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ORIGINAL PAPER

Differences in Timely Antenatal Care Between First and Second-Generation Migrants in the Netherlands

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Abstract To assess whether there are differences in the timing of first antenatal care visit between 1st and 2nd-generation migrants, and if so, how such differences could be explained. The study has been conducted in the framework of Generation R Study, a multi-ethnic population-based study conducted in Rotterdam, the Netherlands. The study population consists of 845 women of the six largest ethnic groups. Data were derived from the electronic antenatal charts of the participating midwives and from written questionnaires. Logistic regression analyses have been carried out to investigate whether difference could be explained by need, predisposing and enabling factors. More first than second generation women enter antenatal care after 14 weeks of pregnancy (28.1 vs. 18.7 %). Women who were not likely to adopt healthy behaviour regarding pregnancy—such as timely taking folic acid—equally were not inclined to enter antenatal care early in pregnancy. The role of Dutch language mastery was limited. Given our results, first generation women are less likely to receive timely health educational advice or to benefit from screening opportunities than second generation women. Future studies should pay more attention to adequate assessment of proficiency of the host language.

Keywords Ethnicity · Antenatal care · Late entry · Generational status · Language mastery

Background and Framework

In Western countries, studies point to a late intake into antenatal care and/or fewer visits by migrant groups [1–6]. Scientific debate exists about the optimal number of visits,

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but the necessity of timely entrance is unquestioned, since it offers the opportunity for early health educational advices and detection and treatment of adverse pregnancy outcomes.

In the Netherlands approximately 20 % of the population has a migrant background. In the larger cities like Amsterdam and Rotterdam even half of the population consists of first and second generation migrants. The largest groups are Turks, Moroccans, Surinamese and Dutch Antilleans. Turks and Moroccans came to the Netherlands as labour migrants since the sixties of the previous century. Surinam is a former colony that gained independence in 1975. During the period of decolonisation many Surinamese migrated to the Netherlands. The Dutch Antilles were still part of the Dutch Kingdom until recently. For Dutch Antilleans employment and educational facilities were important reasons for migration [7]. Finally, Rotterdam attracted migration from the Cape Verdean islands since the sixties of the previous century, and nowadays is the second largest Cape Verdean community in Europe, after Lisbon.

The Netherlands is characterised by a unique organisation of obstetric care, in which pregnancy and childbirth are considered in principle as normal physiological phenomena. Low-risk women receive antenatal care by midwives and sometimes by general practitioners. Only women with medical problems or a complicated obstetric history are referred to hospital-based obstetric care [8]. Migrant women are often unfamiliar with this distinctive system. In Western Europe, they expect to find highly specialised antenatal and obstetric care to be offered by medical specialists in hospitals, rather than by community midwives, because the latter is not considered as an improvement compared to their countries of origin [9]. In any case, migrants in the Netherlands are not acquainted with the specific Dutch system. This might partly explain the delay in antenatal care entry of migrant women.

In Europe, most studies investigating ethnic differences in timely attendance for antenatal care compare native and non-native women, and seek for explanations of the differences [2, 4, 6, 10, 11]. Since we know that migrants seek antenatal care later than native women, since delay in antenatal care entry is undesirable, and since the number of the second generation migrants is steadily increasing in the Netherlands and in many other European countries, it is worthwhile to investigate whether delay is decreasing in the second generation even without specific interventions, and how we can explain such a decrease. The role of generational status has not been assessed in the existing studies comparing antenatal care use between migrant and native pregnant women, because generational status is a characteristic not applicable within the native population.

It can be expected that first generation migrants are less acquainted neither with the Dutch obstetric organisation nor with the benefits of early antenatal care, because of their relatively shorter stay in the Netherlands, and because of less proficiency in the language of the host country. Evidence exists that language barriers may affect access to health care services [12, 13]. Proficiency in Dutch is better among migrants from the (former) colonies (Dutch Antilles, Suriname) than from other countries of origins (Turkey, Morocco and the Cape Verdean islands) [14].

The purpose of our study thus was to assess whether there are differences in the timing of first antenatal care visit between 1st and 2nd-generation migrants, and if so, how such differences could be explained. Our analysis was guided by the conceptual framework of Andersen [15], in which health care use is a function of three groups of factors. *Enabling* factors reflect possible barriers to the use of antenatal care. Financial barriers don't play a role in the Netherlands, since antenatal care is included in health insurance for everybody. Also, midwifery density is high in the Netherlands, so geographical access is not an issue [16]. However, health literacy is considered as an important barrier to health care use [17]. Educational level, position on the labour market and mastery of Dutch language may be important means to health literacy, because they facilitate access to information. It can be expected that both educational level and level of proficiency in Dutch are lower among first generation migrants. *Predisposing* factors reflect the propensity to use services. Besides classical predisposing variables such as age [18, 19] and parity [19, 20], we also determined whether differences in timely entry were associated with *life style* characteristics indicating an inclination towards healthy behaviour such as abstaining from tobacco and alcohol, and the use of folic acid, which all may be partly culturally shaped.

Methods

Participants

Data were obtained from the Generation R study. The Generation R study is a multi-ethnic population-based prospective cohort study to investigate growth, development and health of urban children from foetal life until young adulthood, conducted in Rotterdam, the 2nd-largest city in the Netherlands. The study has been described in detail elsewhere [21, 22], and was approved by the Ethics Review Committee of the Erasmus Medical Centre, Rotterdam. Eligible women received written and oral information and were asked for written informed consent.

Data for the present analysis were obtained from seven midwife practices, including 23 midwives, participating in

the Generation R Study. Pregnant women entering antenatal care at a midwife practice with an expected date of delivery in 2002–2004 were included. Non-Dutch status and generational status were assessed on the basis of the countries of birth of the expecting mother and of her parents, according to current practice of Statistics Netherlands [23]. When at least one of the parents was born outside the Netherlands, the woman was classified as non-Dutch. When her country of birth was not the Netherlands, she was considered as first generation and her ethnic background was determined by her own country of birth. When she was born in the Netherlands, she was considered as second generation and her ethnic background was determined by country of birth of her mother, unless this was also the Netherlands: in that case ethnic background was established by country of birth of her father.

We excluded women when information on country of birth was missing. In addition, women only receiving postnatal care were excluded, as well as women referred to these practices by other health care providers. In these cases it was not possible to establish their entry into antenatal care and their gestational age at first visit.

We included the largest ethnic groups in Rotterdam: Moroccan, Turkish, Cape Verdean, Dutch Antillean and Surinamese. Surinamese women consist mainly of Hindustanis originating from India, and Creoles from Africa. Because of their different cultural background, we further classified them as Surinamese–Hindustani and Surinamese–Creole, by asking the woman for her ethnic origin.This resulted in a study population of 845 women.

Data Collection and Measures

The outcome variable was delay in intake (yes/no), which was derived from the electronic antenatal charts (Micronatal®) of the participating midwives. It has been defined as a first visit after 14 weeks of pregnancy, corresponding to the recommendations of the Dutch Society of Obstetrics and Gynaecology (www.nvog.nl, 1-1-2006).

Explanatory variables were derived from written questionnaires at antenatal booking. As a *need* factor, we included a single-item question regarding self-perceived health during early pregnancy, consisting of five possible answers (excellent, very good, good, moderate, poor). As *enabling* variables we included educational level, labour market position and proficiency in Dutch speaking. Educational level consisted of the highest completed education, reclassified into three categories: primary school, secondary school and higher education. Labour market position was determined by having a paid job (yes/no). Proficiency in the native language was assessed by asking proficiency in Dutch speaking (good/not good). *Predisposing* variables included age, marital status (married, cohabiting, no partner), parity (nulliparous/multiparous), and planned pregnancy (yes/no). We also included a scale indicating the confidence in a favourable course of the pregnancy and in the personal ability of the woman to adequately deal with the pregnancy. This variable ranged from little (1) to a lot of concern (4). Details on this variable have been published elsewhere [11]. Finally, *healthy behaviours* regarding pregnancy were included in our study. We included information on the use of folic acid (before pregnancy, as soon as pregnancy was known, later, or never), smoking (never smoked, stopped smoking when pregnancy was known, still smoking during pregnancy) and alcohol use (never drinking, stopped drinking when pregnancy was known, still drinking during pregnancy).

Analysis

Descriptive analyses were performed presenting the outcome variable according to generational status and ethnic background, and the independent variables according to generational status. Differences in independent variables between first and second generation migrants were compared using Chi square statistic in case of categorical variables and analysis of variance (ANOVA) in case of continuous variables.

Logistic regression analyses were performed to examine to what extent generational differences in late entry into antenatal care could be explained by need, enabling and predisposing factors. We first calculated unadjusted odds ratios and then adjusted separately for need, enabling, predisposing and health behaviour factors. Finally, a full model was applied, adjusting simultaneously all explanatory variables. Further, we used logistic regression analysis to assess the association between each independent variable and late antenatal care use, corrected for the role of the other variables.

We used separate categories for the missing data on the categorical explanatory variables. The statistical analyses were performed using SPSS version 15.0 for Windows (SPSS Inc, Chicago, IL, USA).

Results

Figure 1 displays the percentages of women entering into antenatal care according to generational status for the total study population and for each ethnic group. Overall, the percentages entering antenatal care after 14 weeks of pregnancy were higher in the first generation women.

In our study population the first generation was larger than the second generation (see upper part of Table 1).

The mean maternal age of first generation women was higher than that of second generation women. No

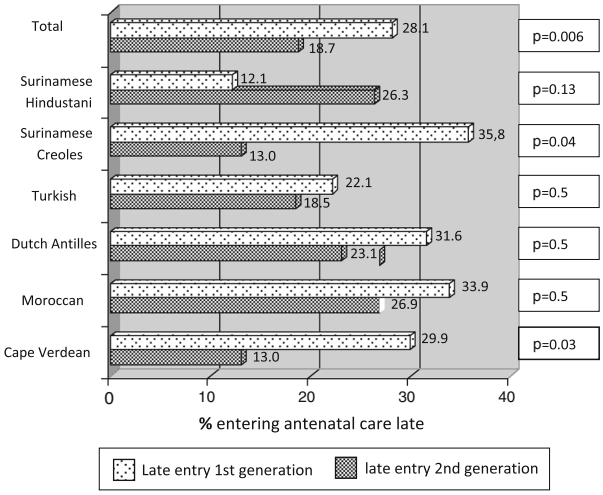

Fig. 1 Late antenatal gcare according to generational status and ethnic background

differences were found regarding perceived health status. First generation women more often had no paid job, were less educated, were married and were multiparous than the second generation women. Mastery of Dutch language was much better among the second generation. No differences were found regarding planned pregnancy and pregnancy concerns. Compared to the second generation, significantly more women in the first generation did not take folic acid at all. Conversely, compared to the second generation, less first generation women started taking folic acid once they knew they were pregnant. Among the first generation more women were never smokers. Quitting smoking during pregnancy occurred more often among the second generation. Regarding the use of alcohol no differences were found between the first and the second generation (see lower part of Table 1).

Table 2 displays the logistic regression models to investigate to what extent differences between first and second generation women in late entry into antenatal care could be explained by need, enabling and predisposing factors. The difference between first and second generation remained when perceived health at the beginning of the pregnancy was entered into the model (model 2). When adjusting for enabling variables (model 3) or for classical predisposing variables (model 4), the difference between bot generations remained significant. However, adjustment for behavioural variables (model 5) reduced the difference to a non-significant level. After adjustment for all variables simultaneously (model 6), the differences were even smaller and not significant.

Finally we assessed the association of each independent variable with late antenatal care entry, adjusted for the role of all other variables (not in table). Not having a paid job was associated with late entry (OR 1.63; 95 % CI 1.02–.60). Women not using folic acid were more likely to enter antenatal care late than those already using folic acid before pregnancy (OR 1.76; 95 % CI 1.03–3.03). A similar but not significant trend was found for women starting folic acid use late (OR 1.77; 95 % CI 0.75–4.16). Women starting folic acid as soon as they knew they were pregnant did not differ from those already using folic acid before pregnancy. All other variables were not significantly associated with late antenatal care use.

Discussion

First generation pregnant women entered later in antenatal care than second generation women (28.1 vs. 18.7 %). As a consequence, first generation women are less likely to receive timely health educational advice or to benefit from screening opportunities.

To our knowledge, this is the first study assessing differences in timely entry into antenatal care between first and second generation migrant women. Among Dutch women included in the Generation R study 10.6 % enters antenatal care late [11]; second generation migrants thus take an intermediate position regarding timely entry into antenatal care: they do better than first generation but worse than their Dutch counterparts.

The difference between both generations could be explained by the independent variables included in the analysis. Especially the behavioural variables seemed to be important. Indeed, our analysis suggests that women who are not likely to adopt healthy behaviour regarding pregnancy are also not inclined to enter antenatal care early in pregnancy. Especially not taking folic acid, or taking it only late in pregnancy was clearly associated with late entry. Lower use of folic acid before or during pregnancy among migrants has been reported previously [24, 25]. Future studies should investigate underlying mechanisms that explain both lack of folic acid use before pregnancy and late antenatal care entry, such as differences in knowledge of the Dutch health care system, which is likely to be al larger problem in the first than in the second generation.

As most migrants—whether first or second generation—do not use alcohol, this variable did not contribute to the difference. This limited use of alcohol is in part related to the religion of some of the migrant groups: most Turkish and Moroccan are Islamic. Compared to Dutch women, also among other migrant groups the percentages of women drinking alcohol are lower [11].

Poorer perceived health did not contribute to the explanation of the difference, which also was not surprising, because no significant difference in perceived health was found between both groups (see Table 1). Future research could take into account more specific subjective

Table 1 Explanatory variables according to generational status

N	First generation (N = 626)	Second generation (N = 219)	
Cape Verdean (n = 133)	65.4	34.6	100
Moroccan (n = 206)	87.4	23.6	100
Dutch Antillean (n = 108)	88.0	12.0	100
Turkish (n = 237)	61.2	38.8	100
Surinamese–Creole (n = 76)	69.7	30.3	100
Surinamese–Hindustani (n = 85)	77.6	22.4	100
Total (n = 845)	74.0	26.0	100
Independent variables			p value
Age in years (mean-sd)	27.5 (5.0)	23.9 (4.0)	$p < 0.001$
Perceived health status (%)			$p = 0.76$
Excellent	7.5	6.4	
Very good	18.5	20.5	
Good	55.8	58.0	
Moderate	12.6	9.6	
Poor	0.5	0.9	
Missing	5.1	4.6	
Paid job (%)			$p < 0.04$
Yes	26.2	34.7	
No	35.5	34.2	
Missing	38.3	31.1	
Educational level (%)			$p < 0.001$
Lower	24.3	12.3	
intermediate	55.9	77.2	
Higher	12.5	10.0	
Missing	7.3	0.5	
Dutch speaking (%)			$p < 0.001$
Good	61.7	95.9	
Not good	35.0	3.2	
Missing	3.4	0.9	
Marital status (%)			$p = 0.019$
Married	56.9	47.9	
Cohabiting	18.1	17.4	
No partner	21.6	32.0	
Missing	3.5	2.7	
Parity (%)			$p < 0.001$
0	45.4	71.9	
≥1	54.6	28.1	
Missing	0	0	
Planned pregnancy (%)			
Yes	49.0	46.1	$p = 0.41$
No	43.8	48.4	
Missing	7.2	5.5	
Pregnancy concern (mean-sd)	2.5 (0.7)	2.4 (0.7)	$p = 0.314$
Folic acid use (%)			$p < 0.001$
Before pregnancy	14.9	15.1	
When woman first knew about pregnancy	20.8	37.9	
Later in pregnancy	4.5	7.3	
No	55.8	37.0	
Missing	4.2	2.7	
Maternal smoking (%)			$p < 0.001$
Never	72.2	44.3	
Stopped during pregnancy	14.1	27.4	
Continued during pregnancy	12.3	27.9	
Missing	1.4	0.5	
Maternal alcohol use (%)			
Never	81.6	79.5	$p = 0.22$
Stopped during pregnancy	12.3	16.9	
Continued in pregnancy	4.2	2.3	
Missing	1.9	1.4	

health assessments directly related to pregnancy that could affect time of entry (e.g. nausea and vomiting).

Notwithstanding large differences in enabling variables (educational level, proficiency in Dutch speaking) between both generations, they did not contribute to the explanation of the difference in timing of entry into antenatal care. More precisely: although the differences between first and second generation diminished, they remained significant. From a public health perspective, this implies that we cannot expect simply that the second generation women (will) enter antenatal care earlier because their educational level or their proficiency in the native language is better. In a study by Alderliesten et al. [2] poor mastery of the language of the host country did contribute to the explanation of the later entry into antenatal care of some migrant groups as compared to the native group. Possibly this different result is due to differences in the study population and to differences in the assessment of language proficiency. A recent review from the U.S. revealed that women reported language as a barrier to the use of antenatal care [26], but this review was restricted to perceptions by women, and did not include studies investigating the actual relationship between language mastery and antenatal care entry. Our survey did not include information on the knowledge women have on the importance of early entry, but they might have obtained this information from sources in their mother tongue. Indeed, increasingly written information is available in other languages advising on the importance of early entry into antenatal care. Also they may rely on information from their informal networks, e.g. family members with a better proficiency in Dutch. Possibly the role of language mastery is

Table 2 Late entry in antenatal care in first generation migrants, as assessed by logistic regression (odds ratios and 95 % confidence intervals—second generation is reference group)

Odds ratio's and 95 % confidence Intervals	1st generation
Model 1: unadjusted	**1.70** (1.16–2.49)
Model 2: adjusted for need: perceived health of pregnant woman	**1.71** (1.17–2.51)
Model 3: adjusted for enabling variables: educational level, having a paid job, Dutch proficiency	**1.58** (1.05–2.37)
Model 4: adjusted for predisposing variables: age, parity, marital status, planned pregnancy, pregnancy concern	**1.66** (1.09–2.52)
Model 5: adjusted for behavioural variables: intake folic acid, maternal smoking, alcohol use	1.39 (0.93–2.09)
Model 6: adjusted for predisposing, behavioural, enabling and need variables	1.29 (0.83–2.05)

Significant ORs ($p < 0.05$) in bold

mitigated by the use of such interpreters. Also more in general the relation between language skills and health care use remains unclear [27, 28].

In our study the classical predisposing variables (age, parity, marital status, pregnancy concern and whether or not the pregnancy was planned) were not significantly associated with entry into antenatal care and didn't explain differences between both generations. This seems to be in contradiction with most previous studies. However, up till now the role of predisposing factors has been assessed merely among native women. Also, it should be noticed that we assessed the influence of these factors after adjustment for all other explanatory variables, whereas most previous studies took into account fewer explanatory variables.

Some limitations of our study should be acknowledged. First, it is likely that some response bias exists to the disadvantage of very poorly educated and illiterate women, although the survey was available in the language of the participating pregnant women. For example, not all women that entered in the generation R study gave informed consent to participate in the questionnaire part of the study. This may have masked the role of educational background, which did not contribute to differences in our study population, although its role was in the direction that could be expected: increased risk on late use as educational level decreases. Response bias may also have masked the role of language mastery. Second, our assessment of Dutch language proficiency by self-reports may have suffered from a tendency to positive answers, and thus not accurately described actual ability to speak Dutch. Thirdly, we did not include all midwife practices participating in the larger Generation R study. We excluded 3 practices, since they did not use electronic antenatal charts. There was no indication that the ethnic composition of these practices was different from the participating practices (analyses not shown). Also, we excluded pregnant women whose ethnic background was unknown. The timing of their entry into antenatal care was not different from the women included in this study (analyses not shown). It should also be mentioned that we only could include pregnant women that entered antenatal care in a midwifery practice, not the women entering secondary antenatal care. We needed the precise assessment of the date of entry in antenatal care. Therefore, we needed data from Micronatal, as we mentioned in the methods part of the manuscript. Micronatal data were only available for women entering antenatal care in midwifery practice.

We defined late antenatal care entry as entry after 14 weeks of pregnancy, following the recommendations by the Dutch Society of Obstetrics and Gynaecology. These recommendations are rather based on professional agreement than on scientific evidence, and currently it is often advised to seek antenatal care earlier in pregnancy, and even before pregnancy [29].

Finally, we were not able to assess a possible differential role of our explanatory variables within the distinct ethnic groups in our study, since for that purpose our study population was too small.

In conclusion, we found that second generation women enter antenatal care earlier than first generation women, but still later than Dutch women. This seems to be going hand in hand with a more general active attitude towards healthy behaviour, especially the starting of folic acid use before pregnancy by second generation women. Most migrants in the Netherlands still belong to the first generation, also in our study population. To a large degree this is the consequence of family formation: many migrants still marry with partners born in their country of origin. The delay in seeking antenatal care in this group could not been explained by language mastery. Future research should both investigate the role of language and the role of broader health literacy factors. A practical conclusion is that clinicians should strengthen the importance of timely booking for antenatal care even more among first generation migrants. Because first generation migrants are likely to be more familiar with general practitioners, and since all residents of the Netherlands are enrolled with a general practitioner, they also should support the importance of timely entry into antenatal care when new migrant families enrol in their practice.

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Conflict of interest No conflict of interests.

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