



Factors Associated with Effective Nutrition Interventions for Pregnant Indigenous Women: A Systematic Review



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ABSTRACT

Introduction Indigenous people continue to experience health disparities relative to non-Indigenous populations. Interventions to improve nutrition during pregnancy in these groups may improve health outcomes for mothers and their infants. The effectiveness of existing nutrition intervention programs has not been reviewed previously.

Objective The objective was to identify interventions targeting improving nutrition-related outcomes for pregnant Indigenous women residing in Organisation for Economic Co-operation and Development countries, and to identify positive factors contributing to successful programs.

Methods Thirteen electronic databases were searched up until October 2015. Key words identified studies intervening to improve nutrition-related outcomes for pregnant Indigenous women. Two reviewers assessed articles for inclusion and study quality and extracted data. Only studies published in English were included. Data were summarized narratively.

Results Abstracts and titles were screened (n=2,566) and 315 full texts were reviewed for eligibility. This review included 27 articles from 20 intervention programs from Australia, Canada, and the United States. The most prevalent measurable outcomes were birth weight (n=9) and breastfeeding initiation/duration (n=11). Programs with statistically significant results for these outcomes employed the following nutrition activities: individual counseling/education (n=8); delivery by senior Indigenous woman (n=2), peer counselor (n=3), or other Indigenous health worker (n=4); community-wide interventions (n=2); media campaigns (n=2); delivery by non-Indigenous health professional (n=3); and home visits (n=3).

Conclusions Heterogeneity of included studies made it challenging to make firm recommendations regarding program success. Authors of included studies recommended community consultation be included when designing studies and working with communities at all stages of the research process. Individualized counseling/education can contribute to successful program outcomes, as can the use of Indigenous workers to deliver program content. Limitations of some studies included a lack of details on interventions and the use of nonrandom control groups. Future studies should include detailed descriptions of intervention components and include appropriate evaluation protocols.

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THERE ARE AN ESTIMATED 370 MILLION PEOPLE worldwide who self-identify as Indigenous, including Aboriginal and Torres Strait Islander people of Australia, Maori people of New Zealand, and

Indigenous people of the Americas.^{1,2} These groups have separate cultural, economic, political, and social characteristics from the dominant societies where they live, and are the descendants of those inhabitants of a region at the time when people of different cultures or ethnic origins arrived. While no official definition for “Indigenous” has been determined, an important understanding of the term includes self-identification as an Indigenous person.¹

Disparities between Indigenous and non-Indigenous peoples in terms of morbidity and mortality and social, economic, and political equity continue wherever Indigenous peoples reside, as does a lasting legacy of colonization, oppression, and systemic disadvantage.² Health disparities have been well-documented, particularly for Indigenous populations residing in Australia, Canada, and the United

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States. In 2012 to 2013, Indigenous Australians were three times more likely to have diabetes (rate ratio 3.3) than non-Indigenous Australians, and twice as likely to have indicators of chronic kidney disease (rate ratio 2.1).³ More than half of Indigenous Australian adults (65%) had at least one risk factor for cardiovascular disease and 11% had diabetes.³ In Canada, approximately 43% of Inuit people have been diagnosed with a chronic condition by a health professional.⁴ In the United States, between 2012 and 2014, 15.4% of American Indian/Alaska Native women aged 18 years and older reported ever having been diagnosed with diabetes, and 3.5% reported ever having had a stroke, compared with 8.1% and 2.5%, respectively, for all American women.⁵

Improving nutrition in pregnancy and early infancy could set the scene for positive long-term health trajectories for Indigenous people. Optimal nutrition during pregnancy has important implications for fetal development and growth and may be protective for maternal and child long-term health outcomes.⁶ Maternal diet during pregnancy must provide adequate energy and nutrients to meet nutritional needs of both the mother and fetus. In addition, appropriate weight gain during pregnancy is important, as excessive gestational weight gain increases the risk of maternal postpartum overweight and obesity⁷⁻⁹ and risk of having a low-birth-weight (LBW) infant (<2,500 g) increases with low gestational weight gain.¹⁰ The Barker hypothesis provided evidence that LBW is associated with an increased risk of cardiovascular disease, hypertension, stroke, and type 2 diabetes mellitus in the future life of the infant.¹¹⁻¹³ In Australia and the United States, Indigenous infants are more likely to be of LBW,¹⁴ with the proportion of LBW babies born to Indigenous mothers in Australia twice the proportion (12.5%) born to non-Indigenous mothers (5.7%).¹⁵

Research on dietary practices of Indigenous women during pregnancy is scarce. A recent examination of remote and urban-dwelling First Nations women in Manitoba, Canada, explored the reasons for increased prevalence of gestational diabetes.¹⁶ This study found significantly lower intakes of vegetables and higher consumption of cholesterol in First Nations women in remote areas (n=24) compared to white women (n=22) in urban areas, and significantly lower intakes of nonfat milk for all First Nations women (n=41) compared to white women.¹⁶ The authors concluded that there was a need for improvements in nutritional intake during pregnancy for First Nations women, especially among those residing in rural or remote communities.¹⁶ In Australia, disparity in income is a determinant of health disadvantage for Indigenous people.¹⁷ Brimblecombe and colleagues¹⁸ and Lee and colleagues¹⁹ have advocated for an improvement in Aboriginal and Torres Strait Islander nutritional health, and suggested exploring economic interventions, including food supplementation for women, infants, and children.

Optimal infant feeding practices are essential for the health of infants. Breast milk is the ideal food, imparting physiologic benefits to both mother and child.²⁰ The World Health Organization recommends exclusive breastfeeding to 6 months of age, continuing along with complementary infant feeding

up until the infant is 2 years of age, or as long as mother and child desire.²¹ Breastfeeding initiation and duration for Indigenous peoples appears to be affected by a number of factors, including residential rurality.²² Rates of breastfeeding are influenced by rural or urban locality for Indigenous Australians, with those living in rural areas more likely to initiate breastfeeding and have a longer duration.²² Significantly fewer Canadian Aboriginal mothers living off-reserve reported exclusively breastfeeding their last child for 6 months or more (17%) compared to non-Aboriginal mothers (27%).²³ Overall, 78% of Canadian Aboriginal women and 88% of non-Aboriginal Canadian women initiated breastfeeding.²³ In Hawaii, overall breastfeeding initiation rates are high (89%), but among Native Hawaiian women rates are relatively low (64%).²⁴

It is clear that maternal and infant nutrition should continue to be a priority for health policy implementation, health promotion activities, and intervention. However, factors associated with the effectiveness of interventions to improve nutrition-related outcomes for the target demographic of pregnant Indigenous women has not been reviewed previously. Lessons learned from existing research in this field are likely to be of great value for future direction to optimize dietary intake and nutrition-related health for the world's Indigenous women and their infants. The objectives of this review are:

1. To identify existing programs where a nutrition intervention conducted with the target group of pregnant Indigenous women aimed to improve nutrition-related outcomes for these women and/or their children. Any outcome related to, or affected by, nutrition was included as long as outcomes were compared with a control group or other comparisons were made.
2. To identify factors associated with nutrition interventions that resulted in positive nutrition-related outcomes for pregnant Indigenous women and/or their children when compared with a comparison group.

METHODS

Methods for the Selection of Literature Reviewed

The protocol for this systematic review was registered with Prospero (University of York Centre for Reviews and Dissemination) (registration ID CRD42014012984, 2014).

Databases were searched using selected key terms relating to diet/nutrition, pregnancy, and Indigenous status. Articles meeting inclusion criteria were assessed for study quality using the Academy of Nutrition and Dietetics Quality Criteria Checklist for Primary Research standardized tool.²⁵ Data were extracted and facets of studies resulting in statistically significant outcomes were identified and summarized narratively.

Eligibility Criteria

Participants/Population. Studies were included where the target population was pregnant women who self-identified as Indigenous, and who resided in one of the 34 member countries

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