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REVIEW ARTICLE

# Racial and Ethnic Disparities in Preterm Birth Among American Indian and Alaska Native Women

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**Abstract**
*Objectives* Preterm birth disproportionately affects American Indian/Alaska Native (AI/AN) women. This disparity in birth outcomes may stem from higher levels of exposure to psychosocial, sociodemographic, and medical risk factors.
*Methods* This paper reviews relevant research related to preterm birth in American Indian and Alaska Native women.
*Conclusions* This narrative review examines disparities in preterm birth rates between AI/AN and other American women, and addresses several maternal risk factors and barriers that contribute to elevated preterm birth rates among this racial minority group. Additionally, this paper focuses on recent evidence that geographical location can significantly impact preterm birth rates among AI/AN women. In particular, access to care among AI/AN women and differences between rural and urban areas are discussed.

**Keywords** American Indian · Alaska Native · Racial and ethnic disparities · Preterm birth · Women's health

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## Significance

These findings will contribute to an overall understanding of this important issue among AI/AN women, with the aim of encouraging research in preterm birth prevention in this population.

## Introduction

Preterm birth (<37 completed weeks gestation) carries lasting potential complications in the child including cerebral palsy [1], learning disabilities [2], and respiratory illnesses [3], and is the leading cause of infant mortality [4]. Information on preterm birth rates among American Indian and Alaska Native (AI/AN) women suggests that they have higher rates of preterm birth than other racial and ethnic groups in America, except for non-Hispanic Black (NHB) women [5]. This manuscript examines how sociodemographic, psychosocial, behavioral, and medical disparities in AI/AN people may impact rates of preterm birth. It also explores how access to care may influence preterm birth rates among AI/AN women.

### Preterm Birth Rates Among American Indian and Alaska Native Women

Preterm birth rates for AI/AN women have been reliably higher than the national average, and are currently approximately 13.0 % compared with an average of 11.4 % for the U.S. population [5]. Preterm birth rates remain highest for NHB and AI/AN women compared to non-Hispanic White (NHW), Asian, and Hispanic women (See Fig. 1) [5–7]. According to 2012 data, the increased preterm birth rate among AI/AN women relative to White

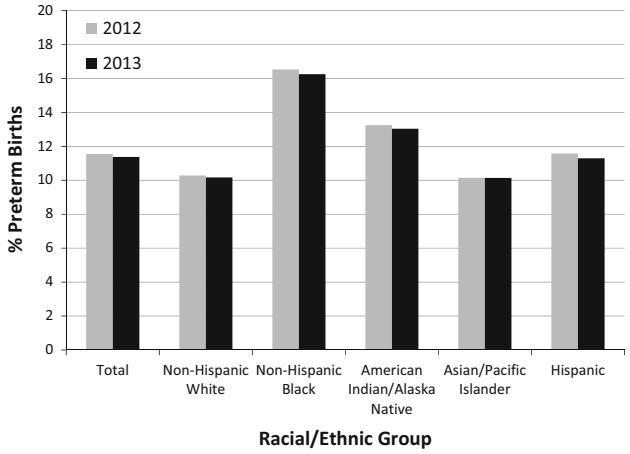


**Fig. 1** Preterm birth rates by racial/ethnic group [5]

women is seen within both late preterm deliveries (34–36 weeks gestation: 9.3 % compared to 7.7 %) and early preterm deliveries (<32 weeks gestation: 4.0 % compared to 3.0 %) [8]. Other recent studies have also estimated rates of preterm birth among AI/AN women to be approximately 11–14 % [9–12]; however, one study found preterm birth rates as high as 23 % among AI/ANs, far exceeding rates of African American and White women [13]. These findings indicate that rates of preterm birth among AI/AN mothers are generally high across the United States, but that some populations of AI/AN women may be at particularly high risk.

Preterm birth results from spontaneous preterm labor or deliberate delivery for maternal or fetal indications. In the United States, approximately 30–35 % of preterm births are medically-indicated and 65–70 % are spontaneous [14], but the distribution of preterm births among AI/AN women is unknown. Several maternal medical conditions associated with preterm delivery, such as diabetes and hypertension, are more common among AI/AN women than NHW women. Additionally, risk factors for spontaneous preterm birth such as tobacco use, low socioeconomic status, low maternal ages, and single marital status, are also more common among AI/AN women. Multiple exposures may contribute to a compound effect, exponentially increasing the preterm birth risk.

## Methods

This paper is a narrative review. Relevant articles were identified through online searches on PubMed and GoogleScholar. These databases were searched using the terms "American Indian health disparities," "American Indian preterm birth," "American Indian women's health" from 1980 through June 2014. In addition, the references of articles retrieved were explored to ensure an appropriate scope of literature.

Because of the breadth of literature in these areas, and because of the limited scope of this paper in addressing issues related to preterm birth, articles that discussed health disparities unrelated to preterm birth were not included in this review. Additionally, articles published more than 20 years ago were generally not included, unless they added substantively to the discussion of more current research. Articles published in languages other than English were not included in this narrative review.

## Maternal Risk Factors for Poor Birth Outcomes Among American Indian/Alaska Native Women

### Psychosocial and Behavioral Risk Factors

AI/AN people have experienced centuries of racism and discrimination which have directly affected their health and access to health care [15]. While the last hundred years have seen large improvements in the treatment of AI/ANs, disparities remain. These historic traumas continue to impact today's AI/AN population [16] and particularly their interactions with healthcare providers [15]. The stresses of long-term persecution and historical disenfranchisement have been linked to social pathologies such as suicide, alcoholism, and mental health problems [17–19]. AI/ANs may be particularly reluctant to access Western-style medical interventions due to their lack of trust in medical professionals [20], and a desire for culturally specific care emphasizing family systems and natural and spiritual healing [21].

Psychosocial stress affects overall health and has been linked to preterm birth [22, 23]. Specifically, subjective measures of stress and pregnancy-related stress carry the strongest associations with preterm birth [23]. Research indicates that AI/AN women experience a greater number of major stressors than women of other racial and ethnic origins in the 12 months prior to pregnancy [24] and in the 12 months prior to delivery [25]. AI/AN women have high rates of interpersonal violence, including childhood physical abuse, rape, domestic abuse, and multiple victimizations [26, 27]. AI/AN women are more likely than other racial and ethnic groups, besides multiracial women, to have experienced rape or other sexual violence during their lifetimes [28–30], and are more likely to report rape or interpersonal violence in the past year [29]. Prevalence of violence against women is high among AI/AN populations, and remains higher than the general population of American women during pregnancy [31]. Increased lifetime rates of physical and sexual abuse have been linked to increased preterm birth rates [32, 33] and other health risks, such as

substance abuse, smoking, somatic symptoms, psychological disorders, delayed or no prenatal care, and unintentional pregnancy [33–35].

In non-AI/AN populations, depression and other mental health disorders have been linked to preterm birth [36–38]. AI/AN women may be disproportionally affected by mental health conditions such as depression compared to women of other racial and ethnic groups [39, 40]. Rates of pregnancy-related depression are also higher among AI/AN women than other women in the United States [41]. AI/AN women are disproportionately represented among those people who die as a result of suicide and homicide [40]. Rates of suicide among AI/ANs have remained relatively unchanged for at least 25 years and are significantly higher than rates for other racial and ethnic groups in the United States [40].

Tobacco use is one of the few modifiable risk factors for spontaneous preterm labor. Smoking cessation may reduce preterm birth by 16 % [42, 43]. Unfortunately, several studies that examine racial and ethnic disparities in pregnancy outcomes found that AI/AN women are at a significantly greater risk for tobacco use [12, 32, 44–48], increasing the risk for preterm birth [49, 50]. In fact, in 2008 AI/AN women had the highest rate of smoking during pregnancy (26%, 95 % CI [20.5, 32.3]) compared to NHW (14 %, 95 % CI [13.5, 15.2]), NWB (9 %, 95 % CI [7.8, 10.2]), Hispanic (3 %, 95 % CI [2.7, 4.3]), and Asian/Pacific Islander (2 %, 95 % CI [1.5, 2.9]) women [51]. While the association of maternal alcohol use and preterm birth is unclear, increasing evidence suggests that drinking alcohol during pregnancy can contribute to preterm birth [49, 52]. Castor et al. found that AI/ANs living on Urban Indian Health Organizations (UIHOs) were 3–4 times more likely to consume alcohol and three times more likely to smoke cigarettes relative to all other women in the study [46]. These results are consistent with other findings that indicate AI/AN women have significantly higher rates of alcohol abuse and tobacco use than NHW women [12, 44, 45, 53].

## Sociodemographic Risk Factors

Risk factors such as maternal age, marital status, employment status, and socioeconomic status place AI/AN women at particular risk for preterm births [54, 55]. AI/AN women also have higher than average rates of unintended or unplanned pregnancy [30], which have a higher risk of ending in preterm delivery [56]. This higher unplanned pregnancy rate may be a consequence of a number of factors, including low rates of contraception utilization [30].

Women younger than age 18 and over age 35 are more likely to have a preterm delivery [57]. AI/AN mothers tend to be younger relative to the general population, with a significant number of AI/AN mothers under the age of 18 [9, 13, 58]. Birth rates for teenagers aged 19 and under are significantly higher among AI/AN girls than in the overall population (13 vs. 7 %) [5, 7].

Pregnancies to unmarried women are associated with greater risk for preterm delivery [57, 59, 60]. Preterm birth among unmarried women may result from lowered household income, increased work pressure, reduced social support, or other factors. AI/AN mothers are more likely to be multiparous, unmarried, and have children living in single-parent households relative to NHW women [9, 44–46, 61]. The Centers for Disease Control and Prevention reports that 66 % of all AI/AN births are to unmarried women compared to 29 % for NHW women [5].

AI/ANs also have higher rates of unemployment than any other race besides African Americans [62]. The current poverty rate for all AI/ANs is 24 % (90 % CI [23.6, 24.1]), almost twice the national average of 14 % (90 % CI [14.2, 14.4]), and higher than any other racial or ethnic group [63]. Moreover, AI/AN mothers have much higher rates of unemployment, poverty, and low educational attainment relative to NHW mothers [9, 12]. These factors contribute to maternal psychosocial stress and can influence pregnancy outcomes.

## Medical Risk Factors

A number of medical conditions increase a woman's chances of experiencing indicated preterm birth, including chronic hypertension, diabetes mellitus, systemic lupus

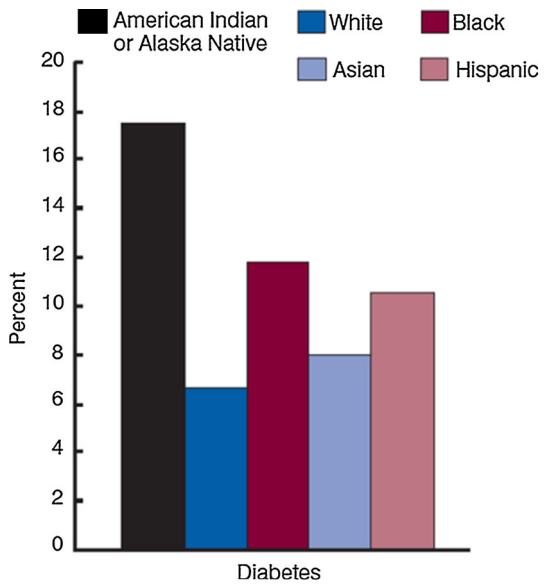


**Fig. 2** Percentage of adults aged 18 years and over who have ever been diagnosed with diabetes by race and ethnicity; United States, 2004–2008 [57]. *Note* Estimates are age adjusted using the projected 2000 U.S. population as the standard population. Estimates are based on household interviews of a sample of the civilian, noninstitutionalized population. DATA SOURCE CDC/NCHS, National Health Interview Survey, 2004–2008

erythematosus, and chronic renal disease [57]. AI/AN women have higher rates of diabetes, chronic hypertension, and pregnancy-induced hypertension, all of which can contribute to preterm birth [14, 64]. AI/AN people in general are more likely than White, Black, Asian, or Hispanic adults to be diagnosed with diabetes [65] (See Fig. 2). In a study conducted in Montana and North Dakota, pregnant AI/AN women were found to have higher rates of gestational diabetes than White women [66]. Pregnant AI/AN women with diabetes are more likely to receive inadequate prenatal care, and are more likely to be hypertensive during pregnancy than NHW women [67]. These findings may indicate that risk factors such as diabetes and hypertension in AI/AN women carry a greater overall risk to pregnancy and health outcomes than in other populations.

AI/AN people have high rates of obesity [64, 68], with poor nutrition, limited access to fresh foods [69], and lower than average levels of physical activity and fitness [70] impacting these outcomes. Pre-pregnancy obesity rates in AI/AN women are higher than in any other racial or ethnic group [71]. Obesity has been linked to adverse pregnancy outcomes, including preeclampsia, antepartum stillbirth, and early neonatal death [72], and poor general health [73]. Obesity itself has not, however, been shown to contribute to spontaneous preterm birth, and may actually be a protective factor against spontaneous preterm birth [14, 74]. However, obesity does increase the chances of a medically-indicated preterm delivery [15, 75]. In addition, higher rates of obesity among AI/AN women predispose them to other medical conditions linked to preterm birth (e.g., gestational diabetes and hypertension).

AI/AN mothers have higher rates of medical complications during pregnancy from preexisting medical conditions, coexisting pregnancy-related conditions, labor complications, and historical preterm births compared to women of other races and ethnicities [45, 75]. AI/AN women are more likely to experience multiple health conditions (i.e., two or more medical complications) before or during pregnancy compared to women of other racial and ethnic groups [13, 64]. The compound effect of multiple medical conditions has an unknown effect on preterm birth and stillbirth, especially in the setting of increased psychosocial and sociodemographic risk factors and thus merits further study. Sexually transmitted infection rates are also higher among AI/AN individuals than the national average [76] and have been linked to preterm birth [77] along with other pregnancy complications.

## Disparities in Access to Care

Inadequate access to prenatal medical care is a known risk factor for preterm birth, but interventions to improve care have not reduced preterm birth in the general population. Nonetheless, access to prenatal care continues to be of concern for AI/AN women because of the high prevalence of co-morbidities impacting pregnancy. AI/AN women are at high risk for inadequate or no prenatal care [13]. Despite the increased need for care, AI/AN women receive late or no prenatal care at twice the rates of other women [46]. AI/AN adults are less likely to receive care and decline needed health care services more frequently than other races/ethnicities because of cost (10.3 %) compared to NHB (9.6 %), Hispanic (9 %), Asian (3 %), or NHW (7 %) adults [65]. AI/AN people are also more likely to consider a clinic or health center their primary point of care, as opposed to a doctor's office or health maintenance organization (HMO) [65]. Whether improved prenatal care among AI/AN women will result in decreased preterm birth rates is unknown, but the potential benefits may be long-lasting.

Barriers to care may be economic or geographic. AI/AN adults are more likely than other racial/ethnic groups to have public insurance [AI/AN: 41 % vs. NHB (20 %), Hispanic (14 %), Asian (9 %), or NHW (9 %) adults] [57] and are less likely than NHW people in all economic groups to have private insurance [78] (See Fig. 3). Even among AI/AN people with access to public healthcare, disparities in access emerge in part due to mistrust of providers, along with perceived racial discrimination and disrespect toward religious beliefs by providers [20]. Healthcare provided by the Indian Health Service (IHS) has improved outcomes and access for some AI/AN people [79], yet budget constraints and geographical population shifts have meant that care is not reaching all AI/AN people [80]. Access to care in tribal health centers is impacted by geographic location and tribal affiliation [81]. Limited access to care can result in delays in seeking care

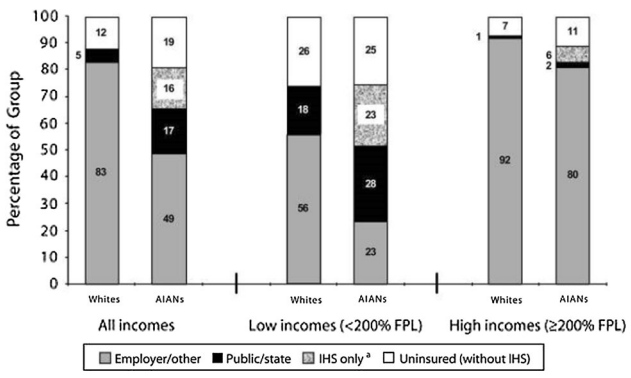


**Fig. 3** Sources of Coverage and Care, by Income, Whites and American Indians/Alaska Natives, 1997 and 1999. *Note. FPL* federal poverty level, *AIANs* American Indians/Alaska Natives, *IHS* Indian Health Service. symbol superscript a represents "IHS only" includes American Indians/Alaska Natives who are uninsured and indicated that the *IHS* was their only source of coverage [67]

and can contribute to poor medical outcomes. In the case of AI/AN individuals, limited access to care may be particularly linked to geographic factors.

### Geographic Location and Access to Care

AI/AN people are a nonhomogenous group, and within group differences may account for variability in risk factors [9]. The number of AI/AN women who live in metropolitan areas is gradually increasing [7, 46]. This relocation of AI/ANs from rural reservations to urban areas has resulted in a significant loss of access to tribal health care services and increased health disparities among AI/ANs. Sixty-one percent of Americans who identify as AI/AN do not live on reservations or Native lands [82]. Moreover, 43 % of AI/ANs do not reside in geographic areas where the IHS provides care [7]. Studies show that access to prenatal care in particular varies greatly by region and state and that national averages do not often reflect regional experiences [83]. It is unclear if AI/AN obstetric outcomes are more dependent on rural versus urban residence or access to IHS.

Reports illustrate that AI/AN women in rural areas may receive less than adequate care and may have particular difficulty in accessing specialist care [44, 45, 84, 85]. Despite these findings, prenatal care among AI/AN women is higher and preterm birth rates are lower than other races in rural areas where access to IHS is more available, such as New Mexico [48]. In Oregon, a recent study found that rural versus urban residence did not affect access to prenatal care among all women [86]. Thus, access to care among AI/AN women is more complex than simply rural versus urban residence and may also depend on resources specific to the local population. For instance, while many major urban areas offer medical or outreach services to AI/AN populations, the quality and accessibility of those resources vary widely [81].

Despite these findings, some studies have shown that AI/AN women in urban areas have worse rates of preterm birth, low birth weight, and infant mortality compared to rural AI/AN women [53]. Women in urban areas may have less access to care due to costs and the lack of IHS availability. Even within areas of similar population density, differences in care and medical outcomes exist across geographical locations. For instance, in a study conducted by Grossman and colleagues, AI/AN women received differing levels of care depending on the city in which they accessed healthcare [81]. Another study found higher rates of low birthweight and preterm birth in the South and Northeast regions of the United States, but higher rates of infant mortality from SIDS and among low birthweight infants in the Midwest [9]. Medically underserved areas, whether urban or rural, may be linked to worse pregnancy outcomes [84]. These findings highlight the importance of gaining a more complete understanding of the unique factors contributing to variable outcomes among AI/AN women in different regions, rather than looking only to national findings for AI/AN women. Geographic locations, tribal resources, population differences and sophistication of health care centers may vary among AI/AN populations of women.

## Future Directions

Research continues to illustrate that AI/AN women are a group at particularly high risk for many health concerns, including preterm birth. As evidenced by the literature, AI/AN women are at the second highest risk (after African Americans) for preterm delivery relative to all women in the United States. Furthermore, many maternal risk factors lead to poor birth outcomes among AI/AN mothers, including psychosocial, behavioral, sociodemographic, and medical variables. AI/AN women often have very limited access to health care services and receive late or no prenatal care. Moreover, rates of tobacco and alcohol use before and during pregnancy among AI/AN women are higher than among other American women, and can negatively influence birth outcomes. Of importance, many of these factors are modifiable behavioral risk factors that, if altered, could significantly lower preterm birth rates and other poor birth outcomes among AI/AN mothers and subsequently narrow this racial health gap.

Emerging evidence suggests that the impact of geographical location and access to care on the rates of preterm births among AI/ANs may be greater than previously thought. These findings act as further evidence that the compound effect of situational, sociodemographic, and psychosocial factors may contribute to the disparate rates of preterm birth rather than innate biological differences between AI/AN women and women of other racial or ethnic backgrounds. These disparities merit interventions even without impact on obstetric outcomes. Only after successful improvements in the conditions for AI/AN people can we speculate further on the biologic and racial contributions to adverse obstetric outcomes. Increased efforts focused on interventions to improve the well-being of AI/AN people may affect birth outcomes of AI/AN women through improved outreach and collaboration with community leaders. In addition, further exploration of differences in access to care based on location and provider type may contribute to a better systemic approach to reducing disparities within the AI/AN population.

Health care providers must be aware of these health disparities in order to better screen for potential risk factors for preterm birth [7]. Improved screening and awareness will allow physicians to provide or refer AI/ANs to the

appropriate resources for treatment. Culturally appropriate resources should also be made available to AI/AN patients informing them of the risks of preterm birth and the importance of seeking early prenatal care. Increased collaborative care between obstetrician-gynecologists and other providers may also improve access to care for women who would not ordinarily seek specialist services [87].

While the current literature presents a convincing case for the increased prevalence of preterm birth and risk factors among AI/AN women, limitations exist in many of these studies. Due to the small proportion of American women that identify as AI/AN, many studies comparing groups rely on small sample sizes, which can result in imprecise estimates that obscure the magnitude of disparities. In addition, racial misclassification of AI/AN peoples is common, and can result in further complicating the interpretation of study findings [88]. These limitations highlight the need for continued empirical research in this area and, in particular, the need for studies of rigorous scientific method in order to better quantify the birth experience of AI/AN women.

These findings, along with the potential risks associated with preterm birth, highlight the urgency of the need for reducing preterm birth and improving healthcare for AI/AN women across the United States. In addition to further study, on the ground changes are necessary to counteract these disparities. Training physicians about the presence of these disparities and to recognize the risk factors of preterm delivery in an AI/AN population are important steps in helping to build a more culturally competent medical workforce. In addition, collaborative work between medical and tribal agencies, including the IHS, to train tribal health providers about the risks and prevalence of preterm birth among their patients may create a more open dialogue for the improvement of women's healthcare. These collaborative relationships may also be used to help prevent preterm birth by educating AI/AN women about risk factors for preterm birth and encouraging them to engage in healthful activities (e.g., physical fitness, smoking cessation). By working with non-traditional partners such as tribal leaders, medical workers may increase their reach and provide more culturally relevant healthcare services to patients.

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