Association between Maternal Diet during Pregnancy and Childhood Asthma

Yasmin Jahan1*, SM Atiqrul Rahman2, Abu Sayeed Chowdhury1, and Md Moshfiur Rahman1

1Graduate School of Biomedical & Health Sciences, Hiroshima University, Japan
2School of Health, University of New England, Australia

Abstract

Over the past four decades, the prevalence of asthma has markedly increased among the developed countries and specially for those countries transitioning to their lifestyle. It has been assumed that these increases are a consequence of changing due to environmental and/or behavioral factors. The modification of dietary habits (i.e., decreased intake of fruits/vegetables and increased intake of “Westernized” processed foods) and decreased intake of antioxidant vitamins due to a decrease in sun exposure and fatty acids and as well as decreased circulating levels of vitamin D, and might have been anticipated to explicate the rise in asthma prevalence. The aim of this article was to explore whether there is an association between maternal diet during pregnancy and development of atopic disorders like asthma in childhood or not.

INTRODUCTION

In the global childhood health perspective, asthma and atopic diseases are considered as one of prime challenges [1]. Recent research shows, over the last 20 years, prevalence of Allergic diseases has increased alarmingly (rate of 20%) in most developed countries yet the chance of developing allergic diseases remains significantly high (one in every three are being affected). Subsequently, children become prime sufferers of the common allergic manifestations such as allergic rhinitis or hay fever, asthma, eczema or atopic dermatitis, and food allergies [2]. Sometimes the disease could come genetically, for example, individuals could be affected if the first-degree relatives (parents or siblings) become atopic and around 70% have chances if both of the parents become atopic [3]. Allergy expression pattern differs with age and food propensities, and atopic eczema topping at the age of 1 year. Conversely, asthma and allergic rhinitis continue to increase until 15 years of age. In respect with childhood asthma sufferers, hay fever is a common symptom (50% and 80%) that continues up to adulthood [4]. The rapid increase in allergic disease incidences can be considered as outcome of population genetic changes, early life dietary facts, farming environment, microbial exposures, obesity, maternal smoking, and viral infections [5-7]. Nonetheless, there is still limited scope in measuring risk factors and understanding implementation strategies of primary prevention of childhood asthma.

There might be a possible effect of ‘Westernized diet and lifestyle’ in increasing asthma and atopic disease. Consequently, atopic predisposition develops where the infant has an innate tendency to produce immunoglobulin (Ig)E antibodies (sensitization), which can even progress to allergic disease [8]. Moreover, many infants, at their early infancy, develop allergic symptoms, and exposure to allergens may be responsible for developing food allergies. Intensive curiosity in maternal dietary approaches during pregnancy and lactation might have some noteworthy outcome on prevention of childhood allergies to influence the burden of disease [9].

DISCUSSION

Recent studies [10] have highlighted that there is an association between childhood asthma and intake of certain foods (e.g., fish, fruits and vegetables) and nutrients (e.g., vitamin E, vitamin D, zinc and polyunsaturated fatty acids) during pregnancy. People become aware of maternal diet habits during pregnancy as it has a potential influence on fetal immunity and airway development during contingencies with long-term irreversible consequences, such as childhood asthma. Epidemiological and immunological studies suggested that there are opportunities to reduce the development of atopic disease in fetal life through dietary modification or supplementation. In addition, early-life diet may control the possibility of childhood asthma by affecting fetal airway development and/or persuading the early-life interactions between allergens and immune system. So, dietary alteration is considered as one of the possible solutions to prevent childhood asthma.

Up to 2009, five studies had been published regarding assessing relationship between maternal diet with childhood asthma [11,12]. Three longitudinal studies reported no connection in-between dietary patterns and adult-onset asthma. However, one cross-sectional study reported a strong association between the Mediterranean diet score and asthma control among asthmatics. Similarly, other study (conducted in Japan) reported a positive and significant association between wheeze and the fast food and quick sugar pattern [13].

D during pregnancy may diminish the risk of recurrent wheeze in the offspring. Another study (conducted in northeastern United States) described that a higher maternal intake of vitamin b-carotene during pregnancy causing defensive syndromes can have a protective effect against atopic eczema in the offspring. Another study entitled “maternal intake of sugar during pregnancy and childhood asthma” suggested that, higher maternal intake of sugar in pregnancy may have intensified the risk of allergy and allergic asthma in the offspring. Another study which was conducted in Japan found higher maternal intake of antioxidants and allergic outcomes found that, although the potential confounders, a study on the association between BMI, vigorous physical activity and television viewing and the risk of symptoms of asthma, rhinoconjunctivitis and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys. Lancet. 2006; 368: 733-743.

CONCLUSION AND RECOMMENDATION

Above discussion clearly indicates a noteworthy relationship between maternal diet and asthma that is getting worldwide interest, especially in developed countries. Further research, particularly intervention studies are needed to be carried out to ensure whether dietary intervention during pregnancy can be used as a healthy, low-cost, public health measure to reduce the prevalence of childhood asthma.

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REFERENCES


