

## Original Article

# Self-reported health problems related to traditional dietary practices in postpartum women from urban, suburban and rural areas of Hubei province, China: the ‘zuò yuèzi’

Limei Mao PhD<sup>1</sup>, Liping Ma MS<sup>1</sup>, Nian Liu MS<sup>2</sup>, Banghua Chen MS<sup>2</sup>, Qinggui Lu MS<sup>1</sup>, Chenjiang Ying MS<sup>2</sup>, Xiufa Sun MD<sup>2</sup>

<sup>1</sup>Department of Nutrition and Food Hygiene, School of Public Health and Tropical Medicine, Southern Medical University, Guangzhou, Guangdong, PR China

<sup>2</sup>Department of Nutrition and Food Hygiene, School of Public Health, Tongji Medical College, Huazhong University of Science & Technology, Wuhan, PR China

**Background and Objectives:** We aimed to investigate the prevalence of maternal health problems in the postpartum period and their association with traditional Chinese postpartum diets and behaviours in three selected regions in Hubei province, China. **Methods and Study Design:** A cross-sectional study was conducted in urban, suburban and rural areas. A total of 2100 women who had given birth to full-term single infants in the past two years were enrolled. Their postpartum diet, personal behaviours, and health problems were surveyed by trained interviewers. **Results:** During the puerperium women consumed plentiful eggs, fish, poultry and meats; however, fruit, vegetable and milk consumption were limited. A high prevalence of health problems potentially related to pregnancy and the puerperium were found. At least one such problem was reported by 59.3% of women. The putative postpartum problems were backaches (29.6%), arthralgia or leg clonus (12.7%), breast problems (19.6%), constipation (18.7%), haemorrhoids (11.7%), dizziness or headaches (14.8%), anaemia (10.0%). Multiple logistic regression analysis showed that leafy vegetable intake and frequent recipe change in the puerperium were positively associated with less anal diseases. Bathing or hair washing did not increase the risk of maternal infection as belief would have suggested. However, bathing was a risk factor for backache or arthralgia, and tooth brushing was a risk factor for bleeding gums. Excessive housework was a risk factor for anal diseases and disordered uterine involution. **Conclusion:** Postpartum maternal health problems were prevalent in Hubei province. These were in part associated with postpartum traditional Chinese diets and behaviours.

**Key Words:** Zuò yuèzi 坐月子, Chinese women, beliefs, health problems, postpartum diets, puerperium

## INTRODUCTION

The postpartum period, also known as the puerperium, is a highly unique period in the life of a woman and her infant. Inappropriate care during the postpartum period can lead to high risk of morbidity and/or mortality of the mother and/or infant.<sup>1</sup> Some population-based studies have documented a high prevalence of maternal health problems after childbirth.<sup>2-8</sup> Frequently reported postpartum problems include infection, anaemia, constipation, haemorrhoids, backaches, pelvic pains, breast problems and the controversial medical construct of ‘delayed uterine involution’. Good care and a reasonable diet in the postpartum period can be expected to be important for a new mother’s health.

Dietary and other personal behaviours along with domestic traditions and obligations in the postpartum period vary greatly among different countries and regions.<sup>9-11</sup> According to Chinese traditions, the first 30 or 40 d after birth is recognized as a special period when many taboos on food consumption and other practices by women are

considered a priority. This period is known as ‘zuò yuèzi’ (坐月子), ‘doing the month’ or ‘sitting with the moon’.

Women during ‘zuò yuèzi’ are advised not to eat ‘cold food’ (such as fruits, vegetables and cold drinks), and avoid bathing or washing hair. Women are also advised to stay in bed for the entire day, with doors and windows closed to avoid wind exposure. The practices or lack of them are believed to result in various health problems during the postpartum period, and may even influence a woman’s health throughout her life.<sup>12-14</sup> By contrast, western women have progressively set aside earlier tradi-

**Corresponding Author:** Prof Limei Mao, Department of Nutrition and Food Hygiene, School of Public Health and Tropical Medicine, Southern Medical University, Guangzhou, Guangdong 510515, PR China.

Tel: 86 020 61648328; Fax: 86 020 61648328

Email: mml912@163.com

Manuscript received 15 January 2015. Initial review completed 20 February 2015. Revision accepted 31 March 2015.

doi: 10.6133/apjcn.2016.25.2.03

tions and taboos in favour a varied and nutritious diet from all food categories and graded physical activity during this period.<sup>15</sup> China has experienced a rapid transformation in terms of economy and culture. But while some have abandoned Chinese traditional postpartum practices, others still insist on the 'food and behaviour taboos'. Not only is 'doing the month' practiced in mainland China, but by almost all people of Chinese ancestor worldwide.<sup>16-19</sup> Thus, the validity of the purported associations of the traditional Chinese postpartum diet and other practices with maternal health remains a far-reaching question.

The objectives of this study were: (1) to establish the prevalence of maternal health problems during the puerperium in China or, at least, in Hubei province (2) to examine whether postpartum practices are associated with these health problems and (3) to identify other factors that might influence health problems in postpartum women, such as sociodemographic characteristics and obstetric history.

## METHODS

### *Study sites and participants*

A cross-sectional retrospective survey was conducted in Hubei. This province is located in the central part of China, with 60 million residents and a middle economic level among all provinces in China. People's life styles vary considerably between its metropolitan and rural areas. The rural areas remain economically underdeveloped and culturally conservative. Women in rural areas are more likely to adhere to the traditional Chinese practice during the postpartum period than those in urban or suburban areas. Thus, three regions were selected to represent the urban, suburban and rural areas. A total of 2100 women who had given birth to full-term single infants in the past two years, were recruited via cluster-stratified sampling. Ethics approval was obtained from the local health department and the Institutional Review Board of Tongji Medical College, China. The study was fully explained to the participants before confirming their participation.

### *Data collection*

After obtaining informed consent, the selected women were interviewed using a pre-tested questionnaire which collected information about socio-demographic characteristics, obstetric history, physical activity, dietary behaviours, health behaviours and health problems experienced during the puerperium. A food frequency questionnaire was used to collect information about dietary intake during this period. The participants were asked to recall the frequency and the approximate amount of food consumed during the puerperal period. Cups, bowls and spoons were used to assist food recall and measurement. The total amount of food by type consumed during the puerperium was calculated and converted to mean daily intake. Interviewers were health professionals from local maternal and child health clinics, trained by our research team. Each question had to be understood and administered uniformly without hesitation.

### *Statistical analysis*

All statistical analyses were performed using the SAS 8.1 statistical software package. Frequency distributions were

used to describe characteristics of women in terms of demographic, dietary and health behaviours, as well as the prevalence of maternal health problems during puerperium. A series of multiple logistic regression analyses were performed to estimate the effects of dietary intake, health behaviours and other factors on maternal morbidity. In the multivariable logistic regression models, all potential influencing factors were initially included. Stepwise regression was used to determine factors that were most strongly correlated with the outcomes of interest. Only the variables that had a significant relationship with the response variables at the  $p < 0.05$  level were considered as independent variables in the final regression models. The criterion for removal in the regression analysis was  $p > 0.1$ . The following variables were considered potential independent variables: parity (0=primipara, 1=multipara), urban (0=no, 1=yes), suburban (0=no, 1=yes), rural (0=no, 1=yes), delivery site (0=delivery in hospital, 1=delivery at home), mode of delivery (0=vaginal delivery, 1=Caesarean section), housework (1=never, 2=occasionally, 3=every week, 4=every day), bathing (1=never, 2=occasionally, 3=every week, 4=every day), tooth brushing (1=never, 2=occasionally, 3=every week, 4=every day), mean sleep duration (continuous), average sleeping time (continuous), cereal intake (continuous), leafy vegetable intake (continuous), meat intake (continuous), egg intake (continuous), sugar intake (continuous), frequency of recipe change (0=no, 1=yes), breast feeding (0=no, 1=yes) and breastfeeding started within 0.5 h after giving birth (0=no, 1=yes).

## RESULTS

### *Characteristics of the sample*

Among 2100 women recruited, 1975 completed the questionnaire (638 in the urban, 627 in the suburban and 710 in the rural area), with an overall 94.1% response rate. The age range was from 18 to 44 years, with a mean of  $26.8 \pm 3.6$  years. The education levels were: primary school and lower (17.4%), middle school (49.1%), high school (21.0%) and college or higher (12.6%). A majority (63.8%) of the urban participants attained at least a high school education; however, a majority (96.9%) of the rural participants received only a primary or middle school education. The annual family income per capita was 5179 Yuan (about 814 USD) in the city, 2623 Yuan (about 412 USD) in the suburbs and 1799 Yuan (about 282 USD) in the rural areas. Most women were primiparous. In terms of mode of delivery, 67.2% had a vaginal delivery (47.6% in the city, 61.9% in the suburbs and 67.2% in the rural areas), 32.8% had a Caesarean section (52.4% in the city, 38.1% in the suburbs and 32.8% in the rural areas).

### *Dietary and health behaviours*

During the puerperium, women consumed plentiful eggs, fish, poultry and meats; however, fruit, vegetable and milk consumption were inadequate. Most participants (77.9%) believed that cold foods such as fruits, cold drinks, vegetables and cooling foods should be prohibited. Some 18.0%, 78.8% or 75.7% of participants did not consume any vegetables, fruit or milk postpartum, respectively. Women in the city consumed more fruits and milk

than did women in the rural areas. The sugar consumption (mainly brown sugar) of the participants was excessive in all three areas, especially in the rural area (81.3 g/dL). Women residing in the rural area consumed more vegetables than those living in the city.

Women in all three areas continued to adhere to the traditional behavioural taboos for the puerperium, but to different degrees. Some women (25.2%) believed that they should stay inside and be protected from the wind; they believed that wind would induce disease. Some 54.9% stayed in bed for up to two days after giving birth. The average time women stayed in bed during the puerperium was 18.0±3.8 h (16.3±4.2 h in the city, 18.5±3.3 h in the suburbs, 19.0±3.0 h in the rural areas). A few women (1.8%) only got out of bed for their basic needs. Some (32.7%) never performed outdoor activities. Eighty percent never participated in physical exercise, and only 3.8% exercised regularly (every day or every week) during this period. Some women (24.5%) never took a bath, 32.3% never washed their hair and 13.3% never brushed their teeth during the puerperium.

#### Prevalence of maternal health problems

A high prevalence of health problems was found in women in the postpartum period. A majority of women (59.3%) reported at least one symptom during the puerperium. The most frequently cited symptoms were backaches (29.6%), anal disease (including constipation, haemorrhoids and anal fissure; 25.7%), breast problems (including breast swelling, cracked nipples and mastitis; 19.6%) and dizziness or headaches (14.8%). Women reported anaemia (10.0%), oral disease (including gum bleeding, oral mucosal ulcer, angular cheilitis and glossitis; 9.3%) and common colds (8.3%). The majority (63.7%) of the women had a check-up six weeks after delivery. A few (14.1%) were said to have disordered uterine involution. The types and prevalence of health problems reported by women by area are shown in Table 1.

#### Factors associated with maternal health problems

To assess what factors might be associated with the re-

ported morbidities, multiple logistic regression analyses was performed. The dependent variables were backache or arthralgia (0=no, 1=yes); anal disease, such as constipation, haemorrhoids and anal fissure (0=no, 1=yes); breast problems, such as breast swelling, cracked nipples and mastitis (0=no, 1=yes); gum bleeding (0=no, 1=yes); oral inflammation, such as oral mucosal ulcer, angular cheilitis and glossitis (0=no, 1=yes); and disordered uterine involution (0=no, 1=yes). The variables that were included in the logistic regression analysis were age, rural-urban residence, delivery methods, abortion history, diet and health behaviour of women during the puerperium. The significance level for inclusion of a variable was 0.05, and 0.1 for exclusion of a variable.

The factors that were significantly and positively associated with the occurrence of backaches or arthralgia were suburban residence, egg intake and mean sleep duration during the puerperium. Bathing had a negative association. For anal disease, positive associations were found with rural residence, Caesarean section, cereal intake, leafy vegetable intake and frequent recipe change. Doing housework had a negative association factor. Rural residence, leafy vegetable intake and breastfeeding that began within 0.5 h after giving birth were associated with less breast problems, whereas home natal delivery, Caesarean section and meat intake had adverse associations. Tooth brushing appeared to increase the risk of gum bleeding. Sugar intake and an average time staying in bed increased the risk of oral mucosal ulcers, angular cheilitis or glossitis; whereas leafy vegetable intake decreased the risk of these oral problems. Abnormal (presumably delayed) uterine involution was correlated with doing housework, parity and breastfeeding (Table 2).

#### DISCUSSION

Our study indicates that health problems in women during the postpartum period are highly prevalent in Hubei province, China. About 60% women reported at least one problem during the puerperium. Reported postpartum problems included backaches, breast problems, constipation, haemorrhoids and anaemia. Other studies that have

**Table 1.** Prevalence of maternal health problems during the puerperium

Reported problems	Urban (n=637)		Suburban (n=628)		Rural (n=710)		Total (n=1975)	
	No.	%	No.	%	No.	%	No.	%
Backaches	225	35.3	163	26.0	196	27.6	584	29.6
Arthralgia	44	6.9	51	8.1	54	7.6	149	7.5
Leg clonus	38	5.0	33	5.3	30	4.2	101	5.1
Constipation	111	17.5	159	25.3	99	13.9	369	18.7
Haemorrhoids	75	11.8	100	15.9	55	7.8	230	11.7
Anal fissure	19	3.0	16	2.6	3	0.4	38	1.9
Breast swelling	79	12.4	84	13.4	44	6.2	207	10.5
Cracked nipples	38	6.0	33	5.3	57	8.0	128	6.5
Mastitis	24	3.8	21	3.3	8	1.1	53	2.7
Dizziness or headaches	79	12.4	91	14.5	122	17.2	292	14.8
Anaemia	58	9.1	35	5.6	105	14.8	198	10.0
Common cold	73	11.5	54	8.6	36	5.1	163	8.3
Gum bleeding	70	11.0	42	6.7	19	2.7	131	6.6
Oral mucosal ulcer	13	2.0	16	2.6	15	2.1	44	2.2
Angular cheilitis, glossitis	8	1.3	8	1.3	3	0.4	19	1.0
Fever	37	5.8	20	3.2	4	0.6	61	3.1
Postpartum haemorrhage	11	1.7	5	0.8	5	0.7	21	1.1

**Table 2.** Factors considered to influence maternal health

Response	Independent variables <sup>†</sup>	Estimate	Standard error	<i>p</i> value	Standardized estimate	OR	95% CI
Backaches or arthralgia	Location–suburban	-0.341	0.128	0.008	-0.084	0.71	0.55~0.91
	Eggs intake	-0.418	0.109	<0.001	-0.113	0.66	0.53~0.82
	Bathing	0.297	0.055	<0.0001	0.162	1.35	1.21~1.50
	Mean sleep duration	-0.674	0.184	<0.001	-0.105	0.51	0.36~0.73
Analdigsease <sup>‡</sup>	Location–rural area	-0.572	0.167	<0.001	-0.155	0.56	0.41~0.78
	Caesarean section	-0.551	0.144	<0.001	-0.141	0.56	0.44~0.76
	Cereal intake	-0.173	0.070	0.013	-0.084	0.84	0.73~0.97
	Leafy vegetable intake	-0.239	0.093	0.010	-0.111	0.79	0.66~0.94
	Often changed recipes	-0.663	0.149	<0.0001	-0.141	0.52	0.36~0.69
	Doing housework	0.283	0.067	<0.0001	0.139	1.33	1.16~1.51
Breast problems <sup>§</sup>	Location–rural area	-0.491	0.209	0.019	-0.134	0.61	0.41~0.92
	Delivery at home	0.970	0.225	<0.0001	0.202	2.64	1.70~4.10
	Caesarean section	0.347	0.166	0.036	0.088	1.42	1.02~1.96
	Meat intake	0.233	0.109	0.032	0.081	1.26	1.02~1.56
	Leafy vegetable intake	-0.458	0.107	<0.0001	-0.214	0.63	0.51~0.78
	Began breastfeeding within 0.5 h after giving birth	-0.015	0.004	<0.0001	-0.204	0.99	0.98~0.99
Gum bleeding	Location–urban	0.717	0.248	0.004	0.187	2.05	1.26~3.33
	Location–rural area	-0.915	0.327	0.005	-0.248	0.40	0.21~0.76
	Brush teeth	0.302	0.102	0.003	0.194	1.35	1.11~1.65
Oral inflammation <sup>¶</sup>	Leafy vegetable intake	-0.770	0.282	0.006	-0.355	0.46	0.27~0.81
	Sugar intake	0.462	0.180	0.010	0.246	1.59	1.12~2.26
	Average time to stay in bed	1.010	0.434	0.020	0.357	2.75	1.17~6.42
Disordered uterine involution	Doing housework	0.178	0.088	0.043	0.090	1.20	1.01~1.42
	Parity	0.343	0.130	0.008	0.107	1.41	1.09~1.82
	Breast feeding	-0.606	0.175	0.005	-0.158	0.55	0.39~0.77

<sup>†</sup>The independent variables above were selected by stepwise regression for the final models. All potential independent variables are listed in the statistical analysis methods section.

<sup>‡</sup>Anal disorders including hemorrhoids, constipation and anal fissure.

<sup>§</sup>Breast problems include breast swelling, cracked nipples and mastitis.

<sup>¶</sup>Oral inflammation including oral mucosal ulcers, angular cheilitis and glossitis.

found similar puerperal health problems. In a study in India by Iyengar,<sup>2</sup> nearly three-fourths of the women were found to report illness after delivery; the reported problems included severe anaemia (7.4%), moderate anaemia (46%), fever (4%), breast ailments (4.9%) and perineal conditions (4.5%). In a Scottish study, Glazener et al<sup>3</sup> found that the incidence of new health problems after birth was very high; these problems included fatigue (54%), backache (20%), headache (15%) and perineal pain (10%). Twenty-five percent of all women were anaemic in the first eight weeks postpartum. A survey by Yuan et al. in Henan province, China, showed that 57% of women in the puerperium had anaemia, and 19% had haemorrhoids or an anal fissure.<sup>6</sup> A study in Canada<sup>8</sup> also indicated that postpartum problems were common among new mothers, which reported that 96% of the women had at least one health problem in the first two months after childbirth. The most frequently reported symptoms were backache (54.5%), sore or cracked nipples (52.4%), perineal pain (45.9%), haemorrhoids (35.5%) and headaches (23.0%).

In traditional Chinese belief, women in the postpartum are considered to have a Qi deficiency and a blood deficiency. 'Qi' is regarded as an invisible substance of which the human body is made according to traditional Chinese medicine. Postpartum women are believed to need special dietary approaches in the first month after delivery to nourish the blood, replenish 'Qi' and dispel the 'cold-wind'.<sup>14</sup> Foods, such as fruits and some kinds of vegetables, as well as soy products, are regarded as 'cold'; therefore, these materials are avoided. By contrast, foods, such as chicken, meat, fish, eggs and brown sugar, are strongly recommended. In the present study, we found that women's intakes of meat, poultry, fish and eggs were plentiful; however, vegetables, fruits and dairy food intakes were limited during the puerperium. Some women (78.8%) never ate fruit and 18.0% never ate vegetables. Traditional dietary practices are likely to be related to a woman's health in one way or another during the puerperium since the changes are deliberate and nutritionally substantial.<sup>12,13</sup> Our logistic regression analysis showed that leafy vegetable intake during the puerperium was associated with less anal disease (namely, constipation, haemorrhoids or anal fissure). Likewise, women who changed recipes frequently reported fewer occurrences of anal problems diseases than did women who had a monotonous diet. No morbidity was reported in regard to vegetables or fruit intake. Thus, the practice of fruit or vegetable avoidance could be questioned on scientific grounds, but that might not capture the original basis of the belief and its role. Again logistic regression analysis showed that excessive meat intake was a risk factor for breast problems; and that more sugar resulted in more oral disease with their lesser or greater biomedical plausibility. Whatever the findings, women will continue to choose their postpartum diet and other practices for a composite of tradition, experience and the evolving science.

Our survey found that a range of non-dietary traditional puerperal practices were thought to be associated with health status. These included the absence of room ventilation, refraining from leaving the room or even getting out

of bed, avoiding bathing, washing hair or brushing teeth. According to tradition, these behaviours may lead to health problems, such as postpartum fever, backaches or arthralgia. In the present study, we did not find that behaviours such as bathing and washing hair were a risk for fever as believed. However, logistic regression analysis showed that taking a bath was a risk factor for backache and arthralgia, and brushing teeth was a risk factor for bleeding gums. Although the causality of these relationships is questionably puerperal, women continue to take account of the way teeth are brushed and avoid the cold when taking a necessary bath. It is possible the fruit avoidance with vitamin C deficiency could link to bleeding gums when teeth are brushed.

Contemporary biomedical science supports moderate physical exercise and gymnastics after delivery (and as early as possible) to hasten reproductive recovery and physical fitness.<sup>15,20-22</sup> Yet, our study found that excessive housework during the puerperium was a risk factor for anal disease and 'disordered or delayed uterine involution'; in addition, less sleep was a risk factor for backache and arthralgia. The emergent cross-cultural compromise would seem to be that a woman's well-being and functionality during the puerperium are of personal and family importance, dependent on sufficient sleep, increasing physical activity and exercise and the ability to perform the activities of daily living along with the necessary household duties. Controversy remains as to the apportionment of baby care between mother and extended family, especially with changing social and family structures.

Aside from diet and personal behaviours, other aspects of perinatal management were found to be associated with maternal health during the puerperium. Logistic regression analysis showed that anal disease, such as haemorrhoids, were more likely to be reported by women who had had a vaginal delivery compared with those who had a Caesarean section, in accord with published reports.<sup>4,7,8</sup> Breastfeeding was associated with improved uterine involution and the earlier start of breastfeeding decreased the prevalence of breast problems reported elsewhere.<sup>23</sup> It was noteworthy that home births and Caesarean section were both risk factors for breast problems. Women who resided in rural areas reported less anal disease, breast problems and gum bleeding compared with those who resided in urban or suburban areas.

### **Strengths and limitations**

One of the strengths of our study is that the recruitment of women from urban, suburban and rural areas allowed a comparison between those with their various degrees of adherence to traditional Chinese belief and practices during the postpartum period. A second strength was that trained interviewers conducted the surveys personally. One limitation was that the health problems were self-reported. For health problems like backaches, breast problems, constipation and haemorrhoids, reportability is probably fairly reliable, but for others like anaemia, reliability depends on communication with the investigator and is subject to underestimation, particularly if there were no post-natal hospital visit. The current study was conducted after the completion of the puerperium with the potential for recall bias. However, most women were

primipara and ‘zuò yuèzi’ (坐月子) is a very important event to be remembered in a women’s life in China because of tradition and what has been referred to as ‘the one-child policy’. Chinese women generally have a detailed memory postpartum (notwithstanding the recognised phenomenon of memory erasure and replacement in recognition of the new-born child). Finally, the food frequency questionnaire used in this study has not been validated.

### Conclusions

Postpartum maternal health problems and factors associated with them have been documented in Hubei, China. We found a high prevalence of maternal health problems after birth as has been found elsewhere. We demonstrated that some features of traditional diets and behaviours in China are associated with maternal morbidity during the puerperium. The information should enable health planners to design strategies to improve puerperal health and its sequelae in Chinese women at-large.

### ACKNOWLEDGEMENTS

The study was funded by the Danone Nutrition Research and Health Education Foundation (No. DIC2002-06). The authors would like to gratefully acknowledge the assistance giving by the staffs in Jiangnan Maternal and Child Health Clinic, Dongxihu Maternal and Child Health Hospital and Macheng Health Bureau in Hubei, China.

### AUTHOR DISCLOSURES

The author(s) declare that they have no competing interests.

The study was funded by the Danone Nutrition Research and Health Education Foundation (No. DIC2002-06). The funder contributed to the study design, conduct of the study, analysis of samples and data, interpretation of findings and the preparation of the manuscript.

### REFERENCES

- World Health Organization. Trends in maternal mortality: 1990 to 2008. Geneva: World Health Organization; 2010. doi: 10.1111/j.1728-4457.2011.00406.x.
- Iyengar K. Early postpartum maternal morbidity among rural women of Rajasthan, India: a community-based study. *J Health Popul Nutr.* 2012;30:213-25. doi: 10.3329/jhpn.v30i2.11316.
- Glazener CM, Abdalla M, Stroud P, Naji S, Templeton A, Russell IT. Postnatal maternal morbidity: extent, causes, prevention and treatment. *Br J Obstet Gynaecol.* 1995;102:282-7. doi: 10.1111/j.1471-0528.1995.tb09132.x.
- Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *Lancet.* 2006;367:1066-74. doi: 10.1016/S0140-6736(06)68397-9.
- Albers LL. Health problems after childbirth. *J Midwifery Women Health.* 2000;45:55-7. doi: 10.1016/s1526-9523(99)00003-3.
- Yuan SY, Chen WQ, Zhang Y, Liang CH, Zhu XR, Li YL et al. The survey on the requirements of mothers and infants during the puerperium. *Maternal and Child Health Care of China.* 2001;16:95-6. doi: 10.3969/j.issn.1001-4411.2001.02.013. (In Chinese)
- Ferdous J, Ahmed A, Dasgupta SK, Jahan M, Huda FA, Ronsmans C, Koblinsky M, Chowdhury ME. Occurrence and determinants of postpartum maternal morbidities and disabilities among women in Matlab, Bangladesh. *J Health Popul Nutr.* 2012;30:143-58. doi: 10.3329/jhpn.v30i2.11308.
- Ansara D, Cohen MM, Gallop R, Kung R, Schei B. Predictors of women's physical health problems after childbirth. *J Psychosom Obstet Gynaecol.* 2005;26:115-25. doi: 10.1080/01443610400023064.
- Chen LW, Low YL, Fok D, Han WM, Chong YS, Gluckman P et al. Dietary changes during pregnancy and the postpartum period in Singaporean Chinese, Malay and Indian women: the GUSTO birth cohort study. *Public Health Nutr.* 2013;28:1-9. doi: 10.1017/S1368980013001730.
- Barennes H, Simmala C, Odermatt P, Thaybouavone T, Vallee J, Martinez-Aussel B, Newton PN, Strobel M. Postpartum traditions and nutrition practices among urban Lao women and their infants in Vientiane, Lao PDR. *Eur J Clin Nutr.* 2009;63:323-31. doi: 10.1038/sj.ejcn.1602928.
- Cucó G, Fernández-Ballart J, Sala J, Viladrich C, Iranzo R, Vila J, Arija V. Dietary patterns and associated lifestyles in preconception, pregnancy and postpartum. *Eur J Clin Nutr.* 2006;60:364-71. doi: 10.1038/sj.ejcn.1602324.
- Liu YQ, Maloni JA, Petrini MA. Effect of postpartum practices of doing the month on Chinese women's physical and psychological health. *Biol Res Nurs.* 2014;16:55-63. doi: 10.1177/1099800412465107.
- Bao W, Ma A, Mao L, Lai J, Xiao M, Sun G et al. Diet and lifestyle interventions in postpartum women in China: study design and rationale of a multicenter randomized controlled trial. *BMC Public Health.* 2010;10:103. doi: 10.1186/1471-2458-10-103.
- SM Chan, EAS Nelson, SSF Leung, PCK Cheung, CY Li. Special postpartum dietary practices of Hong Kong Chinese women. *Eur J Clin Nutr.* 2000;54:797-802. doi: 10.1038/sj.ejcn.1601095.
- Artal R, O'Toole M, White S. Guidelines of the American College of Obstetricians and Gynecologists for exercise during pregnancy and the postpartum period. *Brit J Sport Med.* 2003;37:6-12. doi: 10.1136/bjism.37.1.6.
- Liu YQ, Petrini M, Maloni JA. “Doing the month”: postpartum practices in Chinese women. *Nurs Health Sci.* 2014. doi: 10.1111/nhs.12146.
- Chien LY, Tai CJ, Ko YL, Huang CH, Sheu SJ. Adherence to “Doing-the-month” practices is associated with fewer physical and depressive symptoms among postpartum women in Taiwan. *Res Nurs Health.* 2006;29:374-83. doi: 10.1002/nur.20154.
- Chu C. Postnatal experience and health needs of Chinese migrant women in Brisbane, Australia. *Ethn Health.* 2005;10:33-56. doi: 10.1080/1355785052000323029.
- Brathwaite AC, Williams CC. Childbirth experiences of professional Chinese Canadian women. *J Obstet Gynecol Neonatal Nurs.* 2004;33:748-55. doi: 10.1177/0884217504270671.
- Bertz F, Brekke HK, Ellegård L, Rasmussen KM, Wennergren M, Winkvist A. Diet and exercise weight-loss trial in lactating overweight and obese women. *Am J Clin Nutr.* 2012;96:698-705. doi: 10.3945/ajcn.112.040196.
- Ruchat SM, Davenport MH, Giroux I, Hillier M, Batada A, Sopper MM, Hammond JM, Mottola MF. Nutrition and exercise reduce excessive weight gain in normal-weight pregnant women. *Med Sci Sports Exerc.* 2012;44:1419-26. doi: 10.1249/MSS.0b013e31825365f1.
- Lovelady C. Balancing exercise and food intake with lactation to promote post-partum weight loss. *Proc Nutr Soc.* 2011;70:181-4. doi: 10.1017/s002966511100005x.
- Lǚ QY. An investigation on influence of breast feeding on involution of uterus and quantity of lochia in parturient.

## Original Article

## Self-reported health problems related to traditional dietary practices in postpartum women from urban, suburban and rural areas of Hubei province, China: the ‘zuò yuèzi’

Limei Mao PhD<sup>1</sup>, Liping Ma MS<sup>1</sup>, Nian Liu MS<sup>2</sup>, Banghua Chen MS<sup>2</sup>, Qinggui Lu MS<sup>1</sup>, Chenjiang Ying MS<sup>2</sup>, Xiufa Sun MD<sup>2</sup>

<sup>1</sup>Department of Nutrition and Food Hygiene, School of Public Health and Tropical Medicine, Southern Medical University, Guangzhou, Guangdong, PR China

<sup>2</sup>Department of Nutrition and Food Hygiene, School of Public Health, Tongji Medical College, Huazhong University of Science & Technology, Wuhan, PR China

### 中国湖北省城市、城郊、农村地区产褥期妇女与传统饮食习惯相关的自述健康问题：坐月子

**背景与目的：**本研究的目的是了解来自中国湖北省三个地区产褥期妇女健康问题的患病率，及其与中国传统产后饮食习惯及行为的关系。**方法与研究设计：**在中国湖北省选取有代表性的城市、城郊、农村地区开展横断面研究，2100名近两年内分娩出足月单胎的妇女被纳入研究，由统一培训的调查者通过问卷调查她们的产褥期饮食、行为和健康问题。**结果：**产褥期妇女摄入鸡蛋、鱼类、禽肉、畜肉较多，而水果、蔬菜、奶类较少。她们在妊娠和产后相关的潜在健康问题存在非常高的患病率。59.3%的研究对象自述至少存在一种以上的健康问题。这些健康问题包括：背痛（29.6%）、关节痛/腿抽筋（12.7%）、哺乳困难（19.6%）、便秘（18.7%）、痔疮（11.7%）、头晕/头痛（14.8%）、贫血（10.0%）。多元回归分析显示：产褥期绿叶蔬菜的摄入量及食谱更换的频率与肠道疾病的发病率呈负相关。沐浴和洗头并不会增加产褥期妇女感染的风险。然而，沐浴是背痛和关节痛的危险因素，刷牙是牙龈出血的危险因素。过度的家务劳动是肠道疾病和产后子宫复旧不良的危险因素。**结论：**中国湖北省产褥期妇女的健康问题发生率较高，某些传统饮食习惯及行为与健康问题的发生率相关。

**关键词：**坐月子、中国女性、信仰、健康问题、产后饮食、产褥期