

# Mini Review-Qualitative Review on the Causes of Low Birth Weight



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## Abstract

**Object :** To review the literatures on the causes of low birth weight.

**Method:** On the Pub Med and Ichushi (Japan Medical Abstracts Society) websites, the literatures on the causes of low birth weight published between 1975 to 2011 were searched for the

**Results:** From among the 469 original articles retrieved, 65 articles containing any description of the cause of low birth weight were identified, of which the 32 articles well-structured in the format of scientific writing were selected and reviewed.

**Conclusion:** The suspected causes of low birth weight from pre-pregnancy risks were classified into two categories:

- a) Family risk factors,
- b) Mother herself risk factors.

Further large-scale follow-up studies from birth would be needed at the prefectural level. .

**Keywords:** Low birth weight; Risk factors; Pre-pregnancy

## Introduction

In Japan, the mean birth weight has been on a downward trend after peaking at 3200 g in 1974, falling to 3000 g in 2009. The rate of low birth weight infants has been increasing in the population of full-term infants [1]. This study aimed at sorting out the causes of low birth weight through the systematic review on the article investigating such causes.

## Methods

On the Pub Med and Ichushi (Japan Medical Abstracts Society) websites, searching for the keywords listed below retrieved 469 articles (as of August 16, 2011), from among which 65 articles were selected based on title and abstract. Through a detailed review on those 65 articles, 32 articles were extracted; and another two articles on the risk factors of low birth weight were added. The search keywords: ("infant, low birth weight"[Mesh Terms] OR ("infant"[All Fields] AND "low"[All Fields] AND "birth"[All Fields] AND "weight"[All Fields]) OR "low birth weight infant"[All Fields] OR ("low"[All Fields] AND "birth weight"[All Fields]) OR "low birth weight"[All Fields]) AND ("risk factors"[Mesh Terms] OR ("risk"[All

Fields] AND "factors"[All Fields]) OR "risk factors"[All Fields]) AND pre-pregnancy[All Fields] for the Pub Med website; and the same words in Japanese for the Ichushi website.

## Results

The 34 articles extracted in this review were sorted out, in terms of the causes described therein, into the two categories:

- a) Pre-pregnancy risk factors,
- b) Pregnancy risk factor.

Then we classified

- a) Pre-pregnancy risk factors in two risks.

One is Family risk factor; the other one is mothering her risk factor.

- a) Family risk factors include age (<17 and >34), race (black), poor socio-economic condition, unmarried mother, and poor education.

b) Mother himself risk factors include parity (0 or >4), low BMI, low body weight, reproductive history or obstetric history (including spontaneous abortion), and low birth weight of the mother.

## Discussion

### Discussion About Family Factors

Family risk factors include age (<17 and >34), race (black), poor socio-economic condition, unmarried mother, and poor education. All the articles containing description about age [2-7] showed that early and old ages may be or tend to be risk factors, though some of them did not reach statistical significance. However, unlike the results of this review study, Kumar et al. [8] demonstrated that lower age might be associated with reduced risk of low birth weight. This means possible difference between races, which merits further research. The articles referring to socio-economic situation or education [3-11] showed that poor situation or poor education level may be related to the risk of low birth weight. As for marital status, only one article [12] was referring to this factor, so it is difficult to reach to conclusion. Supposedly, the higher rate of low birth weight infants may be related not to being single itself, but to its associated factors, such as economic or emotional strain.

### Discussion about Mother Herself Risk Factors

A number of articles [2-18] demonstrated that low body weight or low BMI of the mother is clearly related to the risk of low birth weight. The BMI Guidelines presented by JASSO (Japan Society for the Study of Obesity) and WHO (World Health Organization) give the following definitions: underweight (under 18.5 kg/m<sup>2</sup>), normal weight (18.5 to 25.0 kg/m<sup>2</sup>), and overweight (over 25.0 kg/m<sup>2</sup>). However, some of the articles identified in this review study have been based on other standards of underweight or overweight, and the standard weight may vary between races. These are the reasons why we need to take racial differences into consideration rather than relying solely on the BMI classification. Some articles [19] reported that low birth weight of the first infant may be associated with increased risk of low birth weight of the subsequent babies. Possibly, the mother's aging over time or rise in physical activity related to child caring may contribute to such increased risk in the subsequent births. Therefore, living conditions or availability of support from partner or other neighbors should be taken into consideration.

## Summary

Many studies about potential causes of low birth weight have been published in Japan and abroad, but there have been few numbers of case-control studies at the level of every prefecture. Further large-scale studies will be needed to make it possible to use the results of this review study for improvement of pregnant women guidance, which may eventually contribute to health care guidance in less developed countries.

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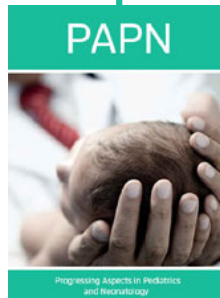
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