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Inequalities in maternal care in Italy: the role of socioeconomic and migrant status

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Abstract

Introduction. Maternal care is affected by socioeconomic factors. This study analyses the effect of maternal education, employment and citizenship on some antenatal and postnatal care indicators in Italy.

Methods. Data are from two population-based follow-up surveys conducted to evaluate the quality of maternal care in 25 Italian Local Health Units in 2008/9 and 2010/1 (6942 women). Logistic models were applied and interactions among independent variables were explored.

Results. Education and employment status affect antenatal and postnatal care indicators and migrant women are less likely to make use of health opportunities. Low education status exacerbates the initial social disadvantage of migrants. Migrant women are also more affected by socioeconomic pressure to restart working early, with negative impact on postnatal care.

Conclusion. Interventions focusing on women's empowerment may tackle inequalities in maternal care for those women, Italians or migrants, who have a worse initial maternal health literacy due to their lower socioeconomic conditions.

Key words
- antenatal care
- postnatal care
- migrant women's health
- healthcare inequalities

INTRODUCTION

The positive role of healthcare during pregnancy and postpartum for the mothers' and children's health is widely recognised. Incomplete antenatal care carries a substantially elevated risk of adverse pregnancy outcomes and neonatal morbidity [1, 2]. Antenatal care also contributes to the preparation of women for childbirth and motherhood and has a good effect on psychological wellbeing [3]. Postnatal care helps to identify complications, promotes healthy behaviours and is associated with exclusive breastfeeding [4, 5].

Antenatal and postnatal care, as well as delivery care, are influenced by several socioeconomic factors, such as maternal education, occupational status and income. These effects have been shown not just in industrialised or newly industrialized countries [5-7], but also in developing countries [8, 9]. In particular, in Europe, women living in more disadvantaged conditions experience more difficulties in accessing pregnancy care [10-12].

Foreign born status and ethnicity also affect maternal care. Migrant women encounter barriers in accessing and using antenatal care [13-17]. The association between maternal care and reproductive outcomes, related also to ethnicity, has been assessed [14, 16] showing that even small variations in coverage of maternal care by woman's ethnicity were associated with ethnic differences in birth outcomes. The point is whether maternal services are culturally sensitive and really able to empower migrant women and respond to their specific health needs and those of their newborns [18].

In Italy, the current model of care, although universally accessible for both Italians and foreigners, is characterised by a low use of public health services, such as the family care centres (consultori familiari) which provide psycho-social and health support through a multi-professional and an integrated approach, in favour of private assistance by obstetrician-gynaecologists, which in contrast is based mainly on a biomedical approach. This also produces an over-medicalization of pregnancy and delivery [19, 20]. In this setting, which seems focused on medical aspects more than women's empowerment, maternal social factors may even have a more important role in determining health and care inequalities, which have not been deeply assessed yet.

The need to understand clearly the socio-cultural and service delivery related factors affecting the use of maternal health services is even more important now due to increasing immigration. In 2010 more than two million migrant women were estimated to live in

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Italy [21] and the majority enjoy good health and are of reproductive age. Indeed, pregnancy, delivery and postpartum care are the main reasons for hospitalisation of foreign resident women and about 15% of all newborns are to parents who are both migrants.

Despite this, few studies have investigated the possible differences in healthcare during pregnancy, delivery and postpartum between migrant and native-born mothers in Italy [22, 23]. More attention has been given to analyse birth outcomes [24-26]. To our knowledge, no studies have been published on the impact that both migrant and socioeconomic status play together on maternal care in Italy.

In general terms, the importance of socioeconomic position in explaining differences in health status and health services utilization both in the native and in the migrant population is recognised [27]. Recent studies have shown that socioeconomic status is a fundamental determinant of ethnic inequalities in health [28, 29] and health inequalities among immigrants may appear less evident when socioeconomic status is included in the analysis [30, 31]. These factors have not often been assessed together, specifically for maternal health.

In England, social and ethnic differences in maternal care have been observed [12, 32], and in Belgium non-European origin and low income were predisposing determinants of late initiation of antenatal care [6]. Two recent systematic reviews confirm the existence, in high-income countries, of large inequities in antenatal care utilization according to educational level and ethnicity. Both studies underline the need to investigate more deeply the determinants of inadequate use of antenatal care in order to facilitate the development of strategies improving antenatal care for pregnant women at risk [7, 17].

Our analyses aim to identify inequalities in maternal care related to socioeconomic and migrant status in Italy. It describes the use of antenatal and postnatal care and delivery practices in the study areas, focusing on the association with maternal education, employment and citizenship.

The maternal care model in Italy

In Italy, according to the national health policies, maternal care should be equally and universally accessible. Currently, a set of maternal care services is guaranteed, free-of-charge, by the public sector. They are included in the so-called "essential levels of care", which are defined at national level and provided by the Regions (Ministerial Decree of 10 September 1998, confirmed by that of 29 November 2001).

Furthermore, a general maternal care pathway has been defined by a national programme for mother and child health (Progetto Obiettivo Materno Infantile, POMI, Ministerial Decree of 24 April 2000). This strategic programme states that healthy pregnant women should be followed by midwives in public health services, in particular in family care centres (consultori familiari), which can provide psycho-social and health support to women during pregnancy and postpartum. This can due to their multi-professional team and integrated approach focusing on health promotion and empowerment aims. Within these services, antenatal classes are organised, and all pregnant women are invited to attend in order to improve their knowledge and their competences in motherhood, delivery and child care. To ensure the continuity of care after delivery, postpartum visits and support for breastfeeding should be offered to new mothers by the family care centres.

All new-born children are followed, free-of-charge, by National Health Service (NHS) paediatricians after registration in the Local Health Unit (LHU) offices.

Migrant women, legally or illegally present in Italy, can access and use the same services during pregnancy, delivery and postpartum, and have the same formally recognised healthcare rights as Italian women (Legislative Decree n. 286/1998).

Despite these policies, the prevailing maternal care model is a biomedical model, which has led to progressive medicalisation of natural events, such as pregnancy and delivery, and to an increase of interventions carried out without evidence-based clinical indications which may potentially cause adverse events. This is observed, for instance, in the high number of ultrasound examinations during pregnancy, with 78.8% of pregnant women having more than 3 ultrasound scans and 29% more than 7 [33]. Italy has also the highest rate of deliveries by caesarean section in Europe, which in 2009 was 38% of the all deliveries, ranging from 24% to 60% among regions [34]. The biomedical model is widespread in all maternal health services, including the public family care centres, although the care they provide appears to be much more appropriate than that of private maternal services. Indeed, women assisted by the public family care centres are more likely to attend antenatal classes, to receive a postnatal home care visit, to receive information on contraception and on breastfeeding, and they also have a lower mean number of ultrasound scans and are less likely to deliver with a caesarean section [35].

This maternal care model does not take into account the role of social factors or individual subjectivity and is probably unable to overcome the differences existing at social level, to the detriment of the most vulnerable women.

MATERIALS AND METHODS

Study population, sample and data collection

Data for this study were obtained from two similar population-based follow-up surveys conducted by the Italian National Institute of Health in 2008-2009 and 2010-2011, to evaluate changes in pregnancy, delivery and postpartum care. The surveys were offered to all the 20 Italian Regions, but only 11 agreed to participate. Twenty-five of the 79 LHUs of the participating Regions agreed to be involved in the surveys, of which 7 are from the North of the country, 6 from the Center and 12 from the South. In each survey, women who had given birth and were resident in these LHUs were the target population. Women were recruited and interviewed within a few days of their giving birth and again, if they provided their consent to be reinterviewed, at 3 months after delivery, by trained interviewers using questionnaires. The first questionnaire was structured in

four sections regarding pregnancy, delivery, postpartum and socio-demographic characteristics. The follow-up questionnaire included items regarding assistance and breastfeeding after discharge from hospital.

In both surveys, all resident women who had given birth within a defined period were recruited. The period was defined for each LHU as that within which 120 deliveries were expected according to the previous year's data. The number of women recruited in each LHU varied from 51 to 344. Exclusion criteria were: severe illness of mother or child; women with an active infection and fever > 38 °C; women with haemorrhage > 1000 cm^3. Since the objective of this study focused on the comparison of the principal ante and post natal care indicators by social characteristics, data of the two surveys were pooled.

The ante and post natal care indicators were:

- pregnancy care, classified as provided by private/public obstetrician-gynaecologist or by public family care centres/midwives;
- attendance at antenatal classes (yes, no), consisting of meetings between pregnant women and maternal/child care professionals that are variable in number and organisation among LHU, but with the same aim to strengthen the women's competence concerning birth and parenthood;
- peri-conceptional folic acid supplementation, *i.e.* starting assumption at least one month before conception, (yes, no), which can be considered an indicator of the level of women's empowerment, indicating their capacity to make aware choices on the basis of the information received;
- mode of delivery, classified as vaginal or by caesarean section;
- exclusive/predominant breastfeeding at three months after delivery (yes, no), which includes when children are breastfed at the most with addition of water and water-based drinks, according to the WHO definition [36];
- delay in registering children with a NHS paediatrician (yes, no), classified as registered within or after 15 days from birth.

The main independent factors used in the analyses were maternal education, employment and citizenship.

Education was classified as low (less than high school) or high (high school/university).

Employment was classified differently in the analysis of ante and post natal care: before delivery the variable was classified as employed vs unemployed. Employment at three months after delivery was classified as employed who had restarted working vs not working (not employed or employed but not restarted working yet).

Migrant status was defined in this study by citizenship, classified as Italian or Foreign. We did not differentiate foreigners from developed countries from those from less developed countries, according to the most recently used classification of the Italian National Institute of Statistics, for two main reasons. Firstly we wanted to compare this study's results with the results of previous studies which used the dichotomous classification Italians *vs* Foreigners; secondly the proportion of foreign women from highly developed countries in the sample was very small, about 6%. We used "foreigners" and "migrants" to identify the same group of women.

Other variables considered to be potential confounders were: maternal age (< 30; 30-34; > 34), parity (primiparous, multiparous), marital status (married; unmarried; the latter category included women who were single, divorced, separated or widowed), and area of residence (North, Centre, South). Pregnancy care and attendance at antenatal classes were also included as potential confounders in the models which considered postnatal indicators.

Statistical analysis

Socio-demographic characteristics of Italians *vs* migrants were compared. Descriptive analyses of the selected maternal care indicators by maternal citizenship, education and employment status are reported. The Pearson design-based F statistic or T-test for survey data were used for all the comparisons. Further, multivariate logistic models which take account of complex survey data were used to analyse the association between each care indicator and social characteristics also adjusting for other potential confounding factors. Possible interactions among independent variables were explored. If interaction terms were found significant, stratified odds ratios comparing Foreigners vs Italians were also reported.

In order to make the entire sample representative of the total population from which the LHU samples derived, descriptive and multivariate analyses were weighted by the reciprocal of the sampling fractions. All the analyses used STATA, version 11 statistical software.

RESULTS

Of a total sample of 6942 women (95% of the contacted women), 6189 were Italian (IT, 89%) and 753 were foreign (FO, 11%). At follow-up, 5906 women (85% of the total sample) were re-interviewed of whom 5320 were Italians (86%) and 586 foreigners (78%). The proportion of women who received assistance from the family care centres was 26% in the North, 24% in the Centre and 11% in the South of Italy.

Almost all foreign women were citizens of less developed countries with strong migratory pressure (94%) and this confirmed the validity of the methodological choice to refer to foreigners as migrants. Foreign women had lower education (FO 46.5% *vs* IT 26.9%; p = 0.007), were more likely to be unemployed (FO 52.8% *vs* IT 29.4%; p < 0.001) or unmarried (FO 29.3% *vs* IT 23.9%; p = 0.335). A slightly higher percentage of multiparous women was observed among migrants (FO 49.9% *vs* IT 46.1%; p = 0.082). The mean age of foreigners was three years less than that of Italians (FO 29y *vs* IT 32y; p < 0.001). At follow-up, they were more likely than Italians to have re-started work (FO 20.1% *vs* IT 11.8%; p = 0.030).

Most of foreign women were resident in the LHUs of the North and of the Center (40.6% and 47.5%, respectively), according to the geographic distribution of the all foreigners in Italy [21]. The Italians were mostly resident in the LHUs of the South because of

Table 1
Maternity care indicators by maternal education and citizenship (%)

		Low education			High education		
		IT	FO	p	IT	FO	p
Antenatal indicators	**No.**	**1705**	**331**		**4484**	**422**	
Pregnancy care by public family care centres/midwives		17.2	70.1	< 0.001	12.4	47.6	< 0.001
Attendance at antenatal classes		32.0	20.2	0.010	61.6	36.4	< 0.001
Peri-conception folic acid supplementation		15.9	5.5	< 0.001	25.9	11.3	< 0.001
Delivering by caesarean section		38.1	22.6	0.016	34.5	32.8	0.713
Postnatal indicators	**No.**	**1425**	**249**		**3895**	**337**	
Exclusive/predominant breastfeeding at 3 months after delivery		49.9	47.1	0.831	58.9	63.6	0.334
Delay in registering children with a NHS paediatrician		16.3	22.3	0.298	13.8	14.1	0.935

IT: Italians; FO: foreigners.

Table 2
Maternity care indicators by maternal occupational status and citizenship (%)

		Non employed			Employed		
		IT	FO	p	IT	FO	p
Antenatal indicators	**No.**	**1926**	**431**		**4263**	**322**	
Pregnancy care by public family care centres/midwives		16.3	62.4	< 0.001	12.6	53.1	< 0.001
Attendance at antenatal classes		36.9	24.9	0.001	60.6	33.4	< 0.001
Peri-conception folic acid supplementation		15.9	6.8	0.010	26.2	10.6	< 0.001
Delivering by caesarean section		39.3	31.2	0.144	33.9	24.6	0.042
		Not working at 3 months			**Restarted work within 3 months**		
		IT	FO	p	IT	FO	p
Postnatal indicators	**No.**	**4672**	**494**		**648**	**92**	
Exclusive/predominant breastfeeding at 3 months after delivery		57.4	65.4	0.079	50.4	21.0	0.015
Delay in registering children with a NHS paediatrician		14.3	14.1	0.944	15.6	31.9	0.003

IT: Italians; FO: foreigners.

the location of the sample of LHUs involved (data not shown in tables).

Citizenship and education

While Italian women were more likely to receive assistance during pregnancy from a private obstetrician-gynaecologist, most of the migrants used public family care centres, especially the low educated (70.1%) *(Table 1)*. Participation in antenatal classes during the present or a previous pregnancy was similar, about 30%, between migrant and the least-educated Italian women, while 61.6% of Italian women with high education level attended antenatal classes.

A critical difference between Italians and migrant women was observed for peri-conceptional folic acid supplementation: its use in low educated women was nearly three time more among Italians (15.9% *vs* 5.5%), and the prevalence was doubled for the highly educated women (25.9% *vs* 11.3%).

The proportion of deliveries by caesarean section was lower among migrant women than Italians. Nevertheless, the best educated migrant women had a similar percentage as those of Italians (32.8% *vs* 34.5%). Neither citizenship nor education consistently affected the preferences expressed by women on the kind of delivery and method of feeding the baby they would

Table 3
Logistic regression models results

	Pregnancy care from family care centres[a]		Attendance at antenatal classes[b]		Peri-conceptional folic acid supplementation[c]		Delivery with caesarean section[a]		Exclusive/ predominant breastfeeding at 3 months[d]		Delay in registering children with a NHS paediatrician[e]	
Explanatory variables	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Foreigners vs Italians	5.31	3.89-7.26	0.26	0.20-0.35	0.45	0.26-0.76	1.07	0.78-1.47	1.12	0.61-2.06	1.79	0.85-3.75
High vs low education	0.63	0.52-0.77	2.39	2.03-2.80	1.44	1.19-1.73	1.04	0.85-1.26	1.37	1.12-1.67	0.88	0.72-1.08
Employed vs not employed	0.69	0.58-0.83	1.39	1.19-1.63	1.42	1.19-1.69	0.86	0.73-1.02	0.60	0.39-0.93	1.34	0.91-1.97

[a]Also adjusted for age, parity, marital status and residence area; [b]also adjusted for age, parity, marital status, residence area and pregnancy care; [c]also adjusted for age, parity and marital status; [d]also adjusted for parity, marital status, pregnancy care and attending antenatal classes; [e]also adjusted for parity, marital status and residence area.

Table 4
Stratified odds ratios of foreigners *vs* Italians

	Women not working		Women who restarted working within 3 months	
Postnatal indicators	OR	95% CI	OR	95% CI
Exclusive/predominant breastfeeding at 3 months after delivery	1.50	1.02-2.20	0.30	0.11-0.84
Delay in registering children with a NHS paediatrician	1.34	0.77-2.31	4.79	2.06-11.12

chose, if possible: vaginal delivery in 86.3% of Italians and 87.2% of migrants, and breastfeeding in 96.5% and 95.7%, respectively.

Three months after delivery, 56% of both Italians and foreigners reported that they were still breastfeeding exclusively/predominantly, with the higher educated women reporting higher prevalences of breastfeeding, especially among foreigners (low FO: 47.1% *vs* high FO: 63.6%, *Table 1*).

Delay in registration with a NHS paediatrician was more common among foreign lower educated women (low FO: 22.3% *vs* low IT: 16.3%), while there was no difference by citizenship within the highly educated women.

Citizenship and occupational status

The use of antenatal care by citizenship and occupational status of the women is reported in *Table 2*. A higher use of public services for pregnancy care by foreign women was observed, independently of their occupational status. In both groups, employed women participated more frequently in antenatal classes and their assumption of folic acid in the periconception period was more prevalent. The risk of caesarean section was lower for employed women, although the value among unemployed foreigners (31.2%) almost reaches that of the employed Italian women (33.9%).

Unlike Italians, occupational status has a strong effect on postnatal care for migrant women. In fact, if 65.4% of those not working were still exclusively/predominantly breastfeeding at 3 months, this percentage becomes 21.0% in foreigners who had started working within 3 months. The same negative effect of re-starting work was observed for the delay in the registration with a NHS paediatrician among foreigners (FO not working: 14.1% *vs* FO re-starting: 31.9%). The effect of working status on breastfeeding was lower in Italian women (57.4% *vs* 50.4%) and absent for delay in pediatrician registration (14.3% *vs* 15.6%).

The role of socioeconomic and migrant status on maternal care

Logistic regression models were used to explore the association between maternal care indicators and citizenship, education and employment status, also after adjustment for other factors significantly associated with the specific outcome, as reported in the notes of *Table 3*.

Foreign citizenship was the most important factor positively associated with pregnancy care by family care

centres showing for foreigners vs Italians an OR = 5.31 (95% CI: 3.89-7.26). Highly educated and employed women were similarly less likely to receive assistance from family care centres. A significant interaction was found between citizenship and education (p = 0.03), which emphasizes the differences between foreigners and Italians, particularly within the group of the less educated women. Among this group, indeed, the foreigners were 7 times more likely to receive pregnancy care by family care centres than Italians (OR = 7.24, 95% CI: 4.93-10.64), while among the more educated women the odds ratios for foreigners vs Italians was lower (OR = 4.32, 95% CI: 2.80-6.68).

Participation in antenatal classes was less likely for foreigners (OR = 0.26, 95% CI: 0.20-0.35) and more likely for the higher educated and employed women. Similarly, foreigners were less likely to take peri-conceptional folic acid (OR = 0.45, 95% CI: 0.26-0.76), while high education status and employment were protective factors for this healthy behaviour, confirming the results of the univariate analyses *(Table 3)*.

In logistic regression analysis, delivering by caesarean section was not statistically associated with any of the social independent factors considered, despite the univariate results. The effects previously observed between foreign and Italian women disappeared after controlling for the age and the geographical area of residence of the women. In particular, this last variable determined a strong confounding effect that was identified while testing the variables to enter in the specific models. Exclusive or predominant breastfeeding at three months was more likely among highly educated women and those who were not working. No significant association with citizenship was found in the simpler analysis but, when considering interactions, a significant term was found between citizenship and employment status ($p < 0.001$). Among women not working, foreigners had a higher probability to breastfeed exclusively or predominantly than Italians (OR = 1.50, 95% CI: 1.02-2.20), while among the women who had restarted working within three months foreigners are less likely to breastfeed (OR = 0.30, 95% CI: 0.11-0.84; *Table 4*).

Delay in registration with a NHS paediatrician was not significantly associated with any of the simple social independent variables *(Table 3)* but a similar significant interaction ($p < 0.001$) was found between citizenship and employment status. Foreign women were more likely than the Italians to register after more than 15 days from birth, but while within the group of those not working the odds ratio was 1.34 (95% CI: 0.77-2.31), among the women who had restarted working within three months the odds ratio reached 4.79 (95% CI: 2.06-11.12; *Table 4*).

DISCUSSION

Some of the analysed indicators show that maternal care in Italy needs generally to be improved to comply with international and national recommendations and guidelines. For example, the proportion of deliveries by caesarean section is too high and the proportion of women exclusively breastfeeding after three months from birth is low. Moreover the proportion of women who use private assistance instead of the public family care centres is very high. Finally the peri-conceptional assumption of folic acid is particularly low considering that all women who are planning or not actively excluding a pregnancy are recommended to take it [37], although its use has constantly increased during the last ten years from when information campaigns started.

The results of the study confirm the influence of social determinants in antenatal care observed in the high income countries [7, 11]. Women living in Italy with a higher social position are more aware of good health practices during pregnancy, although they use more private services.

Citizenship also affects the use of appropriate care in ante and post natal periods. The definition of appropriate care is not univocal; in this study specific indicators related to the Italian maternal care model have been used, which are not commonly used at internationally level such as pregnancy care by family care centres or midwives, attendance at antenatal classes and peri-conceptional folic acid supplementation. However, analogous difficulties in accessing and using appropriate antenatal care among migrant women, observed in other European countries [13-17], were also observed in this study.

A potential confounding relationship between socioeconomic and migrant status has been identified in explaining health disparities [38] and migration-related health inequalities are found to be reduced after adjustment for social class [30]. This effect is observed also in our study, but only for the better educated migrant women who tend to have results similar to Italians, possibly in part due to the foreigners from developed countries. On the contrary, the lower educated migrant woman have less ability to make use of health opportunities during pregnancy (such as to attend antenatal classes or to consume folic acid in periconception period) or they face postpartum difficulties (such as to not breastfeed exclusively at three months after delivery or to not register with a NHS paediatrician within 15 days from partum when restarting working). In this case, low education status may exacerbate the initial social disadvantage of migrants. This is in line with the recent studies in high-income countries that underline the existence of inequities in maternal care utilisation by educational level and ethnicity [6, 7, 12, 32].

Occupational status reduces the use of appropriate practices. This is particularly important in postnatal care for migrant women, who seem to be more affected by socioeconomic pressure to restart working early, without an adequate support to overcome the consequent difficulties. Although almost all migrant women declared to prefer breastfeeding and the large majority breastfed exclusively in hospital after delivery, with a higher proportion compared to Italians (result not reported in the tables and confirming the findings of a previous study [23]), they are more likely to re-start working within 3 months and, in this case, they are the least able to achieve their intention to exclusively/predominantly breastfeed.

This result is particularly important considering previous research carried out in United States, which found that migrant women have higher breastfeeding initiation [39] and longer duration rates [40] than native women, even after controlling for socioeconomic and demographic differences. On the contrary, in Italy migrant women who restart working early have shorter breastfeeding duration, coherently with the evidence that this is influenced by the duration of leave from work [41, 42]. This finding constitutes a strong inequality for migrants, considering also the evidence on the positive consequences of exclusive breastfeeding for the children's and women's health [43]. In general, postpartum is a particularly difficult period for foreigners because they are often without family support and need to restart working early for economic reasons. Therefore social-health support should be provided and their maternity rights safeguarded by health professionals in this period [44].

The results might raise the hypothesis that the maternal care model actually implemented in Italy is not adequately ensuring equity because it is failing to support women who are in a more disadvantage social position and have a weaker health seeking behaviour, such as in other high-income countries with universally accessible pregnancy care [10, 45]. This appears more critical when considering that most of the migrants, especially those who are less educated tend to use public family care centres during pregnancy, which should play a more supportive role for the women's empowerment. On the contrary, this contact can be considered as a missed opportunity for these services to enhance the ability of migrant women to make aware choices for their health and that of their children.

Therefore, pregnancy care services in Italy seem more able to reach those women who probably have already a good maternal health literacy, defined as the cognitive and social skills which determine the motivation and the ability of women to gain access to, understand and use information in ways that promote and maintain their and their children health [46]. Health knowledge is recognised as one of the key factors enabling women to be aware of their rights and their health status and to seek appropriate health services. Migrant women's lack of maternal health care knowledge has been related to not attending antenatal care and/or insufficient information received at the antenatal care [47]. Thus our study suggest that Italian maternal care services should be more engaged in facilitating their accessibility for migrant and low social class women. They should also promote women's awareness of all maternal health opportunities. In particular, women with an initial disadvantage because of their low education, migrant status or condition of unemployment should be actively involved in antenatal classes, which improve women's knowledge and competence [48], when these classes are not limited to the transmission of information, but focused to develop women's skills and confidence useful to make healthy choices. In general, family care centres should strengthen their commitment to actively promote maternal health literacy among social disadvantaged women. In fact, even women of limited educational experience can improve their maternal health literacy by an antenatal care programme based on community interventions [49], such as Italian family care centres.

Most of these key aspects of migration and health in European countries have been addressed in a recent article published in *Lancet*, reporting the results of a study undertaken by European and international organizations [50].

The present study has certain limitations. First, the sample of the two population-based follow-up surveys is not representative of the overall Italian population, since they have been carried out only in the 25 LHUs that chose to participate.

Moreover, the use of a macro classification for citizenship could hide different maternal care patterns among specific migrant groups. However, previous research on maternal care for migrant women in Italy showed a generally worse pattern for all foreigners compared with Italian women, with little variability among the selected antenatal indicators [23]. Also, this study could have overestimated the differences between groups of foreign women considering that most of those who come from developed countries are likely to belong to the more advantaged groups (high educated, employed) and to share the same behaviour of the Italians of the same social class.

Another limitation concerns the choice of exclusive or predominant breastfeeding as one of the postnatal indicators, although the WHO and Unicef recommendations focus only on exclusive breastfeeding [36]. Since the sampled women reported to have great difficulties to make a clear distinction between the two kinds of breastfeeding, both were considered in a single category.

Finally, the time spent in Italy by the migrant women is likely to affect their communication skills and their ability to use health services; cultural mediators are not always available in maternal health services. Therefore it would have been useful to control for the length of time spent in Italy in the multivariate analysis, but this information was not collected in the survey.

CONCLUSIONS

This study shows that education and employment status affect maternal care in both migrant and Italian women, with a stronger impact on foreigners. Policies addressing inequalities in ante and post natal care should target specifically these underlying socioeconomic inequalities.

Maternal care should be offered actively by public health services, by the following steps:

- taking advantage of all contacts with women for involving them and strengthening their health literacy skills;
- finding innovative solutions in order to reach in particular those women with critical socioeconomic conditions and improve their health seeking behaviour;
- evaluating the effectiveness of the involvement of socially disadvantaged women.

This study suggests the need of interventions that focus on women's empowerment and take into account of the the specific life/work difficulties of foreigners, to improve the maternal care even among the most disadvantaged women.

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Conflict of interest statement

None to declare.

Authors' contributions

LL collaborated at the implementation of the project, conceptualized the manuscript and conducted the analyses; MB has made substantial contributions to the conception of the manuscript as well as interpretation of the results; LL and MB drafted the manuscript; AS commented on the interpretation of the results and critically reviewed the drafts of the manuscript; MEG designed and implemented the project, planned the study protocol and critically reviewed the manuscript. All authors contributed to and approved the final manuscript.

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