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Energy Consumption of Lactating Mothers: Current Situation and Problems

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Abstract

Recommendations on the adequacy of nutrient intake indicate that lactating mothers have higher nutritional needs than do pregnant mothers. High nutrient intake is necessary to help mothers recover after childbirth, produce milk, and maintain the quantity and quality of breast milk. It also prevents maternal malnutrition. Research has shown, however, that the dietary energy consumption of mothers during lactation was significantly lower than that during pregnancy. The current study explored the factors associated with decreased nutritional intake during maternal lactation. The study was conducted in March–April 2013, and the subjects were mothers with infants aged >6 months. Results revealed that the factors causing low dietary energy consumption among breastfeeding mothers were poor nutritional knowledge and attitude toward high energy intake requirements during lactation, lack of time to cook and eat because of infant care, reduced consumption of milk and supplements, dietary restrictions and prohibitions, and suboptimal advice from midwives/health personnel. Beginning from the antenatal care visit, health personnel should conduct effective counseling on the importance of nutrient intake during lactation. Advice should be provided not only to mothers, but also to their families to enable them to thoroughly support the mothers as they breastfeed their infants.

Abstrak

Situasi dan Permasalahan Asupan Energi Ibu Laktasi. Berbagai rekomendasi menunjukkan angka kecukupan gizi yang lebih tinggi untuk ibu laktasi dibandingkan ibu hamil. Kebutuhan gizi yang tinggi diperlukan untuk pemulihan kesehatan ibu setelah melahirkan, memproduksi ASI, menjaga kuantitas dan kualitas ASI agar pertumbuhan bayi optimal, dan menjaga tubuh ibu dari kekurangan gizi. Namun, penelitian menunjukkan bahwa asupan energi ibu saat laktasi justru signifikan lebih rendah dibandingkan saat hamil. Studi kualitatif ini bertujuan untuk menggali faktor yang berhubungan dengan penurunan asupan energi ibu laktasi. Penelitian dilakukan pada Maret-April 2013 terhadap informan ibu yang mempunyai bayi berusia >6 bulan dan dipilih secara purposif. Hasil penelitian menunjukkan bahwa faktor penyebab rendahnya asupan energi ibu laktasi adalah kurangnya pengetahuan dan sikap mengenai tingginya kebutuhan gizi saat laktasi, kesibukan ibu mengurus bayi sehingga membuat ibu merasa terlalu letih untuk masak dan makan, berkurangnya konsumsi susu dan suplemen, adanya pantangan makan, serta kurangnya informasi dari tenaga kesehatan mengenai jumlah kebutuhan gizi ibu laktasi. Diharapkan agar tenaga kesehatan bisa lebih optimal memberikan nasihat akan pentingnya konsumsi zat gizi yang cukup (jenis maupun jumlah), dan tidak adanya pantangan makan selama menyusui sejak kunjungan antenatal. Nasihat agar disampaikan juga kepada keluarga ibu agar mereka dapat membantu memfasilitasi ibu untuk menyusui.

Keywords: energy consumption, nutritional status during lactation

Introduction

National and international nutrition recommendations indicate that lactating mothers have higher nutrient adequacy requirements than do pregnant women.[1-3] The recommendations advise 500 kcal/day of additional energy intake or 2500 kcal/day of total energy intake for lactating mothers but recommend 300 kcal/day or 2200 kcal/day, respectively, for pregnant women. Breastfeeding mothers should increase dietary energy intake above that recommended for normal adult women to support breast milk production and prevent maternal malnutrition.[4]. Additional energy is required to produce breast milk and facilitate maternal recovery after childbirth. Balanced dietary intake during breastfeeding is critical for mothers and infants to maintain optimal health.[5] Olson,[6] showed that successful breastfeeding mothers usually have a balanced diet.

During pregnancy, mothers accumulate 2–4 lbs of body fat stores (reserved fat) that are used to satisfy their energy requirements during breastfeeding. Fat stores can provide up to 200–300 kcal/day, which is sufficient to enable mothers to produce milk for 3 months. Strode, Dewey, and Lonnerdal's,[7] study in the US on mothers with good nutritional status showed that the reduction in the dietary energy intake of mothers 2 weeks postpartum does not immediately affect milk production. To enable exclusive breastfeeding for 6 months, however, additional dietary energy intake is required, especially in the first 3 months of lactation.[8] During milk production, lack of maternal nutritional intake first causes the body to use up energy stores before negatively affecting breast milk.[9] Changes in the breast milk of malnourished mothers initially occur in the form of decreased milk volume followed by diminished milk quality.[8] Breast milk quality and quantity should always be well maintained because low breast milk intake causes growth problems in infants.[10] The neuro-psychological or cognitive development of infants can also be disrupted.[11]

In reality, nursing mothers often fail to satisfy their nutritional needs.[5,12]. Fikawati's,[12] study in Jakarta and Depok showed that daily dietary energy intake during lactation was significantly lower (1,959.8 kcal/day) than that during pregnancy (2,241.0 kcal/day). Fikawati,[12] raised three important points: first, an unexpected finding is that the amount of lactating mothers' dietary energy intake was considerably lower than the recommendation (2,500 kcal/day); second, dietary energy intake/day during lactation was significantly lower than that during pregnancy; and third, mothers who successfully predominantly breastfed for 24 weeks exhibited significantly higher energy intake (2,108.05 kcal/day) than did mothers who predominantly breastfed for less than 24 weeks (1,830.15 kcal/day).[12] This result aligns with that of Gonzales-Cossio *et al.*,[13] who reported that mothers with high energy intake can more successfully breastfeed exclusively for 20 weeks postpartum than can mothers with low energy intake.

The above-mentioned issues are caused by a number of possible factors. (1) Some of the factors are associated with the effort exerted toward returning to pre-pregnancy weight.[11] (2) Problems are also caused by the quality of diet during lactation in relation to weight gain during pregnancy and maternal attitudes toward their weight after childbirth.[14] (3) Moreover, mothers' focus is directed toward health care and nutrition for their babies rather than for themselves.[15] Studies have demonstrated the lack of attention of mothers to their own health.[6,12]. Finally, certain beliefs and traditions regarding breastfeeding are harmful to mothers.[16,17] Given this backdrop, an important requirement is to determine the specific reasons why nutrient intake during lactation is lower than that during pregnancy. This approach enables the appropriate design of solutions and intervention methods for resolving maternal nutrition and lactation problems. The current work is a qualitative follow-up study that aims to comprehensively investigate the various factors associated with the low dietary energy intake of mothers during lactation. The investigation was conducted on the basis of Fikawati's,[12] conclusions.

Methods

This study, conducted in Jakarta and Depok in March–April 2013, used qualitative research methods, with the researcher acting as an observer. The study subjects were mothers with infants aged >6 months and were selected by purposive sampling, with the principles of suitability and adequacy based on Fikawati.[12] A total of 14 mothers were chosen and divided into two groups. The first comprised 8 mothers who successfully predominantly breastfed their infants (aside from breast milk, limited quantities of water-based drinks, such as water, tea, and juice, can be consumed by infants; they are not allowed to drink formula) for 24 weeks (hereinafter referred to as predominant breastfeeding subject). The second group consisted of 6 mothers who did not succeed in predominant breastfeeding for 24 weeks (hereinafter referred to as partial breastfeeding subjects). Privacy and confidentiality were guaranteed by excluding the subjects' names or specific personal identity pointers from the data collection, analysis, and report. In-depth interviews were held, and the results were recorded using the EZ-Text qualitative data processing software. The interview results were examined by content analysis. Statements that are relevant to the conclusion of each interview theme were recorded as direct quotations. The data on predominant breastfeeding and partial breastfeeding subjects were compared. Triangulation was conducted by asking experts to review the data and provide feedback on the results and discussion.

Results and Discussion

This section discusses several factors associated with the low dietary energy consumption of lactating mothers under the conditions described. The discussion is based on Green and Kreuter's[18] framework, which categorizes variables into predisposing factors (age, education, occupation, and parity), enabling factors (access to information and media), and driving factors (support health officers). The section also describes the participating mothers' diets during lactation.

***Predisposing Factors*: Age, education, job, parity.** The age, education, and parity of the predominant breastfeeding and partial breastfeeding subjects were nearly identical. The average age of the mothers in both groups was 28 years, and their education was generally high school graduate level or higher. The parity of the

two groups was generally the same (i.e., first child). Differences were found in terms of employment; the predominant breastfeeding subjects were housewives, whereas the partial breastfeeding subjects were private sector employees.

Maternal employment status is one of the problems encountered in exclusive or predominant breastfeeding. Barriers to 6-month exclusive breastfeeding are associated with allowable time off from work, which lasts only 3 months, and the fact that the workplace is unprepared for facilitating exclusive breastfeeding among female employees.[19] Working mothers reduce the duration of breastfeeding. Fein and Roe,[20] reported that at 3 months postpartum, mothers who work full time breastfeed for an average of only 8.6 weeks.[20]. This result may be attributed to the desire of the mothers to acclimate their infants to bottle feeding once they resume work. For 2-month old infants, mothers start introducing formula milk. Seward and Serdula,[21] stated that the working status of mothers is one of the drivers of infant formula feeding and the reduction in breastfeeding duration and frequency.

Knowledge of food consumption–type. The knowledge of the lactating mothers about the types of food that should be consumed was limited to the addition of vegetables and legumes. Among the subjects, only two were knowledgeable about balanced nutrition. Most of the predominantly breastfeeding subjects knew that vegetables, including nuts, should be consumed during lactation. The primary factors that drove these mothers to include vegetables and nuts in their diet were the breastfeeding benefits that these food types provide.

> *"Must eat a lot of vegetables to facilitate breast-feeding." (predominant breastfeeding subject 3)*
> *"…nuts and vegetables soup." (predominant breastfeeding subject 7)*
> *"…that should be eaten are fruits and nuts." (predominant breastfeeding subject 6)*

This result suggests that the general guidelines for balanced nutrition have been only minimally disseminated among mothers. Mothers who consume certain types of foods, such as green vegetables, generally do so to facilitate milk production.

Knowledge of food consumption–quantity. Nearly half of the predominant breastfeeding subjects were aware that nutritional needs for lactation are increasing. The respondents stated that increased nutritional intake for lactation is aimed at satisfying the nutritional requirements of mothers and infants and at ensuring optimal infant growth.

> *"Yes, more for nursing mothers, to meet the nutritional needs." (predominant breastfeeding subject 3)*
> *"...while breastfeeding, due to the growth of the baby." (predominant breastfeeding subject 7)*

Approximately three of the predominant breastfeeding subjects stated that nutritional needs during pregnancy and lactation are the same. Two subjects stated that nutritional needs are higher during pregnancy than during lactation. In their opinion, the embryo needs more nutrition for growth and development.

> *"...equally important and same quantity (between pregnancy and lactation)." (predominant breast-feeding subject 5)*
> *"...need more during pregnancy, due to growth and development process during pregnancy, a healthy baby, and for brain development." (predominant breastfeeding subject 8)*
> *"…more during pregnancy, to supply nutrition for two (persons)..." (predominant breastfeeding subject 7)*

In the partial breastfeeding group, only one subject was aware that the nutritional needs of lactating mothers are higher than those of pregnant women. This subject stated the foods consumed by a mother affects milk production. One of the respondents deem nutritional needs during pregnancy and lactation to be the same, whereas two other respondents said that nutritional needs during pregnancy are higher because babies require more nutrition for growth as a fetus.

> *"...more quantity and frequency of foods and eating during pregnant, to supply vitamin to embryo." (partial breastfeeding subject 3)*
> *"...more when pregnant because it needed for baby growth during pregnancy..." (partial breastfeeding subject 6)*

Not all the mothers knew that nutritional requirements are higher during lactation than during pregnancy. One of the opinions was that during pregnancy, mothers need more nutritional supply for the growth and development of fetuses. Information on nutritional needs being higher during lactation than during pregnancy has not been effectively disseminated to the public by health information sources, such as health officers and the media. Knowledge is one of the influencing factors for personal attitudes and actions, including health behavior.

Attitude. Similar to the partial breastfeeding subjects, more than half of the predominant breastfeeding subjects rejected the idea that mothers' nutritional needs increase during lactation. This attitude originates from the mothers' assumption that a baby needs more nutritional supply for its development during pregnancy than after birth.

> *"...While pregnant, foods consumed by mother is for the mother and the fetus..." (predominant breastfeeding subject 7 and partial breastfeeding subject 6)*

> *"...Precisely the statement lactating mother have to consume enough nutrition but no need to be as much as during pregnancy is more correct, because pregnancy is very important for fetal growth." (partial breastfeeding subject 3)*

Motivation to diet. In terms of motivation, almost all the predominant breastfeeding and partial breastfeeding subjects expressed no intention to go on a diet during lactation. Only one partial breastfeeding subject articulated a desire to go on an immediate diet during lactation. The mothers do not want to go on a diet out of fear that dieting may affect the health of their babies, that they will feel exhausted as they care for their infants, and that toxic effects may occur. The mothers also stated that they lose weight regardless of diet.

> *"There is no intention to diet, because of concerns about the baby..." (predominant breastfeeding subject 2)*
> *"No...basically never been fat. After deliver baby, weight keep falling instead, taking care of children..." (predominant breastfeeding subject 3)*
> *"Nah no intention of dieting while breastfeeding..." (partial breastfeeding subject 3 and predominant breastfeeding subject 8)*
> *"There is no intention to diet while breastfeeding, as it gets the info from a friend that a diet when breastfeeding was not good, because removing toxins" (partial breastfeeding subject 5)*

Beliefs. Almost half of the predominant breastfeeding subjects were not prohibited from consuming certain foods. The remaining subjects avoided eating some foods, such as seafood, nuts, and dairy products, because their children had allergies (skin redness) when the mothers consumed these foods. One subject avoided foods with yeast (containing alcohol), and two others avoided eating spicy foods.

> *"The point is to avoid seafood, nuts, and dairy products due to allergic children." (predominant breastfeeding subject 2)*
> *"Alcoholic beverages, avoid foods contain yeast..." (predominant breastfeeding subject 3)*
> *"There should not be eating spicy food, the baby would diarrhea. Was told by mama [respondent's parent]..." (predominant breastfeeding subject 8)*

Meanwhile, all the partial breastfeeding subjects were advised to avoid certain food types while breastfeeding. They were generally restricted from eating spicy foods, acidic foods and "cold vegetables" (i.e., chicory, cabbage, and water spinach, according to the respondents), as well as fruits, such as pears and watermelon. One subject avoided eating all fruits, except apples.

> *"It is not allowed to eat spice, noodle, acidic foods, will make the baby get stomachache. Told by parents." (partial breastfeeding subject 1)*
> *"Not allowed to eat spicy foods, the baby could be diarrhea…Should not eat chicory and cabbage because its belong to cold veggies group, the baby could be bloating. Told by parents." (partial breastfeeding subject 2)*
> *"Not allowed to eat any kind of fruits except apple, because it could make the baby get stomachache. People say so..." (partial breast-feeding subject 3)*
> *"Not allowed to eat cold fruits, such as pear and watermelon. Not allowed to eat coconut milk. Does not really know the reason, my parents just tell so..." (partial breastfeeding subject 4)*

Some mothers argued that certain foods are prohibited. The mothers generally limited the consumption of spicy foods for fear of causing diarrhea in their infants. Some of the mothers abstained from eating certain foods because of negative effects on babies, such as allergies. In some areas in Indonesia, culture dictates the avoidance of certain types of foods; in Central Kalimantan, for example, specific types of fish are believed to cause the production of foul-smelling breast milk and abdominal pain in breastfed infants.[22]

Parents were the main sources of information regarding foods to be avoided by nursing mothers. This result corresponds with that of Rahmadani, Syahrial, and Andayani,[23] who reported that parental endorsement during pregnancy, delivery, and lactation determines a mother's attitude toward engaging in health-related behavior. Close relationships and experience contributed to the credibility of parental advice. Although the information provided by parents does not necessarily accord with theory, the persistence with which parental advice is given urges lactating mothers to avoid consuming vegetables and fruits because of the "coldness" of these foods. This decision presents nutritional disadvantages for lactating mothers and their infants.

***Enabling Factors*: Accessibility of information and media.** The predominant and partial breastfeeding subjects generally obtain information about food types that should be consumed during lactation through self-search (Internet, SMS, e-mail, books), from parents, and from their own experiences (allergic symptoms in babies).

> *"... Info from social media, follow many doctor's twitter account so that not need to spend some special time to read it." (predominant breastfeeding subject 2)*
> *"... If suddenly curious to find out then I'll find out, usually from a Bebe club that often calling told about food intake information ... Also like to send an e-mail as well, but just from the text that reads." (predominant breastfeeding subject 3)*
> *"I would often go to the Internet, more happy open yourself via Google ... can focus more infonya Kismet." (partial breastfeeding subject 1)*

The subjects recruited for this study live in cities with high levels of education; thus, they are familiar with different forms of media. The Internet is the medium most frequently consulted by the mothers because of the simplicity that it presents in searching for desired information. According to Martin,[24] the Internet has become the primary source of health information. Larsson's,[25] study on Swedish pregnant women indicated that 91% of the respondents access the Internet to find information on pregnancy health.

***Reinforcing Factors*: Support from health officers.** Health workers' support in providing information and facilitating breastfeeding among mothers is a crucial component. However, nearly half of the predominant breastfeeding subjects did not receive advice regarding lactation nutrition from health professionals. Only half of the subjects were advised to increase the intake of certain nutrients, such as protein. Two predominant breastfeeding subjects were advised to increase calcium intake and encouraged to consume foods that contain carbohydrates, fats, vitamins, and minerals.

> *"No message, because the focus is only until delivering baby, not to postpartum." (predominant breastfeeding subject 2)*
> *"Consumed calcium, protein, DHA, fat, vitamin C, B12, D, and A." (predominant breastfeeding subject 5)*
> *"Should eat more beans, drink green beans or soybeans juice." (predominant breastfeeding subject 7)*

Similarly to the partial breastfeeding subjects, as many as three of the predominant breastfeeding mothers did not acquire recommendations from health professionals. Two mothers were told to increase the consumption of protein, and one was advised to increase iron intake. For another predominant breastfeeding subject, health professionals recommended increased consumption of water but not milk.

> *"Should have to eat more veggies, eggs, and soybeans, which contain a lot of protein." (partial breastfeeding subject 2)*
> *"The message is have to eat more veggies, fruits, beans. Drink a lot of mineral water without drinking any milk." (partial breastfeeding subject 5)*
> *"The message is to frequently consume sangobion to give additional iron in the blood." (partial breastfeeding subject 6)*

This study found that not all health officers who were visited by the mothers provided advice related to nutritional consumption during lactation. The information delivered by a midwife/health worker generally revolved around the types of food that should be consumed. Midwives/health workers almost never state that food consumption during lactation should be higher than that during pregnancy; none of these practitioners also explain the considerably high need for energy for milk production. This deficiency may be related to the fact that the handbooks and educational materials on child health published by Ministry of Health Republic of Indonesia do not sufficiently emphasize the importance of food intake during lactation.[26-28] The mothers who participated in this study also believe that midwives play an important role in only during child delivery and not in postpartum care.

Diet during lactation. In general, differences between the predominant breastfeeding and partial breastfeeding mothers were found in terms of food consumption frequency. The partial breastfeeding mothers exhibited low consumption frequency per day than did the predominant breastfeeding mothers. The predominant breastfeeding mothers ate with a frequency equal to that during pregnancy (i.e., at least 3 times a day). More than half of the predominant breastfeeding subjects stated that their intake increased during lactation because they became hungry more quickly after breastfeeding sessions.

> *"...3 times a day, but added green beans Energen every evening and morning." (predominant breastfeeding subject 5)*
> *"...The same, but more portion because easy to feel hungry." (predominant breastfeeding subject 6)*
> *"...Can eat up to 4 times a day. So more often to eat because hunger. During pregnancy eating normally, 3 times a day or even 2 times while breastfeeding, should add eating fry vegetables." (predominant breastfeeding subject 3)*

Only one predominant breastfeeding subject had lower intake during lactation. Such behavior was motivated by her belief that a mother requires higher intake during pregnancy to satisfy her and her infant's nutritional needs. Most of the partial breastfeeding mothers consumed food at a lower frequency during lactation. Even though some of them ate frequently, they did so to a relatively lesser extent than did the predominant breastfeeding mothers. Two partial breastfeeding subjects decreased intake during lactation and ate more frequently during pregnancy. This decision is attributed to the fact that the subjects did not consume snacks and to their preconception that fetuses need more vitamins than do newborn babies.

> *"...3 times a day, no snacks. More...more often eat while pregnant, due to give vitamins to the fetus." (partial breastfeeding subject 3)*

One subject reported decreased appetite due to exhaustion or fatigue from breastfeeding. This subject preferred to rest than eat. During pregnancy, she could freely engage in many activities and never experienced difficulties in managing meal times.

> *"...Many and frequent eating during pregnancy because the baby may be still in the stomach and my activities are still a lot of spare time. If I breastfeed often exhausted, appetite not so good and yes I would choose to sleep…" (partial breastfeeding subject 1)*

Another problem raised by the respondents is the limited time for cooking and eating. Their meal times were irregular because they had to wait for their babies to sleep before they can eat. The time allotted for cooking was also limited because the mothers spent nearly all their time taking care of their babies. The same result was derived by a study in Nigeria, in which the mothers who successfully breastfed for 6 months were those who had relatively large families; they had many 'mother helpers', leaving the mothers more time to rest and breastfeed.[29]

> *"...Eat 3 times a day but not regularly because waiting for the baby to sleep..." (predominant breastfeeding subject 2)*
> *"...The difficulty is not enough time to cook so we have to buy and so do not know the nutritional content…" (predominant breastfeeding subject 2)*
> *"...Now there is help in cooking, if not, what a trouble..." (predominant breastfeeding subject 3)*
> *"...It is difficult to meet the nutritional needs because of the time, if I do not cook so I buy..." (partial breastfeeding subject 1)*

During lactation, the mothers' consumption of milk and supplements decreased in both groups compared with the level of consumption during pregnancy. This finding also explains why the dietary energy and nutrient intake during pregnancy was higher than that during lactation; the contribution of milk (for energy and proteins) and supplements (for micronutrients) is significant.

Conclusions

This study revealed four main factors that cause low dietary energy intake during lactation. First, the mothers consider nutritional needs to be higher during pregnancy than during lactation. During pregnancy, an infant is still in the womb and a mother is required to eat for two people, whereas during lactation, the infant is separated from the mother's body and food can be directly given to the baby. The mothers were unaware that the nutrition required to produce milk is very high. Second, the mothers were too exhausted to eat properly. The lactating mothers' diets became irregular because their time and effort were mostly devoted to taking care of their infants. Some of the women were exhausted and had low appetite; these women preferred to rest than eat. Third, the mothers had limited time to cook and eat. During pregnancy, the mothers were generally able to freely engage in activities and encountered no problems in food preparation. During the lactation period, however, the mothers were busy taking care of their babies and found little time for cooking and eating. Companions (e.g., parents, husbands, sisters, and maids) are critical in providing support for mothers; such assistance enables lactating mother to cook and eat. Fourth, the mothers stop consuming or reduce their consumption of milk and supplements after childbirth. Milk and supplements substantially contribute to the production of macro and micro nutrients. An important requirement is for health workers/midwives to provide optimal advice on the importance of adequate nutritional intake (type and amount) and proper food consumption (e.g., abstinence from certain food types) during breastfeeding. Such advice should be given beginning from antenatal care visits. Advice should also be provided to family members (parents, in-laws, husbands) so that they can help assist mothers as they breastfeed. It is essential for families to understand the criticality of their roles so that mothers can take good care of their babies, as well as cook and prepare food for themselves to satisfy the required dietary energy intake during lactation.

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