Newborn Body Indices in Housewives and Working Mothers

Alieh Torabizadeh, M.D. ; Habibollah Esmaili, M.D.

Department of Obstetrics and Gynecology, Ghaem Hospital, Mashhad , Iran

Received November 2007; Revised and accepted July 2008

Abstract

Objective: This study aimed to compare newborns anthropometric indices of housewives and employed women.

Materials and Methods: This case control study compared newborns' anthropometric indices (weight, length, head circumference) and first minute APGAR between working women and housewives. Two hundred consecutive term pregnant women during active phase of labor without any pregnancy complications were evaluated. For each participant a questionnaire was filled by the researcher. Employed women according to their standing position during work time were divided into three groups: heavy, light and moderate jobs.

Results: The mean weight, length and head circumference of the newborns were higher in employed women ($p=0.018$, $p<0.001$, $p=0.010$, respectively). After eliminating effect of the interfering variables by using a general linear model, it was observed that the mother's job has a direct influence on newborn's length and head circumference. But infant's weight was similar in two groups ($p=0.340$). The newborn's anthropometric indices and first minute APGAR had not significant difference in subgroups of job difficulty.

Conclusion: Maternal job has a direct positive influence on newborn's length and head circumference. But infant's weight is not related to maternal job.

Key words: Pregnancy, Job's syndrome, Birth weight, Employment, Household

Introduction

In the recent decades the women's role has been changed in societies. The girls are more educated and delay their marriage and pregnancy. They are more frequently engaged in outdoor jobs. From 1961 to 1985 the working women increased up to 50% in USA. Physiological changes in joints and skeletal system can cause pain during physical works in pregnant women. Although the relation between job condition and pregnancy complications is controversial, but many employed women are always worried about the effects of the stress, tiredness and long shift working on their pregnancy outcome. European women prefer to rest more during pregnancy and lactation (1-2).

Research on 160688 pregnant women in 29 studies till 1999 has shown that physical works, long standing, long working time and tiredness are related with premature labour, preeclampsia and low birth weight (3). Reversely, a research from 1977 to 1979

Correspondence:
Alieh Torabizadeh, Department of Obstetrics and Gynecology, Ghaem Hospital, Mashhad, Iran.
Tel: +98 511-113-0417
E-mail: TorabizadehA@mums.ac.ir

Table 1: Newborn's body Indices in housewives and employed women before eliminating interfering variables

	Employed	Housewives	P-Value
Weight (g)	3094.1± 409.4	2952.3± 427.6	0.018
Length (cm)	48.9± 2.7	47.3± 3.2	<0.001
Head circumference (cm)	34.3± 1.5	33.7± 1.47	0.010
First minute APGAR	8.67± 0.5	8.5± 0.62	0.086

Data are presented as Mean ± SD.

in Boston hospital revealed no considerable relation between mother's work during pregnancy and premature labour, newborn's weight and head circumference (4-5).

A study between female residents with hard and tense physical work and housewives of male residents showed that the rate of premature labour and small for gestational age (SGA) were equal in both groups, but preeclampsia was more common in female residents. This results show that long and hard works have less effect on pregnancy outcome in healthy and privileged women (6).

Since employed women usually continue their job during pregnancy, this question has been raised whether mother's job influences pregnancy and fetomaternal outcomes? There was not enough information available in this field in our country. This research aimed to compare newborns´ anthropometric indices of housewives and employed women in Mashad, Iran.

Materials and methods

This case control study compared newborn's body indices between working women and housewives from 2004 to 2005. Two hundred consecutive term pregnant women during active phase of labor without any pregnancy complications were admitted in midwifery department of Ghaem Hospital, Mashhad, Iran and evaluated in this survey.

After achievement of informed written consents the parturients were divided into 2 equal groups, including 100 employed (case group) and 100 housewives (control group). For each participant a questionnaire was filled by the researcher. The questionnaire contained questions about maternal age, job and education, prenatal care, mother's weight upon admission, weight gain during pregnancy, parity and child bearing interval and method of delivery. Newborns' weight, length, head circumference and first minute APGAR were recorded after delivery. Employed women according to their standing position during work time were divided into three groups: heavy, light and moderate maternal jobs. The job difficulty was described as the following:

Heavy job: at least three hours standing in working time,

Moderate job: periodically standing and sitting in working time,

Light job: less than one hour standing in working time,

Finally results were analyzed by chi square, t-test and analysis of variance in EXCEL (Microsoft® Co.) and SPSS 11.5 (SPSS Inc.chicago IL.) softwares. P-value less than 0.05 were considered as the statistical significance level.

Results

The results of this study showed that some factors such as age, education and caesarian section rate have a considerable increase in the employed women ($P < 0.001$).

The weight gain during pregnancy was less in employed group (60% and 87%, respectively) ($P < 0.001$). The number of parity and child bearing interval was the same in both groups ($P = 0.34$, $P = 0.1$, respectively).

As shown in Table 1, the mean weight, length and head circumference of the newborns were more in employed women ($p = 0.018$, $p < 0.001$, $p = 0.010$, respectively).

After eliminating effect of the interfering variables with using a general linear model, it was obser-

Table 2: Logistic Regression of mothers' work variables on length and head circumference of newborns after eliminating interfering variables

	Regression coefficient	t	P-Value
Length	-1.556	-3.67	< 0.001
Head circumference	-0.554	-2.59	0.01

Table 3: The comparison of newborns' Indices due to job difficulty in employed women

	Job			P-Value
	Heavy	Light	Moderate	
Weight (g)	3040.6±456.8	3167.4±325.6	3230.4 ± 397.3	0.39
Length (cm)	48.8±2.7	49.2±2.2	48.5± 3.2	0.6
Head circumference (cm)	34.2±1.4	34.2±1.2	34.7±1.9	0.41
First minute APGAR	8.7±0.5	8.8±0.48	8.3±0.65	0.01

Data are presented as Mean ± SD.

ved that the maternal job has a direct influence on newborn's length and head circumference (Table 2). The mean and range of infants' weight was similar in both groups (p = 0.340). There was no difference in first minute APGAR between two groups (Tables 1 and 2).

Finally according to maternal job difficulty the newborns' anthropometric indices and first minute APGAR had no significant difference in study groups (Table 3).

Discussion

In this study we compared the newborn's anthropometric indices, including weight, length and head circumference of employed and unemployed women. The results showed that weight was not significantly different between the two groups. This is in accordance with Zuckerman et al and Makowiec et al findings (4-5), but Biernacka et al, Hernandez et al and Frazier et al found that the newborns' weight of working mothers are less than of those remained at home (7-9).

Our research showed that the length of new born of working women was more in working mothers group. Although Zuckerman et al reported just the length of newborns of standing position working women is higher than of those not working. In opposite to Zuckerman study we have concluded that head circumference of infants of working women was bigger.

In our study we divided standing working women into three groups heavy, light, moderate and then we evaluated newborn weight, length and head circumference and first minute APGAR among these groups. The results showed no significant difference between them. On the contrary in Mackowiec's study the maternal occupation had a clear impact on body mass of infants, especially in those mothers who are working more than 9 hours a day. Naeye et al approved the infant's weight of working women especially in third trimester was less about 150-400 g (7, 12).

This study has an important limitation in its design, which is lacking of maternal and paternal anthropometric indices in order to evaluate the effect of genetic factors. It also could not be ignored that socioeconomic and cultural conditions may well affect newborn's anthropometric indices. This study could be a pilot for further researches.

Acknowledgement

The authors wish to express sincere gratitude and appreciation to the midwifery department of Ghaem Hospital. There exists no conflict of interest to declare.

References

1. Shilling S, Lalich NR. Maternal occupation and industry and the pregnancy outcome of U.S. married women, 1980. Public Health Rep 1984; 99: 152-61.
2. Riley J. Did mothers begin with an advantage? A study of childbirth and maternal health in England and Wales, 1778-1929. Popul Stud (Camb) 2003; 57: 5-20.
3. Mozurkewich EL, Luke B, Avni M, Wolf FM. Working conditions and adverse pregnancy outcome: a meta-analysis. Obstet Gynecol 2000; 95: 623-35.
4. Zuckerman BS, Frank DA, Hingson R, Morelock S, Kayne HL. Impact of maternal work outside the home during pregnancy on neonatal outcome. Pediatrics 1986; 77: 459-64.
5. Makowiec-Dabrowska T, Siedlecka J. Physical exertion at work and the course and outcome of pregnancy. Med Pr 1996; 47: 629-49.
6. Klebanoff MA, Shiono PH, Rhoads GG. Outcomes of pregnancy in a national sample of resident physicians. N Engl J Med 1990; 323: 1040-5.
7. Biernacka JB , Hanke W. The Effect of Occupational and non-Occupational Psychosocial Stress on the Course of Pregnancy and its Outcome. Med Pr 2006; 57: 281-90.
8. Hernandez-Pena P, Kageyama ML, Coria I, Hernandez B, Harlow S. Work conditions, labor fatigue and low birth weight among street vendors. Salud Publica Mex 1999; 41: 101-9.

9. Frazier LM, Ho HL, Molgaard CA. Variability in physician management of employment during pregnancy. Women Health 2001; 34: 51-63.
10. Cunningham FG , Gant NF, Leveno KJ , Gilstrop III LC, Hauth JC, Wenstrom KD. Fetal growth & development .In: William's obstetrics. 22st Ed. New York: Mc Grow - Hill; 2005: 91-117.
11. Dickute J, Padaiga Z, Grabauskas V, Gaizauskiene A, Basys V, Obelenis V. Do maternal social factors, health behavior and work conditions during pregnancy increase the risk of low birth weight in Lithuania? Medicina (Kaunas) 2002; 38: 321-32.
12. Naeye RL, Peters EC. Working during pregnancy: effects on the fetus. Pediatrics 1982; 69: 724-7.