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ORIGINAL PAPER

Undocumented Pregnant Women: What Does the Literature Tell Us?

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Abstract The present literature review was conducted to determine what information has been published on the topic of undocumented pregnant migrants. Scientific databases and gray literature sources were searched for articles published between January 1967 and September 2010. Eighty-seven articles met the inclusion criteria and were reviewed. A final sample of 23 articles was included in the review. Existing evidence suggests that pregnant undocumented migrants living in Western societies tend to be younger, unmarried, and more likely to be employed in the domestic sector than documented migrants and permanent residents. They have less access to prenatal care and consult later in pregnancy than controls. Findings concerning delivery and birth outcomes are conflicting and subject to several biases. Little has been published on programs to address the needs of undocumented pregnant women living in Western countries. More research on the particular health and social issues faced by these women is needed.

Keywords Undocumented · Pregnancy · Migrants · Review

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Introduction

As undocumented migrant populations in Western countries expand, there is growing concern for the health status of these individuals [1–3]. Despite these concerns, the issue has, until recently, received little attention in the academic literature.

While there have been calls for further research on the issue of uninsured immigrants and refugee claimants [4], so far there has been little focus on the topic of undocumented migrants [5]. We define "migrants" as people who, for a variety of reasons, choose to leave their home countries and establish themselves either permanently or temporarily in another country [6]. An issue of particular concern regarding undocumented migrant populations is their lack of access to health services, putting them at risk for various health problems [2, 5, 7].

Few countries have institutionalized policies on how to address the healthcare needs of undocumented migrants, despite the existence of some regional and community programs [8]. Medical institutions mainly deal with the issue on an ad hoc basis. As a result, institutional and financial barriers often act as deterrents to care-seeking by this population [7].

Undocumented pregnant women constitute a particularly vulnerable subgroup because their legal status limits access to prenatal and obstetrical services that favor healthy maternal and child outcomes [5, 9]. The present

literature review was carried out to determine what studies have been conducted on the subject. This article presents a review of the international literature published between January 1967 and September 2010 on the topic of undocumented pregnant migrants living in Western societies.

Methods

We conducted a scoping literature review of articles published between January 1967 and September 2010 on the topic of undocumented pregnant migrants living in Western societies. The study group comprised of three family physicians (CJ, MM, LG), one research coordinator (VD) and one research assistant (KM).

We chose 1967 as the start date because this is the year that universal healthcare began in Canada. A scoping review methodology was considered appropriate due to the limited information available on the issue [10]. This approach does not intend to provide a critical assessment of the quality of studies included, but rather provides a description of the available evidence. Our goal was to provide a synthesis of the existing literature, regardless of research design.

First, an online search was conducted by healthcare librarians using PubMed, Medline, CINAHL and EMBASE databases. The key search terms identified by the research team included "pregnancy", "medically uninsured", "medical indigency", "uncompensated care", "insurance, health" and "refugee". Other keywords included, "uninsured", "undocumented", "noninsured", "nonstatus", "clandestine", "sans papier", "Canada", "Canadian". Relevant documents published in the gray literature were also included. Gray literature consisted of documents and reports published in formats other than peer-reviewed journals (e.g. reports published by governments or international organizations). Reference lists of identified articles were also reviewed.

An initial selection of 172 articles was reviewed by the study workgroup. To be included in the review, articles had to be published in either English or French between January 1967 and September 2010, and correspond to the above-mentioned search terms.

The 87 articles that met the inclusion criteria were then read by a primary reviewer (KM) and classified into three categories: "include", "exclude" and "unsure". We chose to include articles that were carried out in "Western" countries; that is to say Western Europe, the United States, Canada, Australia and New Zealand. The majority of articles reviewed were from the United States. We came across very few articles regarding undocumented migrants living in non-Western countries and the conditions of migrants living in non-Western societies are likely quite different than those living in Western societies. As our main interest in conducting this review is to eventually contribute to improving the situation of undocumented pregnant migrants in Canada, we sought information emanating from contexts similar to our own. Articles were excluded if they did not specifically discuss pregnancy-related issues with respect to undocumented or uninsured women. Articles were classified as "unsure" if they pertained to pregnancy-related issues among uninsured—but not necessarily undocumented migrant—women.

Next, a meeting was held between the primary reviewer and two other members of the research team (CJ, VD) to discuss articles classified as "unsure" and to reach a consensus on their inclusion. Many of the articles placed in the "unsure" category came from the United States. As until recently there was no universal medical coverage in the United States, most articles studying lack of health insurance among pregnant women focused on low-income women with American citizenship or legal resident status in the United States. As lack of health insurance among these women was not linked to migration or lack of status, we chose to exclude these articles from the review. A consensus was reached to include only the American articles that discussed undocumented pregnant migrants residing in the United States.

The group also discussed three European studies that focused primarily on uninsured pregnant women as a whole, rather than undocumented women specifically [11–13]. These articles were included as they were conducted in countries in which universal health coverage is available for citizens and individuals with residency permits. In such contexts, those without health insurance are either undocumented migrants, extremely marginalized citizens, or very wealthy [11]. Conclusions cited from these articles pertain to the undocumented pregnant women in the samples.

Finally, a one-page summary form was completed for each included article, identifying objectives, study type, population, methods, and findings. Articles were then grouped into themes based on findings or issues discussed.

Synthesis

A final sample of 23 articles was included in the review. Ten articles were from the United States (43%), two were from Canada (9%), and the rest were from Western European countries (48%; Belgium, France, Germany, Netherlands, and Switzerland). The publications were grouped into three themes based on the findings and issues that were discussed in the articles. Articles that broached more than one theme were included in all relevant categories. The three key themes identified from the sample were: (1) Demographics; (2) Pregnancy and birth outcomes; and (3) Programs. Each of these is discussed in the following sections.

Demographics

Very little information exists on the identifying characteristics of pregnant, undocumented migrant populations [14]. Precarious legal status makes this group hard to reach and reticent to disclosure [15, 16]. Indicative of this reluctance, one study found that post-partum women of foreign nationality or without health insurance were less likely to participate in a household survey [12].

Available sociodemographic information suggests that undocumented migrant populations are highly heterogeneous, varying significantly by host country. Nonetheless, there are certain characteristics that seem to hold across the populations studied (Table 1). Undocumented pregnant women tend to be young [14, 17, 18], unmarried [17, 18], and engaged in low-income domestic employment [17, 19].

Pregnancy and Birth Outcomes

Several groups have studied pregnancy and birth-related issues with respect to undocumented pregnant migrants (Table 2). We have divided pregnancy outcomes into Prenatal and Delivery Care.

Prenatal Care

Pregnant undocumented migrants are less likely to access prenatal care than both documented migrant women and women in the general population [11, 19, 20]. Lack of legal residency status has been explicitly cited as a reason for not seeking prenatal care [12, 21]. Delayed access to care may also be related to whether or not the pregnancy was intended. One research group reported on two separate occasions that pregnancies among undocumented women were more likely to be unintended [14, 17].

When undocumented women do seek prenatal care, it is generally significantly later than documented or resident controls [17–20, 22]. One study reported that undocumented women first consulted for pregnancy more than four weeks later than controls from the general population [17]. Another study reported that uninsured pregnant women (58% of whom were undocumented) presented for initial care on average 13.6 weeks later than insured women. These women presented for their first prenatal visit on average at 25.6 weeks. They also had fewer visits with their health care provider during pregnancy and underwent less auxiliary tests as compared to insured controls [20].

Adequate prenatal care is important in preventing health problems in both the mother and the fetus. Several studies suggest that undocumented pregnant women are at increased risk of poor perinatal outcomes. One study of 970 undocumented pregnant women showed that women without prenatal care were almost four times more likely to deliver low birth weight infants and over seven times more likely to deliver premature infants as were undocumented women who had received prenatal care [23]. A US study that used a modeling software to simulate the effects of banning access to prenatal care programs for undocumented women suggested that such a policy would lead to an increase in adverse birth outcomes related to sexually transmitted infections [24]. According to the authors, resources saved by banning undocumented women from such programs would be offset by treatment costs for affected infants who are eligible for public health programs as American citizens. In support of these findings, a separate study reported a higher prevalence of chlamydia trachomatis infection among undocumented pregnant women when compared to documented residents [25]. The American College of Obstetricians and Gynecologists has advocated for access to prenatal care for all women residing in the United States, "regardless of their citizenship status" [26, 27].

Delivery Care

There is conflicting evidence on the delivery experience of undocumented women. One European study found that women without health insurance—98% of whom were

Table 1 Characteristic profile of undocumented pregnant women

Characteristic	Summary of statistics [source]
Young	Median age of 27.4 years [14]
	Mean age of 29 years versus 31 years for controls ($p = 0.02$) [17]
	97% under 35 years old versus 89% of controls ($p < 0.001$) [18]
Unmarried	69% of sample [14]
	71% of sample versus 21% of controls ($p < 0.001$) [17]
	35 versus 25% of controls ($p < 0.001$) [18]
Engaged in low-income domestic employment	Median income less than half the minimal statutory income for Geneva [14]
	64% of undocumented women worked versus 48% of documented women, but undocumented women earned less (annual income $6,243 vs. $7,026) [19]

Table 2 Relevant findings related to pregnancy, delivery and birth outcomes among undocumented pregnant women

Authors Country	Methods	Study group versus comparison group Study group countries of origin	Relevant findings/conclusions
Barlow et al. [11] Belgium	Retrospective chart review	137 women without health insurance (98% foreign, mainly undocumented) versus 1,264 women with health insurance Poland, ex-Yugoslavia, former Zaïre	*Prenatal care*: 46% of uninsured women received no prenatal care. Only 6.6% of the uninsured initiated prenatal care during the first trimester, versus 52% of controls (significance not cited) *Delivery*: Uninsured women presented later for delivery (11% arrived fully dilated compared to 4.5% of controls, $p < 0.001$) and spent less time in hospital following delivery than controls (mean of 3.3 days versus 6.2 days, significance not cited) *Births outcomes*: 18.6% of uninsured women delivered a premature infant weighing under 2,500 g as compared to 7.8% of controls. There was a significant difference in incidence of infants weighing under 1,500 g (7.5% uninsured vs. 1.1% insured, $p < 0.001$). Outcomes of premature births were less favorable among the uninsured, in terms of mortality (58.4 vs. 15%, $p < 0.001$) and admission to the neonatal intensive care unit (31 vs. 20%, significance not cited)
Blondel and Marshall [12] France	Prospective study	848 women who had received inadequate prenatal care versus 848 women who had received adequate prenatal care France, North Africa, Sub-Saharan Africa	*Prenatal care*: Foreign nationality was found to be a risk factor for inadequate prenatal care (OR = 1.9, CI 95% = 1.5-2.3). Lack of residency permit was cited as a reason for not seeking prenatal care by 37.5% of foreign women. Three quarters of foreign-born women who received inadequate or no prenatal care had no health insurance *Birth outcomes*: Little or no prenatal care was associated with a four fold increase risk of premature delivery
Carrillo et al. [39] United States	Prospective study	274 pregnant Hispanic women (including "many" undocumented—number not specified) (no comparison group) Mexico	*Prenatal care*: 28% of women were categorized as high risk according to the Obstetrical Advisory Committee at Arizona Health Sciences Center guidelines *Delivery*: 88% of deliveries were vaginal and 12% were by cesarean section *Birth outcomes*: Data on 115 known birth weights reported that 3.5% infants weighed <2,500 g
Castañeda [36] Germany	Prospective ethnographic study	Undocumented pregnant women (number not specified) (no comparison group) South & Eastern Europe, Southeast Asia, West Africa, and former Soviet Republics	*Prenatal care*: Prenatal care accounted for 30% of all visits to the Migrant Clinic. Most undocumented women consulted for prenatal care in the third trimester and were afraid of presenting at hospitals for delivery due to risk of deportation. Pregnancy and delivery care is sought in "trusted" institutions that are less likely to denounce migrants
Castañeda [15] Germany	Prospective ethnographic study	51 undocumented pregnant women (no comparison group) Asia (esp. Vietnam), Sub-Saharan Africa (esp. Ghana), former Soviet Republics	*Prenatal care*: Prenatal care represented 27.9% of all visits, and 46.8% of all women's visits. Most women first presented for prenatal care during their third trimester. The study highlighted the complexity surrounding access to prenatal and delivery care for undocumented migrants, including confusion concerning policies and the fear of being denounced as undocumented and subsequently deported
Caulford and Vali [4] Canada	Commentary	Medically uninsured patients presenting for care at the Scarborough Clinic (number not specified) (no comparison group) Not indicated	*Prenatal care*: 17% of all patients at the clinic consulted for maternity care. 60% of pregnant women who consulted had prior inadequate prenatal care. Mean gestational age at presentation was 23 weeks

Table 2 continued

Authors Country	Methods	Study group versus comparison group Study group countries of origin	Relevant findings/conclusions
Chavez et al. [19] United States	Cross-sectional study	491 undocumented Mexican women versus 537 Mexican women with residency permits Mexico	*Prenatal care*: Undocumented women were more likely to have received no or inadequate prenatal care as compared to documented counterparts. 86% of documented women presented during their first trimester versus 54% of undocumented women ($p < 0.001$) *Delivery*: Documented women were more likely to deliver by cesarean section than undocumented women (34 vs. 17%, $p < 0.01$) *Postnatal care*: Undocumented mothers were less likely to bring their infants to postnatal checkups (10 vs. 2%, $p < 0.001$). They reasoned that their babies were healthy and therefore not in need of an examination (49%) or that checkups were too costly (13%). Similarly, 17% of undocumented mothers did not receive a postpartum checkup, as compared to 5% of documented residents ($p < 0.001$)
Haelterman et al. [28] Belgium	Case–control study	99 women diagnosed with severe pre-eclampsia, eclampsia and HELLP syndrome. Versus 200 women who had delivered in the same hospitals during the same period. Not indicated.	*Delivery*: Status as undocumented or an asylum seeker was associated with a six times higher likelihood of suffering from severe pre-eclampsia, eclampsia, and HELLP (hemolytic anemia, elevated liver enzymes, low platelet count) syndrome at the time of delivery (OR 6.6, CI 95%; 1.7, 25.9)
Higgins and Burton [21] United States	Retrospective chart review	270 women who had received no prenatal care as of delivery (no comparison group) Not indicated	*Prenatal care*: Of the women who provided a reason as to why they had not sought prenatal care, 19% reported lack of residency status in US as the primary reason
Jarvis et al. [20] Canada	Retrospective case–control chart review	71 uninsured pregnant women (58% undocumented) versus. 72 insured pregnant women Not indicated	*Prenatal care*: Uninsured pregnant women presented for care 13.6 weeks later than insured women (25.6 vs., 12.0 weeks, $p = 0.0001$). They received less blood work (93.7 vs. 100%, $p = 0.045$), ultrasound screening (82.5 vs. 98.4%, $p = 0.003$), cervical swabs (69.8 vs. 85.2%, $p = 0.04$), Pap tests (38.1 vs. 75.4%, $p < 0.0001$), and genetic screening (12.7 vs. 44.3%, $p < 0.0001$). They had fewer visits with health care providers (6.6 vs. 10.7, $p = 0.05$). Uninsured women were more likely categorized as receiving "inadequate care" (uninsured 61.9% vs. insured 11.7%, $p = 0.0001$) using a modified Kotelchuck Adequacy of Prenatal Care Utilization Index *Delivery*: There were no significant differences in route of delivery or epidural use *Birth outcomes*: There were no significant differences in gestational age at birth or birth weight
Kelaher and Jessop [29] United States	Prospective study	915 undocumented migrant Latinas versus 2,827 documented migrant Latinas and 1,322 US-born Latinas Dominican Republic, Mexico, Ecuador	*Birth outcomes*: US-born Latinas were more likely to have delivered low-birth weight infants (18%) than both documented migrants (13%) and undocumented migrants (14%, significance not specified). A significant linear trend was observed in which incidence of low birth weight increased from documented migrants to undocumented migrants to US-born Latinas. The authors suggested that this effect was due to both the tendency for healthier individuals to migrate ("healthy migrant effect") and immigration selection procedures

Table 2 continued

Authors Country	Methods	Study group versus comparison group Study group countries of origin	Relevant findings/conclusions
Kuiper et al. [24] United States	Modeling study	38,352 undocumented women (no comparison group) Not indicated	*Prenatal care*: The study created a model to asses the health and economic impact of eliminating publicly funded prenatal care for undocumented migrants. It was based on the assumption that prenatal care for undocumented women would result in the detection and treatment of many sexually transmitted infections (STI), thereby preventing adverse birth outcomes for infants. When elimination of publicly funded prenatal care for undocumented migrants was factored into the model, the number of STI-related adverse birth outcomes increased significantly. The estimated cost of treating infants (US citizens by birth) affected with STI-related adverse birth outcomes was substantial. Treatment costs significantly surpassed the predicted savings of eliminating publicly funded prenatal care for undocumented migrants
Lejeune et al. [13] France	Prospective study	259 women without health insurance (136 undocumented migrants and 48 whose residency applications were in progress) versus 2,735 women with health insurance Not indicated	*Prenatal care*: Of 192 live births to women without health insurance, 38% were considered to have had inadequate prenatal care. Lack of health insurance was associated with inadequate prenatal care (39 vs. 0.9%, $p < 0.0001$). Absence of health insurance increased the risk of inadequate care for foreign women (OR = 197). For foreign women without health insurance, residency status was not associated with better prenatal care, but residency status of her partner was associated with better prenatal care. By the end of the study, 85% of the women without insurance had obtained some type of coverage
Lu et al. [23] United States	Retrospective chart review	970 undocumented women (no comparison group) Mexico	*Prenatal care*: 10% of undocumented women received no prenatal care, 13% presented during their first trimester, 42% during their second trimester and 35% during their third trimester. Length of time in the country was significantly longer among women who had received prenatal care *Birth outcomes*: Incidence of low birth weight infants was significantly higher among women without prenatal care (19%) than among women who had received prenatal care (6.1%, $p < 0.001$). Women who had received no prenatal care, after adjusting for risk factors, were almost four times more likely to give birth to a low birth-weight infant (RR 3.8; 95% CI, 4.35-12.59) and more than seven times more likely to deliver prematurely (RR 7.4; 95% CI, 4.35-12.59) than women who had received prenatal care *Costs*: There was no significant difference in the cost of maternity care for women with and without prenatal care. However, postnatal care costs for a neonate without prenatal care was on average US$2,341 more than for a neonate with prenatal care ($p < 0.001$) due to the higher incidence of low birth weight and prematurity in this group. Elimination of publicly funded prenatal care for undocumented migrants could increase the rates of low birth weight and premature infants, and increase postnatal costs

Table 2 continued

Authors Country	Methods	Study group versus comparison group Study group countries of origin	Relevant findings/conclusions
Norton et al. [22] United States	Retrospective review	103,434 women who had delivered in California state in 1987 or 1991 (no comparison group) Asia and Latin America	*Prenatal care and delivery*: California Medicaid covered 41% of deliveries in California in 1991, as compared to 26% in 1987. 78% of the increase observed was attributed to undocumented or "legalized" undocumented women. Undocumented or legalized undocumented women accounted for 45% of deliveries covered by California Medicaid in 1991. Undocumented women enrolled in the Medicaid program later in pregnancy than US residents. Elimination of public funding for prenatal care and delivery services for undocumented women raises the question of how medical institutions would fund such services, as well as the possible increase in adverse birth outcomes due to inadequate prenatal care
Reed et al. [18] United States	Retrospective chart review	5,961 undocumented women versus 112,943 documented residents or citizens Mexico	*Prenatal care*: Undocumented women were less likely to have smoked (1.9 vs. 11.1%, $p < 0.001$), more likely to have had inadequate weight gain (23.5 vs. 12.7%, $p < 0.001$) and more likely to have received an inadequate number of prenatal visits (47.3 vs. 20.1%, $p < 0.001$) as compared to controls. Undocumented women had higher rates of anemia during pregnancy than controls (7.7 vs. 2.2%, $p < 0.001$) *Delivery*: Undocumented women experienced higher rates of serious complications during labor than controls ($p < 0.001$) *Birth outcomes*: Undocumented women were less likely to deliver a low birth-weight infant (5.3 vs. 6.5%, $p < 0.001$) or to deliver prematurely (12.9 vs. 14.5%, $p < 0.001$). After combining all abnormal conditions of the newborn into one category, undocumented women had a higher incidence than controls (10.0 vs. 7.8%, $p < 0.001$)
Schoevers et al. [16] Netherlands	Descriptive study	100 undocumented women (no comparison group) Eastern Europe/Former USSR, Sub-Saharan Africa	*Prenatal care and delivery*: 27 women delivered during their time as undocumented residents. Nine of these women reported problems during delivery or problems with the neonate, including: preterm delivery [2], cesarean delivery [2], and infant weighing under 2,500 g [3]
Wolff et al. [14] Switzerland	Cross-sectional study	134 pregnant undocumented women (no comparison group) Bolivia, Ecuador, Colombia, Brazil	*Prenatal care*: Most pregnancies were unintended (83%) and resulted from a lack of contraceptive use (70%). 57% of women had complications during pregnancy (e.g. vaginal or urinary infection, post term delivery) *Delivery*: 52% of women experienced complications during delivery, all of which were minor except for one major incident of bleeding

Table 2 continued

Authors Country	Methods	Study group versus comparison group Study group countries of origin	Relevant findings/conclusions
Wolff et al. [17] Switzerland	Prospective cohort	163 undocumented pregnant women versus 246 pregnant women with residency permits Bolivia, Brazil, Colombia, Ecuador	*Prenatal care*: Pregnancies among undocumented women were most often unintended (75 vs. 21%, $p < 0.001$). They were less aware of emergency contraception (61 vs. 9%, $p < 0.001$) and 79% had used no contraception or unreliable forms of contraception. Undocumented women consulted for pregnancy four weeks later than controls (12.6 vs. 8.0 weeks, $p < 0.001$). Only 63% had their first visit during the first trimester as compared to 96% of controls ($p < 0.001$). They were more exposed to violence during pregnancy (11 vs. 1%, $p < 0.001$), although lifetime exposure rates were similar between the two groups There was no significant difference in complications during pregnancy. *Delivery*: There were no significant differences in complications during delivery and the postpartum period *Birth outcomes*: There was a non-significant trend toward lower gestational age and preterm birth among undocumented women
Wolff et al. [25] Switzerland	Prospective study	175 undocumented women versus 208 women with residency permits Bolivia, Brazil, Ecuador, Cameroon	*Pregnancy*: Undocumented women were less likely to have used a contraceptive method than controls (OR 1.8, CI: 1.0; 2.9). Chlamydia was found to be three times more prevalent among undocumented women than controls (12.8 vs. 4.4%, age adjusted OR 3.2, 95% CI 1.4; 7.3)

undocumented migrants—were admitted for intrapartum care later and spent fewer days in the hospital following delivery than insured controls [11]. It has been reported that undocumented women experience significantly more serious complications during delivery than controls from the general population [18]. Indeed, when questioned on their pregnancy and delivery experiences during their time as undocumented residents, women self-report several problems, including preterm delivery and cesarean delivery [16]. A study looking specifically at women whose deliveries were complicated by severe pre-eclampsia, eclampsia, and HELLP (hemolytic anemia, elevated liver enzymes, low platelet count) syndrome demonstrated that women with undocumented or asylum seeking status were six times more likely to suffer from these conditions [28]. In contrast, another study found similar rates of complications during the delivery and post-partum period when comparing undocumented migrants to documented residents [17].

Birth Outcomes

The existing evidence on birth outcomes for undocumented women or for those without insurance is conflicting.

Some studies have reported that undocumented and/or uninsured women experience less favorable birth outcomes [11, 13]. One study in a tertiary care centre found that uninsured/undocumented women were significantly more likely to deliver premature, low birth weight infants when compared to insured controls [11]. The outcomes of such births were less favorable among the uninsured and included higher perinatal mortality and more frequent admission to the neonatal intensive care unit. These findings were supported by a second study that reported increased neonatal morbidity and transfer to the neonatal intensive care unit among uninsured women (78% of foreign nationality, 68% of whom were undocumented) [13].

Other studies have reported either no difference or more positive birth outcomes when comparing undocumented pregnant women to documented controls. A prospective cohort study showed lower rates of preterm delivery and low birth weight infants among undocumented women than the general population, despite higher rates of pregnancy-related risk factors such as anemia and inadequate prenatal care [18]. Another prospective cohort study reported that while preterm birth was more common for the undocumented, there was no difference in terms of birth weight and health outcomes (morbidity or mortality) among infants [17]. A study comparing undocumented Latinas to documented Latinas and US-born Latinas found no significant difference in low birth weight infants between the groups [29].

These conflicting results shed light on some of the difficulties of studying this population. In general, it is well documented that poor prenatal care has an impact on infant morbidity and mortality [30], but the evaluation of birth outcomes among undocumented women is not straight forward. Undocumented women may benefit from the previously described "Healthy Migrant Effect" which suggests that healthy individuals are more mobile and likely to migrate, and that they have better health indicators as compared to host populations upon arrival to the country [31–33]. For instance, Mexican-born women who had migrated to the US were found to be less likely to deliver low birth-weight and small-for-gestational-age infants, as compared to US-born women [34]. It has also been hypothesized that Hispanic women benefit from protective social factors such as family support and less substance use, despite low rates of prenatal care use [35]. Such potential confounders may, therefore, mask or protect against the effect of poor prenatal care on morbidity and mortality outcomes for this population.

Programs

Little has been published on specific programs that address the needs of undocumented pregnant women (Table 3).

Healthcare for undocumented migrants is a highly contentious issue that resurfaces regularly in the academic literature as well as in the media. In 2009, the American College of Obstetricians and Gynecologists reiterated their 2004 call for prenatal and delivery services for undocumented women living in the United States [27].

As mentioned previously, few countries have specific policies to address the healthcare needs of undocumented migrants. In Germany, the Maternal Protection Act stipulates that undocumented pregnant women are eligible for prenatal care and delivery services [36]. However, to access these rights, women must register for the program, exposing themselves as undocumented migrants and risking deportation following delivery. Widespread fear and confusion regarding healthcare policies have been reported in undocumented communities, making migrants reluctant to seek care [27, 36]. Ethnographic studies have highlighted how the healthcare provider's knowledge of policies and access to an expanded network of care are important mediating factors on the pregnancy experience of undocumented women [15, 36].

In countries where no governmental policies exist, programs have been developed on an ad-hoc basis to respond to the needs of undocumented migrants. In Canada, for example, a primary care clinic in Scarborough, Ontario has been in operation for over ten years [4]. Though not exclusive to pregnant women, in 2006, 17% of all consultations were for prenatal care. In Switzerland, the Unité mobile de soins communautaires (UMSCO) was implemented in January 1997 as a result of a partnership between the city of Geneva and various community and medical institutions [37]. Within one year of opening, 98% of UMSCO's clients were undocumented migrants. The team credited their success in reaching this marginalized group to the mobile clinic's location outside of a public institution and the hiring of Spanish-speaking staff. In 2003, an agreement was reached between the UMSCO and the University Hospitals to facilitate access to pregnancy and delivery services for pregnant undocumented women [38]. Berlin's Migrant Clinic offers primary care services to undocumented individuals, including prenatal care and facilitates access to delivery services for pregnant women [15, 36].

The "Dar a Luz" program (meaning "to give birth" in Spanish) was initiated in 1980 near the Mexico-US border in Arizona in collaboration with the area's Hispanic community [39]. It aimed to offer high quality prenatal care to pregnant Hispanic women, many of whom were undocumented. The program was based out of a local clinic where women were offered medical follow-up and information on birth and child rearing. Each woman was assigned a bilingual patient advocate who acted as a liaison between her and the health providers. While Dar a Luz was limited

Table 3 Programs for undocumented pregnant women

Program [source]	City, country	Description
Scarborough clinic [4]	Toronto, Canada	Primary care clinic for the medically uninsured. Prenatal care, midwifery, and social services available
Migrant clinic [15, 36]	Berlin, Germany	Primary care clinic for undocumented migrants. Offers prenatal care and facilitates access to delivery services
UMSCO [37, 38]	Geneva, Switzerland	Primary care mobile clinic serving marginalized patients, mainly undocumented migrants. Facilitates referrals for prenatal and delivery services
Dar a Luz [39]	Tucson, United States	Prenatal and perinatal program for undocumented pregnant women. Offers prenatal care, patient education workshops, pairing with patient advocates and referrals for delivery. Conducts advocacy work at local hospitals regarding care of undocumented women

by its primary care nature, local emergency rooms had been informed of the program's existence and participants were encouraged to present for delivery with their prenatal records informing staff of any preexisting health conditions. The fate of the Dar a Luz program is unclear as no further studies have been published and we were unable to locate any current information.

Limitations

It is important to recognize that the current research data available on undocumented populations is subject to several biases. A selection bias may arise depending on site and stage of pregnancy at recruitment. For instance, tertiary care centers are more likely to see higher-risk cases, whereas primary prenatal care sites likely include women who consult earlier in pregnancy. Results may also vary by design; a prospective approach is more sensitive to modulating factors such as prenatal care than a retrospective study. Findings may also depend on the comparison group used, for example differences may be seen if the comparison group is drawn from the general population versus from a documented migrant population. Finally, since undocumented pregnant women have traditionally been a hard-to-reach population, studies typically include small samples. As poor maternal and birth outcomes are relatively rare in Western societies, the population sizes used may not be large enough to detect differences between groups.

Conclusions

Several conclusions can be drawn from the present scoping review. First, findings indicate that undocumented pregnant women constitute a particularly vulnerable subgroup of migrants, as suggested by their reported social precariousness and under-utilization of health services. Nonetheless, it is evident from the dearth of studies identified that this population remains highly understudied. Proper documentation of this issue is paramount in preventing the further exclusion of this hard-to-reach group from health services [37]. Second, it is important to take the sociopolitical context of the country of study into consideration, as each country has its own specific migrant population and policies. National policies regarding treatment and resources for the care of undocumented pregnant migrants vary widely. Third, when evaluating the health outcomes of this population, it is crucial to employ appropriate indicators that can take into account both the risk factors and protective factors associated with being an undocumented migrant. Finally, the health of undocumented pregnant migrants affects not simply a marginalized community, but can impact the health and economy of an entire population and is therefore a matter of public health.

As undocumented populations grow across Europe and North America, it is important to recognize and address the health issues faced by this marginalized group. A more solid evidence base can serve as a lever for public awareness and political action [8]. Above all, research can provide valuable information on how to effectively intervene with respect to this population.

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