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Article

## Socio-demographic determinants of women's satisfaction with prenatal and delivery care services in Italy

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### Abstract

**Objective:** The aim of this study was to examine the extent to which socio-demographic variables affect women's satisfaction regarding antenatal and perinatal care.

**Design:** To take into account the role of the context in shaping women's satisfaction, we used multilevel models, with women at the lower level, and the health districts of residence, or the hospitals in which the delivery took place, at the higher level.

**Setting:** Tuscany (Italy)

**Participants:** The study is based on a representative survey focused on the satisfaction and experience of 4598 new mothers who gave birth in one of the 25 hospitals in Tuscany (Italy) in 2012.

**Main Outcome Measures:** Women's overall satisfaction in the prenatal period and their overall satisfaction during hospitalization for delivery.

**Results:** Regarding pregnancy, women's satisfaction increased with age, and was generally higher among foreign women coming from non-Western countries and among highly educated women. Regarding delivery, age proved insignificant, whereas citizenship and education maintained the same association with satisfaction. Contrary to our expectations, the number of previous pregnancies turned out to be insignificant.

**Conclusions:** Our findings suggest that the quality of maternity services was perceived differently in different socio-demographic groups: women's expectations affected satisfaction, but in different ways, in various socio-demographic groups, both during pregnancy and at delivery. Keeping these socio-demographic factors into account in the analysis of satisfaction may help organisations to identify areas where pregnancy and delivery services can be better targeted and where increasing awareness among professionals in their everyday practice is most needed.

**Key words:** Italy, socio-demographic factors, patient satisfaction, quality improvement, statistical methods

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## Introduction

Before this century, prenatal care for a woman and her unborn child was not subject to rigorous scientific evaluation in most high-income countries. After a phase of increasing medicalization, the World Health Organization defined a model of prenatal care with a set of guidelines and recommendations for decision-makers and health care providers, urging them to promote patients' empowerment [1].

Despite this recommendation, few large-scale surveys have focused on pregnant women's needs and their assessment of the care provided as the starting point of a patient-centred approach in providing health care in high-income countries. In fact, typically women's assessment has been investigated with other means: ethnographic research, qualitative interviews or small descriptive studies [2–5]. The national survey on maternity care regularly conducted in the UK as well the 2008 Australian survey are rare exceptions [6–8]; whereas population-level surveys on perceived quality regarding maternal and newborn health are widespread in low-income countries [9–13].

Patients' satisfaction and experience are important measure of the quality of health service and in the last few years are routinely used together with clinical indicators in both high-income and low-income countries for continuous quality improvement [14, 15]. Patient satisfaction is a complex and multidimensional measure, affected by a number of clinical and technical factors, but also by expectations and personal characteristics [16–20]. With regard to women's satisfaction for maternity services, previous studies have shown its importance not only for the health and well-being of both mothers and children, but also for service providers and decision-makers [21–27].

The factors that have been shown to matter are, for instance, respect for the patient and her dignity, emotional support by the staff, contact with friends and family, information and guidelines, physical comfort, trust in treatment providers, autonomy and participation in decision-making; and confidentiality [28–34]. Of course, expectations play a major role in this sphere: when services meet women's expectations of care, women are usually satisfied and tend to report a higher quality of care [31]. Education is one of the most important intervening variables here [35, 36]: it shapes expectations, and thus influences satisfaction: women with low education frequently report feeling alone, ignored or harassed [31].

Our research investigates the role of socio-demographic factors on women's satisfaction regarding the maternity services using data from an ad-hoc, representative survey conducted in Tuscany in 2012–13 [37]. We aim to illustrate how socio-demographic characteristics interact with expectations in influencing women's perception of quality. The survey that we used in this study is unique in Italy. We believe that it could also be used as a template for other countries because it overcomes some of the limitations that are frequently noted in the literature: the sample is large and representative, and the perceived quality of the various stages of the process (antenatal period and childbirth) is investigated separately [38]. In addition, women's satisfaction (during pregnancy and at delivery, separately [38]) can be analysed in relation to variables whose role is still controversial in the literature: for instance, maternal age, educational level, number of previous pregnancies and country of origin [6, 28, 30, 38–44], taking into account the area in which each woman lived during her pregnancy or where the delivery took place [44, 45].

The women in our sample were generally satisfied with the services received in the prenatal period and during delivery, as is often

the case in the evaluation of maternity wards [44]. However, some differences emerged: our paper tries to explain this variability in the light of women's expectations through the lens of their socio-demographic characteristics. In short, our research questions are: What is the relationship between women's socio-demographic characteristics (age, education, citizenship and previous pregnancies) and their satisfaction with the service they received? Which expectations matter most in 'explaining' satisfaction levels?

Analysing satisfaction measures by socio-demographic subgroups and their interaction with expectations may provide an insight for policy makers and practitioners into the areas where services need to be better targeted, and increase awareness of the socio-cultural context of pregnant women and new mothers in clinical practice.

## Methods

### Data source

The present study was based on a representative survey conducted between October 2012 and March 2013 by the 'Management and Health Laboratory (MeS)' of the 'Scuola Superiore Sant'Anna' of Pisa and commissioned by the administrative government of Tuscany within the Performance Evaluation System of the Tuscan healthcare system [46]. All of the 4598 new mothers who participated in the survey (37.2% of those who had been contacted) were considered for the analysis of women's satisfaction at delivery, whereas for the analysis of satisfaction during the prenatal period, we excluded the 131 respondents who did not live in Tuscany (see [37] for additional details on the survey). The missing figures (1981 for 19 variables, that is about 100 cases per variable, on average) were imputed using multivariate imputation with chained equations (MICE) [47]. Finally, we verified ex-post that the sample of respondents was not significantly different from that of non-respondents, on the basis of the information available in the (random) sample list. Adopting the potential-outcome framework for causal inference [48], we formalised the statistical issues involved in estimating the effect of participating or not participating in the survey on women's satisfaction. Our sensitivity analyses showed that respondents did not appear to be selected in any way. This holds also for the subgroup of foreign women (see Supplementary material online for details).

### Key variables

#### Response variables

In the survey, women were asked to rate their overall satisfaction with the assistance received in two different phases: in the prenatal period and during their hospitalization for delivery [49]. In both cases, women's assessment was expressed with a five-category Likert-type scale (Excellent, Good, Fair, Poor and Very poor).

#### Explanatory variables

Our key explanatory variables were of different types. Some were socio-demographic: age, education, citizenship and previous pregnancies. Other variables, identified by the specialists as potentially relevant [50, 51], related to the women's experience and to the clinical conditions of each phase. In the analysis of the satisfaction regarding their experience of pregnancy, we considered the number of ultrasounds ('low' if below 3) and the occurrence of a pathological pregnancy, and we considered whether a preparation course

for birth had been attended, the birth centre visited, and the patient duly informed about her 'path' from pregnancy to childbirth.

As for delivery, we included the type of delivery, whether it was preterm, whether it was outside or inside the health district of residence of the woman, whether inconsistent information was supplied by the personnel about breastfeeding, whether pain control was appropriate, whether the woman had felt alone during labour or delivery (the survey questionnaire did not specify whether this was caused by her partner, by lack of assistance or both), whether there had been skin-to-skin mother-to-child contact immediately after delivery, whether the woman had been with her newborn during hospitalization and whether she trusted the doctors, nurses and/or midwives. (As the questionnaire is administered shortly after birth, it seems logical to assume that women referred to the medical staff they had met on this occasion, although their general feeling towards the category probably also influenced their answers).

In both phases, we also considered the type of interview: postal questionnaire, Computer Assisted Web Interview (CAWI) or Computer Assisted Telephone Interview (CATI) (Table 1).

Finally, in order to (partly) capture the variability among health districts or hospitals, which is another relevant factor [52, 53], we included a few contextual variables in our analyses, namely ad-hoc indicators derived from the Performance Evaluation of the Tuscan healthcare system for the years 2012–13. With regard to pregnancy, we included the access rate by childbearing-age women to professional counselling in the health district and the percentage of prenatal screening in the health district; for delivery, we included the percentage of breastfeeding within 2 h from delivery in the hospital.

### Analytical strategy

We estimated two separate models: one for pregnancy and one for delivery. Multilevel proportional odds models were chosen in both cases, keeping into account the ordinal nature of the items, the hierarchical structure of the phenomenon, and the unbalanced number of interviews by hospital or health district (see online Supplementary material for the choice and appropriateness of the model). Women ( $N = 4467$  in the model for pregnancy and  $N = 4598$  in the model for childbirth) were the first, or lower, level of the model, and the 34 health districts (for pregnancy evaluation), or the 25 hospitals (to assess delivery performances) were the second, or higher level (Table 1).

This nested (multilevel) procedure enabled us to take into account the role of the health district or hospital in shaping subjective characteristics such as women's satisfaction [45]. To better appreciate the effect of first- and second-level covariates, in the estimation process we introduced them in blocks (see Models 1–3 both in Table 2, for pregnancy, and in Table 4, for the delivery phase), keeping correlation under control. Finally, we added an interaction term between women's education and the antenatal course for birth in the analysis for pregnancy, and between women's education and the evaluation of pain control in the model for delivery, to account for the unbalanced use of this service between different social classes, because non-Italian women and low educated women, for instance, typically show lower rates of attendance [37, 54]. Other potential interactions of socio-demographic covariates with experience items, which were tested in both analyses but proved insignificant, are not presented here.

The response variable was the satisfaction towards services and assistance during pregnancy and, in the other model, during delivery

(both with  $C = 5$  categories). The underlying model is described by the following equation:

$$\text{logit}[\text{Pr}(Y_{ij} \leq c)] = \alpha_c - (X'_{ij}\beta + Z'_j\gamma + u_j), \quad c = 1, \dots, C - 1$$

where  $\text{Pr}(Y_{ij} \leq c)$  is the cumulative probability up to the  $c$ th category for woman  $i$  in cluster  $j$  (i.e. health district or hospital),  $\alpha_c$  is the specific threshold for the  $c$ th cumulative probability,  $X_{ij}$  is the vector of first-level covariates (some interaction terms included) and  $Z_j$  the vector of second-level covariates. Finally,  $u_j$  is the random effect for cluster  $j$ , which is assumed to be Normally distributed [55]. The data were analysed using STATA/IC 13.1.

## Results

### Assessing satisfaction during pregnancy

Table 2 shows the model results for women's satisfaction for the services and the assistance received during pregnancy. Women's satisfaction increased with age, but not linearly. While women coming from non-Western countries were usually more satisfied than Italian women, the opposite was true for women coming from Western countries (but not significantly so in Models 2 and 3). Women's satisfaction increased for highly educated women, while the number of previous pregnancies apparently played no role.

Among women's experience and clinical covariates, only those concerning the presentation of the birth path and the antenatal course were significant, even if moderated by education (i.e. highly educated women attended antenatal classes more often and were more satisfied by the course than their less educated counterparts; see Table 3). Women who attended the course and found it useful were generally more satisfied with prenatal services; if, instead, they had not liked the course, they presumably considered it a waste of time, and were even markedly less satisfied than those who had not participated at all.

Among the second-level covariates, both indicators—reflecting the diffusion and the proactivity of prenatal services throughout the districts—proved non-significant. Taking second-level random effects into account, the differences in the predicted, conditional probabilities across local authority districts were not large because satisfaction was high in all the health districts. Instead, the predicted probabilities varied significantly in terms of the different values of the socio-demographic covariates. This would seem to imply that personal traits influenced women's satisfaction more than the health district of residence (results available upon request).

### Assessing satisfaction during delivery

Table 4 reports the results for women's satisfaction with the services and the assistance at delivery. In this case, age was not associated with higher satisfaction, whereas citizenship and education proved significant, as before: foreign, non-western women as well as highly educated women were the most satisfied. The number of former pregnancies proved, once again, not significant.

Women's experience and clinical covariates proved almost always significant. Having a Caesarean section, for instance, was negatively associated with satisfaction, compared with a vaginal delivery. Lack of or inconsistent information about breastfeeding as well as insufficient pain control, the feeling of loneliness during labour or at delivery, and the privation of skin-to-skin contact after delivery were all factors that lowered women's satisfaction. At the same time, confidence in doctors, nurses and midwives turned out to

**Table 1.** Sample characteristics

	Total
Number of women per health district (mean $\pm$ SD)	131.4 $\pm$ 86.6
Number of women per hospital (mean $\pm$ SD)	183.9 $\pm$ 91.6
Satisfaction w.r.t. prenatal services (mean $\pm$ SD)	4.0 $\pm$ 0.71
Satisfaction during delivery (mean $\pm$ SD)	4.1 $\pm$ 0.88
Education (N, %)	
Lower secondary	2137 (46.5)
Upper secondary	610 (13.3)
Tertiary	1848 (40.2)
Citizenship (N, %)	
Italian	4152 (90.3)
Non-western country	391 (8.5)
Western country	55 (1.2)
Age (mean $\pm$ SD)	34.4 $\pm$ 4.9
Number of previous pregnancies (mean $\pm$ SD)	0.76 $\pm$ 1.2
Had visited the birth centre before delivery (N, %)	2175 (47.7)
Low number of ultrasounds (below 3, recommended value) (N, %)	173 (4.0)
Pathological pregnancy (N, %)	613 (13.4)
Presentation of the birth path by the staff of the health district (N, %)	
Not at all/Little	864 (19.1)
Sufficiently	1568 (34.6)
Much/In full	2097 (46.3)
Evaluation of the course preparing for birth (N, %)	
Very poor/Poor	208 (4.5)
Fair	425 (9.2)
Good/Excellent	1892 (41.2)
Did not attend the course	2073 (45.1)
Type of delivery (N, %)	
Vaginal	2562 (56.5)
Assisted (with cupping glass or forceps)/Induced	870 (19.2)
Scheduled Caesarean section	568 (12.5)
Unscheduled Caesarean section	535 (11.8)
Consistent information about breastfeeding (N, %)	
Yes	2163 (48.9)
Somewhat	1411 (31.9)
No	569 (12.9)
No information received	284 (6.4)
Pain control (N, %)	
Yes	2366 (53.8)
Somewhat	1560 (35.5)
No	475 (10.8)
Alone during labour or delivery (N, %)	364 (8.4)
No skin-to-skin mother-to-child contact after delivery (N, %)	641 (14.3)
Preterm delivery (N, %)	424 (9.4)
Out-of-local health authority delivery (N, %)	726 (15.8)
Mother and newborn together during hospitalization (N, %)	
Always	3950 (86.9)
Sometimes	185 (4.1)
Never	410 (9.0)
Confidence in doctors (N, %)	
Not at all/Not much	231 (5.2)
Quite	987 (22.1)
Much/Very much	3246 (72.7)
Confidence in nurses (N, %)	
Not at all/Not much	279 (6.4)
Quite	1110 (25.5)
Much/Very much	2967 (68.1)

Table continued

**Table 1.** Continued

	Total
Confidence in midwives (N, %)	
Not at all/Not much	214 (4.7)
Quite	635 (14.1)
Much/Very much	3660 (81.2)
Type of questionnaire (N, %)	
Postal	3827 (83.2)
Computer assisted web interview (CAWI)	753 (16.4)
Computer assisted telephone interview (CATI)	18 (0.4)

*Note:* The sum of the different categories is not always equal to  $N = 4598$  because of missing data. The percentage does not always add up to 100 because of rounding.

*Source:* Own processing of survey data ( $N = 4598$ ).

be important variables for a higher level of satisfaction. Women's experience and health during hospitalization and delivery appeared more relevant for their satisfaction than was the case during pregnancy, but education played an important mediating role. For example, better-educated women were less satisfied if they had not had appropriate pain control: in short, highly educated women appeared to be a more demanding group. They tended to show appreciation if their expectations were fulfilled, but expressed criticism in the opposite case.

Looking at the hospital level variables, the percentage of women who breastfed no later than 2 h after delivery in the hospital was not significant. Taking into account second-level random effects, a bigger variability emerged at the hospital level in this analysis than in the case of pregnancy (variance = 0.09 for delivery against 0.02 for pregnancy—Table 2). Thus, the predicted probabilities for the satisfaction varied more among hospitals than among health districts (results available upon request).

## Discussion

In our study, we addressed women's satisfaction during pregnancy and at delivery, focusing on the association between women's satisfaction and some of their socio-demographic characteristics: educational attainment, age, citizenship and the number of previous pregnancies. According to previous studies on this topic, the link between women's satisfaction and their socio-demographic characteristics was not always straightforward [23, 38, 40, 41]: we tried to explain this controversy through the intermediate role played by women's expectations.

Our results confirm the importance of socio-demographic factors in explaining women's satisfaction, both for the prenatal period and during hospitalization for delivery. Relatively older women were all in all more satisfied than others about the care received during pregnancy, but not at delivery, as found in other studies [39, 44]. This appears to be due to the special attention that the Tuscany region devotes to 35 and older pregnant women, who, for example, receive prenatal exams for free: as for age, women's satisfaction during pregnancy is driven by actual differences in care received. Apart from this, however, age is scarcely related to satisfaction, if it all, and the same holds for the number of previous pregnancies [44, 56]. A possible explanation is that patient education with regard to pregnancy and childbirth—which is supposed to be higher for multiparous women—may control expectations, which in turn have a lower

**Table 2.** Estimates and standard errors for three multilevel proportional odds models. Dependent variable: satisfaction with the services and the assistance received during pregnancy

Fixed Part	Model 1			Model 2			Model 3		
	Coeff.	SE	P-value	Coeff.	SE	P-value	Coeff.	SE	P-value
<b>Thresholds</b>									
First	-5.433	0.242	<0.001	-3.732	0.281	<0.001	-2.930	0.531	<0.001
Second	-3.636	0.111	<0.001	-1.908	0.184	<0.001	-1.098	0.488	0.03
Third	-1.414	0.066	<0.001	0.412	0.168	0.01	1.238	0.485	0.01
Fourth	1.331	0.065	<0.001	3.389	0.177	<0.001	4.221	0.489	<0.001
<b>Women's socio-demographics</b>									
Age (centred at the median)	0.029	0.007	<0.001	0.033	0.007	<0.001	0.034	0.007	<0.001
Age^2 (centred at the median)	0.003	0.001	0.004	0.003	0.001	0.004	0.003	0.001	0.006
<b>Citizenship (Ref. Italian)</b>									
Non-Western country	0.264	0.113	0.02	0.248	0.116	0.03	0.236	0.116	0.04
Western Country	-0.511	0.275	0.06	-0.351	0.276	0.20	-0.396	0.278	0.16
<b>Education (Ref. Lower secondary)</b>									
Upper secondary	-0.227	0.096	0.02	-0.278	0.098	0.004	-0.818	0.587	0.16
Tertiary	0.178	0.064	0.006	0.201	0.065	0.002	0.905	0.300	0.003
Number of previous pregnancies	-0.021	0.026	0.42	-0.026	0.027	0.34	-0.026	0.028	0.34
<b>Woman's experience/clinical</b>									
Has visited the birth centre				0.081	0.068	0.23	0.086	0.068	0.21
Low number of ultrasounds				0.254	0.158	0.11	0.208	0.162	0.20
Pathological pregnancy				-0.087	0.091	0.34	-0.093	0.091	0.31
<b>Presentation of the birth path (Ref. Not at all/Little)</b>									
Sufficiently				0.375	0.088	<0.001	0.367	0.088	<0.001
Much/In full				1.126	0.088	<0.001	1.118	0.088	<0.001
<b>Course preparing for birth (Ref. Very poor/poor evaluation)</b>									
Fair evaluation				0.497	0.173	0.004	0.859	0.271	0.002
Good/Excellent evaluation				1.502	0.153	<0.001	1.840	0.241	<0.001
Did not attend the course				1.320	0.156	<0.001	1.738	0.241	<0.001
Up. Sec. education # Fair evaluation of the course							0.277	0.687	0.69
Up. Sec. education # Good/Excellent evaluation of the course							0.470	0.611	0.44
Up. Sec. education # Did not attend the course							0.624	0.603	0.30
Tertiary education # Fair evaluation of the course							-0.661	0.362	0.07
Tertiary education # Good/Excellent evaluation of the course							-0.637	0.315	0.04
Tertiary education #Did not attend the course							-0.890	0.317	0.005
<b>Health district characteristics</b>									
Access rate to counselling services for childbearing-age women							0.000	0.001	0.61
% of prenatal screening							0.005	0.005	0.34
<b>Random part</b>									
Variance at the health district level	0.024	0.013		0.024	0.014		0.023	0.013	
ICC	0.007			0.007			0.007		

Note: In Model 3, we controlled also for another individual-level covariate, the type of questionnaire, but it was not significant.

influence on perceived quality. Instead, both citizenship and education are significant in both phases. Women from non-Western countries are more satisfied than Italians, even if they benefited less from antenatal services. Women from low-income countries presumably have lower expectations because of their previous experience of healthcare in their home country, and therefore they appreciate what they are offered [57], and tend to report higher levels of satisfaction [58]. Satisfaction is higher for the most educated women in both models (pregnancy and delivery), but women's satisfaction among the highly educated very much depends on the fulfilment of their expectations, as the interaction terms show, which is in line with what is normally found in the specialised literature [36, 42]. Compared to the influence of individual socio-demographic characteristics, the role of the context (i.e. the health district or the hospital) in explaining women's satisfaction is more limited, at least in Tuscany, but still significant.

Two main methodological points emerge from our analysis. First, the various phases of the process (prenatal and delivery) must be analysed separately because results may differ, also in the association

**Table 3.** Predicted probability of positive evaluation (good and excellent) of prenatal services according to education and satisfaction with the course preparing for birth

Education	Evaluation of the course preparing for birth			
	Very poor/ Poor	Fair	Good/ Excellent	Did not attend
Lower secondary	0.22	0.40	0.65	0.62
Upper secondary	0.11	0.29	0.56	0.58
Tertiary	0.42	0.47	0.70	0.63

between satisfaction and the socio-demographic characteristics of the woman. Second, the importance of the context must be emphasised, be it the district where the woman lived or the hospital where delivery took place. In both cases, this contextual level needs to be modelled properly, to avoid the risk of bias in the estimation of what determines women's satisfaction.



**Table 4.** Estimates and standard errors for three multilevel proportional odds models. Dependent variable: satisfaction with the services and the assistance received at delivery

Fixed part	Model 1			Model 2			Model 3		
	Coeff.	SE	P-value	Coeff.	SE	P-value	Coeff.	SE	P-value
<b>Thresholds</b>									
First	-4.284	0.153	<0.001	-2.741	0.234	<0.001	-1.583	1.477	0.28
Second	-3.052	0.116	<0.001	-0.820	0.228	<0.001	0.338	1.475	0.82
Third	-1.630	0.101	<0.001	1.613	0.242	<0.001	2.778	1.478	0.06
Fourth	0.465	0.098	<0.001	4.933	0.248	<0.001	6.107	1.479	<0.001
<b>Women's socio-demographics</b>									
Age (centred at the median)	0.010	0.006	0.09	0.002	0.007	0.80	0.002	0.007	0.72
<b>Citizenship (Ref. Italian)</b>									
Non-Western country	0.098	0.105	0.35	0.292	0.116	0.01	0.288	0.117	0.01
Western Country	-0.454	0.251	0.07	-0.488	0.274	0.08	-0.437	0.278	0.12
<b>Education (Ref. Lower secondary)</b>									
Upper secondary	0.094	0.088	0.29	0.200	0.097	0.04	0.138	0.133	0.30
Tertiary	0.058	0.061	0.34	0.128	0.067	0.054	0.322	0.094	0.001
Number of previous pregnancies	0.006	0.025	0.80	-0.013	0.027	0.62	-0.013	0.027	0.62
<b>Woman's experience and clinical</b>									
<b>Type of delivery (Ref. Vaginal)</b>									
Assisted/Induced				0.006	0.081	0.94	0.001	0.082	0.99
Scheduled Caesarean section				-0.448	0.101	<0.001	-0.460	0.101	<0.001
Unscheduled Caesarean section				-0.326	0.106	0.002	-0.339	0.106	0.001
<b>Consistent information about breastfeeding (Ref. Yes)</b>									
Some				-0.717	0.073	<0.001	-0.717	0.074	<0.001
No				-1.388	0.108	<0.001	-1.379	0.108	<0.001
No information received				-1.482	0.139	<0.001	-1.495	0.139	<0.001
<b>Pain control (Ref. Yes)</b>									
Some				-0.735	0.072	<0.001	-0.608	0.103	<0.001
No				-1.042	0.118	<0.001	-0.845	0.161	<0.001
Alone during labour or delivery				-0.768	0.118	<0.001	-0.757	0.118	<0.001
No skin-to-skin contact after delivery				-0.170	0.098	0.08	-0.173	0.098	0.08
<b>Trust towards doctors (Ref. Not at all/Not much)</b>									
Quite				0.588	0.160	<0.001	0.575	0.161	<0.001
Much/Very much				1.116	0.163	<0.001	1.116	0.164	<0.001
<b>Trust towards nurses (Ref. Not at all/Not much)</b>									
Quite				1.378	0.156	<0.001	1.392	0.156	<0.001
Much/Very much				2.464	0.166	<0.001	2.474	0.167	<0.001
<b>Trust towards midwives (Ref. Not much/Not at all)</b>									
Quite				1.401	0.185	<0.001	1.407	0.184	<0.001
Much/Very much				2.199	0.182	<0.001	2.211	0.182	<0.001
Up. Sec. education # Some pain control							0.114	0.212	0.59
Up. Sec. education # No pain control							0.199	0.325	0.54
Tertiary education # Some pain control							-0.364	0.148	0.01
Tertiary education # No pain control							-0.539	0.221	0.02
<b>Hospital characteristics</b>									
% of breastfeeding within 2 h from delivery							0.012	0.016	0.47
<b>Random part</b>									
Variance at the hospital level	0.175	0.058		0.092	0.036		0.090	0.036	
ICC	0.051			0.027			0.027		

*Notes:* In Model 2, we also controlled for three other individual-level covariates (preterm delivery, out-of-Local Health Authority delivery, mother and newborn together during hospital stay), but they were not significant. In Model 3, we controlled also for another individual-level covariate (type of questionnaire), but it was not significant. Finally, we checked whether including or excluding confidence in doctors/nurses/midwives had a significant impact on the results. As it turned out, it did not: the confidence intervals of all our socio-demographic variables largely overlapped (not shown here).

In terms of policy implications, the patients' evaluation of care is fundamental, especially when developing targeted policies to enhance patient-centred care [59]. Indeed, our results show differences among satisfaction and experience across the diverse patient socio-demographic characteristics and thus confirm the need for a pro-active approach aligning the organization and the delivery of healthcare services with the culture, needs and expectations of the diverse segments of the population. Therefore, healthcare

organisations should develop policies and procedures to engage professionals and improve practices that address the needs of the different types of patients.

Our findings suggest that the socio-demographic component should not be underestimated: both citizenship and education should be considered by health authorities and decision-makers because they affect the perception of the quality of maternity services. In addition, while it is generally accepted that the patients'

care experience is likely to influence their satisfaction, we also found that the relationship between experience and satisfaction is mediated by socio-demographic characteristics. In practical terms, this means that services need to be more precisely targeted to a woman's particular characteristics. For example, the different population groups identified by the study may require different access policies (e.g. different service hours) to increase participation in prenatal classes, especially for mothers with low and medium education, given that patient education with regard to pregnancy and childbirth may improve women's experience and their overall satisfaction [35, 60]. Another example is the relationship between pain-management and education: scientific knowledge alone may not suffice, and health-care professionals should also consider the patients' values, needs and preferences (i.e. highly educated women's greater desire for epidural anaesthesia), in order to ensure that respectful and responsive care is delivered to each segment of the population [61].

This study has also some limitations. A few potentially relevant questions were not asked in the survey, such as those on the newborns' and on their mothers' health, about the family and the partner and about the length of stay in Italy for foreign women. The lack of these elements may have reduced our capability to explain the observed differences in satisfaction, both between individuals and between hospitals or health districts.

However, this study provides fresh insights into an understudied topic, and contributes to a better understanding of the association between women's socio-demographic characteristics and their satisfaction in relation to maternity and counselling services. This is particularly important in view of the increased need for empirical evidence to formulate policies in which care is provided in a way that better fits women's different needs and values.

## Supplementary material

Supplementary material is available at *International Journal for Quality in Health Care* online.

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