



Correspondence

Body weight and pregnancy

Dear Editor,



We read Dr. Wen's article published in the March issue of the *Taiwanese Journal of Obstetrics and Gynecology* with interest [1]. The authors performed a longitudinal study to evaluate the body weight (BW) change in each trimester of the pregnant Taiwanese women, and the reference was based on pre-pregnancy body mass index (BMI) recommended by the Institute of Medicine (IOM) [1]. The results showed that the mean gestational BW increase of 13.84 kg and more than half of pregnant women did not follow the recommendation by IOM, and this violation tended to be apparent in the second and third trimesters and for those pregnant women with a higher pre-pregnancy BMI [1]. Finally, the authors concluded that the most pregnant Taiwanese women had an exceeding total BW and weekly BW recommendations of the IOM. The current study is highly valuable and interesting. Based on the important issue of maternal-fetal health, we would like to highlight the necessity of pre-conception consultations and pregnancy education in all Taiwanese women about the gestational weight gain (GWG) who attempt or continue pregnancy.

First, it is not still consistent with the definition of normal BMI of women, based on the different study for the Asia population [1–4]. There is a relative consistence of the definition of underweight ($\text{BMI} < 18.5 \text{ kg/m}^2$) and obesity ($\text{BMI} \geq 30 \text{ kg/m}^2$) in all studies [1–4], but the definition of normal BMI was varied, ranging from 18.5 kg/m^2 to 22.9 kg/m^2 [2], 23.9 kg/m^2 [3], or 24.9 kg/m^2 [1,4]. In Taiwan' studies, nearly all studies used the criteria of normal BMI between 18.5 kg/m^2 and 24.9 kg/m^2 [1,4]. For epidemiology study, if the definition is not clear, the results might be varied greatly, with subsequently resulting in the underestimated or overestimated risk calculation, contributing to uncertain or conflicted conclusion [5,6]. For example, a recent Japan's study addressed this issue, and the authors used five subgroups of pre-pregnancy BMI (<18.5 , $18.5-19.9$, $20-22.9$, $23-24.9$ and $25-27.4$) to evaluate the relationship between GWG and pregnancy outcome and found optimal weight gain during pregnancy varied largely by pre-pregnancy BMI [7]. Finally, the authors suggested the overweight could be defined BMI more than 23.9 kg/m^2 (the World Health Organization WHO definition) may be much useful when applying current IOM recommendations to Japanese guidelines [7]. All suggested that we could consider the possibility of using 23.9 kg/m^2 or even lower as 22.9 kg/m^2 as the cut-off value in place of often used cut-off value of 24.9 kg/m^2 in Taiwan.

Second, GWG is an important issue not only for maternal health but also for pregnancy outcome or future infant outcome, regardless of continents or ethnicity [8–10]. In our previous study, we found GWG below the IOM guidelines is still reasonable without significantly and adversely affecting maternal and perinatal outcomes in Taiwan [9]. In contrast, a recent meta-analysis showed

that GWG below the IOM guidelines was associated with a higher risk of small gestational age (USA/Europe [odd ratio OR 1.51; 95% confidence interval CI 1.39–1.63]; Asia [OR 1.63; 95% CI 1.45–1.82]) and preterm birth (USA/Europe [OR 1.35; 95% CI 1.17–1.56]; Asia [OR 1.06; 95% CI 0.78–1.44]) than GWG within guidelines [8].

In term of excessive GWG, there is no doubt that excessive GWG is associated with worst outcome in all studies [8–10]. Meta-analysis showed that GWG above guidelines was associated with a higher risk of large of gestational age (USA/Europe [OR 1.93; 95% CI 1.81–2.06]; Asia [OR 1.68; 95% CI 1.51–1.87]), macrosomia (USA/Europe [OR 1.87; 95% CI 1.70–2.06]; Asia [OR 2.18; 95% CI 1.91–2.49]) and caesarean (USA/Europe [OR 1.26; 95% CI 1.21–1.33]; Asia [OR 1.37; 95% CI 1.30–1.45]) [8].

In fact, more women in Asia population were categorized as having GWG below guidelines using WHO (60%) compared to regional BMI categories (16%) in the report from the recent meta-analysis [8].

Finally, we should give a big hand to the publication of the *Taiwanese Journal of Obstetrics and Gynecology*, and Dr. Wen' study re-emphasized the important issue about practical counseling for pregnant women and recommendation for weekly or trimester-based GWG. All can be used as reference for policy and strategy for women's health promotion.

Conflicts of interest

The authors declare that they have no competing interests.

Acknowledgements

This work was supported by grants from the Taipei Veterans General Hospital (V108C-085) and from the Ministry of Science and Technology, Executive Yuan (MOST: 106-2314-B-075-061-MY3), Taipei, Taiwan. The authors appreciate the financial support of Female Cancer Foundation, Taipei, Taiwan.

References

- [1] Wen FH, Lee CF, Lin CJ, Lin HM. Total gestational weight change and rate of change in pregnant Taiwanese women. *Taiwan J Obstet Gynecol* 2019;58: 196–200.
- [2] Choi SK, Lee G, Kim YH, Park IY, Ko HS, Shin JC. Determining optimal gestational weight gain in the Korean population: a retrospective cohort study. *Reprod Biol Endocrinol* 2017;15:67.
- [3] Hu J, Aris IM, Oken E, Ma Y, Ding N, Gao M, et al. Association of total and trimester-specific gestational weight gain rate with early infancy weight status: a prospective birth cohort study in China. *Nutrients* 2019;11:E280.

- [4] Hung TH, Hsieh TT. Pregestational body mass index, gestational weight gain, and risks for adverse pregnancy outcomes among Taiwanese women: a retrospective cohort study. *Taiwan J Obstet Gynecol* 2016;55:575–81.
- [5] Teng SW, Horng HC, Ho CH, Yen MS, Chao HT, Wang PH, Taiwan Association of Gynecology Systematic Review Group. Women with endometriosis have higher comorbidities: analysis of domestic data in Taiwan. *J Chin Med Assoc* 2016;79:577–82.
- [6] Lee WL, Chang WH, Wang KC, Guo CY, Chou YJ, Huang N, et al. The risk of epithelial ovarian cancer of women with endometriosis may be varied greatly if diagnostic criteria are different: a nationwide population-based cohort study. *Medicine (Baltim)* 2015;94:e1633.
- [7] Morisaki N, Nagata C, Jwa SC, Sago H, Saito S, Oken E, et al. Pre-pregnancy BMI-specific optimal gestational weight gain for women in Japan. *J Epidemiol* 2017;27:492–8.
- [8] Goldstein RF, Abell SK, Ranasinha S, Misso ML, Boyle JA, Harrison CL, et al. Gestational weight gain across continents and ethnicity: systematic review and meta-analysis of maternal and infant outcomes in more than one million women. *BMC Med* 2018;16:153.
- [9] Horng HC, Huang BS, Lu YF, Chang WH, Chiou JS, Chang PL, et al. Avoiding excessive pregnancy weight gain to obtain better pregnancy outcomes in Taiwan. *Medicine (Baltim)* 2018;97:e9711.
- [10] Truong YN, Yee LM, Caughey AB, Cheng YW. Weight gain in pregnancy: does the Institute of Medicine have it right? *Am J Obstet Gynecol* 2015;212:362.e1–8.

Fa-Kung Lee

*Department of Obstetrics and Gynecology, Cathy General Hospital,
Taipei, Taiwan*

*Department of Obstetrics and Gynecology, Taipei Veterans General
Hospital, Taipei, Taiwan*

Huann-Cheng Horng

*Department of Obstetrics and Gynecology, Taipei Veterans General
Hospital, Taipei, Taiwan*

*Institute of Clinical Medicine, National Yang-Ming University, Taipei,
Taiwan*

Peng-Hui Wang*

*Department of Obstetrics and Gynecology, Taipei Veterans General
Hospital, Taipei, Taiwan*

*Institute of Clinical Medicine, National Yang-Ming University, Taipei,
Taiwan*

*Department of Medical Research, China Medical University Hospital,
Taichung, Taiwan*

Female Cancer Foundation, Taipei, Taiwan

* Corresponding author. Department of Obstetrics and Gynecology,
Taipei Veterans General Hospital, National Yang-Ming University,
201 Section 2, Shih-Pai Road, Taipei, 11217, Taiwan. Fax: +886
255702788.

E-mail addresses: phwang@vghtpe.gov.tw,
pongpongwang@gmail.com (P.-H. Wang).