S3	S4	Total	S1	S2	S3	S4
	2007					2010					2012				
% UI*	6,51	6,18	6,83	6,53	6,42	4,64	3,52	5,45	5,09	4,07	4,1	3,19	4,57	4,41	3,77
% Vacuum	2,15	7,22	1,49	1,93	1,7	3,34	7,09	2,73	3,75	2,52	5,59	9,98	4,21	4,97	6,08
% Forceps	10,01	6,45	6,92	11,08	10,81	7,81	4,5	5,09	9,25	8,04	6,89	4,69	4,22	8,35	6,81
%C-section	23,51	30,12	23,16	21,35	24,86	25,08	32,83	23,52	22,2	27,89	25,46	31,5	22,47	21,74	29,14

Figure 2 Obstetric interventions in all hospitals by stratum.

at all three time points. These hospitals also performed the highest number of obstetric interventions overall in all three years considered. When each stratum is considered separately the data show that in hospitals classified as S4 (highest number of births/year) the number of caesareans performed has increased from 24.86% (CI 24.47-25.25) in 2007 to 29.14% (CI 28.73-29.56) in 2012. In terms of the use of forceps, this has progressively decreased in all strata. All four strata show a trend towards an increased use of a vacuum extractor and a decrease in the use of non-specified instruments.

Table 3 shows data (including proportions and the corresponding confidence interval) for the types of obstetric interventions performed in each group of hospitals, by year and by stratum. The most relevant findings are summarized in the following two-sub-sections.

Group of public hospitals

Across the study period the proportion of caesareans performed in public hospitals ranged from 19.20% (CI 18.84-19.55) to 28.14% (CI 27.73-28.54). Comparison of the proportions for 2007 and 2012 by stratum shows that S3 hospitals present hardly any variations in the proportion of caesareans ($p = 0.113$). Among hospitals with the lowest annual numbers of births (S1 and S2) the proportion of caesareans decreased by 3.2% ($p = 0.012$) (S1) and 1.69% ($p = 0.002$) (S2) across the same period. By contrast, the proportion of caesareans performed increased significantly by 1.94% ($p = 0.000$) in hospitals with the highest annual numbers of births (S4).

The use of forceps showed a decreasing trend in public hospitals classified as S2 (p = 0.000), S3 (p = 0.000) and S4 (p = 0.000). Across both public and private hospitals the highest rate of forceps use in 2012 corresponded to public hospitals classified as S3 (8.98%; CI 9.24-8.72) and S4 (9.70%; CI 9.96-9.70).

The use of a vacuum extractor remained stable among S1 ($p = 0{,}335$) hospitals, but rose in S2 ($p = 0.000$), S3 ($p = 0.000$), and S4 ($p = 0.000$).

With regard to the use of non-specified instruments, proportions of this indicator decreased significantly in all four strata of public hospitals: S1 ($p = 0.000$), S2 ($p = 0.000$), S3 ($p = 0.000$), and S4 ($p = 0.000$). In 2012, the lowest proportion of vacuum use (1.15%; CI 1.06-1.25) corresponded to S4 hospitals, and the highest proportion (4.34%; CI 4.15-4.52) was found in S2.

Group of private hospitals

The proportion of caesareans performed in private hospitals across the study period ranged from 32.21% (CI 31.78-32.63) to 39.43% (CI 38.98-39.87). Between 2007 and 2012 there was a 6.09% increase in the number of caesareans performed in hospitals classified in S1 (p = 0.000) and a 3.33% increase in the number carried out by S3 hospitals (p = 0.003). Over the same period the use of forceps declined across all four strata, most notably among S2 private hospitals.

The use of a vacuum extractor was more common among private hospitals, the highest rate corresponding to S1 hospitals. Comparison of the figures for 2007 and 2012 shows that the use of a vacuum increased notably over this period in S1 (p = 0.000) and S3 (p = 0.000) private hospitals.

The use of non-specified (spatula) instruments showed a clear decline between 2007 and 2012. The use of these instruments in the S3 hospitals fell by 3.21% (p = 0.000) and by 4.75% in S4 private hospitals (p = 0.000), but the

Table 3 Obstetric interventions in public and private hospitals by stratum

		C-Section		Forceps		Vacuum		UI*	
		%	*CI*	%	*CI*	%	*CI*	%	*CI*
Public hospitals									
2007	**S1**	28.13	*26.36-29.91*	6.68	*5.69-7.66*	2.73	*2.08-3.37*	6.72	*5.73-7.74*
	S2	21.47	*20.65-22.30*	7.10	*6.59-7.62*	0.32	*0.20-0.43*	7.00	*6.48-7.51*
	S3	19.19	*18.71-19.69*	11.97	*11.56-12-37*	0.38	*0.30-0.46*	6.30	*5.99-6.60*
	S4	19.49	*18.89-20.11*	13.21	*12.69-13.73*	0.35	*0.26-0.44*	4.08	*3.77-4.38*
2010	**S1**	28.69	*27.05-30.33*	5.44	*4.61-6.26*	2.27	*1.73-2.81*	3.03	*2.40-3.65*
	S2	19.33	*18.50-20.15*	6.02	*5.53-6.52*	1.74	*1.46-2.01*	5.13	*4.67-5.59*
	S3	19.34	*18.85-19.83*	9.94	*9.57-10.32*	2.55	*2.36-2.75*	5.00	*4.73-5.27*
	S4	19.46	*18.83-20.09*	11.16	*10.66-11.66*	1.05	*0.89-1.21*	1.71	*1.50-1.92*
2012	**S1**	25.11	*23.19-27.04-*	6.48	*5.39-7.58*	2.52	*1.82-3.21*	2.16	*1.51-2.81*
	S2	19.78	*18.93-20.63*	4.77	*4.32-5.22*	2.99	*2.63-3.35*	4.34	*3.90-4.77*
	S3	19.63	*19.12-20.15*	8.98	*8.61-9.35*	3.67	*3.42-3.91*	4.35	*4.09-4.61*
	S4	21.44	*20.74-22.14*	9.70	*9.19-10.20*	2.00	*1.87-2.23*	1.15	*0.97-1.34*
Private hospitals									
2007	**S1**	32.21	*30.31-34.10*	6.21	*5.23-7.19*	11.95	*10.63-13.26*	5.61	*4.68-6.54*
	S2	35.66	*33.03-38.29*	5.56	*4.31-6.28*	10.19	*8.53-11.85*	5.56	*4.31-6.82*
	S3	36.10	*34.54-37.66*	5.04	*4.33-5.75*	12.48	*11.41-13,56*	8.10	*7.21-8.99*
	S4	34.93	*33.92-35.93*	6.28	*5.77-6.79*	4.23	*3.80-4,65*	10.82	*10.17-11.48*
2010	**S1**	38.65	*36.55-40.75*	3.19	*2.43-3.95*	13.86	*12.38-15.35*	4.20	*3.34-5.07*
	S2	38.15	*36.27-40.04*	1.85	*1.32-2.37*	6.21	*5.27-7.15*	6.56	*5.60-7.52*
	S3	38.33	*36.65-40.02*	3.79	*3.13-4.45*	13.12	*11.95-14.29*	6.05	*5.22-6.87*
	S4	37.49	*36.67-38.31*	4.50	*4.15-4.85*	4.20	*3.86-4.53*	6.75	*6.33-7.18*
2012	**S1**	38.30	*36.08-40.51*	2.80	*2.05-3.56*	17.80	*16.06-19.54*	4.26	*3.34-5.18*
	S2	34.93	*32.75-37.11*	1.69	*1.10-2.28*	9.86	*8.50-11.23*	5.67	*4.61-6.73*
	S3	39.43	*37.61-41.25*	3.08	*2.43-3.72*	15.86	*14.50-17.22*	*4.89*	*4.08-5.69*
	S4	35.90.	*35.14-36.67*	4.28	*3.96-4.60*	9.66	*9.19-10.14*	6.07	*5.69-6.45*

UI. unspecified instrument.*

decrease in S1 private hospitals was not significant ($p = 0.023$).

Accredited hospitals

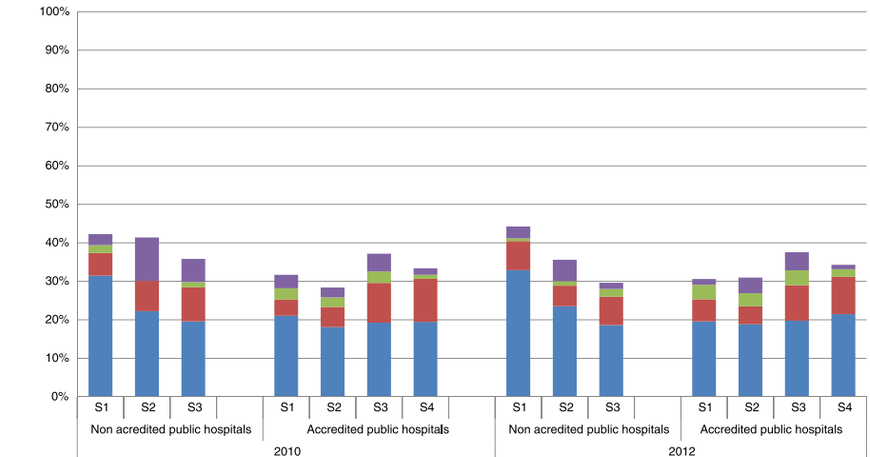
Figure 3 shows data for the 44 public hospitals according to whether or not they were accredited to implement the normal childbirth initiative. In 2010 a total of 27 public hospitals had been accredited, with a further 5 achieving accreditation by 2012. The data are presented for each year and by strata (Figure 3). All the public hospitals classified as S4 (highest number of births/year) had been accredited by 2010.

The most common obstetric intervention performed in accredited hospitals was a caesarean. The overall proportions in this sub-group ranged from 18.10% (CI 17.15-19.06) to 21.06% (CI 18.19-23.93) in 2010 and from 18.84% (CI 17.91-19.77) to 21.44% (CI 20.74-22.14) in 2012.

No relevant differences in the obstetric interventions performed were observed between these two years in any of the strata. The use of forceps was more common in S3 and S4 accredited hospitals, and the greatest number of interventions in both years corresponded to S3 institutions.

Non-accredited hospitals

In this sub-group the highest proportion of caesareans in both 2010 and 2012 corresponded to S1 and S2 hospitals. By summing the proportions corresponding to the columns in Figure 3 it can be seen that, in general, the four kinds of obstetric interventions considered in the present study are more commonly performed in non-accredited hospitals; note, however, that the proportion of interventions decreases progressively from S2 to S3 hospitals.



	2010								2012							
	Non acredited public hospitals				Accredited public hospitals				Non acredited public hospitals				Accredited public hospitals			
	S1	S2	S3		S1	S2	S3	S4	S1	S2	S3		S1	S2	S3	S4
% UI*	2,86	11,27	6,03		3,49	2,55	4,63	1,71	3,09	5,55	1,63		1,5	4,03	4,71	1,15
% Vacuum	2,02	0	1,37		2,97	2,47	2,96	1,05	0,74	1,18	2,01		3,79	3,44	3,89	2
% Forceps	5,91	7,88	8,84		4,16	5,24	10,33	11,16	7,54	5,31	7,35		5,73	4,64	9,2	9,7
%C-section	31,46	22,24	19,59		21,06	18,1	19,25	19,46	32,88	23,54	18,64		19,58	18,84	19,76	21,44

Figure 3 Obstetric interventions in accredited and non-accredited public hospitals by stratum.

Discussion

This paper forms part of a wider evaluation of maternity care services in Catalonia. The data used are derived from hospital discharge records that include diagnostic information and a description of any obstetric procedures used during labour. The paper focuses specifically on four obstetric interventions and examines changes in their use following implementation of the recommendations set out in a government strategy paper on normal childbirth. The indicators used here relate solely to interventions that may be performed during labour, a process which may also be influenced by other aspects of the maternity services available in a particular setting. In terms of the obstetric interventions that are performed, the findings reveal differences between public and private hospitals, and also between accredited and non-accredited public hospitals. This is especially evident with regard to caesareans, which have become more common in private hospitals over the study period considered here. This finding corroborates existing international previous research [15,4], as well as a study conducted in our geographical area [16]. It confirms the trend towards greater differentiation between public and private hospitals in this regard: the number of caesareans performed in public hospitals has remained stable in recent years, but in private hospitals it has risen.

The aim of this study was to provide a general overview of certain aspects of maternity services in Catalonia, both their organization (staffing) and some of the outcomes achieved. By grouping hospitals into different types and classifying them according to 1) the annual number of births recorded in their respective maternity service and 2) whether or not they are accredited to implement the normal childbirth initiative, it has been possible to observe differences that may be of key importance when it comes to further research and decision making in relation to healthcare policy.

In general, the number of obstetricians and midwives differs between public and private hospitals, and the employment situation of maternity health professionals and the institution also depends on the type of hospital. This could have implications for the kind of care they receive during labour with regard to the duration and type of care. This highlights the need to study other factors that may be relevant to the delivery of clinically and economically effective services [17,18]: for example, what sort of employment contract the staff should have, the kind of professionals who should be hired, the number of hours they need to work and the experience required by maternity care staff.

In the present study, hospitals were stratified according to the annual number of births recorded in their respective maternity service. The results showed that, in general, the highest numbers of obstetric interventions were performed by hospitals with a lower annual number of births. This could be interpreted as a negative finding, since in Catalonia hospitals are classified in three levels [19] according to their capacity to attend complications. According to this classification the hospitals where fewer births take place are also the ones that are less well equipped to deal with complicated births, and they tend to provide care to women at low obstetric risk. Research suggests that women at low obstetric risk are less likely to undergo an assisted birth in hospitals with smaller maternity departments or in 'birth centres' that operate a policy geared towards normal childbirth

[17,20,21]. The above finding therefore suggests that the current model of maternity care in these Catalan hospitals needs to be reconsidered in light of the implications it may be having for outcomes.

Caesareans were performed more often in private than in public hospitals. There were also differences between public and private hospitals in the distribution of proportions for the other kinds of obstetric interventions considered here. Our findings are consistent with previous studies that have compared the maternity outcomes of public and private hospitals either for the population as a whole or among women at low obstetric risk [15,22]. Our analysis showed that the use of a vacuum extractor is now more common and appears to be on the rise in private hospitals. While the use of forceps has declined overall, this kind of assisted birth is still more frequent in public than in private hospitals. Numerous studies have concluded that differences in the kind of obstetric interventions performed may be attributable to the type of hospital (public or private), in that the interventions used are not always justifiable in terms of the obstetric risk presented [2,22]. These findings highlight the need to examine whether such practices have a negative impact on maternal or neonatal health.

A final result to consider from the analysis of public hospitals is that fewer caesareans were performed in hospitals accredited to implement the *Strategy for Assistance at Normal Childbirth* than in hospitals that were not accredited. This finding highlights the importance of continuing to promote the recommendations in this strategy in all hospitals [14].

When new health policies are implemented, their impact must be periodically evaluated. It is important to know the opinions of service users. Much of the data used by public administrations in this regard is derived from hospital discharge records, which can be used to establish quality indicators and to examine how practices (in this case, obstetric intervention) may have changed since a new policy was implemented [23,24]. If our aim, as policy makers, is to explore the extent to which maternity services have become more women-centred, then data of this kind cannot provide exhaustive information [25,26], although they do have a role to play provided they are complemented by information obtained from women themselves and from professionals [27,28]. Some studies have used medical records and interviews with women to gather more detailed information about the maternity care received, since on many occasions there will be information recorded in the medical notes that is not mentioned in the discharge report. This reinforces the recommendation to record all treatment or interventions in a patient's medical records [29,3], and suggests the need for further consideration regarding the data that should be included in discharge reports.

This study aims to evaluate the impact that policy-making and national recommendations for normal childbirth care have on clinical practice. For this purpose, the hospital has been taken as the unit of analysis, obviating potentially different inter-professional practices.

We are aware that the characteristics of women attending private or public hospitals may vary and they could potentially affect the results.

This study did not consider clinical conditions, for example, whether caesarean sections were emergency or planned, since our objective was to analyses global intervention rates. The standards recommended in the *Strategy for Assistance at Normal Childbirth* on the different obstetric interventions discussed in this paper are assumed. These standards are useful as a reference to identify high intervention rates.

Conclusions

Caesareans are the most common obstetric intervention performed in the context of full-term singleton births in Catalonia. The number of caesareans carried out in public hospitals has remained stable, whereas there is an upward trend in the use of this procedure by private hospitals. The use of a vacuum extractor has become more common, most notably among private hospitals.

In the sub-group of non-accredited public hospitals the highest proportion of caesareans corresponded to those hospitals with the lowest annual number of births (S1), and this proportion increased between 2010 and 2012. Among accredited public hospitals the proportion of caesareans was within a limited range in all four strata (i.e. regardless of the annual number of births they recorded), and it remained stable over the study period.

Analysis of staff profiles according to the stratification of hospitals by annual number of births showed that almost all the hospitals (with the exception of S3 public hospitals) had more obstetricians than midwives among their maternity care staff.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

RE was involved in the conception and design of the study, the acquisition, analysis and interpretation of data and drafting of the manuscript. JG was involved in the conception, design, interpretation and drafting of the manuscript. MJP was responsible for the acquisition, analysis, and interpretation of data. NG, IU, IE and CC contributed important intellectual content and contributed to drafting the manuscript. VO revised the manuscript and gave final approval of the version to be published. All authors read and approved the final manuscript.

Authors' information

RE is coordinating the project to implement the *Strategy for Assistance at Normal Childbirth in the National Health System* in Catalonia that involves 32 public Hospitals. He is also involved in the ISCH COST Action IS1405 Building Intrapartum Research through Health-An interdisciplinary whole System Approach to Understanding and Contextualising Physiological Labour and Birth (BIRTH) and is too a partner member of the research team project FEM2012-33067.

JG is the Principal Researcher of Project FEM2012-33067 "Maternidad, Tecnología y Relación Asistencial" and leader of the research group SGR2014-156 "*Grup d'estudis en Dones Salut I Ètica de la Relació assistencial* (eDOSIER)" recognized by the Ministry of Economy and Knowledge of the *Generalitat* of Catalonia (Spain). NG, IU and CC are researchers of Project FEM2012-33067. NG and IU are too members of the research group SGR2014-156.

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Author details

[1]Department of Experimental and Health Sciences, Universitat Pompeu Fabra (UPF), Barcelona, Spain. [2]Directorate-General for Health Planning and Research, Ministry of Health of the Government of Catalonia, Barcelona, Spain. [3]Department of Public Health, Mental Health and Perinatal Nursing, Universitat de Barcelona, Bellvitge Health Sciences Campus, Pavelló de Govern, 3a planta, C/Feixa Llarga s/n, 08907 L'Hospitalet de Llobregat, Barcelona, Spain. [4]Hospital de Manresa, Fundació Althaia, Manresa, Spain. [5]Observatory on Women's Health, Subdirectorate for Quality and Cohesion, Ministry of Health, Social Services and Equality, Madrid, Spain. [6]Faculty of Economic and Business Sciences, Universitat Pompeu Fabra (UPF), Barcelona, Spain.

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Capítulo 3

Cross-sectional study comparing public and private hospitals in Catalonia: Is the practice of routine episiotomy changing?

Ramón Escuriet
María J Pueyo
Mercedes Pérez-Botella
Xavi Espada
Isabel Salgado
Analía Gómez
Herminia Biescas
Isabel Espiga
Joanna White
Rosa Fernández
Josep Fusté
Vicente Ortún

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Cross-sectional study comparing public and private hospitals in Catalonia: Is the practice of routine episiotomy changing?

Ramón Escuriet[1,2,3*], María J Pueyo[1], Mercedes Perez-Botella[4], Xavi Espada[5,6], Isabel Salgado[3], Analía Gómez[3], Herminia Biescas[1], Isabel Espiga[7], Joanna White[8,9], Rosa Fernandez[10], Josep Fusté[11] and Vicente Ortún[12]

Abstract

Background: In Spain, the Strategy for Assistance in Normal Childbirth (SANC) promoted a model of care, which respects the physiological birth process and discards unnecessary routine interventions, such as episiotomies. We evaluated the rate of episiotomy use and perineal trauma as indicators of how selective introduction of the SANC initiative has impacted childbirth outcomes in hospitals of Catalonia.

Methods: Cross-sectional study of all singleton vaginal term deliveries without instrument registered in the Minimum Basic Data Set (MBDS) of Catalonia in 2007, 2010 and 2012. Hospitals were divided into types according to funding (public or private), and four strata were differentiated according to volume of births attended.
Episiotomies and perineal injury were considered dependent variables. The relationship between qualitative variables was analysed using the chi-squared test, and Student's *t*-test was used for quantitative variables. Comparison of proportions was performed on the two hospital groups between 2007 and 2012 using a Z-test. Logistic regression models were used to analyse the relationship between episiotomy or severe perineal damage and maternal age, volume of births and hospital type, obtaining odds ratios (OR) and 95% confidence intervals (CI).

Results: The majority of normal singleton term deliveries were attended in public hospitals, where maternal age was lower than for women attended in private hospitals. Analysis revealed a statistically significant ($P < 0.001$) decreasing trend in episiotomy use in Catalonia for both hospital types. Private hospitals appeared to be associated with increased episiotomy rate in 2007 (OR = 1.099, CI: 1,057–1,142), 2010 (OR = 1.528, CI: 1,472–1,587) and 2012 (OR = 1.459, CI: 1,383–1,540), and a lower rate of severe perineal trauma in 2007 (OR = 0.164, CI: 0.095–0.283), 2010 (OR = 0.16, CI: 0.110–0.232) and 2012 (OR = 0.19, CI: 0.107–0.336). Regarding severe perineal injury, when independent variables were adjusted, maternal age ceased to have a significant correlation in 2012 (OR = 0.994, CI: 0.970–1.018).

Conclusions: Episiotomy procedures during normal singleton vaginal term deliveries in Catalonia has decreased steadily since 2007. Study results show a stable incidence trend below 1% for severe perineal trauma over the study period.

Keywords: Episiotomy, Perineal trauma, Maternity services organisation

* Correspondence: rescuriet@catsalut.cat
[1]Directorate-General for Health Planning and Research, Ministry of Health of the Government of Catalonia, Barcelona, Spain
[2]Department of Experimental and Health Sciences, Universitat Pompeu Fabra (UPF), Barcelona, Spain
Full list of author information is available at the end of the article

Background

Recent evidence has led to publication of recommendations about best practice in supporting normal childbirth. These recommendations focus on a model of care that centres on women's needs, respects the physiological birth process and discards unnecessary routine interventions, such as episiotomies.

Episiotomy was originally incorporated as a routine clinical practice [1] to reduce the risk of foetal distress and perineal damage. The intervention is routinely recorded in childbirth procedure documentation, together with diagnosis of perineal trauma. Analysis of both phenomena is widely used to assess quality in maternity care [2-5].

After many years of the routine practice of episiotomy, the document "Appropriate Technology for Birth" published by the World Health Organisation (WHO) [6] acknowledged that routine use of the procedure was unjustified and recognised the importance of informing women about the procedure and respecting their wishes. In addition, systematic reviews [7,8] have concluded that routine use of episiotomy does not benefit the mother or infant. These developments have led to a change in the recommendations made by scientific bodies; a more selective use of the intervention is now favoured. Other studies have revealed the economic cost of episiotomy [9] and the economic impact of a reduction in its use [10,11].

Recommendations concerning the selective use of episiotomy published in 2006 by the American College of Obstetricians and Gynecologists (ACOG) [12] revealed that medial episiotomies were associated with a greater risk of third- and fourth-degree tears when compared with mediolateral episiotomies, and confirmed that routine episiotomy does not prevent perineal damage or associated incontinence. Other guidelines recommending restrictive use of episiotomy have emerged, such as those developed jointly in 2007 by the National Institute for Health and Care Excellence (NICE) and the Royal College of Obstetricians and Gynaecologists (RCOG) [13]. In Spain, a clinical practice guideline [14] was published in 2010, promoted by the Ministry of Health, Social Services and Equality (MHSSE) as part of its Strategy for Assistance in Normal Childbirth (SANC) within the Spanish National Health Service [15].

While clinical practice guidelines recommend practices based on the best available evidence, their everyday implementation is not without its challenges. Some health service providers have very strict protocols that are difficult to access and review, and some providers have adopted practices over the years that have become ingrained and are difficult to change. There are also economic drivers that leave little room for change [16-18]. The importance of integrating scientific evidence into clinical practice so as to improve care is well recognised; however, translation of knowledge into practice does not generally happen automatically. Strategies are often required to implement good clinical practice and adapt protocols to emerging knowledge [19].

Quality indicators, such as the rate of third- and fourth-degree perineal tears, are used to evaluate the quality of maternity services [20]. These are based on published clinical guidelines and are of paramount importance when comparing different models of care [21]. In Spain, introduction of the SANC in 2008 promoted changes in the model of care, orienting maternity care towards the needs of women and their families. Adoption of this strategy in Catalonia led to a project that provided funds to 32 hospitals to help them improve their labour and delivery rooms, to improve the information given to women so as to encourage them to participate in decision making about delivery, and to enhance staff training in the area of promoting natural childbirth. SANC recommendations have enhanced the incorporation of good clinical practice in normal deliveries, such as the selective use of episiotomy.

Several years after the introduction of SANC in Catalonia, it is important to review the initiative and understand its impact. For that purpose, an evaluation of the care provided during normal childbirth is underway. As part of this evaluation, we are analysing complied data about the structure and organisation of hospitals, obtained through a national database containing information about each hospital that provides maternity care. In addition, we are conducting visits to those hospitals that have received funds (accredited hospitals), and a series of indicators related to care processes and outcomes in relation to normal deliveries have been developed to assess performance. Analysis of data so far shows some differences between public and private hospitals in certain aspects of service organisation and outcomes [22]. Evolution of the rate of episiotomy use and perineal trauma in singleton vaginal term deliveries without instrumentation provides an important indication of how the selective use of episiotomy has impacted outcomes in both public and private hospitals.

The current study was therefore developed as part of the evaluation of care provided during normal births in Catalonia, with the following objectives:

- To determine trends of the global episiotomy rate in singleton vaginal term deliveries without instrument in Catalonia
- To identify trends of the global severe perineal trauma rate (third- and fourth-degree tears) in singleton vaginal term deliveries without instrument in Catalonia

The current recommended rate of episiotomies varies between less than 30% [10] and less than 15% [8]. As a standard reference in this work, we adhered to the WHO recommended episiotomy rate for comparison purposes, which is between 5% and 20%.

Methods

We performed a cross-sectional study of all singleton vaginal births at term without instrumentation registered in the Minimum Basic Data Set (MBDS) of Catalonia in 2007, 2010 and 2012. These three time points were chosen to assess trends of the global rate of episiotomy and severe perineal trauma, from 1 year prior to the publication of SANC (2007) and for subsequent years (2010 and 2012), corresponding to 2 and 4 years after publication of the strategy, respectively.

The MBDS is mandatory for all public hospitals and provides the basis for state funding. Its use has been extended to private hospitals with a good record of diagnoses and procedures. The MBDS compiles information from 44 public and 20 (out of a total 27) private hospitals, thereby representing data for 98% of all births in Catalonia.

Data collection

We first identified all singleton term deliveries (between 37 and 42 weeks' gestation) registered in the MBDS during the three time points. Included births met the following criteria: vaginal delivery with no accompanying principal or secondary codes for C-section, forceps, vacuum or unspecified instrumental delivery. Included births were then attributed to the hospital where they were attended.

The unit of analysis in our study was the hospital, with the presumption that the nature of the health care organisation influences the probability that an obstetric intervention will be carried out. For our analysis, hospitals were divided into two types according to funding (public or private) and four strata were differentiated according to the volume of births attended (stratum 1 (S1): <600 births pa, stratum 2 (S2): 600–1200 births pa, stratum 3 (S3): 1201–2400 births pa, stratum (S4): >2400 births pa).

Episiotomies and severe perineal trauma were considered dependent variables and their analysis was restricted to singleton vaginal births at term without instrument. Episiotomies were recorded as yes/no and severe perineal trauma was analysed according to degree of perineal tearing, with third- and fourth degree tears being grouped together into a category of "severe perineal trauma" whether tearing occurred spontaneously or after an episiotomy had been performed.

Independent variables were maternal age, type of hospital funding and strata of attended births. A descriptive analysis for each group of hospitals and strata was carried out using the mean and confidence interval (95%) for each dependent variable.

To determine whether the proportion of episiotomies performed had changed since introduction of the SANC strategy, a comparison of proportions was performed on the two hospital types between 2007 and 2012 using the Z-test (level of significance $\alpha = 0.05$).

The relationship between qualitative variables was analysed using the chi-squared test and Student's *t*-test was used for quantitative variables. Finally, logistic regression models were used to analyse the relationship between episiotomy or severe perineal damage and maternal age, volume of births and type of hospital (private or public).

Ethical approval

This study was exempt from review by the Ministry of Health, Government of Catalonia Ethics Committee because it used publicly available, anonymised data.

Results

Singleton vaginal term deliveries without instrument represented more than half of all singleton term births, most of which were attended in public hospitals in Catalonia over the three time periods studied. Figure 1 shows the distribution of both included and excluded births.

Average maternal age was also calculated and analysed in relation to hospital type. This analysis revealed that the age of women experiencing singleton vaginal term deliveries without instrument was lower in public hospitals than that of women giving birth in private hospitals (Table 1).

Figure 2 shows a downward trend in the global episiotomy rate in Catalonia and also in both hospital groups. All three indicators show a significant decrease ($P < 0.001$) since 2007. The most marked downward trend can be observed in private hospitals, which may be explained by the fact that their starting rates (prior to adoption of the new strategy) were markedly higher and these rates have significantly decreased over the last 5 years.

The distribution of episiotomy rates and severe (third- and fourth-degree) perineal tears can be seen in Figures 3 and 4. Hospitals in both groups (private and public) were combined by strata according to their volume of births, and percentages and confidence intervals were calculated for episiotomies and severe perineal trauma for all births occurring in each stratum. Figure 3 shows a nonuniform distribution in the episiotomy rate, with a higher variability observed between strata in private hospitals; a more elevated rate is evident in S3 of this group across the three time points reviewed. It can be seen that severe perineal trauma remained below 1% in both groups and in all strata over the 3 years analysed.

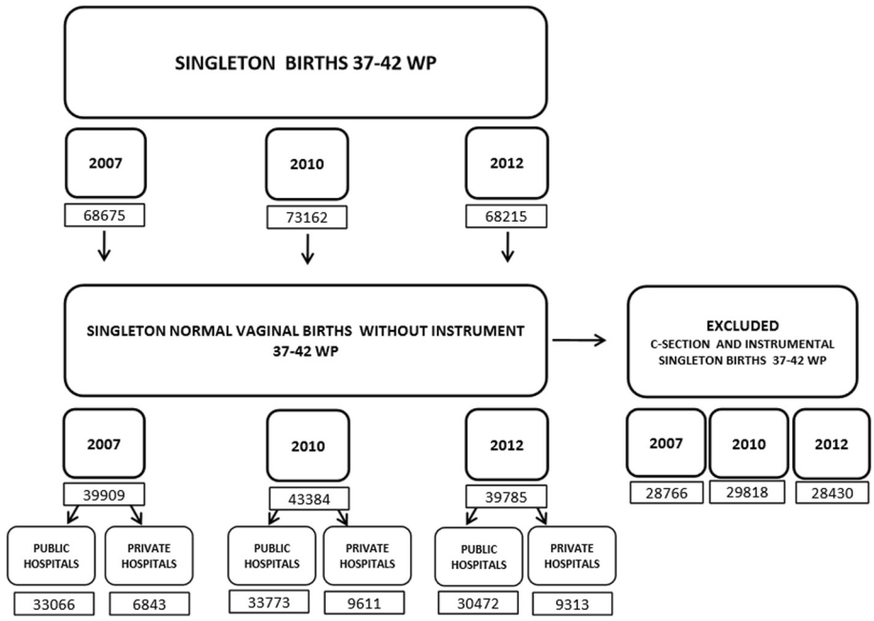

Figure 1 Births distribution in two types of hospital.

Multivariate analysis (Table 2) shows a significant correlation between the use of episiotomy, private hospitals and the volume of births over the study period. Private hospitals were associated with an increased rate of episiotomy and a lower rate of severe perineal trauma. When independent variables are adjusted, maternal age ceases to have a significant correlation. Although both dependent variables were initially positively associated with the volume of births, this association did not reach significant levels in 2012.

Discussion

This study is part of an ongoing, wider evaluation of maternity care in Catalonia, in the context of the SANC strategy to promote natural childbirth and following the development of several initiatives to promote best clinical practice. The overall aim of the evaluation is to enhance knowledge about the use of obstetric interventions, the organisation of maternity care, and women's satisfaction with the care received during pregnancy and delivery. For this purpose, visits have been made to the 32 hospitals that have adopted SANC, a survey of women's experiences is being conducted, and a series of indicators about the use of obstetric interventions in normal singleton vaginal births are being assessed.

The data used in the current study were generated from an existing birth record database owing to its ease of access and consistency in data entry [23]. We investigated the use of episiotomy and occurrence of severe perineal damage, as defined above, as indicators of the quality and effectiveness of maternity care [2,3,5]. The rationale for this analysis was that studying trends in relation to these indicators over a period of time could provide some measure of the impact on clinical practice of implementing the SANC recommendations.

Throughout the period studied, maternal age as an independent variable nearly reached statistical significance in the prediction of severe perineal trauma; younger age appeared to be associated with a higher incidence risk. The type of hospital where the birth occurred was found to be associated with either increased use of episiotomy or increased incidence of perineal damage. Volume of

Table 1 Distribution and average maternal age in singleton vaginal births at term without instrument (37–42 wks)

YEAR	Public hospitals		Private hospitals	
	% of births attended	Average marternal age	% of births attended	Average maternal age
2007	82.85%	29,73(SD 5,51)	(17.14%)	32,9 (SD 3,84)
2010	77.84%	30,08 (SD 5,57)	(22.15%)	33,32 (SD 3,82)
2012	76.59	30,45 (SD 5,63)	(23.40%)	33,65 (SD 3,88)

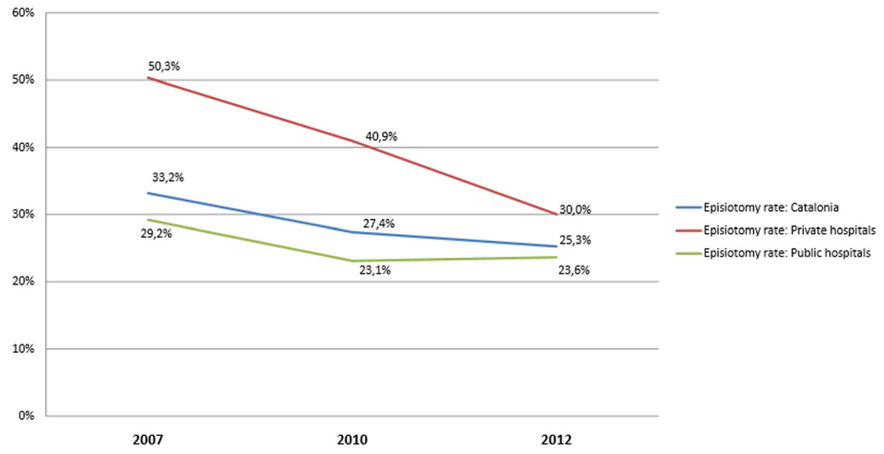

Figure 2 Tendency of the evolution of the episiotomy rate.

births was an independent variable for the prediction of episiotomy from 2007 to 2012, at which point it ceased to predict severe perineal damage. This finding is consistent with another study where the likelihood of perineal laceration did not differ significantly by birth volume [24].

Using 2007 as a reference point, the results of this study confirm that the use of the episiotomy has decreased steadily in all Catalonian hospitals and that the SANC recommendations for selective use of this intervention are being followed. This finding strengthens other recommendations [25] regarding the importance of developing clinical guidelines and education programmes nationwide that target providers, encouraging them to change their practices of episiotomy use. This is especially important because restrictive use of this intervention does not affect neonatal outcomes [26] and is associated with reduced blood loss [27]. A good example of such strategies is the programme for midwives and obstetricians developed and implemented in Norway, which saw a reduction in the incidence of third- and fourth-degree tears [28]. On the other hand, a recent study on the performance of episiotomies in the United States questioned whether systematic reviews can change

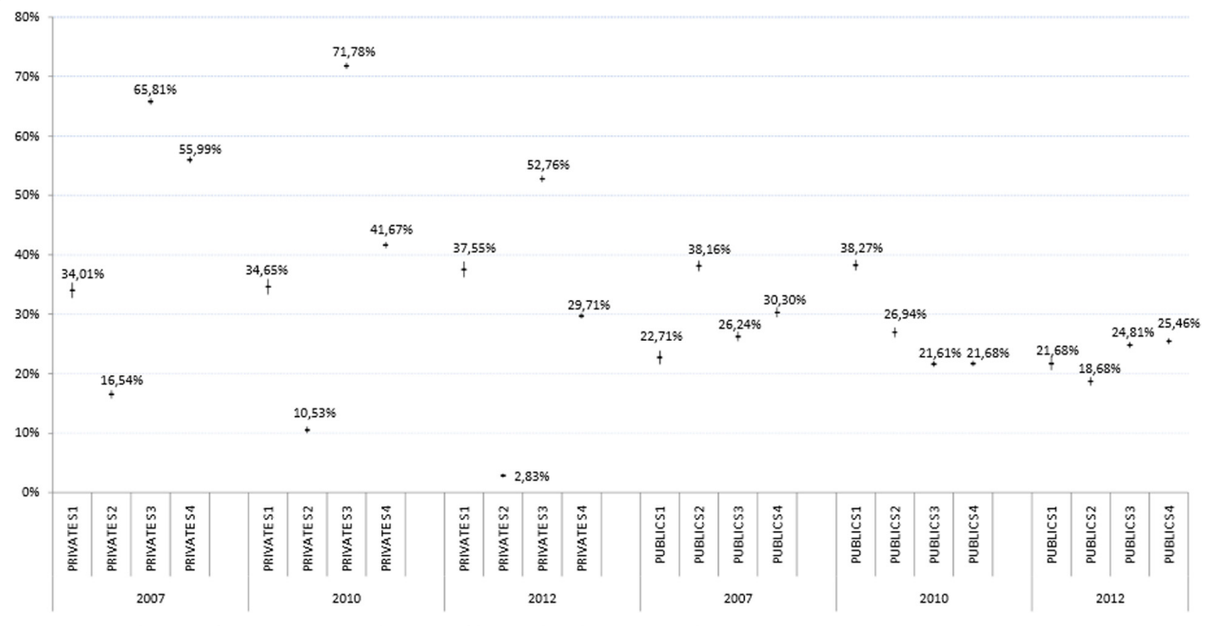

Figure 3 Distribution of episiotomy rates by type of hospital and stratum in the tree times point.

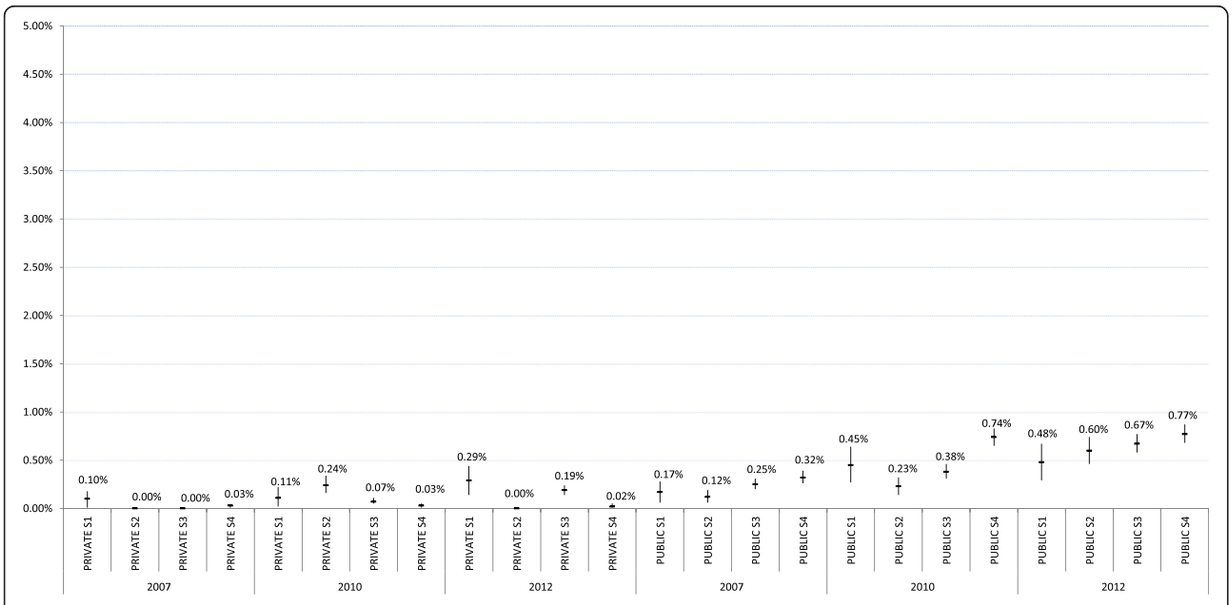

Figure 4 Distribution of severe tear rates by type of hospital and stratum in the tree times point.

practice. The results of this study showed a gradual reduction in the episiotomy rate and concluded that it was negative obstetric outcomes associated with routine performance of the intervention that prompted professionals to change protocols and align them with recommendations arising from scientific evidence [29,30]. Similar conclusions have been reached in France [31], Finland [32] and Spain [33].

Existing evidence indicates that prophylactic nominal episiotomy does not prevent the risk of severe perineal damage [7]. In addition, the risk of subsequent severe perineal trauma for women who have previously undergone episiotomy is no higher than that for other women, and therefore episiotomy to prevent subsequent trauma is not justified [13-15]. The results of our study showed a stable incidence trend for severe perineal trauma over the period examined (below 1%). However, a marked difference between the two types of hospitals was observable. A study published in 2013 [34], which examined morbidity associated with the use of episiotomy, provided new information that complements existing knowledge generated from Carroli's systematic review [7], thus reinforcing the recommendation to restrict episiotomy use and confirming that this approach reduces pain and dyspareunia without increasing urinary or faecal incontinence.

As part of the wider evaluation mentioned above, qualitative information was collected via semi-structured interviews with senior managerial staff in the 32 public hospitals that had obtained funding to implement SANC. In these interviews, some key aspects relating to the organisation of services were explored, in particular the organisation of maternity care. A common denominator in all hospitals was identification of the midwife as the lead carer for women throughout the childbearing continuum, including birth. This information is very

Table 2 Episiotomy and severe perineal tear association with maternal age, type of funding and volume of activity of the hospital

		Maternal age		*P*	type of hospital (public or private)		*P*	Volume activity		*P*
		Odds R	(CI)		Odds R	(CI)		Odds R	(CI)	
2007	Episiotomy	0,977	0,973-0,980	*0,000*	1,099	1,057-1,142	*0,000*	1,139	1,118-1,161	*0,000*
	Perineal tears 3-4°	0,984	0,961-1,008	*0,189*	0,164	0,095-0,823	*0,000*	1,365	1,154-1,615	*0,000*
2010	Episiotomy	0,97	0,966-0,973	*0,000*	1,528	1,472-1,587	*0,000*	1,05	1,030-1,070	*0,000*
	Perineal tears 3-4°	0,991	0,975-1,008	*0,309*	0,16	0,110-0,232	*0,000*	1,171	1,039-1,320	*0,000*
2012	Episiotomy	0,971	0,967-0,976	*0,000*	1,459	1,383-1,540	*0,000*	1,136	1,105-1,168	*0,000*
	Perineal tears 3-4°	0,994	0,970-1,018	*0,628*	0,19	0,107-0,336	*0,000*	1,054	0,890-1,249	*0,540*

valuable, permitting us to identify a factor in care delivery that is not recorded in official databases or hospital record systems and confirms that the majority of normal vaginal births are attended by midwives.

Finally, it is important to remember that recommendations for episiotomy use in Catalonia are framed within a strategy (SANC) that supports a model of care within which birth is considered a normal physiological process. The adoption of this model has entailed a series of changes, including physical improvement of the hospitals involved as well as pressure from local government encouraging providers to modify clinical practices that are not supported by scientific evidence.

Procedural changes within hospitals associated with SANC appear to have contributed toward modification of some obstetric practices, such as the routine use of cardiotocography during labour that allows women more freedom of movement during the second stage of labour, water use during the first and second stages of labour, progressive introduction of alternative therapies during labour, and alternative birth positions. All of these changes may have contributed to some degree to the steady fall of episiotomy rates in Catalonia. In light of these study results, introduction of indicators that measure these new developments in birth record databases is recommended, as a means of both documenting and promoting a model of maternity care that truly considers and evaluates birth as a normal physiological process [35].

We were unable to assess current rates of perineal trauma for singleton vaginal births at term when an episiotomy had been performed. It would be of interest to investigate the incidence of perineal trauma following episiotomy.

It would also be interesting to investigate other contributing factors and their relationship with the type of health care professional attending the birth, characteristics of the hospital where the birth took place, and maternal characteristics.

Existing data regarding diagnoses and obstetric interventions only refer to undesirable health outcomes. However, as already noted, it would be beneficial to record results about optimal health outcomes, such as intact perineum after normal vaginal delivery. This would permit a broader understanding of birth outcomes and shift the current focus on negative outcomes to a more positive examination of maternity care related to normal birth outcomes.

Limitations

This study aimed to evaluate the impact of national guidelines and recommendations on clinical practice. For this purpose, the hospital was taken as the unit of analysis, obviating potential different interprofessional practices.

We are aware that the characteristics of women attending private or public hospitals may vary, which could potentially affect the results. Also, information about parity for every woman included in the study was not available.

Another important limitation lies in the nature of the available data, which does not permit a distinction between spontaneous severe perineal damage or that arising after an episiotomy has been performed.

Caution is essential in the interpretation of these data, as underreporting of severe perineal damage could skew the results [29]. Nevertheless, there is evidence that maintenance of records relating to hospital activities and accurate coding of information have significantly improved in the Catalonian region, especially in publicly funded hospitals.

Conclusions

The rate of episiotomies performed during singleton vaginal term deliveries without instrument has decreased since 2007 in both private and public hospitals in Catalonia, and severe perineal trauma in all births has been maintained at a rate below 1%.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

RE was involved in study conception and design, data acquisition, analysis and interpretation, and drafting of the manuscript. MJP was responsible for data acquisition, analysis and interpretation. MPB, XE, MAG and IS contributed important intellectual content and to drafting of the manuscript. IE, HB, RF, JW, JF and VO contributed to critically revising the manuscript for important intellectual content. VO revised the manuscript and gave final approval of the version to be published. All authors have read and approved the final manuscript for publication.

Authors' information

RE coordinates the project for normal delivery assistance in Catalonia that involves 32 public hospitals, and is also involved in the ISCH COST Action IS1405: Building Intrapartum Research Through Health – An Interdisciplinary Whole System Approach to Understanding and Contextualising Physiological Labour and Birth (BIRTH).

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Author details

[1]Directorate-General for Health Planning and Research, Ministry of Health of the Government of Catalonia, Barcelona, Spain. [2]Department of Experimental and Health Sciences, Universitat Pompeu Fabra (UPF), Barcelona, Spain. [3]Consorci Sanitari Integral, Hospital General de l'Hospitalet, L'Hospitalet de Llobregat, Barcelona, Spain. [4]University of Central Lancashire, School of Health, Midwifery, Neonatal and Sexual Health Division, Preston, UK. [5]Institut Català de la Salut, Unitat Atenció a la Salut Sexual i Reproductiva, Granollers, Spain. [6]Fundació Hospital Asil de Granollers, Granollers, Spain. [7]Women's Health Observatory, Subdirectorate for Quality and Cohesion, Ministry of Health, Social Services and Equality, Madrid, Spain. [8]Centre for Research in Anthropology (CRIA-IUL), Lisbon, Portugal. [9]Visiting Fellow, King's College, London, UK. [10]Public Health Agency of Catalonia, Maternal and Infant Health Programme, Government of Catalonia, Barcelona, Spain. [11]The Union, Health and Social Entities Association, Barcelona, Spain. [12]Universitat Pompeu Fabra (UPF), Faculty of Economic and Business Sciences, Barcelona, Spain.

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Conclusiones y propuestas de futuro

1. Conclusiones

Para definir los criterios sobre la organización de los servicios sanitarios se ha de considerar, por una parte, los aspectos sobre la estructura y la distribución de competencias entre los equipos profesionales implicados en la atención a la maternidad. Y, por la otra, los factores asociados a la salud de las mujeres embarazadas y sus demandas de atención

Parece conveniente plantear la inclusión de indicadores, que permitan conocer el tipo de atención provista en situaciones que no presentan riesgos, e indicadores que evalúen resultados positivos en salud.

El volumen anual de partos atendidos en los hospitales y su tipo de financiación tienen un efecto significativo en la incidencia de la realización de cesáreas en Cataluña. El tipo de financiación también tiene un efecto en la incidencia de partos instrumentados.

La cesárea es la intervención más común entre los partos únicos a término en Cataluña. La tendencia observada en este indicador es estable en el grupo de hospitales públicos y tiende al aumento en los hospitales privados. En los hospitales públicos, la mayor proporción de cesáreas se encuentra entre los hospitales no acreditados para la atención al parto normal y con un menor volumen de partos.

La realización de episiotomía, en los partos únicos vaginales no instrumentados, ha experimentado un descenso significativo desde el año 2007. La proporción de lesiones perineales graves se ha mantenido por debajo del 1%.

2. Propuestas de futuro

a) Propuestas para la práctica

Seria recomendable optimizar el completo desarrollo de las competencias de todos los perfiles profesionales, que atienden a las mujeres embarazadas, y asegurar que las tareas o intervenciones sean realizadas por el/la profesional adecuado/a, aplicando el criterio de preferencia y asegurando la mejor relación entre el coste y el beneficio.

Conviene promover el registro de todas las actividades que se realizan durante la provisión de cuidados a las mujeres durante el proceso de parto, aunque no supongan una intervención obstétrica.

El uso e indicaciones de procedimientos e intervenciones en los servicios de maternidad deberían ser revisados, en especial en los hospitales con el menor volumen de actividad.

La tendencia observada en el uso de la episiotomía y los resultados obtenidos en relación a las lesiones perineales siguieren la conveniencia de fortalecer la recomendación del uso de episiotomía de forma no rutinaria.

Como resultado del trabajo de esta tesis, se ha recomendado la modificación de uno de los indicadores de compra de servicios sanitarios de los proveedores asistenciales del *Servei Català de la Salut*. El indicador de cesáreas incluido en los contratos del *Servei Català de la Salut* con los proveedores asistenciales de servicios sanitarios en el año 2015 incorpora las modificaciones sugeridas. (Anexo IV)

b) Propuestas para la investigación

Identificar criterios comunes que sean útiles para todos los modelos organizativos y específicos para la atención al

embarazo, parto y periodo postnatal en mujeres sin riesgos obstétricos e incorporarlos a los actuales modelos organizativos en Cataluña.

Se plantea elaborar un conjunto de indicadores útiles para plantear evaluaciones orientadas a la búsqueda de resultados positivos de salud materno-infantil.

Los hallazgos de esta tesis sugieren la necesidad de seguir investigando sobre los factores asociados al tipo de financiación de los hospitales y la organización de los servicios obstétricos.

La exploración de la realización de episiotomía y de las lesiones perineales graves sugiere la necesidad de explorar otros factores asociados a las condiciones de la mujer, como la paridad y parto vaginal anterior, episiotomía en parto anterior y, también, la posible asociación de la lesión perineal grave con la realización de la episiotomía durante el parto.

Otro aspecto importante para la investigación es la exploración de otros factores asociados al tipo de atención que recibe la mujer durante el periodo intraparto, como puede ser el movimiento durante la dilatación, el uso de medidas analgésicas farmacológicas o no farmacológicas, para el alivio del dolor, o la postura de la mujer durante el expulsivo.

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Anexos

Anexo I

1. Análisis de la situación

1.1. Organización de la atención al parto en los países industrializados.

1.2. Estrategia para la atención al parto normal en España.

1.3. La atención al parto en Cataluña.

1.4. Indicadores de evaluación de la atención durante el proceso de embarazo, parto y puerperio.

1. Análisis de la situación

Para contextualizar el trabajo realizado en esta tesis, en este anexo se ofrece una visión de la atención al parto con una perspectiva que va desde lo global hasta la situación específica en Cataluña. En esta línea, también se explica el tipo de evaluación realizada, cuyo planteamiento se ha basado, por una parte en los indicadores más utilizados en el contexto internacional y por otra parte en las fuentes de información disponibles en nuestro contexto para la recogida de los datos necesarios.

1.1 Organización de la atención al parto en los países industrializados

Existen diferentes modelos de organización para ofrecer atención sanitaria durante el embarazo, parto y periodo postnatal. Estos modelos dependen en gran medida del sistema de salud de cada país y de la cartera de servicios que se incluyen en el sistema público. Así, esta condición influirá en la organización de la atención a la maternidad, pues las prestaciones que no están incluidas en el sistema sanitario público de algunos países, han de contratarse, si la mujer lo requiere, de forma privada.

Para entender el porqué de los diferentes modelos es necesario abordar el tema desde una perspectiva histórica y social. La evolución de los diferentes sistemas de salud, la integración de los avances tecnológicos y de la evidencia científica se ha producido de forma diferente en los distintos países. Además, el entorno social y el papel de las mujeres en cada sociedad también han influido en la evolución de los diferentes modelos y culturas de organización de los servicios en los que se atiende el embarazo, el parto y el periodo de postparto. Se ha de entender pues, que los modelos actuales son dinámicos y siguen incorporando los cambios que determina el entorno de cada país. Uno de los factores que actualmente está influyendo en estos cambios es común en la mayoría de países industrializados, y es la preocupación creciente de los responsables de planificación

de los servicios sanitarios por las elevadas tasas de intervención y sus consecuencias en términos de salud y económicos.

1.2. Estrategia para la atención al parto normal en España

En el año 2008, después de analizar la situación en España y con el impulso del Ministerio de Sanidad y Política Social, se publicó la Estrategia de Atención al Parto Normal en el Sistema Nacional de Salud (EAPN). Los principales objetivos que persigue la EAPN son abordar las prácticas clínicas basadas en el mejor conocimiento, promover la participación de las mujeres usuarias en la toma de decisiones, promover la formación de profesionales sanitarios e investigar e innovar para mejorar y difundir las buenas prácticas en la atención al parto normal. Para la implantación de esta estrategia en España, el Ministerio de Sanidad y Política Social asignó un presupuesto, destinado a impulsar las acciones necesarias en todas las Comunidades Autónomas, para conseguir los objetivos planteados.

En el año 2010, después de dos años desde su aprobación y publicación, se realizó una evaluación con la que se pretendía identificar los objetivos que se habían alcanzado y los aspectos que eran susceptibles de mejora. Para el trabajo de evaluación se formó un grupo de expertos de los Comités Institucional y Técnico de la EAPN que elaboraron indicadores específicos de estructura, de proceso y de resultado. La evaluación se realizo sobre 105 hospitales materno-infantiles de toda España que fueron clasificados en cuatro estratos según el volumen de partos atendidos. La Tabla 1 muestra la comparación de resultados obtenidos para el conjunto de España y para Cataluña.

Tabla 1. Resultados de la evaluación de la EAPN en España

TIPO INDICADOR	FUENTE INFORMACIÓN	INDICADOR	CATALUÑA	ESPAÑA	ESTÁNDAR
ESTRUCTURA	PROTOCOLO 2010	Contenidos del protocolo de atención al parto y nacimiento (11 recomendaciones parto)	0%	15'5%	100%
		Contenidos del protocolo de atención al parto y nacimiento (10 recomendaciones contacto precoz)	12%	13'6%	100%
		Contenidos del protocolo de atención al parto y nacimiento (5 recomendaciones lactancia)	52%	50'5%	100%
PROCESO Y RESULTADO	HISTORIAS CLÍNICAS 2009	Partograma cumplimentado	59%	52'1%	100%
		Realización amniorrexis artificial	40'1%	46'6%	No establecido
		Estimulación con oxitocina	44'4%	53'3%	0'5-10%
		Partos inducidos	16'4%	19'4%	10%
		Uso de analgesia locoregional (epidural y raquídea)	80'9%	72'2%	30-80%
		Alumbramiento con manejo activo	16'3%	21'4 %	>70%
		Episiotomías en partos eutócicos	36'5%	41'9%	<15%
		Desgarros perineales III y IV con episiotomía	3'2%	4'7%	1-5%
		Desgarros perineales III y IV sin episiotomía	1%	1%	0'5-3%
		Partos instrumentales	21%	19'5%	<15%
		Uso de fórceps	13'7%	6'1%	5%
		Uso de espátulas	5'1%	3'2%	5%
		Uso de vacuum extractor	2'4%	10'2%	≤7%
		Parto vaginal tras cesárea	43'3%	44'2%	60-80%
	ENCUESTA 2010	Posición materna en el expulsivo	88%	87'4%	<30%
		Realización de maniobra de Kristeller	27'6%	26'1%	0%
		Contacto precoz madre-recién nacido	52'1%	50'2%	≥ 80%
	CMBD	Tasa de cesáreas	21'2%	21'9%	15%

Los resultados obtenidos en esta evaluación sirvieron para elaborar una serie de propuestas generales de mejora, seguir impulsando la implantación de las prácticas incluidas en la EAPN en España, y también para elaborar recomendaciones específicas para cada Comunidad Autónoma.

- Propuestas generales para España:
  - Organizativas y de gestión para la atención al parto:
    - Necesidad de actualizar y mejorar los protocolos de atención.

- Integrar las recomendaciones de la EAPN en los protocolos hospitalarios.
- Homogeneizar los partogramas.
- Consenso con grupos de interés y difusión de las recomendaciones y del plan de parto a la ciudadanía.

- Propuestas sobre la práctica asistencial:

  - Trabajar sobre la resistencia a los cambios (actitudes).
  - Favorecer cambios estructurales para facilitar algunas prácticas o procedimientos.
  - Análisis de las causas de no aplicación de las recomendaciones.

- Propuestas para la difusión y conocimiento de la EAPN:

  - Mejorar el conocimiento de la EAPN entre los profesionales.
  - Mejorar el flujo de comunicación entre el Ministerio y los diferentes niveles.

- Propuestas sobre coordinación entre agentes:

  - Mejorar la coordinación entre grupos de interés.
  - Buscar puntos coincidentes de interés.

- Propuestas de mejora de sistemas de información:

  - Mejorar la fiabilidad de fuentes de información en relación al proceso de parto. Codificación de procesos.
  - Establecer estándares de resultado deseable de referencia. Importancia de disponer de series amplias de indicadores de atención al parto normal.

- Propuestas relacionadas con la investigación:

  - Estimular la investigación. Análisis causal cualitativo sobre las causas que mantienen las prácticas actuales.

- Propuestas sobre el proceso de evaluación:

  - Mejorar la representatividad entre Comunidades Autónomas y la posibilidad de comparación.
  - Variables socio-demográficas de personas usuarias.
  - Análisis de relaciones entre indicadores y determinantes psicosociales de las mujeres atendidas.
  - Ampliación de variables estructurales de los centros y de los profesionales.
  - Complementariedad entre las bases de datos.

- Propuestas específicas para Cataluña:

  - Organizativas y de gestión para la atención al parto:

    - Impulsar la actualización de protocolos y la inclusión de todas las recomendaciones sobre la atención al parto, lactancia materna y contacto precoz.
    - Seguir impulsando la adecuación de las infraestructuras y dotación de material específico.

  - Propuestas sobre el proceso de evaluación:

    - Trabajar para consensuar grupos de indicadores y codificación sobre procedimientos.
    - Inclusión de variables estructurales de los centros para la evaluación.

- Propuestas relacionadas con la investigación:

    - Investigar sobre la causalidad en la relación a la variabilidad de las prácticas.

1.3. La atención al parto en Cataluña

El *Servei Català de la Salut* incluye en su cartera de servicios la atención durante el embarazo, parto y puerperio. El tipo de modelo de atención viene determinado por el *Departament de Salut* de la *Generalitat de Catalunya* a través del Plan Estratégico para la Atención a la Salud Sexual y Reproductiva que implica la organización de la atención en dos niveles; atención primaria y atención hospitalaria. La atención al parto de forma privada se cubre mediante seguros privados voluntarios o mediante pago directo al proveedor del servicio. En el caso de Cataluña, aproximadamente el 30% de los partos son atendidos en la red sanitaria privada conformada por hospitales privados, una "casa de partos" y profesionales agrupados o independientes que asisten partos en el domicilio.

En el sistema público, la atención sanitaria durante el embarazo y el puerperio, se provee a través de las Unidades de Atención a la Salud Sexual y Reproductiva (ASSIR) de Atención Primaria. La atención al parto y al puerperio inmediato se provee en las unidades de maternidad hospitalarias. Estas unidades hospitalarias se organizan con equipos profesionales multidisciplinares que atienden a la mujer y al recién nacido durante el parto y el nacimiento. Desde una perspectiva estructural se pueden identificar dos tipos de unidades, las unidades secuenciales, en las que se separan los espacios para la atención durante la dilatación, el parto y la recuperación postparto. Y las unidades integradas, donde se atiende a la mujer en el mismo espacio durante todo el proceso de parto y puerperio inmediato.

Desde la perspectiva de la planificación sanitaria, las maternidades de los hospitales se clasifican según su capacidad de atención a la complejidad. Esta clasificación

queda establecida en el Plan Estratégico de Atención Maternoinfantil en los Hospitales de la Red de Utilización Pública de Cataluña, que organiza los hospitales en cinco categorías (Tabla 2.) La clasificación de cada hospital viene determinada por los recursos disponibles en el centro para atender los casos complicados, tanto de la madre como del recién nacido, y se ordenan desde el nivel I, en el que se atienden los casos menos complejos, hasta el nivel IIIB donde se asisten los casos con mayor complejidad. Además se han previsto los circuitos de traslado, en caso de ser necesario, entre las diferentes categorías.

Tabla 2. Clasificación de los hospitales según su capacidad de atención a la complejidad

NIVEL	NÚMERO DE HOSPITALES
I	23
IIA	7
IIB	5
IIIA	6
IIIB	2

En los últimos años, algunos hospitales han realizado cambios en su infraestructura con el fin de adecuar los espacios y poder ofrecer una atención continuada a la mujer, en un mismo espacio y durante todo el proceso de parto y nacimiento. Estos cambios, junto con otras acciones se enmarcan en el programa para implantar buenas prácticas en la atención al parto normal del *Departament de Salut*.

a) Implantación de buenas prácticas para la atención al parto en Cataluña

A partir de la publicación de la EAPN en el año 2008, el Ministerio de Sanidad y Política Social incorporó una dotación presupuestaria para ayudar a las Comunidades Autónomas a implantar las recomendaciones que se incluyen en la EAPN. En el caso de Cataluña, el *Departament de Salut* inició un programa específico para su implantación, que

se coordina desde la *Subdirecció General de la Cartera de Serveis i del Mapa Sanitari* de la *Direcció General de Planificació i Recerca en Salut*.

En el marco de este proyecto se han priorizado tres líneas de acción que han sido promovidas mediante una dotación de presupuesto.

Las tres líneas de acción son:

- Adecuación de infraestructuras y dotación de material.
- Formación, sensibilización y difusión de información entre los profesionales de salud.
- Fomento de la participación de las mujeres en la toma de decisiones.

Hasta el momento se han adherido al proyecto 32 hospitales materno-infantiles de un total de 43, que han recibido soporte económico y técnico, para adecuar sus espacios, adquirir material específico e implantar las buenas prácticas recomendadas. Durante el año 2015 se espera la adhesión de dos nuevos hospitales.

En el marco de la formación, se han realizado diversos cursos de actualización en la atención al parto normal que se han organizado en colaboración con asociaciones científicas. Se ha elaborado información con recomendaciones específicas dirigidas a profesionales y se han actualizado guías de práctica clínica y protocolos de actuación. Además desde el año 2012, las recomendaciones de la EAPN forman parte del contenido del programa formativo de la especialidad de Enfermería Obstétrico-Ginecológica (Matrona), que se coordina desde la *Subdirecció de Ordenació Professional* de la *Direcció General de Planificació i Recerca en Salut*

La participación de las mujeres se ha impulsado a través de diferentes acciones. Por una lado a través de la utilización del “Plan de Parto”, que es un documento donde cada mujer puede solicitar cómo quiere ser atendida y expresar sus expectativas para el parto. El documento “Plan de Parto”, se

elaboró en el marco de la EAPN y se puso a disposición de las mujeres a través de la web del Ministerio de Sanidad.

Además se elaboró un documento adaptado a Cataluña y se recomendó que cada hospital adaptase y elaborase su propio documento de forma coordinada y consensuada con las unidades ASSIR de su área de referencia. Por otro lado se actualizó el documento *Guia per embarassades,* con información sobre el modelo actual de atención al parto normal, poniéndolo a disposición de las mujeres a través de la página web del *Departament de Salut*.

También se elaboró un cuestionario específico para explorar la percepción de la satisfacción de las mujeres con los cuidados recibidos durante el embarazo, parto y puerperio. Este cuestionario se confeccionó a partir de la información obtenida en grupos focales de mujeres y se incluyó en el Plan de Encuestas del *Servei Català de la Salut*. Los resultados obtenidos en las dos ediciones de esta encuesta realizadas hasta ahora, están siendo utilizados para identificar aquellos aspectos de atención valorados como no óptimos y proponer objetivos de mejora de calidad en este ámbito de atención del sistema sanitario público.

b) Organización de la atención al parto en los hospitales que están implantando buenas prácticas

Posteriormente a la evaluación de la implantación de la EAPN que se hizo en todo el Estado, se realizaron visitas a 30 hospitales de Cataluña, del total de 32, que ya se habían adherido al proyecto. Estas visitas se realizaron entre los años 2013 y 2014 para, por una parte, observar directamente los espacios en los que se atiende a las mujeres y, por otra, para conocer el tipo de organización de los equipos, recabar información adicional sobre la formación específica de los profesionales, sobre la participación de las mujeres y sobre la coordinación entre los dos niveles asistenciales, hospital y atención primaria.

Para la realización de las visitas el coordinador del proyecto en Cataluña se desplazó a cada hospital y se entrevistó con los responsables del servicio de maternidad. Este trabajo ha servido para identificar puntos comunes y relevantes y también diferencias en cuanto a la infraestructura, organización, planificación de actividades y distribución de tareas entre profesionales de los diferentes servicios visitados.

En cuanto a la infraestructura, se han observado diferentes niveles de adecuación en las adaptaciones realizadas en los espacios para la atención al parto normal (Figura 1). Estas adaptaciones van desde adecuaciones importantes o creación de nuevos espacios, hasta ajustes menores de los espacios existentes, que no suponen una mejora cualitativa para la atención al parto normal.

Figura 1. Infraestructura

INFRAESTRUCTURA					
Material específico	Nº hospitales	30			
Adecuación de espacios	Nº hospitales	10	5	12	3
	Tipo de adecuación	Creación de espacio específico para la atención al parto normal	Adecuación importante	Adecuación del espacio existente para mejorar la comfortablidad	Adecuación menor
		Instalación de bañeras (14)			

La coordinación entre los dos niveles de atención implica entre otras cosas, la comunicación entre el hospital y a las unidades ASSIR que atienden a la misma población de referencia del hospital.

Esta comunicación es importante para procurar una continuidad en los cuidados que se prestan y para mantener la homogeneidad en la información que reciben las mujeres sobre el tipo de atención que reciben durante todo el proceso, desde el embarazo, hasta el periodo postnatal.
Con esta finalidad el *Departament de Salut* y el *Servei Català de la Salut* han realizado recomendaciones a las instituciones sanitarias para que coordinen sus servicios y configuren equipos territoriales. Estos equipos territoriales pueden tener dependencia funcional (que no dependen de la misma institución) o dependencia orgánica (que dependen de la misma institución). Actualmente existen 43 hospitales

materno-infantiles públicos (además de un hospital con gestión privada, en la zona metropolitana de Barcelona, que registra un elevado número de partos con financiación pública) y 35 unidades ASSIR en todo el territorio de Cataluña, que trabajan para configurar estos equipos territoriales de atención maternoinfantil.

Los hospitales que se han visitado muestran diferentes tipos de coordinación (Figura 2), y se puedo apreciar la heterogeneidad todavía existente en este aspecto de organización que implicaba, desde el establecimiento de acuerdos para la coordinación, hasta la planificación de actividades concretas de forma puntual.

Figura 2. Coordinación entre niveles asistenciales

COORDINACIÓN ENTRE HOSPITAL -UNIDAD ASSIR			
Coordinación	**Nº hospitales**	**17**	**13**
	Tipo de coordinación	Coordinación establecida mediante acuerdos (coordinación funcional u orgánica). Implica periodicidad	Contacto funcional. Acuerdos puntuales
		Elaboración documentos comunes*: Plan de parto, protocolos, criterios derivación,……*	Planificación acciones puntuales
		Organización de actividades comunes*: formación, sesiones clínicas, reuniones periódicas*	

En relación a la formación continuada o actualización de conocimientos, se ha podido apreciar una gran variabilidad en la oferta y en la formación realizada por los profesionales que trabajan en estos hospitales. Por una parte, en todos los hospitales, se han identificado diversas actividades de formación externa, lo que supone que los profesionales han realizado cursos de formación específica sobre la atención al parto normal fuera de la institución.

La mayoría de esta formación corresponde a los cursos subvencionados por el *Departament de Salut* y organizados a través del entonces *Institut d'Estudis de la Salut* en colaboración con diferentes asociaciones científicas. Se realizaron diferentes tipos de cursos; sobre la atención al parto normal, sobre el liderazgo para la atención al parto normal y sobre investigación en buenas prácticas en salud reproductiva, además de varios talleres de reparación de lesiones perineales.

Por otro lado, se ha identificado una serie de iniciativas formativas internas del hospital, con diferentes temas y metodologías (Figura 3). En estos casos, el hospital promueve la formación y facilita la asistencia de los profesionales.

Figura 3. Formación

FORMACIÓN RELACIONADA CON LA ATENCIÓN AL PARTO NORMAL			
Formación externa	Nº hospitales	30	
Formación interna	Nº hospitales	23	7
	Tipo de formación	Formación promovida por el hospital i dirigida a los profesionales. Incluye formación específica para la atención al parto normal y formación en temas relacionados (lactancia, alivio del dolor, reparación perineal, utilización de material específico para la atención al parto normal)	No se ha realizado ningúntipo de formción específica
	Metodología	Talleres	
		Cursos	
		Sesiones específicas	

La participación de las mujeres se promueve de varias formas y con diferentes estrategias e intensidades. El método más utilizado es el “Plan de parto”, que en la mayoría de ocasiones se ha adaptado y elaborado en consenso con los profesionales de las unidades ASSIR de cada territorio y de acuerdo a los recursos disponibles en cada hospital. Sólo dos de los hospitales no disponen de este documento, uno de ellos, porque no lo ha elaborado y el otro porque, según explican los responsables, ofrecen una atención individualizada a cada mujer, intentando adaptarse a sus necesidades, para lo cual se les ofrece información durante el embarazo y les facilitan la comunicación con el equipo asistencial. En este caso se trata de un territorio donde el hospital y las unidades ASSIR se gestionan por un mismo proveedor sanitario, por lo que se puede asegurar que todos los profesionales trabajan dentro de un mismo equipo territorial y siguen las mismas guías y protocolos

Se han identificado otras formas de ofrecer información a la mujer y fomentar su participación en la toma de decisiones relacionadas con el modo en que desea ser atendida. En general la información que se ofrece se centra en el tipo de atención y los recursos disponibles para la atención al parto de cada hospital (Figura 4). Los soportes mediante los cuales se facilita la información son variados y en ocasiones

bidireccionales (p.e. se facilita el correo electrónico, para responder demandas de información)

Figura 4. Participación de las mujeres

PARTICIPACIÓN DE LAS MUJERES				
Plan de parto	**Nº hospitales**	**28**		**2**
		Si. Documento propio adaptado o se facilita el documento del *Departament de Salut*		No
Información orientada a las mujeres	**Nº hospitales**	**13**	**3**	**14**
	Tipo de información	Información ofrecida desde el hospital sobre el tipo de atención al parto normal	En proceso de elaboración	No disponen de ningún tipo de información
		Visitas antes del parto (individual o grupal)		
	Soporte de la información	Información a través de la web o correo electrónico		
		Documentación escrita (folletos informativos)		

Por último, la organización de los equipos profesionales responde a un modelo jerárquico en todos los hospitales con un/a responsable médico del servicio y un/a responsable de la coordinación y del funcionamiento del área de maternidad, que suele ser matrona. En cuanto a la distribución de las competencias, en todos los hospitales se ha identificado un punto en común, y es que los responsables han identificado a la matrona como figura profesional referente para la atención y asistencia al parto de las mujeres que no presentan riesgos obstétricos. Aún así, existen algunas diferencias en el desarrollo de sus competencias que marcan desde un ejercicio profesional con un perfil más técnico, basado en la ejecución de tareas profesionales, hasta un perfil profesional autónomo, con un desarrollo competencial más completo.

Con el objetivo de explorar otros modelos de organización, y como parte del trabajo de campo, se realizó una estancia en *East Lancashire Hospitals NHS Trust* del Reino Unido. Esta institución provee servicios de salud en la zona de East Lancashire y una atención a la maternidad que engloba desde el inicio del embarazo hasta la finalización del periodo postnatal.

En el anexo VII se describen los aspectos destacables respecto a la organización de la atención en esta institución.

1.4. Indicadores de evaluación de la atención durante el proceso de embarazo, parto y puerperio

La monitorización de la calidad obstétrica requiere del uso de indicadores apropiados. Estos indicadores han de ser escogidos teniendo en cuenta su importancia, validez, la posibilidad de obtener la información necesaria, el significado del indicador y las implicaciones que se derivarán de los resultados obtenidos. La importancia de tener en cuenta esta serie de criterios es relevante si la evaluación implica la provisión de servicios de atención a la maternidad que se prestan en diferentes hospitales y localizaciones.

Una de las clasificaciones más conocidas para agrupar los indicadores es la descrita por *Donavedian,* en la que identifica tres tipos; de estructura, de proceso y de resultado. Existen múltiples indicadores que miden diferentes aspectos de la atención obstétrica y que son utilizados para evaluar la calidad de los servicios de maternidad. Por otra parte, los indicadores más utilizados intentan monitorizar aspectos de intervención y en ocasiones los efectos no deseados de las intervenciones realizadas. Muchos de los indicadores identificados miden los mismos aspectos, pero de forma distinta lo cual hace difícil la comparación de los resultados entre diferentes entornos.

La búsqueda bibliográfica realizada durante este trabajo se describe en el anexo III

La información obtenida en esta fase del trabajo ha servido para elaborar los indicadores propios que serán utilizados en este trabajo.

a) Exploración de los datos disponibles para la evaluación en Cataluña.

Como fase previa a la elaboración de los indicadores se ha explorado la disponibilidad y la accesibilidad a la información

existente. Los datos relativos a la atención sanitaria en el parto se recogen principalmente en tres diferentes repositorios.

Los registros asistenciales de los hospitales recopilan, en la mayoría de casos en formato electrónico, los procedimientos y diagnósticos de cada episodio asistencial, además de multitud de datos relacionados con el tipo de asistencia. Muchos de estos registros hospitalarios (libro de partos) utilizan el mismo método de codificación para las principales intervenciones que se realizan, pero la accesibilidad a la información *in situ* es limitada.

El registro de enfermedades metabólicas en Cataluña, se nutre de la información recogida para el análisis de las muestras del cribado de enfermedades metabólicas en los/as recién nacidos/as. Esta información, aunque contiene datos relativos al parto, se ha considerado limitada para la evaluación de las intervenciones obstétricas que se realizan y que se pretenden evaluar en esta tesis.

Por último, existe el Conjunto Mínimo Básico de Datos (CMBD) que contiene información codificada sobre los diagnósticos y procedimientos realizados en cada episodio asistencial. Esta información se recoge de forma rutinaria a partir del informe de alta hospitalaria y se codifica utilizando la Clasificación Internacional de Enfermedades 9ª Revisión, Modificación Clínica (CIE·9·MC). El registro esta centralizado en el *Servei Català de la Salut* y actualmente recibe información de todos los hospitales públicos y de 20 hospitales privados en los que se atienden partos, con lo que contiene información de aproximadamente 98% de los partos atendidos anualmente en Cataluña.

Una vez exploradas las diferentes fuentes de información, se ha optado por utilizar el CMBD para evaluar las intervenciones obstétricas por diversas razones, que se exponen a continuación:

- Capacidad de comparación: muchos de los indicadores explorados durante la fase de búsqueda bibliográfica se

elaboran a partir de la información de los registros de alta hospitalaria. Toda la información recogida en estos registros se codifica utilizando una clasificación internacional. Actualmente, en España, esta clasificación es el CIE·9·MC, aunque ya se está trabajando para la transferencia de los datos a la versión CIE·10.

- Exhaustividad: la fuente principal de información proviene de los datos que registran los profesionales que realizan la asistencia en el momento en que se realiza. Esta información es posteriormente codificada y remitida de forma periódica al *Servei Català de la Salut*. Durante las visitas realizadas a los hospitales en el periodo en que se ha realizado este trabajo, se ha contrastado la correspondencia entre los datos disponibles en el CMBD y los datos existentes en el hospital. Este ejercicio ha mostrado, una elevada correspondencia para algunas intervenciones en algunos casos del 100%, y también ha permitido identificar intervenciones que pueden presentar un infra-registro.

- Periodicidad: los datos son recogidos de forma periódica lo que permite comparar la evolución de los indicadores en diferentes puntos temporales.

- Accesibilidad: los datos son accesibles para el trabajo de planificación de los servicios de salud. Por otra parte, el tratamiento de los datos permite trabajar con los códigos de cada caso sin identificar las personas. Este factor es esencial para acceder a la información sin afectar la confidencialidad.

- Población: el CMBD incluye la mayoría de los partos atendidos en Cataluña. Al comparar el número total de partos registrados en el CMBD y el número total de partos registrados en el *Institut d'Estadística de Catalunya* se comprueba que el CMBD incluye entre el 98% - 99% de los partos atendidos en Cataluña en el periodo de estudio.

b) Elaboración de indicadores para la evaluación

Para el estudio se han elaborado indicadores que aportan una visión global sobre los resultados de los servicios obstétricos. Los indicadores se han construido en base a las características de las mujeres, con el fin de ajustar las comparaciones entre hospitales.

Las características consideradas excluyen las causas que con mayor probabilidad justificarían una intervención obstétrica, por lo que dificultaría la comparación entre hospitales con diferentes recursos para la atención a los casos complejos. De esta forma se han considerado dos condiciones que deben cumplir todas las mujeres incluidas en la población de estudio y por tanto configuran el denominador del indicador.

Estas condiciones son:

- Parto de feto único
- Tiempo de embarazo en el momento del parto : ≥ 37 semanas ≤ 42 semanas

Los diagnósticos y procedimientos evaluados se identifican a través de los códigos utilizados en el CMBD, de acuerdo a la clasificación CIM·9·MC:

- Parto normal
- Inducción al parto
- Rotura artificial de bolsa amniótica
- Operación de cesárea
- Fórceps
- Vacuum
- Instrumento sin especificar
- Episiotomía
- Lesión perineal grave (lesión de 3º y 4º)

b) Indicador sensible para la monitorización de la intervención en la atención al parto normal

Para la evaluación de la intervención de episiotomía y de las lesiones perineales el indicador se construyó considerando el modo de finalización del parto, por esta razón se incorporaron dos condiciones que son: parto vaginal y no utilización de instrumento para la asistencia. Estas dos condiciones se identifican de modo inverso, es decir, considerando los partos que no contienen ninguno de los códigos que identifican la operación de cesárea o el uso de instrumento para su asistencia.

Para la identificación de los casos se han explorado, además del diagnóstico y procedimiento principal, hasta los cinco códigos siguientes asociados al episodio del parto.

c) Unidad de análisis

Como unidad de análisis para la comparación se ha considerado el hospital, asumiendo el efecto de la organización sobre la práctica clínica y en consecuencia sobre los resultados de los indicadores que se evalúan. Los hospitales se han comparado entre si, y de forma agrupada por estratos según el volumen de actividad anual (número de partos año). Para la comparación, se han considerado periodos anuales, permitiendo observar la evolución de los indicadores entre los diferentes puntos temporales explorados.

En una primera fase, se han explorado todos los indicadores planteados. Esta fase se ha realizado de forma paralela a las visitas de los hospitales, lo que ha permitido comprobar la exhaustividad en el registro de los diagnósticos y procedimientos estudiados. Las entrevistas con los responsables de los servicios de obstetricia y el contraste entre los datos registrados en el hospital y los datos

existentes en el CMBD ha evidenciado un importante infra-registro del procedimiento de inducción al parto (inducción médica e inducción quirúrgica), del procedimiento de rotura artificial de bolsa amniótica y del diagnóstico de parto normal, por lo cual los indicadores construidos con esta información se han descartado en las posteriores fases de estudio.

d) Clasificación y estratificación de los hospitales para la evaluación

- Clasificación

  El estudio incluye un total de 64 hospitales materno-infantiles que se han clasificado en dos grupos según el tipo de financiación de los partos. Un grupo de 44 hospitales que reciben financiación pública para la provisión de la atención materno-infantil en el territorio de referencia. Este grupo constituido por hospitales de titularidad pública y hospitales que ofrecen servicios públicos pero que son gestionados de forma privada sin ánimo de lucro (consorcios, corporaciones y fundaciones). El segundo grupo lo constituyen hospitales que no reciben financiación pública para la atención materno-infantil, y que son hospitales privados. En ambos grupos se ha detectado actividad con financiación pública y con financiación privada, que se ha analizado de forma específica para detectar posibles diferencias intra-hospital que pudieran estar asociadas al tipo de financiación. Tras una primera exploración, y debido a que no se han encontrado diferencias relevantes y al escaso volumen de partos con financiación privada en hospitales públicos y partos con financiación pública en hospitales privados, se estima no descartar esta parte de actividad de los hospitales y por tanto se consideran todos los partos, independientemente de su financiación, atendidos en cada hospital, sea público o privado.

- Estratificación

Existen diferentes criterios para clasificar los hospitales. Estos criterios pueden basarse en características territoriales, estructurales o en el volumen de actividad realizado. En Cataluña, se ha elaborado una clasificación basada en los criterios estructurales que condicionan la tecnología disponible y la cartera de servicios que se pueden ofertar en cada hospital. Esta clasificación, útil para la planificación de los servicios, puede en cambio limitar la comparación de los resultados obtenidos en este trabajo, puesto que solo se han incluido los hospitales de la red de utilización pública de Cataluña.

A efectos de comparación, se ha tenido en cuenta escoger un criterio aplicable a cualquier ámbito y que permita así la comparación de los resultados obtenidos. Así, se ha optado por estratificar los hospitales según el volumen anual de partos atendidos, siguiendo la estratificación utilizada en el año 2010 por Ministerio de Sanidad, Servicios Sociales e Igualdad para la evaluación de la EAPN en España. Esta estratificación se ha realizado incluyendo los hospitales que aportan datos de sus registros de alta hospitalaria al CMBD y considera cuatro estratos:

- Estrato 1: Hospitales con un volumen de partos anuales ≤ 600 partos
- Estrato 2: Hospitales con un volumen de partos anuales > 600 hasta ≤1.200
- Estrato 3: Hospitales con un volumen de partos anuales >1.200 hasta ≤2.400
- Estrato 4 : Hospitales con un volumen de partos anuales ≥ 2.400

Tabla 3. Distribución de los hospitales según el estrato

Estrato	S1	S2	S3	S4	Total
Número de hospitales públicos	11	11	16	5	44
Número de hospitales privados	5	3	3	5	20

El volumen total de partos atendidos en Cataluña ha descendido entre un 4% a un 7% durante el intervalo de tiempo que contiene los puntos temporales estudiados. En este estudio y a efectos de comparación, la asignación de los hospitales a cada estrato se ha basado en el primer análisis realizado con los datos del año 2011. El descenso de partos ha incidido en el volumen total de partos de la mayoría de hospitales en el año 2012 y en consecuencia podría motivar una modificación en la asignación de algunos hospitales al estrato correspondiente. En este caso, en el año 2012 la disminución del volumen de partos solo afectó a 4 de los hospitales de tal forma que hubieran tenido que pasar al estrato inferior. En ninguno de estos cuatro casos la disminución superó el 5% sobre el volumen de partos atendidos el año anterior, por lo que, a efectos de comparación en este estudio se ha mantenido la asignación al estrato correspondiente según la actividad registrada en el año 2011. Esta decisión también se argumenta por la asunción de que las posibles adaptaciones organizativas y el tipo de práctica clínica que pudieran estar asociados al volumen de actividad requieren de más tiempo para su consolidación, por lo tanto el posible efecto de esta disminución de volumen de actividad, si lo hubiera, no se vería reflejado en los resultados del año inmediatamente posterior.

e) Percepción de la satisfacción con la provisión pública de servicios de atención al embarazo, parto y puerperio en Cataluña

Durante la exploración previa que se ha realizado en busca de los indicadores más utilizados en Europa para medir la atención al parto, han emergido diferentes aspectos sobre la satisfacción que perciben las mujeres con la atención que reciben.

Este hallazgo hace pensar que la percepción de la satisfacción con la atención recibida durante el proceso de maternidad puede ser considerada como un resultado

relevante, a tener en cuenta cuando se plantea una evaluación de los servicios.

La satisfacción de las personas respecto a los cuidados en salud ha sido estudiada de forma extensa. Existen algunas teorías que apuntan a que la percepción de la satisfacción está determinada por el resultado de las experiencias vividas y que las expectativas previas son menos importantes, otras teorías discrepantes señalan que la percepción de la satisfacción está determinada por las diferencias entre las expectativas y lo que realmente ha ocurrido. La naturaleza multidimensional de la satisfacción implica que los instrumentos que se utilicen para su medida deban tener en cuenta tanto cuestiones sobre la satisfacción general, como cuestiones sobre aspectos específicos o dimensiones del cuidado.

A través de los resultados de los estudios de satisfacción con la atención recibida durante el proceso de maternidad se pueden identificar áreas de elevada insatisfacción y promover cambios en las políticas de calidad de los servicios sanitarios, reducir tasas de intervención obstétrica y dar más énfasis al respeto durante el proceso de parto.

En Cataluña, se ha planteado incluir la valoración periódica de la satisfacción con la atención durante el embarazo, parto y puerperio en el Plan de Encuestas de Salud del *Servei Català de la Salut*, como instrumento para mejorar la calidad de los servicios públicos. Para ello se ha trabajado con grupos focales de mujeres y entrevistas a profesionales con el fin de construir y validar un cuestionario que sea útil para medir aquellos aspectos que más preocupan a las mujeres. Como resultado de este trabajo, se han identificado las dos áreas principales que más preocupan a las mujeres y que han servido para plantear el cuestionario final. Estas áreas son el momento del parto y el momento de la llegada a casa después del parto.

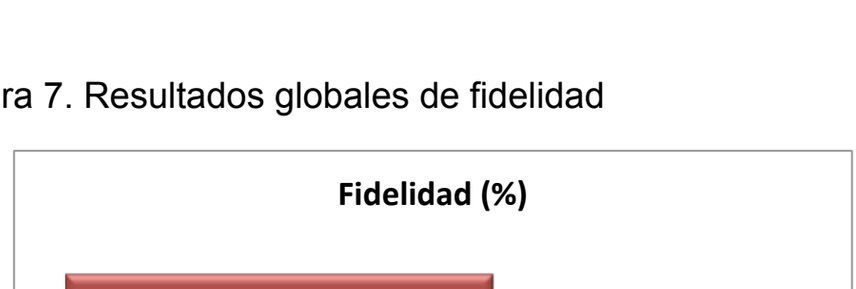
El cuestionario final consta de preguntas específicas sobre el proceso de embarazo, parto y puerperio, preguntas generales sobre la satisfacción global y la fidelidad, y las

relativas a las características socio-demográficas de las mujeres. El cuestionario abarca los factores de confort, proceso y competencia profesional.

Los resultados obtenidos en las dos ediciones que se han realizado de la encuesta muestran los aspectos más valorados y los aspectos que conviene mejorar, que básicamente están relacionados con la información que reciben las mujeres y los cuidados durante el periodo postnatal. Los resultados de satisfacción global y de fidelidad obtenidos en las dos ediciones son positivos. (Figura 6 y Figura 7)

Figura 6. Resultados globales de satisfacción

Figura 7. Resultados globales de fidelidad



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Anexo II

Artículo especial

La atención al parto en diferentes países de la Organización para la Cooperación y el Desarrollo Económico (OCDE)

Ramón Escuriet
María Pueyo
Herminia Biescas
Isabel Espiga
Cristina Colls
Marianne Sanders
Ann Kinnear
Marie Roberts
Sylvie Gomes
Josep Fusté
Vicente Ortún

Escuriet et al. Matronas Prof. 2014; 15(2): 62-70

http://www.federacion-matronas.org/revista/matronas-profesion/sumarios/i/17167/173/la-atencion-al-parto-en-diferentes-paises-de-la-organizacion-para-la-cooperacion-y-el-desarrollo-economico-ocde

Escuriet R, Pueyo M, Biescas H, Espiga I, Colls C, Sanders N et al. La atención al parto en diferentes países de la Organización para la Cooperación y el Desarrollo Económico. Matronas Prof. 2014; 15(2): 62-70

Anexo III

Artículo de revisión

Assessing the performance of maternity care in Europe: a critical exploration of tools and indicators

Ramón Escuriet
Joanna White
Katrien Beeckman
Lucy Frith
Fatima Leon-Larios
Christine Loytved
Ans Luyben[8]
Marlene Sinclair
Edwin van Teijlingen
and EU COST Action IS0907 collaborators. 'Childbirth Cultures, Concerns, and Consequences'

(Enviado a BMC Health Services Research. En proceso de revisión)

Assessing the performance of maternity care in Europe: a critical exploration of tools and indicators

Authors: Ramón Escuriet [1,2,†], Joanna White [3,†], Katrien Beeckman[4], Lucy Frith[5], Fatima Leon-Larios[6], Christine Loytved[7], Ans Luyben[8], Marlene Sinclair[9] and Edwin van Teijlingen[10]
and EU COST Action IS0907 collaborators. 'Childbirth Cultures, Concerns, and Consequences'

[1] Corresponding author. Directorate-General for Health Planning and Research, Ministry of Health of the Government of Catalonia

[2] Universitat Pompeu Fabra. Department of Experimental and Health Sciences

rescuriet@catsalut.cat

Departament de Salut de la Generalitat de Catalunya

Travessera de les Corts, 131-159. Pavelló Ave Maria

Barcelona 08028

[3] Centre for Research in Anthropology/Centro em Rede de Investigação em Antropologia (CRIA-IUL), Lisbon, Portugal

jowhite67@yahoo.co.uk

[4] Nursing and Midwifery research, University hospital Brussels, Vrije universiteit Brussel, Belgium

Katrien.Beekman@uzbrussel.be

[5] Department of Health Services Research, The University of Liverpool, UK

L.J.Frith@liverpool.ac.uk

[6] Departamento de Enfermería. Facultad de Enfermería, Fisioterapia y Podología. Universidad de Sevilla

fatimaleon@us.es

[7] Zurich University of Applied Sciences, School of Health Professions, Institute of Midwifery

christine.loytved@zhaw.ch

[8] Women's Clinic, Spital STS AG , Thun, Switzerland

luyben@bluewin.ch

[9] Maternal Fetal and Infant Research Centre, University of Ulster, UK

m.sinclair1@ulster.ac.uk

[10] Centre for Midwifery, Maternal & Perinatal Health Bournemouth University, UK

evteijlingen@bournemouth.ac.uk

[†] Equal contributors

Abstract

Background

Valid reliable indicators and methodological tools for collecting these are essential for measuring maternal health service provision, performance and quality, and identifying areas requiring improvement This paper provides a critical review of existing published material on the tools and indicators currently being used to measure the performance of maternity care within Europe, as evidenced by published literature and international databases. The review identifies areas of measurement which are neglected, and poses the question as to whether existing approaches capture maternity care systems in a comprehensive way. This paper will be useful to health practitioners, researchers and policy makers interested in measuring and analysing maternity care, be it from a local, national or pan-national perspective.

Methods

A structured literature search was conducted using key words, resulting in 23 published documents and two indicator databases which were analysed in detail.

Results

A total of 388 indicators were identified as well as seven tools specifically designed for capturing a range of aspects of maternity care. Intrapartum care was found to be the most frequently measured aspect of maternity services, through the use of both process and outcome indicators. Postnatal and neonatal care of mother and baby were the least appraised areas. An over-riding focus on the quantification of technical intervention and adverse or undesirable outcomes was identified, for example rate of caesarean section, artificial rupture of the membranes, perineal tear and maternal mortality. While vaginal birth (no instruments) was cited as an indicator in some sources, apart from this measurement few of the 388 indicators were found to be measuring “good” or positive outcomes more generally.

A normal birth requiring minimal or no intervention was only found to be readily measurable through the application of one of the seven general tools identified. Six of the seven tools included some measurement of positive outcomes more generally, however, mainly through indicators relating to the state of the intact perineum and breastfeeding.

Conclusions

The tools and indicators identified largely enable the measurement of technical interventions and undesirable outcomes. A physiological birth generally necessitates few, if any, medical interventions and is associated with good or positive outcomes, yet most of the indicators presently applied to the measurement of maternity care fail to capture (a) this phenomenon, and (b) the relationship between different forms and processes of care, mode of birth and other outcomes. There is a need for more indicators measuring non-intervention and its

outcomes to complement existing measurements of care, reflecting the reality that the majority of births are low-risk, and in practice should require few, if any, technical medical procedures. It is recommended that Delphi approaches, which include representatives of a range of stakeholder groups, including midwives and service users, are utilised to develop consensus on indicators that measure good or optimal maternity care, including normal birth.

Keywords: maternity care, indicators, tools, evaluation, quality indicators, health services.

Background

Valid, reliable indicators, and methodological tools for collecting these, are essential for measuring maternal health care provision, performance and quality, enabling comparison at various levels and evaluating progress against defined targets. Moreover, the monitoring of indicators can lead to better understanding of how maternity health care services function, identify areas requiring improvement and can point to the need for necessary research [1-3]. The ways in which maternity and other forms of health care provision are measured using indicators and tools are inevitably conditioned by whoever is designing and conducting this appraisal, what the aims of this activity are, and what types of decisions will be taken as a consequence [4]. At the same time, indicators of any form often play a valuable role in prompting useful questions and stimulating informed debate [3].

The aim of this paper is to provide a critical review of existing published literature on the tools and indicators currently being used to measure the performance of maternity care within Europe, identify the dominant focus of existing measurements, and highlight any areas which are not being systematically examined. By maternity care we refer to all formal care in relation to pregnancy, childbirth and the postpartum period as part of health service provision [5, 6]. We were particularly interested in analysing whether and how current tools and indicators enable systematic measurement of processes of minimal (or non-) intervention in support of physiological or "normal birth" and associated outcomes.

Defining Indicators and Tools to Measure Maternity Care

Indicators

An indicator can be defined as a measure used to express the behaviour of a system or part of a system which is collected in a standardised manner so that comparable data can be used for analysis [7, 8]. Donabedian [1,9] provided one of the earliest and most widely applied categorisations of health care indicators in relation to the assessment of care, emphasising the importance of examining structure, process and outcome. According to Donabedian, *structure indicators* are those which represent the necessary conditions for the delivery of a given quality of care. These include human, physical, financial and other resources available for service provision, such as total number of health providers or bed capacity per hospital. However these particular indicators do not ensure that appropriate processes are carried out or that satisfactory outcomes are achieved by the system, so cannot be directly related to subsequent care provision or the quality of care. *Process indicators* include the set of activities that take place within the service and how these are performed, such as rates of particular interventions and the use of protocols, thereby measuring the delivery of health care to the target population. Process indicators represent the closest approximation of how actual health care is provided and are the most clinically specific of the three types of indicators, but there is concern as to what degree these measures can be related to clinically desirable outcomes [8]; it has been argued that process measures are only as good as the evidence which links them to outcomes [9].

Outcome indicators measure aspects attributable to the healthcare offered, and can be negative or positive, for example mortality rates, health status, or patient satisfaction. A

particular challenge related to outcome indicators is that they may be influenced by factors other than the care provided; sufficient evidence is necessary to demonstrate that the quality of care contributed to the outcome independently. Satisfaction with services, for example, is a complicated outcome to measure given the various possible influences at play. It has also been argued that differences in outcome may be attributable to data collection methods and case mix as well as care provision, hence outcome indicators can be improved if efforts are made to standardize data collection and case mix adjustment systems are developed and validated [10]. The OECD proposed, for example, that indicator sets should be population-based and should strive to represent both the most important risk and client groups and the most essential interventions for these groups, be these preventive, curative or caring [8]. Measuring outcomes is a recognised means of monitoring and comparing care, often in order to identify any improvements required, while it is also acknowledged that outcome differences can be linked to the *process* of care [5]; the various categories of indicator are therefore inter-related.

The collective mix as well as type of indicators used to measure care is also important. All indicators are individually limited: any one value will only give a very specific, limited perspective of a wider situation, which may hide other significant factors related to the type/quality of care provided. For example, caesarean rate (CR) measurement may indicate a reduction over time, which might be interpreted as a positive development, but considering this indicator in isolation may disguise the fact that instrumental births or other interventions increase concomitantly as the CR decreases. The use of a range of indicators has therefore been recommended [4] - a 'balanced scorecard' approach - which provides varied yet complementary insight into the overall system of care, with the various indicators employed measuring important yet diverse aspects [3].

Tools

A tool is an instrument for carrying out a particular function; in the context of this review an instrument for collecting information on maternity care performance. Tools contain a range of indicators; it has been argued that tool kits for measuring quality of care should specifically include process indicators, for example [9]. Much of the background literature on tools for measuring health care refers to "quality indicators" (also known as performance indicators or quality measures). These may be structural, process or outcome indicators which track significant changes, in other words deterioration and/or improvement, within a specific area of care [11]. The monitoring of quality indicators, in other words, a continuous or systematic periodical measurement of these values, is understood to substantially enhance understanding of what is working well or not, where efforts for improvement should be targeted, and the evolution of any introduced changes either within a particular unit of analysis (e.g. hospital, region, country) or across units [12,13].

Methods

For the purpose of this review we used Donabedian´s definition of indicators [1]. We understood a tool to be a collection of indicators used as an instrument for collecting information about a particular aspect of the performance of maternity care, and if it was defined as a tool by the authors of the publication in question. This does not necessarily mean

that it has been validated in practice (some of the papers reviewed propose a new tool or the validation of a tool).

Criteria for selection of studies

We considered studies, reports or databases containing tools or indicators for the measure of maternity care in Europe to be eligible for inclusion in our review.

Search strategy

A team of eight individuals was involved in this work, all of whom were collaborators in the COST Action IS0907 (see Acknowledgements). As a first step we defined a strategy to search for tools and indicators measuring maternal health care at national, regional and local level within European countries **(Annex I).** The search was limited to research databases (Centre for Reviews and Dissemination, OvidSP, Scopus), published documents in peer-reviewed international journals and indicator databases which included the measurement of aspects of health care at a national and pan-national level (OECD, Eurostat and Euro-Peristat). We restricted our search to sources published between 2005 and when the review took place, September 2013. For practical reasons the search was restricted to the English language (also following the assumption that much of the information relevant Europe-wide would have been published in English). The search was conducted using different combinations of a set of keywords: maternity, maternity care, obstetric health services, satisfaction, reproductive health services, reproductive care, evaluation, measurement, assessment, accessibility, equity, organisation culture, sustainability, cost-effectiveness, outcomes, results, outputs, deliverables, indicators.

Quality assessment of included studies

The quality of included studies was assessed using an "ad hoc" critical evaluation tool (Annex II) based on the Critical Appraisal Skills Programme Cheklist (CASP) [14]. This tool was structured to assess the quality of the studies and systematic reviews identified. Each was appraised separately for relevance and quality by two members of the team, aided by a pre-tested scoring "grid". The documents were scrutinised in terms of whether they provided a clear tool or indicator/s which had been applied to the measurement of maternity care within Europe, their proven (or validated) transferability to other settings (given the known specificities in the structuring of maternity care in different countries), and appraised and graded in terms of their overall quality.

Details of ethical approval

This study was exempt from Ministry of Health of the Government of Catalonia Ethics Comittee review as it used publically available data.

Results

The final total of publications generated from the first-round selection was 498 references, plus two indicator databases (given that data are distributed by Euro-Peristat in summary form, we considered the latest Euro-Peristat report [15] as a published document). After close review of document titles and abstracts this selection was reduced to 155 sources. Of these, 110 were excluded due to unavailability (researchers could not locate a copy or the full document was only available in a language other than English), non-relevance to maternity care, or the source only related to a country/countries outside Europe. Out of the resulting 45 documents reviewed in detail, a further 22 documents were excluded, four because they related to non-European countries, thirteen because they did not include a tool or indicator/s, and three because they did not constitute a full study and two more because of poor methodological quality. This resulted in a total of two databases and 23 published references for detailed analysis. **Figure 1** is shown according to PRISMA statement [16]**.**

Table 1 shows a structured summary of the 23 published references and the two databases selected in terms of whether they constituted a tool or a set of indicators, and what particular area of care they were measuring.

The review uncovered a total of 388 indicators, 383 measuring structure, process and outcome and a further five measuring user satisfaction. Some of these indicators were grouped within tools (a total of seven tools). In addition, 13 distinct tools were identified which exclusively measured satisfaction with maternity care (**Figure 2**). Although indicators of user satisfaction are generally considered within the category of care outcomes we chose to analyse tools related to satisfaction and their associated indicators separately due to the methodological and analytical complexity of this area, discussed in more detail below.

Both the Organisation for Economic Co-operation and Development (OECD) and Eurostat databases include maternity care-related indicators. In 2005 both Eurostat and the OECD adopted the International Classification for Hospital Morbidity Tabulation (ISHMT) as a shortlist for statistical comparison of hospital activity by diagnostic categories and information about outcomes such as maternal and infant mortality as well as structural indicators concerning health care professionals (e.g. number of midwives and obstetricians) are provided by both databases. OECD provides accessible datasets at country level, including structural indicators on health care resources, health status outcomes (e.g. neonatal mortality, maternal mortality and perinatal mortality), process indicators on health care utilisation (e.g. hospital discharges and average length of hospital stay by diagnostic categories), and outcome quality indicators for childbirth (e.g. obstetric trauma, vaginal delivery with/ without instruments). Eurostat, similarly, provides data on hospital discharges by diagnostic category, health care professionals and maternal and infant mortality which can be extracted at both country and regional level.

The 383 indicators identified from all the selected sources, including the two databases, focused largely on process and outcomes in maternity care (a total of 297 indicators); structure indicators were least represented (Table 2). Further, intrapartum care was found to be the aspect of maternity care assessed most often through both process and outcome indicators, while the postnatal and neonatal care of mother and baby were the areas least appraised. A large number of process indicators relating to antenatal care were also identified (**Table 2**). Within the two international indicator databases (OECD and Eurostat), the systematic collection of process and outcome indicators reflected elements of the standard administrative procedures for monitoring care in the various countries included.

Caesarean Section rate (CR) was found to be the most commonly measured event, followed by the type of instrument employed (vaginal birth), and postnatal maternal complications (**Table 3**). Maternal morbidity was found to be the most frequently applied indicator regarding fatal/undesirable outcome (not shown in table).

Some variability was identified in indicators ostensibly measuring the same intervention, highlighting the difficulties of cross-site comparison in maternity care. For example in the measurement of perineal damage sources varied in their definition of ranges related to the severity of damage; in the measurement of labour induction, the definition of this intervention was also found to vary widely.

General Tools

The 20 tools identified fell into two categories, seven general tools which used quality indicators to monitor and compare maternity care provision, largely drawing on data from hospital level), and thirteen formulated solely to appraise user satisfaction with services. The aims and foci of the general tools identified are summarised in Table 4. Very few of the tools were found to be measuring normal birth or positive birth outcomes.

The Delphi method, an iterative process using several rounds of data collection and analysis to generate group consensus [17, 18] emerged as a common approach for developing tools for maternity care measurement; three of the seven general tools were generated using a version of the Delphi approach. The multi-disciplinary nature of the stakeholder groups involved in developing tools through this method varied, however. In all cases obstetricians as well as other technical service providers such as paediatricians and anaesthetists participated in the tool development. Midwives were only included in the development of two of the tools, while service users were included in one [19]

Tools Measuring Satisfaction

Of the 13 tools found to be measuring user satisfaction one was a comparative review of existing satisfaction measures, which identified nine questionnaires and concluded that despite continuing interest in this area, few validated indicators exist for measuring satisfaction with care during labour and birth [17,20]. While not all of the content of the tools for measuring satisfaction could readily be classified as indicators, the satisfaction measures identified can be classified into two areas: satisfaction with care and satisfaction with service provision (**Table 4**).

Discussion

The review aimed to critically examine existing published literature on the tools and indicators being used to measure the performance of maternity care within Europe. Findings emerged regarding a range of issues, including the focus of current forms of appraisal - including the limited measurement of normal birth, non-intervention more generally, and positive outcomes - the lack of consensus regarding optimal care and its measurement, and methodological issues related to indicator development.

Focus on the clinical aspects of intrapartum care

A dominant focus on the measurement of intrapartum care was identified, with most indicators clinically focused, while the postnatal care of the mother was found to be the area least measured. This finding underlines existing concern about the limited monitoring of postpartum care [21-23]. It must also be recognised that despite the comprehensive measurement of technical interventions identified, many of these may have been unnecessary [9].

Table 3 reveals the predominance of CR as an overall indicator; this indicator was present in all of the tools devised to monitor and compare maternity care, and its comprehensive application highlights the perceived value of measuring CR in comparing performance both within and across hospitals. Some discussion emerged in the literature reviewed regarding the application of this indicator, however. One source highlighted the importance of measuring the CR rates of particular institutions and comparing these with the "normal range" of elective and emergency caesareans; hospitals found to be above the normal range might need to review pre-labour obstetric practices, for example. Approaches were identified in some sources whereby CRs were disaggregated in relation to a core indicator of total CR, such as rates of caesarean section before/after onset of labour [24] and proportions of elective and emergency caesarean section [25], providing more meaningful information about the performance of the system, including decisions associated with the use of caesarean section and their outcomes.

Importance of case mix analysis and limited disaggregated analysis of low-risk women

The importance of nuanced understanding of the particular contexts in which interventions take place, and in particular the various sub-groups of users to whom care is offered, was similarly highlighted. It was argued, for example, that knowledge of the case mix in different settings is essential to the full understanding of any indicators [3]. Only two of the seven tools identified attempted to directly address this problem, however. In one tool a homogenous group of "standard primaparae" (a typology of low-risk women) was defined in order for indicators in relation to these users to be compared across sites; in another the examination of CR rates both before and during labour included a disaggregated sub-sample of low-risk women to enhance understanding of this measurement [25].

Indeed, the non-inclusion of the specific, disaggregated care pathway (process and outcome indicators) of low-risk women in most of the general tools identified is striking. As noted

earlier, it has been proposed that indicator sets should strive to represent the most important risk and client groups and the most essential interventions (be these preventive, curative or caring) for these groups [8] Low-risk women can be deemed both a key risk and client group for monitoring care, not least due to their numerical dominance on a national level, in addition to other high risk user groups which may inevitably require a greater level of technical intervention, including caesarean section. Tracking the care of low-risk women requires particular tailored indicators throughout pregnancy and intrapartum and post-partum, including an indicator for normal, physiological birth (*non-intervention*), but such measurement was found to be lacking.

Limited measurement of non-intervention and optimal outcomes and systemic implications

Birth requiring no instrumental intervention was only found to be readily measurable through the application of one of the seven general tools identified. Only through the combined analysis of two indicators presented in this tool ("delivery was vaginal, not caesarean section" and "delivery occurred without instruments") would it be possible to define the occurrence of non-instrumental vaginal births [26]. In terms of overall indicators, however, vaginal birth (no instruments) was common (see **Table 3**).

Moreover, it emerged that apart from this measurement few of the total 388 indicators identified were found to be measuring optimal or positive outcomes more generally (excluding satisfaction, which is examined separately, below). Six of the seven tools were found to capture certain positive outcomes, but with a particular focus on the condition of the perineum (degree of tears/whether intact) and breastfeeding (early initiation/continuation/support).

It has been argued that one of the criteria for selecting quality indicators in terms of importance and relevance is whether they clarify consensus on the objectives of a system/organisation .The overwhelming focus on technical, clinical interventions amongst the indicators and tools identified suggests that either the objectives of the system/organisation are to provide technical intervention or current quality indicators are failing to clarify consensus; key elements of the system are not yet being captured comprehensively.

A focus on adverse outcomes in maternal care appraisal, and the lack of appropriate measurements for monitoring non-intervention during pregnancy and delivery in low-risk cases and in the absence of complications has been highlighted in previous reviews [5,6]. The current review similarly identified an emphasis on technical aspects of maternity care rather than a consideration of the systematic or comprehensive measurement of care processes contributing to non-intervention and physiological (normal) birth. Moreover, the links between care processes and outcomes related to this mode of birth and a mix of indicators related to optimal outcomes was also found to be lacking.

Feasibility and the need to focus on the most measurable data as opposed to what might be the most effective/interesting information was a further issue which emerged from the literature [25, 27-29], which raises the question as to whether normal birth is not being

measured due to the difficulties involved in generating consensus and effective tools and indicators for measuring this mode of birth. At the same time, Chappell et al. [28] made a persuasive case for the development of "aspirational" indicators related to normal or unassisted birth through wider consultation and representation, challenging the argument that certain indicators are problematic to collect. Indeed it has been argued that the indicators available are based on the objectives of the organisation in question, not just the availability of data [3], highlighting the influence of factors related to maternity care organisation on methods of measurement.

Factors influencing the focus of maternity care measurement

Both the professional context and the national or local maternal healthcare models from which care measurement strategies emerge inevitably condition the focus of maternity care appraisal. The construction of indicators is known to depend upon who designs and manages the measurement process, their understanding of the philosophy and objectives of the care system in question, what the aims of this exercise are, and what decisions will be taken as a consequence of the findings [4]. Maternity care is usually provided by a range of professionals from different disciplines whose philosophy of maternity care may range from pathology to normality, and whose definition of quality service provision and approaches to measuring this may differ accordingly.

Lack of consensus regarding optimal indicator trajectories and targets

The possible impact of differing perceptions regarding overall philosophy of care and associated assessment of services is reflected in the variability of the tools and indicators reviewed, which exposes the challenge of developing a systematic, transferrable approach of appraisal across different sites. For example, it is difficult to make meaning or practical use of indicators if they are "stand-alone", without a clearly identified target value or indicator direction identified, yet this is a subjective issue. In one of the selected references which presented a tool for monitoring quality of care the stated unwanted direction of rate change for epidural analgesia use amongst women who delivered vaginally was "decrease" [25]; viewing the rise of interventions as favourable is a debatable objective. This problem is exacerbated by the fact that, as noted in several of the sources scrutinised, there is no consensus about what constitutes good, or optimal care, and therefore no agreed criteria against which progress should be measured in relation to these categories [30]. A recent systematic review of outcomes related to optimum and/or positive maternal and neonatal health and well-being identified how less attention has been given to the measurement of factors that contribute to well-being and positive health outcomes [31, 32], and recommended the development of a core outcome data set of "salutogenically-focused" outcomes for intrapartum research. Findings of the current review confirm this need, across the spectrum of maternity care.

In some of the literature reviewed it was described how targets and thresholds are a complicated aspect of performance monitoring, requiring national and international development and should ideally reflect universally accepted standards [11]. The issue of consensus is central here. At a local level, the Delphi approach is understood as a popular, successful method for defining a set of indicators (tools) as it enables individuals in various locations and with different areas of expertise to be included anonymously, often without a

physical meeting, which prevents the views of a minority from dominating the group [22]. However, as already noted, the current review found the involvement of non-clinicians in the delineation of tools through the Delphi method to be rare.

Debatable value of rare events as an indicator

Maternal morbidity and maternal and perinatal mortality rates were validated indicators frequently included in the tools reviewed. The limitations of using such rare events as indicators in developed country settings have been observed, and it has been argued that these measurements lack sensitivity for assessing obstetrical care and, particularly in the case of mortality, such events can be uncontrollable and uncertain, regardless of health intervention [31]. Alternatively, it has also been argued that rare and significant events (adverse outcomes) can provide an important starting point for in-depth studies aimed at understanding key issues relating to the care system [3]. The focus of current measurements of maternity care on rare, adverse events yet the neglect of "normality" and optimal outcomes is, nonetheless, a marked contrast.

Measuring satisfaction as an indicator

Satisfaction is a complex element of maternity care to measure. Studies have shown that in some cases women were satisfied with care even if this does not meet their previous expectations, for example [33]. Two discrete areas of satisfaction emerged from the literature included in this review: one relating to women's perceptions of the care they received and the other associated with the structure of services, such as the care pathway during the course of pregnancy (**Table 4**). However, the full findings of the review process related to satisfaction will be analysed in a separate paper, as certain publications emerged from the original literature searches which did not explicitly fit the requirements of the present review (and hence were not included for detailed analysis) but nonetheless provided important, alternative methods for assessing the impact and outcomes of care provision as expressed by women. One tool not included in this current review, for instance, explored women´s perceptions of outcomes and quality of life over an extended period following delivery [34], an approach which has important implications for care provision.

Transferability of tools

We considered a tool to be transferable when the tool containing indicators was well defined and could be replicable in other settings, in other words the same item could be measured in the same way in another (indeed any) setting. Using transferable tools or indicators may help for comparing different settings or organisations and could contribute to identify areas for improvement. Many of the indicators and tools identified can readily be used at different levels of service provision, to measure the activity of individuals or teams of clinicians, at maternity unit or birth centre level, or at the level of hospital site. They could equally be applied and aggregated, including at national or inter-country level, to provide comparison. While non-European countries were excluded from the review as our aim was to examine tools being used to measure maternity care in Europe, much may be learned from adapting and piloting tools across different contexts (our review elicited a tool, the Optimality Index, which was successfully transferred from the US to the UK, for example).

Limitations of the study

We are aware that there may be a wealth of unpublished literature on the topic examined, there may also be tools and indicators with great potential which have not yet been applied, and that, further, within certain European countries there may exist databases with a range of indicators and tools for measuring and comparing maternity service performance and quality within the national health system at different levels (e.g. Healthcare Commission UK, 2007) which may be transferable to other settings in Europe. However, for practical reasons, beyond examining the international databases already mentioned which are relevant Europe-wide, we narrowed our focus to internationally published, peer-reviewed literature available in English.

Conclusions

The review identified an emphasis on technical aspects of maternity, particularly intrapartum care, rather than a consideration of the systematic or comprehensive measurement of care processes contributing to non-intervention and physiological (normal) birth. The links between care processes and outcomes related to normal mode of birth were also not measured. It has been argued that one of the criteria for selecting quality indicators in terms of importance and relevance is whether they clarify agreement on the objectives of a system/organisation. The current focus of tools and indicators would suggest that either the objectives of maternity care are largely technical, as opposed to the avoidance of unnecessary technical intervention (or at least have become defined as such through existing systems of appraisal), or current quality indicators are failing to capture key elements of the system comprehensively. Normal birth is just one area identified which is not being systematically measured. There is a need for new "aspirational" quality indicators aimed at measuring optimal, positive outcomes, to counter the predominant focus of current indicators and tools, based on the reality that the majority of births are low-risk and should require little technical intervention. This development would contribute to a `balanced scorecard´ approach to providing varied yet complementary insight into the overall system of care, with indicators measuring important yet diverse aspects.

The inclusion of optimal or positive indicators in measuring pregnancy, childbirth and postpartum processes, could, further, contribute to the broader consideration of maternity as a normal life event and not a condition which inherently requires medical intervention. As there is no apparent cross-stakeholder consensus about what constitutes good, or optimal maternity care (as evidenced by current indicators and tools for measurement), agreeing criteria against which progress should be measured in relation to these categories may be problematic. Delphi approaches, which include representatives of a range of stakeholder groups related to maternity care, including midwives and service users, are recommended to develop criteria that measure the positive aspects of maternity care.

Competing Interests

There were no competing interests in the preparation of this paper.

Authors' Contribution

MS, AL, LF, KB and JW conceived the idea behind the paper; RE and JW conducted the bibliographic searches; RE, JW, KB, LF, AL, FL and CL critically reviewed the literature, RE and JW produced the first draft, MS, AL, LF, KB, CL and EvT provided critical input to all drafts, RE and JW finalised the work. All authors agreed the final manuscript.

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Tables and figures

Table 1. Summary of references selected

	TOOL	SET OF INDICATORS	STRUCTURE			PROCESS				OUTCOME				
			MATERIAL RESOURCES	HUMAN RESOURCES	MODELS OF MATERNITY CARE AND ORGANISA	ANTENATAL CARE	INTRAPARTUM CARE	POSTNATAL CARE	NEONATAL CARE	ANTENATAL CARE	INTRAPARTUM CARE	POSTNATAL CARE	NEONATAL CARE	WOMEN'S SATISFACTION
Aniuliene R. et al, 2011		√			√									
Boulkedid R. et al, 2013	√					√	√				√	√	√	
Bruin-Kooistra M. 2012		√			√									
Chappel L. C. et al, 2013		√					√				√	√		
Devane D. et al, 2007		√		√	√	√	√			√	√	√	√	√
Euro-Peristat Project with SCPE and Eurocat, 2012		√				√	√	√	√	√	√	√	√	
Eurostat. Database [accessed 2013]		√		√	√						√			
Faissel H . et al, 2009	√										√		√	
Hollins-Martin C. et al, 2009	√													√
Knight H. E. et al, 2013		√					√							
Murray S F. et al, 2010	√				√									
Nuti S. et al, 2009	√			√	√		√				√	√		√
OECD. Database [accessed 2013]		√		√	√						√		√	
Overgaard C at al, 2012	√													√
Parkhurst J. O. et al, 2005		√	√	√	√	√					√	√		
Roosmalen J. et al, 2009		√				√	√					√		√
Rudman A. et al, 2006	√										√			√
Sawyer A. et al, 2013	√(9 *tools)*													√
Sheridan M. et al, 2009	√				√	√					√	√	√	
Sibanda T. et al, 2013		√					√					√		
Tucker J. et al, 2013		√			√						√		√	
Turner M. J. 2011		√									√			
Voerman G. E. et al, 2013	√				√	√	√	√	√		√	√	√	
WHO Europe. Making pregnancy safer, 2009	√		√	√	√	√	√	√	√	√	√	√	√	
Wiegers T. A, 2009	√			√	√									√

Table 2. Typology of indicators identified

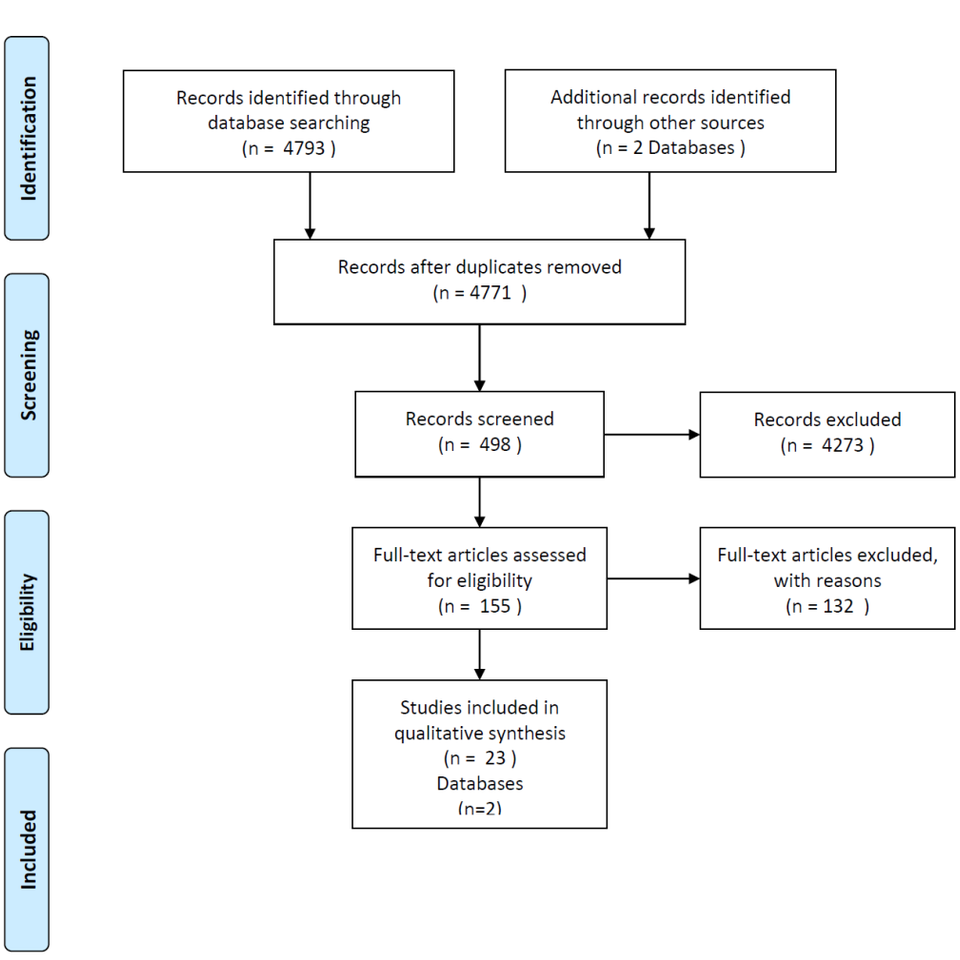
TYPE OF INDICATORS	Number of indicators
STRUCTURE	
HUMAN RESOURCES	9
MODELS OF MATERNITY CARE AND ORGANISATION	77
PROCESS	
ANTENATAL CARE	45
INTRAPARTUM CARE	67
POSTNATAL CARE	5
NEONATAL CARE	16
OUTCOMES	
ANTENATAL CARE	12
INTRAPARTUM CARE	99
POSTNATAL CARE	16
NEONATAL	37
SATISFACTION	
TOOLS	13
INDICATORS	5

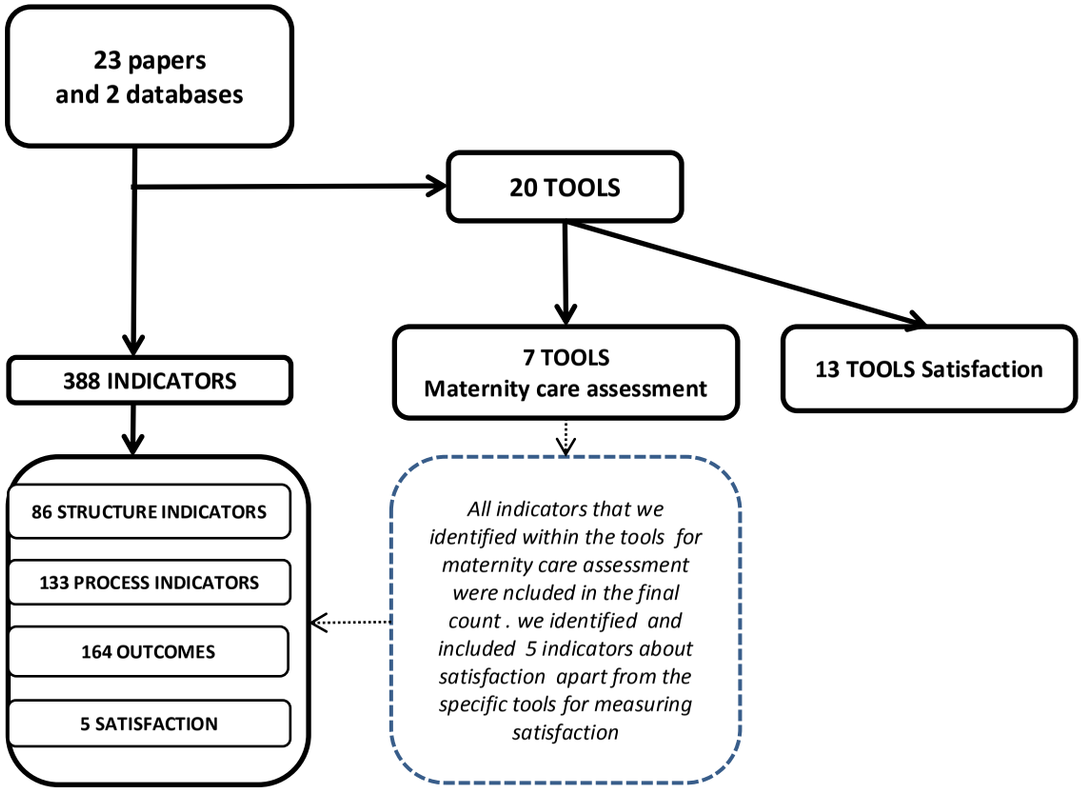
Table 3. The 10 most frequently measured events

Classification	MEASURED EVENTS	Type
1	Caesarean section	Outcome
2	Vaginal delivery with instrument (type of instrument)	Outcome
3	Maternal complications postnatal	Outcome
4	Perineal tears	Outcome
5	Method of infant feeding	Process
6	Induction augmentation labour	Process
7	Vaginal delivery without instruments (may include normal birth)	Outcome
8	Apgar	Outcome
9	Other NN complicatons	Outcome
10	Mode onset labour	Process

Table 4. Areas of user satisfaction presented in identified tools

SATISFACTION ASPECTS
Satisfaction with care
Antenatal care
Before labour
Labour and birth care
Couples' perceptions of care during labour and birth
Different types of birth
Caesarean section under regional anaesthesia
Safety of practice and care
Care procedures
Perceived reality of care and subjective importance of each item
Postnatal care
Women's perceptions of interpersonal care
Information and decision making
Provided education
Satisfaction with service provision
Physical birth environment
Antenatal care by Midwife, General Practitioner and Gynaecologist
Care during ultrasound
Hospital stay
Postpartum care by Midwife, General Practitioner and Maternity Care Assistant
Neonatal screening
Overall pathaway of care


Identification
Screening
Eligibility
Included
Records identified through database searching (n = 4793)
Additional records identified through other sources (n = 2 Databases)
Records after duplicates removed (n = 4771)
Records screened (n = 498)
Records excluded (n = 4273)
Full-text articles assessed for eligibility (n = 155)
Full-text articles excluded, with reasons (n = 132)
Studies included in qualitative synthesis (n = 23) Databases (n=2)


23 papers
and 2 databases
20 TOOLS
388 INDICATORS
7 TOOLS
Maternity care assessment
13 TOOLS Satisfaction
86 STRUCTURE INDICATORS
133 PROCESS INDICATORS
164 OUTCOMES
5 SATISFACTION
All indicators that we identified within the tools for maternity care assessment were ncluded in the final count . we identified and included 5 indicators about satisfaction apart from the specific tools for measuring satisfaction

Anexo IV

Comentario

Utilidad del porcentaje de cesáreas en mujeres de bajo riesgo para monitorizar la calidad de la atención obstétrica

Ramón Escuriet

Gaceta Clínica y Sanitaria 2015; 15(3-4):57

http://www.iiss.es/gcs/gestion57.pdf

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Utilidad del porcentaje de cesáreas en mujeres de bajo riesgo para monitorizar la calidad de la atención obstétrica

Librero J, Peiró S, Belda A, Calabuig J.
Porcentaje de cesáreas en mujeres de bajo riesgo: un indicador útil para comparar hospitales que atienden partos con riesgos diferentes. Rev Esp Salud Pública. 2014;88:315-326.

Introducción y objetivo

El incremento en la incidencia de la intervención de cesárea y las variaciones entre diferentes regiones y hospitales ha motivado la inclusión del porcentaje de cesáreas como indicador de calidad y eficiencia de la atención obstétrica. Aún así, este indicador es limitado para comparar hospitales con distinta capacidad para atender la complejidad en los partos. Este estudio explora el indicador de cesárea en partos de bajo riesgo y analiza su variabilidad y su correlación con el indicador convencional (porcentaje de cesáreas sobre el total de partos).

Método

Estudio de cohorte retrospectivo. Se incluyen todos los partos (214.611) atendidos en los hospitales públicos de la Comunidad Valenciana (2005-2010). La información se obtiene a partir de los diagnósticos y procedimientos codificados en el Conjunto Mínimo Básico de Datos (CMBD).

Se delimita un subgrupo de bajo riesgo: mujeres menores de 35 años, sin embarazo múltiple, sin antecedentes de cesárea, gestación entre 37 y 41 semanas, feto en presentación cefálica y peso entre 2.500 a 3.999 gramos.

Se describe la frecuencia de los factores de riesgo, el porcentaje de cesáreas para todos los partos (indicador crudo), y el volumen y características de los partos de bajo riesgo para cada hospital. A continuación se analiza la variabilidad entre hospitales para ambos indicadores. Finalmente se valora la homogeneidad interna del indicador de bajo riesgo, para averiguar si se mantienen diferencias de riesgo que puedan afectar las comparaciones entre hospitales.

Resultados

El análisis del total de partos muestra una gran variabilidad en la mayoría de factores de riesgo y variación discreta en la edad media materna, el tiempo medio gestacional y el peso medio de la criatura. El 58,4% de los partos se identifican como de bajo riesgo, con una edad media materna inferior, y edad media gestacional y peso de la criatura discretamente superior. El porcentaje de cesáreas en este subgrupo es de 11,9% (12,33 puntos porcentuales menor que el global). Los estadísticos de variabilidad muestran una mayor dispersión con el indicador de bajo riesgo. En cuanto a la probabilidad de cesárea en las mujeres de bajo riesgo, se observa una importante discrepancia entre hospitales, no explicable por el azar. Se obtiene una elevada correlación entre el indicador global y el indicador de bajo riesgo, y las diferencias entre hospitales sobre las variaciones en el riesgo de cesárea individual se mantienen con este indicador.

Discusión

Más de la mitad de los partos se identifican como de bajo riesgo y se observa más variabilidad que con el indicador global. Este hallazgo sugiere una mayor sensibilidad del indicador de bajo riesgo para identificar hospitales con comportamientos diferenciados, lo cual es importante para monitorizar la actividad de los servicios obstétricos. La elevada correlación de este indicador con el indicador global apoya que se puedan identificar con más exactitud los hospitales con mayor tendencia a practicar cesáreas.

Financiación: Ayuda de investigación de la Fundación Mapfre (convocatoria 2010).

COMENTARIO

Es importante poder monitorizar la atención obstétrica mediante indicadores de calidad apropiados que permitan comparar diferentes hospitales sin estar expuestos a limitaciones que invaliden las conclusiones que se deriven.

El porcentaje de cesáreas continúa siendo ampliamente estudiado como indicador de calidad obstétrica. En este sentido, se han desarrollado diferentes métodos para su clasificación en el intento de ajustar las comparaciones entre diferentes centros, regiones o países. Las clasificaciones existentes para ajustar las comparaciones entre diferentes centros, regiones o países se pueden distribuir en cuatro grandes grupos según clasifiquen por indicación, por grado de urgencia, según las características de las mujeres u "otros tipos" (1). En este trabajo se presenta un indicador basado en características de la mujer que determinan un nivel de riesgo. A diferencia de otros trabajos (2), en este estudio se analiza el comportamiento del indicador "porcentaje de cesáreas en mujeres de bajo riesgo" obteniendo una elevada correlación con el indicador global de cesáreas y mostrando su resistencia ante la presencia de otras covariables que no modifican el efecto del hospital. Dicho de otra forma, este indicador ayudaría a identificar aquellos hospitales con una mayor tendencia a realizar cesáreas en las mujeres que no presentan los riesgos obstétricos que se identifican con este instrumento.

La construcción del indicador, y su descripción en este trabajo, suponen una fortaleza en cuanto a que se ha elaborado basándose en información disponible en el CMBD y que se registra de forma exhaustiva en la mayoría de hospitales públicos. La consideración de bajo riesgo se ha elaborado identificando factores objetivos que permiten homogeneizar fácilmente el subgrupo de mujeres, independientemente de las características del hospital donde se atiende el parto. En términos prácticos, y dada la accesibilidad a la información necesaria para el cálculo del indicador, se puede considerar como una opción válida para monitorizar el porcentaje de cesáreas en mujeres de bajo riesgo. Por último, si tenemos en cuenta las potenciales consecuencias negativas, tanto en términos de salud como de coste económico, que tiene realizar intervenciones no necesarias, se podría afirmar que es de especial interés conocer el comportamiento de este indicador en hospitales de nuestro entorno.

Ramón Escuriet
Direcció General de Planificació i Recerca en Salut.
Departament de Salut de la Generalitat de Catalunya.

(1) Torloni MR, Betran AP, Souza JP, Widmer M, Allen T, Gulmezoglu M, Merialdi M. Classifications for Cesarean Section: A systematic review. PLoS One. 2011 Jan 20;6(1):e14566. doi:10.1371/journal.pone.0014566.

(2) Colais P, Fantini MP, Fusco D, Carretta E, Stivanello E, Lenzi J, Perucci CA. Risk adjustment models for interhospital comparison of CS rates using Robson's ten group classification system and other socio-demograhic and clinical variables. BMC Pregnancy and Childbirth 2012 jun 21;12:54.doi:10.1186/1471-2393-12-54.

Anexo V

Objetivo contraprestación por resultados. Atención especializada Contratos para la provisión de servicios de los proveedores sanitarios 2015. *Servei Català de la Salut*

AE09: conseguir que el porcentaje de cesáreas en los embarazos únicos a término se situe por debajo de un determinado valor máximo

línia contractual	*atenció especialitzada*

objectiu AE09	**Aconseguir que el percentatge de parts per cesària en els embarassos únics a terme se situï per sota de un determinat valor màxim**

indicador IAE09	***Parts amb cesària en les embarassos de nadó únic a terme***

descripció	percentatge de parts amb cesària en els embarassos de nadó únic a terme
font dades	***font d'informació:***Conjunt mínim bàsic de dades dels hospitals d'aguts (CMBD-HA) ***unitat responsable***: Divisió de Gestió dels Registres d'Activitat
fórmula	**numerador:** nombre de parts de nadó únic a terme amb cesària **denominador:** nombre de parts de nadó únic a terme
definicions	*- nombre de parts amb cesària: nombre d'altes amb qualsevol procediment informat amb un dels codis de la CIM-9 MC inclosos en la categoria 74 (operació cesària i extracció de fetus).* *- nombre de parts: nombre d'altes amb qualsevol diagnòstic informat amb un dels codis de la CIM-9 MC següents: 650 (part normal) o qualsevol dels codis compresos entre el 640 al 679.9, amb el cinquè dígit informat amb un 1 o amb un 2.* *- embarassos de nadó únic a terme (entre 37 i 41 setmanes de gestació)*
referències	*- Hospitals de més de 600 parts a l'any: percentatge de cesàries no superior al 20%* *- Hospitals de menys de 600 parts a l'any:, que l'any anterior presentaven un percentatge de cesàries superior al 20%, reduir un 5% aquest percentatge.* *- Hospitals de menys de 600 parts a l'any:, que l'any anterior presentaven un percentatge de cesàries no superior al 20%, mantenir aquest percentatge.*
observacions	*El* grup dels parts únics a terme exclou les situacions més freqüentment identificables que exclouen la possibilitat d'un part normal (part preterme, part posterme i embaràs multiple). Dintre d'aquest grup, que inclou parts amb risc i parts sense risc, es poden assumir els estàndards consensuats sobre els percentatges acceptables d'intervenció obstètrica, que en el cas de les cesàries es situa fins al 15%En quan a l'indicador proposat, es tracta d'un indicador sense alta complexitat en la seva elaboració (identificació de parts únics entre 37 i 42 setmanes de gestació) que pot aportar informació útil sobre la qualitat dels serveis d'atenció obstètrica. Indicadors similars, que consideren aquest subgrup i inclús amb major quantitat de variables per excloure el risc, han estat validats i utilitzats, donat la seva alta correlació amb l'indicador convencional (percentatge total de cesàries), però que aporten informació més detallada sobre el comportament del servei obstètric i ajuda a identificar hospitals amb major tendència a la realització de cesàries. És important conèixer aquest fet quan s'ha d'argumentar el balanç risc- benefici en els casos que es superin les recomanacions consensuades sobre la bona pràctica clínica En quan a l'objectiu de l'indicador, es pot continuar considerant aconseguir que el percentatge de parts per cesària en els embarassos de risc baix es situï per sota de un determinat valor màxim, donat que el grup inclou tots els embarassos que poden ser classificats com a baix risc. complert.

Anexo VI

Otros resultados derivados del trabajo de tesis

a) Estancias en el extranjero
b) Participación en jornadas y congresos
c) Participación en proyectos de investigación relacionados con el trabajo de la tesis
d) Capítulos de libro
e) Repercusión en prensa relacionada con el trabajo relacionado
f) Organización de jornadas y seminarios
g) Trabajos en curso

Otros resultados derivados del trabajo de tesis

a) Estancias en el extranjero

1. Short Term Scientific Mission
   Research in Childbirth and Health Unit (UCLAN) and East Lancashire Hospitals NHS Trust
   Preston. Reino Unido
   Noviembre 2013

2. European Cooperation in Science an Technology
   Individuals, Societies, Cultures and Health

   ISCH COST Action IS0907
   ISCH COST Action IS1405

   Novi Sad. Serbia. Junio 2013
   Floriana. Malta. Noviembre 2013
   Bruselas. Bélgica. Abril 2014
   Praga. República Checa. Junio 2014
   Bruselas. Bélgica. Diciembre 2015

b) Participación en jornadas y congresos. Presentación de resultados parciales derivados del trabajo de tesis

- Ponencia. *"**Avances y dificultades: lo que representa las Estrategias en el SNS**"*. En: V Jornada Técnica de Buenas Prácticas. Estrategias de Atención al parto Normal y de Salud Reproductiva en el Sistema Nacional de Salud. Ministerio de Sanidad, Servicios Sociales e Igualdad. Madrid. 2013

- Comunicación. ***"Obstetric intervention rates among single deliveries (37-42 weeks gestation) in Catalonia 2011"***. Ramón Escuriet, Maria Pueyo, Herminia Biescas, Cristina Colls, Josep Fusté, Vicente Ortún. Comunicación. En: I Intrapartum Care Congress. Amsterdam. 2013

- Ponencia. ***"La atención al parto normal en Cataluña: Situación actual y oportunidades de mejora"***. En: IV Congreso Internacional de Bioética. Universitat de Barcelona. Barcelona. 2013

- Ponencia. ***"La atención al parto en Cataluña"*** I Congreso Internacional "Género, Ética y Cuidado". En: Organizado por el proyecto FEM2012-33067: Maternidad, tecnología y relación asistencial. Barcelona. 2014

- Ponencia. ***"Avaluació del part normal i del pla de naixement".*** En: II Jornada d'atenció a la Salut Sexual i Reproductiva. Institut Català de la Salut. Tarragona. 2014

- Ponencia. ***Organisation Research in Childbirth and Health of Midwife-led Care Units***. En: Optimisebirth Conferece. Bruselas. 2014

- Ponencia. **"*Intervenciones obstétricas según el tipo de hospital"***. En: 3ª Jornada de Ginecología y Obstetricia. IDC Salud en Cataluña. Calidad en la Sala de Partos. Barcelona. 2014

- Ponencia. ***"Avaluació i estratègia d'atenció al part normal a Catalunya"***. En: Jornada de Salut Sexual i Reproductiva: Presentació de Bones Pràctiques Departament de Salut. Barcelona. 2014

- Ponencia. ***" Indicadors de bones practiques en obstetricia"*** . En: VI Jornada de Llevadores del COIB. Per una assistència materno-infantil d'excel·lència. Barcelona. 2014

- Comunicación. ***"Implantación de buenas prácticas en la atención al parto normal"***. En: XXXII Congreso Sociedad Española de Calidad Asistencial. Madrid. 2014

c) Participación en proyectos de investigación relacionados con el trabajo de la tesis

- ISCH COST Action IS0907
  Childbirth Cultures, Concerns, and Consequences: Creating a dynamic EU framework for optimal maternity care
  Participación como miembro sustituto del Management Committee
  2013-2014

- ISCH COST Action IS1405.
  Building Intrapartum Research Through Health - an interdisciplinary whole system approach to understanding and contextualising physiological labour and birth (BIRTH)
  Participación como Vice-Chair y miembro del Management Committee
  2014-2018

d) Capítulos de libro

- Capítulo de libro. Making it happen in Catalonia, Spain. En ***The Roar Behind the Silence***

- Capítulo de libro. Organisation Research in Childbirth and Health of Midwife-led Care Units. En ***ISCH COST Action IS0907. Short Term Scientific Missions Book***

e) Repercusión en prensa relacionada con el trabajo desarrollado

- Lancashire Telegraph

  http://www.lancashiretelegraph.co.uk/news/10813059.Midwifery_chief_visits_East_Lancashire_NHS_wards_from_Spain/

- Nota de prensa. University of Central Lancashire

  http://www.uclanmidwifery.co.uk/tag/delivery-care-models/

- Nota de prensa East Lancashire Hospitals.
  http://www.elht.nhs.uk/news/National-Midwifery-Director-praises-Trust-maternity-services.htm

- Nota de prensa. Departament de Salut

  http://salutweb.gencat.cat/ca/actualitatsp/nota-premsa/?id=282109

- Redacción médica

  http://www.redaccionmedica.com/autonomias/cataluna/una-treintena-de-hospitales-publicos-implantan-un-programa-para-impulsar-el-parto-natural-81992

f) Organización de Jornadas y Seminarios

- COST-BIRTH Meeting Barcelona May 4-6, 2015.

  ISCH COST Action IS1405 ***"Building Intrapartum Research Through Health - an interdisciplinary whole system approach to understanding and contextualising physiological labour and birth (BIRTH)"***

  100 asistentes

- Seminario internacional. Barcelona 6 de Mayo, 2015

  "La atención a la maternidad en diferentes países. La contribución de la matrona"
  60 asistentes

g) Trabajos en curso.

- How can we measure women's perception of satisfaction during pregnancy, childbirth and puerperium? The creation of a questionnaire and analysis of the results.

En elaboración. Previsto enviar a la revista *Birth*

- Como participan las mujeres en la atención al parto? Una revisión crítica de los planes de parto que se utilizan en los hospitales de Cataluña.

En elaboración. Previsto enviar a la revista *Midwifery*

- Atención al parto en mujeres con diagnóstico de riesgo obstétrico en los hospitales de Cataluña. Contribución de la matrona.

En elaboración. Previsto enviar a la revista *Birth*

Anexo VII

Short Term Scientific Mission.

Research in Childbirth and Health Unit (UCLAN) and East Lancashire Hospitals NHS Trust

27 Noviembre al 4 de Diciembre de 2013

Ramón Escuriet
Mercedes Pérez Botella

Report of the STSM " Organisation Research in Childbirth and Health of Midwife-led care units"

Date of STSM: 27th November – 4th December

HOST: Research in Childbirth and Health and East Lancashire Hospitals NHS Trust

Principal investigator: Ramón Escuriet-Peiró
Co-Investigator: Mercedes Pérez-Botella

Purpose of the STSM

The aim of this Short Term Scientific Mission was to learn about how Midwifery-led Units are organised and how maternity care is provided for low risk women within these units. The proposed work focused on organisation of Midwifery-led Units including alongside and standalone units within the NHS (public maternity health care providers).

Normal Childbirth initiative in Catalonia started in 2008 (Ministerio de Sanidad, 2008). In this regard, work is currently ongoing to evaluate childbirth care in public hospitals. Results from this evaluation will be included in a final report. This report is intended to uncover improvements and highlight which aspects of care need further work to improve. Report will reinforce some recommendations and incorporate new ones on services organisation. Lessons learned during STSM will lead to identify relevant aspects on organisation of maternity care and these issues will be considered when developing such recommendations

Description of the work carried out during the STSM

Previous work of the investigator about maternity care provision in OECD countries was made (Escuriet et al, 2013). This work showed different organisational models for maternity care provision and also allowed to identify some issues that could be implemented in the structure and organisation of public maternity care providers in the Catalonia Health System. Involvement in COST Action ISO 0907 and participation in WG1 (Organisational design) permitted to the investigator to go forward and gave him the opportunity to find first-hand Midwifery-led Units organisation and outcomes

Work Plan of STSM week:

Monday 28th October

- Visit to Lancashire Women and Newborn Centre (East Lancashire Hospitals), including Burnley Birth Centre.
- Meeting with new midwifery students
- Meeting with Midwifery Team leaders at the Burnley Birth Centre

Tuesday 29th October

- ReaCH unit. Meet some of the research and academic team
- Meeting with Mrs Martindale at the Lancashire Women and Newborn Centre
- Visit to Blackburn Centre to meet Sheena Byron and Jacque Gerrard (RCM) who was visiting the BC.

Wednesday 30th October

- Visit to Blackburn Birth Centre – meet with Sue Watkin, manager. Meet and speak with clinical midwives and health care assistants and review local guidelines
- Attending Divisional meeting and present portfolio project at UCLAN

Thursday 31th October

- Spend the day at the LWNC. Meetings with
    - Anita Fleming, Head of Midwifery,
    - Mr Aty, obstetrician
    - Midwives and health care assistants on the Birth Centre

Friday 1st November

- Working independently and with staff of ReaCH

Description of the main obtained results

The work during this STSM was focused on identifying relevant aspects on the organisation of Midwifery-led Units, and also to know health professional's experiences and opinion by working in these settings.

Summary of relevant aspects related to organisation, structure and model of care

1. Organisation and structure

a. Infrastructure

- Obstetric unit (Birth Suite). Separate area within hospital setting where adequate care for high obstetric risk is provided. All of the resources are available 24 h a day. Obstetricians assume main responsibility for high obstetric risk care. Midwives provide care for all women and assume responsibility for low obstetric risk women attended to in this unit
- Alongside Midwifery Unit: (Birth Centre). Separate area within hospital setting where care for low risk is provided. This area is close to obstetric unit and all resources are available 24 h a day if needed. Midwives are responsible for care. Infrastructure and equipment are adequate for normal childbirth care in a homelike atmosphere
- Freestanding Midwifery Unit. (Birth Centre) Separate area outside the hospital setting where care for low risk is provided. Midwives are responsible for care. Infrastructure and equipment are adequate for normal childbirth care in a homelike atmosphere. Availability for transfer to obstetric unit 24 a day if needed.

b. Staff

- There is a head of midwives in the organisational structure of the Trust
- Experience of midwives is considered to plan shifts
- Staffing units is oriented to provide one to one care during childbirth
- Midwives have the possibility to work in Birth Units and also in clinic. They can provide antenatal, childbirth and postnatal care

c. Protocols

- All protocols and required documents for the proper functioning of the Trust Units have been elaborated and agreed upon all health professionals involved in maternity care. Protocols are well integrated and followed by all health professionals working in the Trust

2. Model of care

a. Philosophy

- Model of care focused on women and families
- Model is intended to provide continuity of care during pregnancy, childbirth and postnatal period. Women may be attended to by same professional or same professional's team throughout the entire process
- Women are receiving homogeneous information about maternity care. All health professionals follow same guidance
- Minimum length of stay in hospital. Early discharge after normal childbirth is offered to women

b. Choice of place of birth

- Women are given all the necessary information to decide themselves, so they can freely choose place of birth.

Lessons learned and transferable aspects

Midwives in different settings, other than obstetric unit, can provide low risk care during childbirth.

Women in the community using these services are receiving homogeneous and positive information about maternity health care in this Trust. This contributes to improve people's perception of quality and health professionals' confidence

Volume of activity (births attended to) in Birth Centres: As shown during the STSM, Burnley Birth Centre and Blackburn Birth Centre are attending one thousand births per year approximately. All main reasons for transfer in labour account 10% of total of births attended to in both centres. Admission criteria and obstetric risk identification are key points to achieve good outcomes.

Some of the observed issues about the structure, the organisation and the model of care are transferable to the maternity health care providers in Catalonia and also to the maternity care model proposed by the Department of Health in Catalonia. Table I shows such transferable aspects that have been identified. (Annex 1)

Future collaboration with host institute

Collaboration between Department of Health and the Research in Childbirth and Health Unit of UCLAN will be explored.
Collaboration between East Lancashire Hospitals NHS Trust and interested health Providers in Catalonia will be explored

Future publications

Mr Ramón Escuriet and Ms Mercedes Pérez-Botella will work on a publication on transferable aspects from maternity Midwifery-led Units in to Obstetric Units in Spain

Confirmation by the host institute of the successful execution of the STSM

Mr Ramón Escuriet spent a very productive time in Research in Childbirth and Health Unit of UCLAN and East Lancashire NHS Hospitals Trust. He made a very good use of the time and meetings made available by Ms Mercedes Perez-Botella. The work in England as part of the STSM helped progress the COST Action

References

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2. Escuriet R, Pueyo M, Biescas H, Espiga I, Colls C, Sanders M, Kinnear M, Roberts M, Gomes S, Fusté J, Ortún V. La atención al parto en diferentes países de la Organización para la Cooperación y el Desarrollo Económico (OCDE). Mat Prof. in press

Annex 1. Table I

Relevant aspect	Level	Short term	Long term
ORGANISATION AND STRUCTURE			
Alongside Midwifery Unit (Birth Centre)	DH	*Recommendation in progress*	
	HCP	*In progress:* *Some maternity units equipped with specific "rooms" for normal childbirth*	*All maternity units*
Staff: Head of Midwives	DH	*Currently not achievable.* *Recommendation to be proposed. Implies HCP structural organisation*	
	HCP	*Hierarchy.* *Midwives depend on Head of nurses*	
Staff: Staffing units	DH	*Continuity of care.* *Shared activity hospital-community: implementation in progress* *Appropriate ratios (one-to-one). Implies model of care. Recommendation to be proposed.*	*Implementation in progress* *One-to-one care: (if agreed) after publishing recommendations*
	HCP	*Some health care providers are currently providing hospital and community care (same professionals)*	*Implementation in progress*
Protocols	DH	*In progress.* *Update protocol for normal pregnancy care. It has been proposed an agreement for new women and family focused model of care. (Accepted text for new model and update of the protocol in progress)* *Update Guidance for normal childbirth care.*	*Implementation after publishing the protocol and the guidance*
	HCP	*Some providers have their own protocols following guidance from Department of Health previous recommendations*	*Implementation after publishing the protocol and the guidance and updating their own protocols*
MODEL OF CARE			
Philosophy	DH	*Accepted text for new model. Model will be published and then included in all related documents on maternity care*	*To be implemented in Health System*
	HCP	*Some HCP have women and family focused model of care, but important differences have been identified (Normal childbirth care assessment. DH. 2013)*	*All HCP*
Choice of place of birth	DH	*Difficult to achieve due to health system organisation. Population is assigned to hospital according to their living location. (Geographical distribution)*	
	HCP	*Difficult to achieve due to Health System organisation.*	

(DH) *Department of Health*
(HCP) *Public Health care providers: Hospitals, Trusts, Health Care Foundations and Consortiums providing maternity care services*