

A Review of Dietary Intake during Postpartum Period

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ABSTRACT

The postpartum period is a critical period for maternal and infant health. There is clear evidence showing the short- and long-term health benefits for women to adopt a healthy diet during this period. An unhealthy diet during this period can lead to cardiovascular disease and mental health problem among the mothers. Besides, optimal food consumption during postpartum is crucial to support the additional nutrient requirements for breastfeeding and to reduce postpartum weight retention. Lack of social support and a harmful traditional dietary practices are among the barriers which prevent postpartum women from consuming balanced and nutritious food. Therefore, there is a need for effective nutritional intervention to promote better health for this population. In addition, the intervention should be culturally sensitive to respect the local traditional dietary practices for a better community acceptance.

Keywords

dietary intake, nutrition, postpartum

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INTRODUCTION

Childbirth is a memorable moment in every woman's life. It involves massive changes in her physical, physiological, psychological and social role.¹ Even though the postpartum period can last up to 6 months after childbirth, some changes may take longer to be restored and some may never fully return to pre-pregnancy state.²

Dietary intake during this period poses short- and long-term health effects on both women and children. Unhealthy diet during postpartum put women in reproductive age at risk of cardiovascular disease³ and it also has impact on their mental health^{4,5}. Besides, optimal food consumption during postpartum is essential to support the additional nutrient requirements for breastfeeding and to reduce postpartum weight retention.⁶

Aside from the aforementioned public health concerns, women are also anxious to return to their pre-pregnancy body weight and shape.⁷ They need evidence-based information on diet and nutrition to restore their body to the pre-pregnant state. It can prevent them from using improper weight loss method that claims speedy effect.⁸

Unfortunately, most women are unable to sustain a healthy diet that they have developed during pregnancy period, even though they understand the importance of postpartum nutrition.^{7,9}

They face barriers in maintaining healthy eating behaviour which can put them at risk of being overweight or obese post-pregnancy. Lack of social support from partners, families and friends is one of the barriers for them to adopt healthy eating practices.⁹ Besides, some long-standing traditional dietary practices can hinder postpartum women from consuming nutritious food, despite the higher energy and nutritional requirement during this period.¹⁰

This review aims to give an overview on dietary intake during the postpartum period. It hopes to generate information that enable various stakeholders to design more effective public health strategies to support women in adhering to healthier dietary behaviours throughout the postpartum period.

METHODS

This narrative review was conducted by searching online databases including Google Scholar, PubMed and BMJ for articles and review papers using keywords of “dietary intake”, “nutrition” and “postpartum”. The inclusion criteria were articles published between 2000 – 2021, published reports, available full text articles and studies conducted among postpartum women. The articles published in languages other than English were excluded. Titles and abstracts screening were done based on the inclusion and exclusion criteria and the relevancy to the objectives of this review. Then, a total 47 articles were included in this review after the authors thoroughly checked the full articles. Five themes emerged from the chosen articles which include weight retention, traditional postpartum dietary practice, psychosocial support, mental health problem and breastfeeding.

RESULTS

Macronutrient and micronutrient

Generally, there is an increment of total fat intake at 6 months postpartum compared to pregnancy period, regardless of its measurement as an absolute intake or a proportion of energy.¹¹ It is related to the poor diet quality after delivery, mostly due to high intake of nutrient-poor and energy dense foods such as cakes, ice cream and cookies.¹² However, there is no consistency of evidence regarding changes in protein and carbohydrate intake from the pregnancy to the postpartum period.¹¹

Studies in the United Kingdom showed that the micronutrient intake during pregnancy was not significantly different from the postpartum period.¹³ On the contrary, another study found that the intake of micronutrients including vitamins A, B, C, D, iron, zinc and calcium reduced from the third semester to postpartum period.¹² The reduction can be explained by the decrease in vegetables and fruit intakes which are the primary source of micronutrients. Besides, there is also a decline in supplement use among women after childbirth.¹²

In terms of supplementation during the postpartum period, despite the lack of evidence from randomized control trials, the World Health Organisation recommended iron and folic acid supplements for at least 3 months postpartum.¹⁴ It is based on the high anaemia prevalence during postpartum, especially in countries with high maternal mortality rate. The report¹⁴ acknowledged that there are side effects from the oral iron supplement, but they are not life-threatening.

Weight retention

Generally, postpartum weight retention is defined as the difference between pre-pregnancy weight and weight after delivery.¹⁵ Postpartum weight retention is a concern because it contributes to the long-term development of obesity among women in reproductive age and interpregnancy weight gain.³ In addition, there is a causal relationship between high postpartum weight retention with gestational diabetes, stillbirth and large-for-gestational-age infant in the subsequent pregnancies.¹⁶

A systematic review estimated that the mean weight retention among five Asian countries was between 1.56 - 4.1 kg at 6 months postpartum, with the Chinese showed the highest weight retention.¹⁷ In terms of prevalence, 33.8% of Malaysian women retained more than 5kg at 6 months postpartum.¹ Whereas in the West, a study in Amsterdam discovered that one in five women had a weight gain of more than 5 kg at one year postpartum.¹⁸

The link between dietary intake and postpartum weight retention was previously established. Women who exceed the local dietary recommendation of saturated fatty acid had a more than threefold higher odds (OR = 3.40, 95% CI: 1.04 - 11.11) to retain more than 5 kg at one year postpartum compared with others.¹⁸ High energy intake in diet was associated with weight retention of more than 5 kg at 6 months postpartum among Malaysian women.⁸ However, multivariable analysis in the study did not find significant associations between postpartum weight retention and protein, carbohydrate or fat intake. The same study also found that breastfeeding for at least 6 months reduces postpartum weight retention⁸ because

women burn approximately 500 kcal per day while breastfeeding.¹⁹

A cohort study in the United States showed that total energy intake positively associated with postpartum weight retention.²⁰ Instead, the dietary pattern based on the Mediterranean Diet Score and the Alternative Healthy Eating Index-2020 was not associated with postpartum weight retention. Thus, it suggested that quality of food consumption have a minor role compared to its quantity.

Nonetheless, another study in Lebanon and Qatar showed that a high intake of proteins, trans fat, cholesterol, sodium and lower intakes of polyunsaturated fat were linked to a greater postpartum weight retention when adjusted to energy intake.²¹

A multi-ethnic cohort study²² among antenatal women in Norway discovered that women with ethnic origin from South Asia, Middle East and Africa had significantly higher postpartum weight retention than Western European women. Notably, an unhealthy diet was not associated with weight retention.²² Perhaps, the ethnic groups altered their traditional diet to an unhealthier Western diet after migration.

Besides, hormone also plays a role in determining the postpartum weight retention. Plasma leptin has been suggested as a predictor of postpartum weight retention. The concentration of leptin increases with increasing adiposity.²³ A cohort study among 545 women discovered that South Asians who have higher plasma leptin in early pregnancy, retained more weight and subcutaneous fat at 14 weeks postpartum compared to the Europeans.²⁴ Besides, the South Asians also have slower decline of plasma leptin than the Europeans. On the other hand, a study among Korean women showed that gestational plasma leptin level is not significantly associated with postpartum weight retention.²⁵ This discrepancy may be due to small number of sample size (n=75) in the Korean study.²⁵

In terms of intervention, a meta-analysis showed that nutritional intervention during postpartum had a

significantly greater weight reduction compared to usual standard care.²⁶ It was found that characteristics of effective intervention include monitor weight regularly, combine both diet and physical activity in the intervention and the intervention is delivered by health professionals.^{26, 27} Surprisingly, the magnitude of weight loss was not affected by intervention intensity (duration and number of sessions) and setting (individual or group).²⁷ The evidence of the characteristics of an effective nutritional intervention can help policymakers in developing intervention at their local setting.

In addition, intervention during the postpartum period should consider women's acceptability. A qualitative study on postpartum women who had pre-pregnancy BMI ≥ 30 kg/m² observed that they were aware that the initiative to change lifestyle should come from them.⁷ However, they perceived that eating habits and weight is not a central issue at that point in their lives. Their focus was more on the new routine of baby care.

Traditional postpartum dietary practice

Cultural influences also play an essential role in determining postpartum diet. This area was explored extensively by various studies,^{10, 28-32} this article will only give a general overview of the findings.

In non-Western culture, the emphasise is on the women themselves and social support rituals by family members (enthnokinship) for an extended period.²⁸ During this period, the women receive extra care and they are prohibited from doing household chores. Therefore, the non-Western culture is collectivistic while Western culture is more individualistic.²⁹

Most traditional dietary practices are linked to non-Western cultures. The traditional dietary practices are distinct in between countries, but they share few similarities. Women in the non-Western culture are prescribed a period of rest which they are prohibited from doing household chores and need to adhere to certain traditional dietary practices.³⁰ In a systematic review of publications from 20 countries, the postpartum period

ranges from 21-35 days.³⁰ A 40-day rest period is similarly practised in countries in various countries such as Mexico, Malaysia, South Africa, and Japan.³⁰

However, the length of the rest period is also determined by socio-economic status. Even though most Cambodian women had a rest period for 2-3 months, women from the high socioeconomic group had extended rest period because they can afford to reduce their normal activities for a longer time.³¹

The concept behind the traditional dietary practice is that the local food is categorised into 'hot' and 'cold' regardless of the food's real temperature.³⁰ Different cultures have its unique classification, as shown by the comprehensive summary on food taboos during the postpartum period in Southeast Asia countries.^{10, 32} Since the postpartum period is considered as cold and vulnerable, consuming 'hot' food will counter by restoring the balance.³⁰

Adhering to the traditional dietary practice is believed to avoid immediate ill-health on both postpartum women (e.g. postpartum haemorrhage, swollen and watery uterus, fatigue or digestive disorders) and newborn (e.g. lost consciousness and late umbilical cord dryness).³⁰ Non-adherence to this practice can also cause illness in later life. For instance, some women regret in later life when they experience multiple joint pain due to the non-adherence to these traditional practices.³⁰ The traditional practice is also intended to restore sexual and reproductive function, boost mothers' energy, escalate wound healing and return to pre-pregnancy weight.²⁹

Psychosocial support

In non-Western cultures, postpartum women receive social support from mothers, mothers-in-law, female relatives, traditional birth attendants or husbands. Women who are from the middle or upper socio-economic class can hire people to provide necessary support. Female predominantly provide the social support because they have more experience and men have fear of contamination.³⁰

Social support not only helps postpartum women to prepare meals but it also boost their self-efficacy in which they believe that they have the capacity to make healthy choices in their daily lives.³³ With increasing self-efficacy, individuals expect positive outcomes, overcome barriers and be motivated to achieve their purpose.³⁴

In a conceptual model proposed by Phillips *et al.* (2012), social support was also acknowledged as one of the predictors for maternal behaviour such as dietary quality, breastfeeding and physical activity.³⁵ Subsequently, these behaviours will affect the maternal weight post-delivery.

A study on 1356 postpartum women in the United States found that high support from partners was associated with high fibre and low trans-fat intake among these women.³⁶ This finding suggests that partners may assist the new mothers in the activity daily living such as buying groceries, preparing healthy food and eating healthy food together. However, the PrimeScreen dietary survey used in this study did not assess the total diet to measure absolute nutrient intake. In addition, this study revealed that social support from the partner, families and friends was also related to high physical activity.

A qualitative study showed that postpartum women felt helpless, lonely and have no self-care time as they focus on infant care. They use food to relieve displeasure as a compensatory mechanism because they are unable to evaporate their feeling adequately. Hence, family members need to support them by helping them with the new routine to avoid this unhealthy eating behaviour.⁷

Mental health problem

Nutrition also plays a role to prevent postpartum depression. Dietary fat is not solely for energy source but also has an impact on brain function. Intake of polyunsaturated fatty acids (PUFAs) including docosahexaenoic acid (DHA) has a prominent role in receptor function, membrane fluidity, neurotransmitter uptake and signal transmission.³⁷ The PUFAs insufficiency can affect the serotonin neurotransmitter, which is associated with depression pathophysiology.³⁷

Since human have limited ability to synthesis long-chain PUFAs, they should be consumed from various sources. They can be found in high concentration in aquatics (mackerel, tone and code), animal sources (fish, meat, egg and milk), plant sources (herbs, spices and fruit seeds).³⁸ Besides, nutrients such as folate and vitamin-B12 is also associated with postpartum depression.³⁷ Thus, nutritional intervention may have a potential to prevent and treat postpartum depression.

Teo *et al.* (2018) showed that the traditional Indian dietary pattern had a protective effect against postpartum, which might be explained by the high vitamin-B in Indian food such as legumes and ethnic bread.⁵ Furthermore, the soup-vegetable-fruit dietary pattern was associated with less postpartum anxiety symptoms.⁵ It is most likely because vegetables and fruits which are rich in antioxidants, can help to counter balance the effect of free radical oxidants and provide neural protection.³⁹

A study in China on 924 postpartum women showed that high food diversity (more than 6 types of food) had a negative association with depression status. The possible explanation was food variety can achieve the adequacy of nutrients to reduce the risk of depression.⁴ Unfortunately, strict adherence to the traditional postpartum food restrictions may reduce their food choice and food diversity. Subsequently, this will put them at higher risk of depression.

Breastfeeding

The energy and nutritional requirement during breastfeeding differ from the general population. Breastfeeding women need approximately 500 additional kcal/day compared to non-pregnant women.¹⁹ However, maternal calorie, macronutrients, dietary fibre and water intake during the postpartum period do not meet the recommended values.¹⁹ It can be attributed to the restriction of food types and quantity among those who practise the traditional confinement.¹⁹ The levels of fat- and water-soluble vitamins in breast milk are reduced when there is a maternal vitamin deficiency. However, calcium, phosphorus and magnesium levels in breast milk are unrelated to the maternal level and diet.⁴⁰

Breastfeeding during the postpartum period has impact on postpartum weight retention. A study among Malaysian women discovered that continuing breastfeeding until six months had significant lower postpartum weight retention.⁸ Another study showed that the longer the breastfeeding period, the lower the postpartum weight retention.⁴¹ Among those who breastfeed for 6 months, every month of breastfeeding will contribute to 0.44 kg of weight loss compared to only a month of breastfeeding. It can be explained by the usage of maternal body stores if they do not take additional calories during breastfeeding.⁴⁰

Traditional practice during the postpartum period also influences nutrition among lactating mothers. There is a traditional belief that specific food intake may change breastmilk taste. For example, women in rural Indonesia believe that eating fish can make breastmilk to have an unpleasant smell and bad taste.⁴² However, baby rarely reacts to the food consumed by the mothers; thus it is not justified to avoid particular foods during breastfeeding.⁴³

Certain traditional dietary practice during postpartum can be harmful to breastfed children, leading to morbidity and mortality. For example, in Laos, postpartum women restrict their diet to long soaked polished glutinous rice.⁴⁴ It results in maternal thiamine deficiency and low thiamine in breastmilk. Consequently, the fully breastfed infant are at higher risk of infantile thiamine deficiency which can cause severe heart failure.⁴⁴

In Laos, an evaluation of interventions to reduce the traditional food restriction among postpartum women was conducted.⁴⁵ It showed that women showed positive dietary changes if village health volunteers disseminate correct information and community members participate in planning, implementing and evaluating the program. In addition, the message conveyed via mass media is also effective, especially when it is consistent with the government policy (i.e. food restriction during the postpartum period is harmful and food diversity is recommended).⁴⁵

Intervention to alter harmful traditional practice is challenging. The first step is to train healthcare

professional with evidence-based recommendations regarding dietary intake during postpartum.⁴⁶ It is because health facility attendance can be a golden opportunity for nutritional education to the mothers. A survey was conducted on Thai nurses who worked at antenatal clinic, delivery room, postpartum ward and community to explore nurses' perspective of postpartum practices. Despite recommending a balanced diet of nutritious food to patients, they also emphasize several foods restriction.⁴⁷ Approximately one in four of the nurses agreed that postpartum women should practice the traditional food restriction.⁴⁷

CONCLUSION

Postpartum dietary intake has been to influence maternal and child health. An unhealthy diet during this period can lead to cardiovascular disease and mental health problem among the mothers, and malnutrition of the infants. Besides, a balanced and nutritious diet is essential to support breastfeeding practice. Despite higher diet requirement, lack of social support and some harmful traditional dietary practices are the barriers which hinder postpartum women from getting optimal nutrition. The postpartum period offers a golden opportunity for health education and health promotion. Therefore, policymakers should plan for effective nutritional intervention because it is a high return investment for future community health. However, for better acceptance by the community, the intervention should be culturally sensitive to respect the local tradition and consider emotional fragility during this period.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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