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## Original Research

# Predictors of late initiation for prenatal care in a metropolitan region in Belgium. A cohort study



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## ABSTRACT

**Objectives:** Timely initiation of prenatal care (PNC) in the first pregnancy trimester allows prevention, identification and treatment of risk factors. However, not all women initiate PNC timely, especially women in a deprived situation. The aim of this study was to measure the prevalence of late initiation, defined as initiation after 14 weeks of gestational age. Secondly the authors wanted to identify predictors for late PNC onset.

**Study design:** Observational cohort study.

**Methods:** Pregnant women ( $n = 1750$ ) were recruited in all four hospitals in Ghent (Belgium), a metropolitan region. A socio-economic deprivation ranking was measured by using a General Deprivation Index (GDI), which consists of six criteria to assess a socio-economic situation as deprived. A univariate analysis and a forward conditional multivariate logistic regression model were used analysing the association between deprivation and the likelihood to initiate PNC late.

**Results:** 1115 women were included of whom 6.1% ( $n = 68$ ) initiated PNC late. A foreign maternal country of birth (OR 2.10; 95% CI 1.15–3.83) and a total GDI  $\geq 3$  (OR 4.40; 95% CI 2.36–8.21) were good predictors for late initiation. More specifically, the GDI criteria education (OR 4.02; 95% CI 2.00–8.08) and unemployment (OR 2.40; 95% CI 1.17–4.90) were significantly associated with higher likelihood for late initiation.

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**Conclusions:** A small group of women initiates PNC late. Vulnerable groups, at risk for late initiation can be identified through assessing their deprivation status. Priority for additional support should be given to women with low educational attainment or women in uncertain employment situations.

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## Introduction

Late initiation of prenatal care (PNC) is known to have a negative impact on both mother and child. Initiation of PNC in the first trimester allows prevention, identification and treatment of risk factors.<sup>1,2</sup> Previous studies demonstrated that young women,<sup>3–5</sup> immigrants,<sup>4,6,7</sup> women with a low income,<sup>7,8</sup> low education,<sup>3,5</sup> living in a temporary accommodation<sup>4</sup> are more likely to initiate PNC late. Other factors described are (grande) multiparity,<sup>3,4,9</sup> poor language proficiency,<sup>3,4</sup> unplanned pregnancy,<sup>3,8</sup> not having a regular obstetrician,<sup>7</sup> not being married,<sup>5</sup> smoking<sup>5,6</sup> and living in a temporary accommodation.<sup>4</sup> Some of these variables related to late onset of PNC, such as income and education, are also associated as indicators for measuring deprivation. Deprivation can be seen as the consequence of a lack of resources and opportunities.<sup>10</sup> The term deprivation is broader than poverty. It does not only reflect the lack of financial resources but also the lack of opportunities, both in monetary and non-monetary terms. Previous research has shown that deprivation is associated with poorer health.<sup>11,12</sup> Deprivation can be measured on two levels: individual and neighbourhood level. The assessment of neighbourhood deprivation is commonly used in studies to evaluate the association between perinatal health and deprived neighbourhoods.<sup>13–15</sup> Living in a deprived area is associated with higher prevalence of adverse pregnancy outcomes. A limitation of the assessment of neighbourhood deprivation is the lack of correspondence to the individual socio-economic status between neighbourhood residents.<sup>13</sup> Residents of a deprived neighbourhood tend to be more deprived compared to ones living in a non-deprived area, but this does not count for all residents. Therefore, the authors have chosen to measure deprivation by using the 'General Deprivation Index' (GDI) as a first attempt to measure deprivation at individual level. The GDI is based on six items of the EU-SILC (European Union Statistics and Income and Living Conditions) and specifically developed by the Belgian Child and Family agency (Kind en Gezin) to assess deprivation in families with children.<sup>16,17</sup>

Low accessibility of health services has a positive impact on the timing of the first PNC visit.<sup>18</sup> In Belgium, almost all residents (>99%) dispose of an obligatory healthcare insurance. Several policies have been set up to support social deprived women in their access to the health system in Belgium. Vulnerable women are exempt from out-of-pocket payments for services in community centers. These policies have a positive effect on the accessibility of PNC. It is estimated that only one percent of pregnant women do not receive any PNC in Belgium.<sup>19</sup> The Belgian PNC guideline includes recommendations on the timing and number of visits

and diagnostic tests such as ultrasound screening, blood analysis, etc. Timely initiation of PNC is important for an adequate PNC follow-up. The latter allows an accurate pregnancy dating, medical history assessment, and identification and treatment of maternal and neonatal risk factors.<sup>7,20,21</sup> Furthermore, timely initiation entails health education about substance abuse, nutrition and supplements advice to avoid complications such as prematurity and birth defects.<sup>3,22,23</sup> In Belgium, a first PNC visit should take place in the first trimester, up to 14 weeks.<sup>19</sup>

The aim of this study was to measure the prevalence of late initiation and to identify predictors for late PNC onset based on a sample of women in a metropolitan region in Belgium. Predictors were identified based on several independent variables namely: age, maternal country of birth, parity and six socio-economic variables for the assessment of general deprivation: income, education, employment status, child(-ren)'s development opportunities, housing and self-perceived general health.

## Methods

### Data collection

Women were consecutively recruited on the maternity units in all four hospitals in Ghent, one teaching hospital and three general hospitals. Ghent is the third largest city in Belgium with  $\pm$  250,000 residents. The recruitment period was from April 2011 until June 2011. All women who gave birth during that period were invited to participate in the study. Ethical approval was obtained from the four participating hospitals.

Data were collected about the timing of PNC initiation by a short interview during their stay at the maternity unit. Data on the general characteristics of the women and the results of the GDI were collected by public health nurses, employed by the Child and Family agency (Kind en Gezin) in Flanders.<sup>17</sup> This agency aims to actively contribute to the well-being of young children and their families by providing preventive medical, psychosocial and parenting/pedagogic services and organises the follow-up services postnatal in terms of health screening. Both datasets were pooled and afterwards anonymised by a third party.

### Outcome variables

The primary outcome variable in this study was the time of initiation of PNC. Late initiation of PNC was defined as initiation after 14 weeks of gestational age, in accordance with the definition of European Perinatal Health Report.<sup>21</sup>

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