RETRACTION

The following article from the Thai Journal of Obstetrics and Gynaecology, 'Quality of life during third trimester of pregnant women with normal pre-pregnant weight and obese pre-pregnant women by Asia-specific BMI criteria' by Panyawudh Limsukhawat and Prisana Panichkul, published online on 30 December 2016 in Thai Journals Online (ThaiJO) (https://www.tci-thaijo.org/), and in year 2016, volume 24, pp.287-293, has been retracted by agreement between the authors, and the journal Editor in Chief, Vorapong Phupong, and The Royal Thai College of Obstetricians and Gynaecologists. The retraction has been agreed to due to double publication.

OBSTETRICS

Quality of Life during Third Trimester of Pregnant Women with Normal Pre-pregnant Weight and Obese Pre-pregnant Women by Asia-specific BMI Criteria

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ABSTRACT

Objectives: To compare quality of life between pre-pregnant normal weight and obese women during third trimester of pregnancy in Phramongkutklao Hospital.

Materials and Methods: This is a cross-sectional study. Pregnant women during third trimester who seek for antenatal care (ANC) at Phramongkutklao Hospital from August 2014 to March 2015 were enrolled to this research by convenience selection. The participants were classified into 2 groups, normal pre-pregnant weight (105 persons) and obese pregnant women (105 persons). All participants was reviewed demographic data, obstetrical and gynecologic history from and ANC record form and a self-administered SF-12 questionnaire was done. Higher score means better quality of life and each group were compared in both physiological and mental component, including 8 dimensions.

Results: Median pre-pregnant BMI of normal pregnant women is 20.4 kg/m^2 while obese pregnant women is 26 kg/m^2 Weight gaining between normal weight and obese pregnant women group were 13.8 and 10.7 kg, respectively. Only underlying hypertension and diabetes mellitus showed significant difference (p=0.008). Meanwhile, familial hypertension and diabetic mellitus history were found significant higher in obese pregnant than normal weight group. In physiological and mental components of both groups were not different significantly (p=0.181) but bodily pain dimension was higher in the obese women than the normal weight group significantly (p=0.044)

Conclusion: In conclusion, the quality of life during third trimester of the obese pregnant women were not different from the normal weight pregnant women in both physical and mental component. But the obese pregnant women had statistically significant less quality of life only in bodily pain dimension than the normal weight women.

Keywords: quality of life, obesity, pregnancy, third trimester, weight, body mass index

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คุณภาพชีวิตในไตรมาสที่สามของสตรีตั้งครรภ์ที่มีภาวะน้ำหนักตัวปกติและภาวะอ้วนก่อนตั้งครรภ์โดยใช้เกณฑ์ดัชนีมวลกายเฉพาะของคนเอเชีย

ปัญญาวุฒิ ลิ้มสุขวัฒน์, ปริศนา พานิชกุล

บทคัดย่อ

วัตถุประสงค์: เพื่อเปรียบเทียบคุณภาพชีวิตในไตรมาสที่สามของสตรีตั้งครรภ์ที่มีภาวะน้ำหนักตัวปกติ และภาวะอ้วนก่อน
ตั้งครรภ์ โดยใช้เกณฑ์ดัชนีมวลกายเฉพาะของคนเอเชียในโรงพยาบาลพระมงกุฎเกล้า

วิธีการศึกษา: การศึกษาวิจัยแบบตัดขวาง โดยศึกษาจากสตรีตั้งครรภ์ที่มาฝากครรภ์ในช่วงไตรมาสที่สามของการตั้งครรภ์
ตั้งแต่เดือนสิงหาคม พ.ศ.2557 ถึงเดือนมีนาคม พ.ศ.2558 ทั้งหมด 210 คน โดยแบ่งเป็น กลุ่มสตรีตั้งครรภ์น้ำหนักตัวก่อนการ
ตั้งครรภ์ปกติ และที่มีภาวะอ้วนก่อนการตั้งครรภ์ โดยใช้ค่าดัชนีมวลกายเฉพาะของคนเอเชีย จำนวนกลุ่มละ 105 คน โดยมีการ
รวบรวมข้อมูลทั่วไป ข้อมูลทางด้านสูตินรีเวชรวมทั้งประวัติการตั้งครรภ์จากเวชระเบียนและสมุดฝากครรภ์ และให้ผู้เข้าร่วมการ
วิจัยตอบแบบสอบถามวัดระดับคุณภาพชีวิต SF-12 ด้วยตนเอง โดยที่คะแนนระดับสูงหมายถึงคุณภาพชีวิตที่ดี และคะแนน
ทั้งหมดจะถูกแบ่งเป็นคุณภาพชีวิตทางด้านกายภาพและทางด้านจิตใจ รวมทั้งมิติของคุณภาพชีวิตทั้ง 8 มิติ

ผลการศึกษา: ค่ามัธยฐานของค่าดัชนีมวลกายก่อนการตั้งครรภ์ในกลุ่มสตรีตั้งครรภ์น้ำหนักปกติเท่ากับ 20.4 กิโลกรัมต่อเมตร
กำลังสอง และกลุ่มที่มีภาวะอ้วนเท่ากับ 26 กิโลกรัมต่อเมตรกำลังสอง น้ำหนักตัวที่เพิ่มขึ้นระหว่างการตั้งครรภ์ในกลุ่มน้ำหนัก
ก่อนการตั้งครรภ์ปกติและกลุ่มที่อ้วนเท่ากับ 13.8 และ 10.7 กิโลกรัม ตามลำดับ งานวิจัยนี้พบว่า สตรีตั้งครรภ์ที่มีโรคประจำ
ตัวคือ โรคความดันโลหิตสูง และเบาหวานนั้น จะพบในกลุ่มที่มีภาวะอ้วนก่อนการตั้งครรภ์มากกว่าอีกกลุ่มอย่างมีนัยสำคัญ
ทางสถิติ อีกทั้งประวัติโรคความดันโลหิตสูงและเบาหวานในครอบครัว ยังพบในกลุ่มสตรีที่มีภาวะอ้วนก่อนการตั้งครรภ์
มากกว่าด้วย ทางด้านระดับของคุณภาพชีวิตทั้งด้านกายภาพและจิตใจนั้น ทั้งสองกลุ่มไม่แตกต่างกัน (p=0.181) แต่ในมิติด้าน
ความเจ็บปวดพบว่ากลุ่มสตรีที่อ้วนมีระดับคุณภาพชีวิตต่ำกว่ากลุ่มน้ำหนักตัวปกติอย่างมีนัยสถิติ (p=0.044)

สรุป: ในกลุ่มสตรีที่มีภาวะอ้วนก่อนการตั้งครรภ์มีระดับคุณภาพชีวิตในไตรมาสที่สามทั้งทางด้านกายภาพและจิตใจไม่แตก
ต่างจากกลุ่มที่มีน้ำหนักตัวปกติ แต่สตรีที่มีภาวะอ้วนจะมีระดับคุณภาพชีวิตในมิติด้านความเจ็บปวดต่ำกว่าสตรีที่มีน้ำหนัก
ปกติอย่างมีนัยสำคัญทางสถิติ

Introduction

Nowadays, obesity is one of the most significant important global public health problems including Thailand. The following risk of chronic diseases from obesity in Asian ethnic has been increasing. Asian population have a trend of lower body mass index (BMI) than that observed for non-Asian populations[1]. From the previous studies in Asian ethnic, they found that Asian people have a high percentage of body fat at a low BMI[2-5], which is impending to increase risk of chronic diseases-related obesity (i.e., diabetes, hypertension, dyslipidemia and heart disease)[1,4,6,7].

In Thailand, prevalence of obese population was doubly increasing during past few decades[8]. This also reflects increasing the prevalence of obesity before and during pregnancy. The situation of high pre-pregnant BMI, pre-pregnancy obesity and obesity during pregnancy directly represent a major risk for adverse pregnancy outcome such as pregnancy-induced hypertension, gestational diabetic mellitus, labor induction, increasing cesarean delivery, moreover preterm labor and postpartum hemorrhage[9-12]. The quality of life in pregnant women especially during the third trimester was impacted by the obesity. From the study of western country found that mental factor was related with quality of life of whole time pregnancy. Particularly, during third trimester, the quality of life was influenced by changing anatomical and physiological factor of pregnancy significantly[13,14].

The most studies of quality of life in obese pregnancy is from western country so there are no study from Thailand, even more quality of life can reflect quality of health care. Furthermore, the prevalence of obese pre-pregnant women in Phramongkutklao hospital was intensified, therefore this research can image holistic health care[13,14]. Thus, the purpose of this study was to compare quality of life during third trimester of pregnancy using a cross sectional study between pre-pregnant normal weight and obese at Phramongkutklao hospital.

Materials and Methods

This cross-sectional study was conducted at Phramongkutklao Hospital after approval by the Royal Thai Army, Institutional Review Board. Two hundred and ten pregnant women during third trimester who seek for antenatal care (ANC) from August 2014 to March 2015weight were informed and enrolled to this research by convenience selection. The participants were classified into 2 groups, the normal group with 105 normal pre-pregnant weight women and the obese group with another 105 women who were overweight and/or obese. BMI that use in this research is classified according to the Regional Office for the Western Pacific Region of WHO (WPRO) specific classification in 2004 for obesity in Asian populations[1]. Normal pre-pregnant weight was defined as BMI less than 23 kg/m^2 and in the obesity group was defined the pre-pregnant women with BMI equals or more than 23 kg/m^2. Pregnant women who cannot read or write in Thai or refuse to participate in this study were excluded. All participants have given informed consent before recruited in this study. For participants aged less than 18 years old, parental permission were also obtained.

The research questionnaires were composed of two parts with demographic data, and quality of life level test. The first part consists of demographic data, obstetrical and gynecologic history from ANC record form. The second part was self-administered quality of life test that use standard form: SF-12 version 2. SF-12 is produced by Quality Metric Incorporated, USA with permission for use in this study[15]. The internal consistency reliability obtained the Cronbach's alpha equal to 0.73 in physiological and 0.77 in mental dimension. Total score for each question is between 0-100 scores.

SF-12 test can demonstrate health in 8 dimensions includes physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health. Each dimension score is calculated by mean average of score from each representing question. High score mean high quality of life. Furthermore SF-12 test can generate score into 2 categories, physical component scores (PCS) and mental component scores (MCS), which mean average of both categories in USA is 50 (standard deviation: SD=10)[14,16]. Primary outcome of this study was comparing the quality of life between normal pre-

pregnant weight and obese pregnant women in physiological and mental component. Secondary outcome was comparing them in 8 dimensions.

Statistical analysis

Data were analyzed using IBM SPSS statistic version 22.0. Baseline characteristic were presented with number, percentage, mean, SD, median and range. Continuous data were compared using t-test or Mann-Whitney U test, while categorical data were compared using λ^2 (Chi-square) test or Fisher's exact test. P-value < 0.05 was considered statistical significant. Logistic regression analysis was used to adjust the confounding factors.

Results

The demographic characteristics including obstetrical and gynecologic data of study population are shown in Table 1. Median age, the average salary per month, level of education primigravida of both group are similar. Meanwhile, average pre-pregnant BMI of normal pregnant women is 20.4 kg/m^2 but the obese pregnant women is 26 kg/m^2. Pregnancy weight gain

between normal group and obesity group is 13.8 and 10.7 kg, respectively. In the obesity group, women have underlying disease (hypertension and diabetes mellitus) which is significant higher compare to the normal weight group (p=0.006). Also the familial antecedents of hypertension and diabetic mellitus history were significantly more common in obese pregnant women than those with normal weight women (p=0.002).

Table 2 illustrated the comparison of quality of life level between 2 groups in both physiological and mental components. Although both components did not show significant different between groups, the median of physiological and mental components of quality of life level in obese pregnant group is lower than normal weight women. However, the physiological and mental components of both groups were not different significantly. This study continued to evaluate the quality of life in 8 dimensions as shown in Table 3. They did not reveal any significant different in quality of life between the 2 groups except the bodily pain's dimension that has significant lower score in the obesity group (p=0.044)

Table 1. Baseline characteristic between normal weight and obese pregnant women.

Characteristics	Normal pre-pregnant weight (n=105)	Obesity pre-pregnant weight (n=105)	P
	Median (min-max)		
Age (year)	29 (16-41)	31 (17-43)	0.041¥
Pre-pregnant weight (kg)	52 (39-65)	67.5 (51.5-115)	< 0.001¥
Weight gain (kg)	13.8 (0-36.8)	10.7 (0-28.5)	< 0.001‡
Body mass index (kg/m^2)	20.4 (16-22.9)	26 (23-46.1)	< 0.001¥
Education n (%)			0.105
Primay school	7 (6.6)	13 (12.0)	
High school	30 (28.5)	20 (19.0)	
Diploma	25 (24.0)	29 (28.0)	
Salary	23,000 (5,000-80,000)	25,000 (8,000-80,000)	0.622¥
Gravida n (%)			0.526
1	51 (48.6)	45 (43.0)	
2	37 (35.2)	38 (36.0)	
≥ 3	17 (16.2)	22 (21.0)	

Table 1. Baseline characteristic between normal weight and obese pregnant women. (Cont.)

Characteristics	Normal pre-pregnant weight (n=105)	Obesity pre-pregnant weight (n=105)	P
	Median (min-max)		
Parity n (%)			0.331[†]
0	61 (59.8)	53 (51.0)	
1	32 (29.9)	40 (38.0)	
≥ 3	12 (10.3)	12 (11.0)	
Underlying disease n (%)			
Hypertension	1 (1)	10 (10)	0.006
Diabetes mellitus	1 (1)	10 (10)	0.006
Family history n (%)			
Hypertension	18 (18.6)	43 (43)	< 0.001
Diabetes mellitus	27 (27.8)	49 (49)	0.002

Chi square test, † Fisher's exact test, ‡ Independent t-test, ¥ Mann-Whitney U test

Table 2. Quality of life level in physical and mental component score of normal weight and obese pregnant women.

Quality of life level	Normal pre-pregnant weight (n=105)	Obesity pre-pregnant weight (n=105)	P
	Median (min–max)	Median (min–max)	
Physical component score	58.3 (25-83.3)	54.2 (29.2-91.7)	0.181
Mental component score	56.3 (37.5-83.3)	52.4 (37.5-83.3)	0.202

Mann-Whitney U test

Table 3. Quality of life level in 8 dimensions of normal weight and obese pregnant women.

Quality of life level	Normal pre-pregnant weight (n=105)	Obesity pre-pregnant weight (n=105)	P
	Median (min–max)	Median (min–max)	
Physical Functioning	50 (0-100)	50 (0-100)	0.418
Role Physical	50 (12.5-100)	50 (25-100)	0.975
Bodily Pain	75 (25-100)	50 (25-100)	0.044
General Health	50 (25-100)	50 (25-100)	0.582
Vitality	50 (0-100)	50 (0-100)	0.802
Social Functioning	75 (25-100)	75 (0-100)	0.321
Role Emotional	50 (0-100)	50 (12.5-100)	0.609
Mental Health	50 (12.5-75)	37.5 (12.5-87.5)	0.247

Mann-Whitney U test

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Discussion

The increasing prevalence of obesity worldwide is one of the most important public health problems. Thailand was reported by WHO in 2014 to have prevalence of obesity in adult women 5-14.9% which is the second country in South-East Asia that had a high percentage of overweight and obese population[17]. There are only few researches in Thailand which intensively interested and worked out in the overweight and obesity situation, especially in pregnant women. This is almost the first research about quality of life and obesity in pregnant women in Thailand. Obese individuals are at increased risk for an imposing number of complications[18], including hypertension and diabetic mellitus. Similarly, the results of this study significantly showed higher prevalence of both underlying diseases in the obese pregnant group than the normal weight pregnant group. The study of Zhou BF, et al., and Tsai WL, et al., also found the prevalence of hypertension, diabetes increased with increasing level of BMI[6, 20]. Meanwhile, Eva MA, et al[19], reported that the pregnant women with underlying disease such as hypertension and diabetes mellitus had lower quality of life, especially mental component, than those without any disease. However, in our study, we didn't focus on the relationship between underlying disease and quality of life, so we may need to further study on this in the future.

For a mom-to-be in future, pregnancy is a waiting event that they are looking forward to see her healthy newborn. It is a time of happiness that is the reason why mental component score more than average of United State which is 50 scores in both normal weight and obesity group, even when it was lower in obesity comparing with the normal weight pregnant group, although it was not statically significant. From the research of Amador N from Mexico[16], they revealed that physiological component score which include bodily pain, physical functioning and role limitation, were less than 50 scores which is below normal average in both group, while this study is more than 50 in both group. Because of the different definition criteria for diagnosis normal weight and obesity which we use Asian specific BMI that is lower than western BMI criteria, this may be one reason that affected the difference of the physiological component score. However, this study showed that the differentiation between normal weight and obese pregnant group in both physiological and mental component score were not statistically significant.

For the study in quality of life in 8 dimensions which is physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health. We found that only bodily pain in the obese pregnant group was significant lower than in the normal weight pregnant group. Stretching of abdominal wall from pregnancy may be the cause of discomfort at the abdomen leading to pain and possibly disturb the normal daily life[21, 22]. Concordant with the study of Tsai WL from Taiwan[20], their research showed that bodily pain is one of the affected dimension in obese person.

Limitation

Nevertheless, this study has some limitations. Firstly, the collecting data is from pregnant women in only urban community, where is easy to access convenience infrastructure and easily attend at tertiary care hospital that can be selection bias. Secondly, pregnant women in this study were only in third trimester which is the most affected period during pregnancy so it may not show how obesity effect other period of pregnancy. Finally, obesity is not the only factor that affect quality of life. So in the future, we need to keep going study other factor that may be affecting the quality of life of pregnant women. Further studies should be performed in community base population both in urban and rural area, and the other factor should be evaluated such as underlying disease and education. The result in the further study will have more accuracy and reliability.

Conclusion

In conclusion, the quality of life of the obese pregnant women were not different from the normal weight pregnant women in both physical and mental component but the obese pregnant women had statistically significant less quality of life only in bodily pain dimension than the normal weight women.

Acknowledgements

References

1. WHO expert consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet 2004;363:157–63.

2. Deurenberg-Yap M, Schmidt G, Staveren van WA, Deurenberg P. The paradox of low body mass index and high body fat percent among Chinese, Malays and Indians in Singapore. Int J Obes 2000;24:1011-7.

3. He M, Tan KCB, Li ETS, Kung AWC. Body fat determination by dual energy X-ray absorptiometry and its relation to body mass index and waist circumference in Hong Kong Chinese. Int J Obes 2001;25:748-52.

4. Ko GTC, Chan JC, Cockram CS, Woo J. Prediction of hypertension, diabetes, dyslipidemia or albuminuria using simple anthropometric indexes in Hong Kong Chinese. Int J Obes 1999;23:1136-42.

5. Gallagher D, Heymsfield SB, Heo M, Jebb,SA, Murgatroyd PR, Sakamoto Y. Healthy percentage body fat ranges: an approach for developing guidelines based on body mass index. Am J Clin Nutr 2000;72:694-701.

6. Zhou BF. Predictive values of body mass index and waist circumference for risk factors of certain related diseases in Chinese adults: study on optimal cut-off points of body mass index and waist circumference in Chinese adults. Biomed Environ Sci 2002;15:83-96.

7. Deurenberg-Yap M, Chew SK, Lin FP, van Staveren WA, Deurenberg P. Relationships between indices of obesity and its comorbidities among Chinese, Malays and Indians in Singapore. Int J Obes 2001;25:1554-62.

8. Aekplakorn W, Mo-Suwan L. Prevalence of obesity in Thailand. Obes Rev 2009;10:589–92.

9. Doherty DA, Magann EF, Francis J, Morrison JC, Newnham JP. Pre-pregnancy body mass index and pregnancy outcomes. Int J Gynaecol Obstet 2006;95: 242–7.

10. Weiss JL, Malone FD, Emig D, Ball RH, Nyberg DA, Comstock CH, et al. Obesity, obstetric complications and cesarean delivery rate--a population-based screening study. Am J Obstet Gynecol 2004;190: 1091–7.

11. Schrauwers C, Dekker G. Maternal and perinatal outcome in obese pregnant patients. J Matern Fetal Neonatal Med 2009;22:218–26.

12. Somprasit C, Tanprasertkul C, Rattanasiri T, Saksiriwutth P, Wongkum J, Kovavisarach E, et al. High pre-pregnancy body mass index and the risk of poor obstetrics outcomes among Asian women using BMI criteria for Asians by World Health Organization Western Pacific Region (WPRO): a large cohort study. J Med Assoc Thai 2015;98(Suppl.2):S101-S107.

13. Castro LC, Avina RL. Maternal obesity and pregnancy outcomes. Curr Opin Obstet Gynecol 2002; 14(6): 601-6.

14. Wen LT, Chun YY, Sheng FL, Fu MF. Impact of obesity on medical problems and quality of life in Taiwan. Am J Epidemiol 2004;160:557-65.

15. Ware JE, Kosinski M, Turner DM, Sundaram M, Gandek B, Maruish ME. SF-12v2 Health Survey: Administration guide for clinical trial investigators. Lincoln, RI: Quality Metric Incorporated 2009. p.1-13

16. Amador N, Juarez JM, Guízar JM, Linares M. Quality of life in obese pregnant women: a longitudinal study. Am J Obstet Gynecol 2008;198:203-5.

17. World health Organization. Global status report on noncommunicable diseases 2014. [internet]. 2014 [cited 2015 Jun 28]. Available from: http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf.

18. Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, et al. Williams Obstetrics, 24th ed. The McGraw-Hill company, United States of America 2014. p.961-72.

19. Eva MA, Eva GR, Gerda TR, Ferdor DA, Josef EG, Uwe LA. Quality of life outcomes in pregnancy and postpartum complicated by hypertensive disorders, gestational diabetes and preterm birth. J Psychosom Obstet Gynecol 2009;30:231-7.

20. Tsai WL, Yang CY, Lin SF, Fang FM. Impact of obesity on medical problems and quality of life in Taiwan. Am J Epidemiol 2004;160:557-65.

21. Gregory ES, Michael VK, Kathleen JD, Diana L, Paul K, Gerald V, et al. Association between obesity and psychiatric disorders in the us adult population. Arch Gen Psychiatry 2006;63:824–30.

22. Baeten JM, Bukusi EA, Lambe M. Pregnancy complications and outcomes among overweight and obese nulliparous women. Am J Public Health 2001;91: 436–40.

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