



Interview with Prof. Man Sau WONG –

# Maternal nutrition in Hong Kong during breastfeeding



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**Prof. Man Sau WONG**

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- Nutrient adequacy among lactating women in Hong Kong
- Nutritional characteristics of human milk

Both World Health Organization (WHO) and United Nations Children’s Fund (UNICEF) recommend mothers worldwide to exclusively breastfeed their children for the first six months of life<sup>1</sup>. Among infants born in Hong Kong, the rates of breastfeeding and exclusive breastfeeding at 6 month of age in 2016 were 47.0% and 27.9% respectively. Both showed an increase compared to those born in 2014<sup>2</sup>. On the other hand, local data on the diet and nutritional characteristics of human milk in lactating women remains scarce<sup>3</sup>. In order to fill the data gap, Prof. Man Sau WONG from the Hong Kong Polytechnic University and her team have undertaken a study of how maternal diet affects the nutritional composition of human milk in Hong Kong<sup>3</sup>.



MSW: Prof. Man Sau WONG

R: Reporter

## R: How was the study conducted?

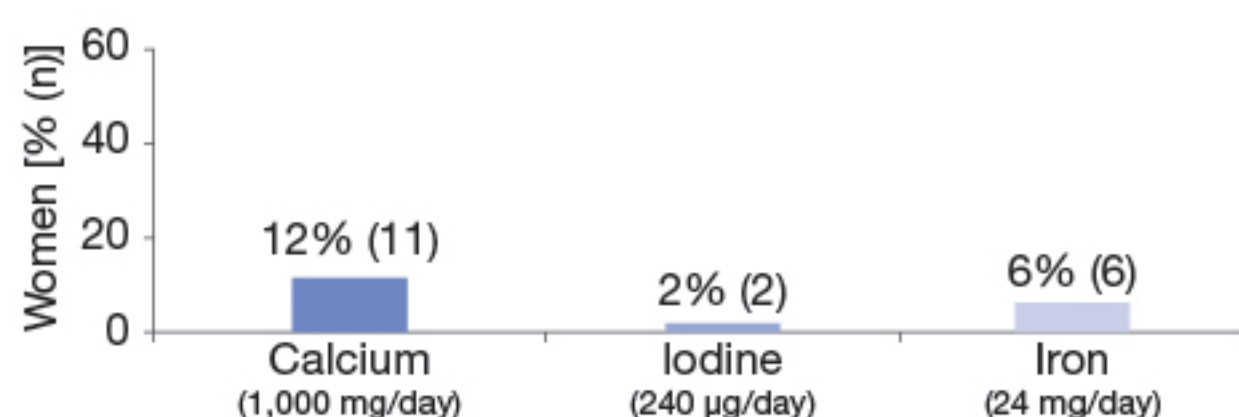
**MSW:** 95 healthy lactating women, age ranged from 19 to 40 years, were recruited between May 2014 and August 2015. Infants who were being exclusively and partially breastfed were included. Some infants were just two months old, while some over 1 year of age. A 3-day diet survey was conducted with the lactating women and samples of human milk were collected. Foremilk and hindmilk were combined. In this study, the levels of micronutrients (such as calcium, iodine and iron) and polyunsaturated fatty acids (PUFAs) [such as docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA)], in the maternal diet and the human milk collected were analyzed. In terms of baseline supplement intake, the lactating women who did not eat fish took DHA/omega-3 supplements. Also, some participants took micronutrient supplements.

## R: Were the levels of micronutrients in maternal diet and the human milk collected in the study adequate?

**MSW:** Results of the study showed that **the daily intakes of calcium, iodine and iron of these 95 lactating women were very low compared with the daily intakes recommended by the Chinese Dietary Reference Intakes (DRIs) 2013 (Figure 1)**. This suggested that dietary intakes of micronutrients among lactating women in Hong Kong might be grossly inadequate<sup>4, 5</sup>.

FIGURE

**1** Lactating women who met the daily intakes recommended by Chinese DRIs<sup>4,5</sup>



On the other hand, results demonstrated that about 51%, 48% and 74% of the human milk samples from 39 lactating women with 0- to 6-month-old infants met the adequate intake levels of calcium (200 mg/day), iodine (85 µg/day) and iron (0.3 mg/day) recommended by the Chinese DRIs 2013 respectively, suggesting that human milk of about half of lactating women might provide sufficient micronutrients to support the growth and development of their infants during the first six months of life<sup>4, 5</sup>.

## R: How about the DHA levels in maternal diet and human milk?

**MSW:** Results of the study showed that the average daily intake of DHA among the participants through diet exceeded the adequate intake level recommended by the Chinese DRIs 2013<sup>3</sup>. The primary sources of dietary DHA are deep-water predatory fish and other marine foods<sup>6</sup>. According to the diet survey, salmon was the most consumed type of fish. On the other hand, more than 80% of the human milk samples collected met the adequate intake level recommended by the Chinese DRIs 2013 for 0- to 36-month-old infants<sup>3</sup>. **In fact, fatty acids like DHA are among the nutrients in human milk that show extreme sensitivity to maternal nutrition<sup>7</sup>**. DHA is of particular importance in infant nutrition as DHA is accumulated specifically in the membrane lipids of the retina and the brain, and is essential for neural and visual development<sup>8</sup>.

## R: What were the eating habits of lactating women in the study?

**MSW:** Although most lactating women recruited to the study were well-educated, they seemed to lack the knowledge and awareness of healthy dietary behavior. In general, they had **low intakes of fruit and vegetables**. For some lactating women, eating well meant having a high-protein diet instead of a well-balanced one. Most of them tended to **overlook the importance of micronutrients, fiber and antioxidants**. Like many lactating women in Hong Kong, some had observed the Chinese traditional custom of ‘postpartum confinement’, a month-long period during which they are advised to **eat a diet of high-fat, high-protein foods** before being recruited to the study.





## R: Which groups of new mothers in Hong Kong are at increased risk of insufficient nutrient intake?

**MSW:** **New mothers from low-income households are vulnerable to poor nutrition.** In order to prioritize the welfare of their children, these mothers often sacrifice their own nutrition in times of economic hardship by eating less expensive, energy-dense foods that are filling but generally have lower nutritional values. Another group of new mothers who may run a risk of an inadequate intake of nutrients is vegetarian or vegan mothers who lack nutritional knowledge. It can be hard for these women to get enough nutrients, especially micronutrients.

## R: What foods are recommended for lactating women who have insufficient intakes of calcium, iodine or iron?

**MSW:** Calcium is needed to maintain healthy bones throughout life<sup>9</sup>. For those who do not get enough of calcium in their daily diets, adding milk is a simple way to increase their intake of calcium<sup>10</sup>. If they follow a vegan diet, they can choose calcium-fortified soymilk as one of the dietary calcium sources<sup>11</sup>. Iodine is needed for proper thyroid function. Seaweeds accumulate iodine from sea water and therefore are a good dietary source of iodine. An adequate consumption of seaweed can help prevent iodine deficiency disorders<sup>12</sup>. Iron is needed for red blood cells to carry oxygen throughout the body and a lack of iron in the body can lead to iron-deficiency anemia<sup>13</sup>. For women who do not get enough of iron in their daily diets, eating lean red meat occasionally might help them boost their iron intake<sup>14</sup>. Since vitamin C can increase the amount of iron that the body absorbs from plant sources such as oatmeal and green leafy vegetables like spinach, vegetarian and vegan mothers can try pairing iron-containing foods with vitamin C-rich foods<sup>13</sup>.

## R: In addition to promoting calcium homeostasis and bone health, what other roles does vitamin D play in women and their breastfed infants?

**MSW:** Unlike other fat-soluble vitamins, vitamin D is mostly produced in the skin when it is exposed to UVB while only a small amount comes from the food eaten<sup>15</sup>. Apart from its classic effects on calcium and bone homeostasis, it is now clear that vitamin D can also modulate the innate and adaptive immune responses. The vitamin D receptor is expressed on immune cells (B cells, T cells and antigen presenting cells) and these immunologic cells are all capable of synthesizing and responding to vitamin D. Deficiency in vitamin D has been found to correlate closely with increased susceptibility to infections and autoimmune diseases, and there is a strong positive correlation between the serum levels of 25-hydroxyvitamin D in breastfed infants and those in their mothers<sup>16,17</sup>. Therefore, **breastfed infants and their mothers are advised to expose themselves to sunlight for 15 minutes each day to ensure the adequacy of vitamin D production.**

## R: What were the challenges faced by these women in the study in breastfeeding?

**MSW:** Before enrolling in the study, many had encountered unpleasant experiences during breastfeeding in public, such as being stared at or asked to go elsewhere, while some had been queried by even their families as to why they continued breastfeeding for such a long period and their children did not gain weight. Therefore, they hoped to raise public awareness of the discrimination against them.

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*“The study is actually a snapshot of the dietary status of the general population.”*

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## Tips for healthcare professionals regarding advising lactating women to get sufficient nutrients:

- It would be better to give specific and practical solutions to lactating women rather than stating some general rules such as eating a well-balanced diet
- Dietitians and nutritionists may devise some nutritious meal and snack recipes made with ingredients that can be locally available so that lactating women here can make healthy food choices for themselves
- Advising lactating women to have blood tests for nutritional insufficiency only when necessary



<https://hongkong.wyethnutritionsc.org>

**References:**  
1. World Health Organization. Exclusive breastfeeding. Available at: [http://www.who.int/nutrition/topics/exclusive\\_breastfeeding/en/](http://www.who.int/nutrition/topics/exclusive_breastfeeding/en/). Accessed 12 February 2018. 2. Department of Health, Family Health Service. Breastfeeding survey 2017. Available at: [http://www.fhs.gov.hk/english/reports/files/BF\\_survey\\_2017.pdf](http://www.fhs.gov.hk/english/reports/files/BF_survey_2017.pdf). Accessed 12 February 2018. 3. The Hong Kong Polytechnic University. 2015.07.21 PolyU establishes Hong Kong's first breast milk nutrient database. Available at: [https://www.polyu.edu.hk/web/en/media/media\\_releases/index\\_id\\_6125.html](https://www.polyu.edu.hk/web/en/media/media_releases/index_id_6125.html). Accessed 12 February 2018. 4. The Hong Kong Polytechnic University. 2016.07.26 PolyU discovers inadequate calcium, iron and iodine intakes of Hong Kong lactating women. Available at: [https://www.polyu.edu.hk/web/en/media/media\\_releases/index\\_id\\_6237.html](https://www.polyu.edu.hk/web/en/media/media_releases/index_id_6237.html). Accessed 13 February 2018. 5. Chinese Nutrition Society. Chinese DRIs Handbook. China Standard Press, 2014. (Book in Chinese). 6. Arterburn LM, et al. J Am Diet Assoc 2008;108:1204-1209. 7. Innis SM. Am J Clin Nutr 2014;99(suppl):734S-741S. 8. Innis SM. Proc Nutr Soc 2007;66:397-404. 9. NIH Osteoporosis and Related Bone Diseases National Resource Center. Once is enough: a guide to preventing future fractures. Available at: <https://www.bones.nih.gov/health-info/bone/osteoporosis/fracture>. Accessed 14 February 2018. 10. National Osteoporosis Foundation. A guide to calcium-rich foods. Available at: <https://www.nof.org/patients/treatment/calcium/vitamin-d/a-guide-to-calcium-rich-foods/>. Accessed 14 February 2018. 11. Physicians Committee for Responsible Medicine. Calcium in plant-based diets. Available at: <http://www.pcrm.org/health/diets/vsk/vegetarian-starter-kit-calcium>. Accessed 14 February 2018. 12. Yeh TS, et al. J Food Drug Anal 2014;22:189-196. 13. Michigan State University Extension. Iron and vitamin C: the perfect pair? Available at: [http://msue.anr.msu.edu/news/iron\\_and\\_vitamin\\_c\\_the\\_perfect\\_pair](http://msue.anr.msu.edu/news/iron_and_vitamin_c_the_perfect_pair). Accessed 14 February 2018. 14. Food Insight. How red meat can 'beef up' your nutrition. Available at: <http://www.foodinsight.org/facts-beef-red-meat-healthy>. Accessed 14 February 2018. 15. Prietl B, et al. Nutrients 2013;5:2502-2521. 16. Aranow C. J Investig Med 2011;59:881-886. 17. Karatekin G, et al. Eur J Clin Nutr 2009;63:473-477.

**IMPORTANT NOTICE:** The World Health Organization recommends exclusive breastfeeding during the first 6 months of life and continued breastfeeding for as long as possible. As children's growth and development needs vary, health professionals should advise the mother on the appropriate time when her baby should start receiving complementary foods.

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