

## Mother Work and Pregnancy Outcome in the Gaza Strip

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**Abstract:**

**Objectives:** *to identify the effect of work during pregnancy on maternal and infant health in order to improve pregnancy outcome and raising recommendations for policymakers.*

**Subjects and Methods:** *this study used data from a prospective cohort study of pregnant women and their deliveries which were conducted to determine the risk factors the pregnant women may be exposed to, and its effect on pregnancy outcome. Pregnant women have been recruited at their third trimester at six health facilities.*

**Findings:** *working mothers are significantly more liable to trauma, presented with premature rupture of membranes, and gave birth through Cesarean section more than non-working mothers. In addition, working mothers were physically abused, anemic, gave history of abortion, and suffered hyperemesis gravidarum more than non-working mothers. Infants of non-working mothers have significantly been breast-fed more than those of working mothers. Also, infants of working mothers were more jaundiced, have one or more morbid condition, and of low birth weight than those of non-working mothers.*

**Conclusion:** *the effect of maternal work on infant health showed that one or more of neonatal morbidities affect more than half of newborn deliveries, it appears that working mothers gave birth to jaundiced, and less birth weight infants. Non-working mothers breastfed their infants more than working mothers.*

*Regarding maternal health and work status, it is revealed that working mothers are significantly more subjected to trauma, PROM, and cesarean section than non-working mothers. In addition, working mothers are more physically abused, and more anemic.*

**Key words:** *pregnancy outcome, working conditions, LBW, Gaza Strip.*

*Abbreviations: LBW, low birth weight; PROM, premature rupture of membranes; SGA, small for gestational age; PCBS, Palestinian central bureau of statistics; IMR, Infant Mortality Rate; UNRWA, united nations refugees work agency; MOH, Ministry of Health; EDHS, Egypt demographic and health survey*

### **Introduction:**

The employment rate of mothers has increased worldwide in recent years (Amanda, 2008). Palestinian women in the Gaza Strip have been affected by the Israeli-Palestinian conflict, their security compromised, their health and lives and families threatened. In addition to direct danger to themselves, some mothers may lose their fathers, husbands, sons or brothers because of death, imprisonment or emigration. The current siege imposed by the Israeli forces around the Gaza Strip leading the Gaza Strip to sink in penury. In 2007, about 80% of population is under poverty line (World Factbook, 2008). Consequently, women try to bear the responsibility and look for work. Percent women economically active constituted 9.5% (Azzouni, 2008). Among working women, a moderate excess risk was observed for women working more than 42 hours a week or standing more than six hours a day (Saurel-Cubizolles, et al, 2004). Women with high-stress jobs, defined as jobs high in demands and low in control, have been observed to deliver babies weighing 190 g less than women who had low-stress jobs or were unemployed. Such high-stress jobs have been associated with other pregnancy outcomes as well, such as preeclampsia. Thus, to adequately consider potential pregnancy effects of strenuous activity in the workplace, the psychological stress component of women's jobs needs to be considered (Shaw, 2003).

Pronounced physical exertion during work may increase intra-abdominal pressure, decrease uterine blood flow, alter hormonal balance, and affect nutritional status (Lindbohm, 2008).

Physically demanding work was significantly associated with preterm birth, maternal hypertension and SGA infants. Prolonged standing, shift work and work fatigue score also were significantly associated with preterm birth. Long work hours, however, were not associated with preterm birth (Barkey, 2000). Globally, about 15.5% of all births are low birth weight (LBW). Approximately, 95% of these are in

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developing countries (UNICEF & WHO, 2008). PCBS reported approximately 8.3% of live birth are low birth weight (MOH, 2003). Infant deaths constitute 17.9% of total deaths. Infant Mortality Rate (IMR) is still high in the Gaza Strip (24/1000 live births). Half of infant deaths occurred in the early neonatal period; about half of infant deaths (47.8%) result from LBW and preterm neonates (MOH, 2003). Risk factors adversely affect the pregnancy outcome is diverse and include maternal, feto-placental, and environmental risk factors. Maternal risk factors leading to LBW infants and preterm delivery are infection, malnutrition, maternal characteristics (too young, too old, low educational level) genetic/constitutional factors (short stature and racial disparity), low social standard and poverty, working conditions, cultural-behavioral factors (inadequate antenatal care and short spacing, stress, physical abuse, smoking, alcohol and illicit drug use), reproductive and obstetric factors (high parity, prior poor birth outcome, PROM), and medical conditions as hypertension,.

Pre-pregnancy maternal risk factors affect the pregnancy outcome include malnutrition (pre-pregnancy weight), infection, height (less than 150 cm), heart volume, ethnicity, consanguinity, smoking, drug addiction, and medical conditions. Maternal risk factors acting during pregnancy include malnutrition (weight gain), infections, maternal age, obstetric history (primigravida, multiparity, short spacing, previous bad pregnancy outcome), and medical conditions.

In the Gaza Strip, The high risk pregnancy was 14.8% of total newly pregnant women in Ministry of Health clinics (MOH, 2003). According to UNRWA risk scoring system, 13.7% of pregnant women were in the high risk category, and 21.8% at moderate risk (UNRWA, 2003).

### **Subjects and Methods**

The current study used the data from a longitudinal follow up study whereas pregnant women were selected randomly at their third trimester (after 28 weeks gestation) from six study health centers in North Gaza and Gaza Governorates. Women were seen at least three times: the first, during antenatal visit in their 3<sup>rd</sup> trimester, after 28-week gestation, the second at delivery with their neonates and the third during the first week postpartum where their neonates were examined.

The health facilities included in the study fulfilled the following criteria: covered urban, rural, and refugee's area; availability of antenatal health records sufficient to perform the study; avoid duplication of health service delivery. Six hundred and fifty one women who were pregnant in their third trimester (after 28 weeks gestation) were picked randomly in the study. The participants in the study have fulfilled the following criteria: Availability of the antenatal medical records, pregnant women in their third trimester, singleton pregnancy, and the mother gave consent to the inclusion. Moreover, association of the working status of the pregnant women and maternal and infant health is estimated. The Statistical Package for Social Science (SPSS) program version 12 was used under windows XP. The data was defined, coded, entered and analyzed by the researcher. Pearson Chi square was used for comparing categorical variables.

### **Results**

Five hundred and ninety pregnant women were successfully followed up during their third trimester and their neonates were clinically examined. A mean age of participants was 25.24 years, SD =  $\pm$  6.11 years (minimum=15; maximum=46). The mean marital age was 18.35 years, SD =  $\pm$  3.22 years (minimum = 12.5; maximum = 38). The percentage of all women of study population who had married before they reach their 18<sup>th</sup> birthday is 43.4%. Almost all of babies were delivered at hospital (99.3%).

Table 1: Maternal and Paternal Characteristic

Maternal characteristics		
Maternal Age	No	%
< 20	115	19.5
20-34	416	70.5
35-	59	10
Total	<b>590</b>	<b>100</b>
Maternal Education		
	No	%
Illiterate	12	2
Primary	77	13.1
preparatory	155	26.3
Secondary	250	42.4

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University	96	16.3
Total	<b>590</b>	<b>100</b>
Maternal Work	No	%
Yes	29	4.9
No	561	95.1
Total	<b>590</b>	<b>100</b>
Paternal Characteristics		
Husband Education	No	%
Illiterate	11	1.9
Primary	80	13.6
preparatory	161	27.3
Secondary	208	35.3
University	130	22
Total	<b>590</b>	<b>100</b>
Husband Occupation	No	%
Employee	176	29.8
Merchant	26	4.4
Skilled	87	14.7
Labor	249	42.2
Workless	52	8.8
Total	<b>590</b>	<b>100</b>

The table (1) shows maternal and paternal characteristics. Most of the participants (70.5%) are in

the favorable age of pregnancy (more than 20 and less than 35 years). The illiteracy rate is 2% and for husbands is 1.9%. About 4.9% of them share in the labor force and 8.8% of their husbands are looking for work.

Table 2: Pregnancy Outcome

Pregnancy outcome*	No	%
Live births	583	98.8
Perinatal Deaths	7	1.2
LBW (gm)	No	%
<1500	2	0.3
1500-	49	8.3
2500-	539	91.4

Gestational age	No	%
Preterm	24	4.1
Term	541	91.7
Post-term	25	4.2
Neonatal morbidity	No	%
Healthy infants	131	22.2
Infections	220	37.3
Jaundice	163	27.6
Asphyxia	43	7.3
Congenital anomalies	29	4.9
Trauma	4	0.7
Total	590	100

\*7 babies of studied participants died in the perinatal period, 2 of them were born dead, and five died within the first week of delivery.

► 131 babies were born healthy

Table (2) shows the pregnancy outcome. Unfortunately, seven of infants were born dead (1.2%) and five (0.8%) died before they completed their seven days of life. Observing the neonates and following up them during the early neonatal period show that study neonates who suffered at least one morbidity problem constituted 55.1%. Regarding the morbidity problems encountered, infections was on the top of the list where more than one-third of the neonates (37.3%) suffered one or more attack of infection during the early neonatal period. Putting physiological jaundice apart (28.1%), low birth weight was ranked as first of non-infectious problems (8.6%), followed by neonatal asphyxia (7.3%). Then, congenital anomalies (4.9%) and birth trauma (0.7%). Working mothers constitute 4.9% of the study participants; 3.2% were engaged in heavy work, 1.5% in moderate work, and only 0.2% in light work. Working pregnant women sharing in the work force are present in higher percentage in refugees' camps (8.5%), less in city (3.2%), and least in village (3%)

(Table 3). The rate of delivery of LBW infants among working mothers was 10.3% which was higher than the rate of delivery of LBW infants among not working mothers (8.6%), this relation is statistically significant). One or more of neonatal morbidity is present in 55.1% of neonates; 58.6% of them among neonates of working

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mothers while 54.9% were among neonates of workless mothers. Three percent of participants gave birth to neonates with congenital anomalies; 5.3% were among working mothers whilst, 2.9% were among workless mothers. Moreover, 98.6% of infants of non-working mothers have been breastfed while, 93.1% of working mothers breastfed their infants (table 4).

Table 3 : Maternal Work and Residency

Neonatal Morbidity	Working	Workless	Total
	No (%)	No (%)	No (%)
City	6 (3.2)	184 (96.8)	190 (100)
Village	6 (3)	194 (97)	200 (100)
Camp	17 (8.5)	183 (91.5)	200 (100)
Total	29 (4.5)	561 (95.1)	590 (100)
P > 0.01			

Table 4 : Maternal Work and Infant Health

Neonatal Morbidity	Working	Workless	Total
	No (%)	No (%)	No (%)
Yes	17 (5.2)	308 (94.8)	325 (100)
No	12 (4.5)	253 (95.9)	265 (100)
Total	29 (4.9)	561 (95.2)	590 (100)
P > 0.05			
Birth Weight (gm)	No (%)	No (%)	No (%)
NBW $\geq$ 2500	26 (89.7)	513 (91.4)	539 (91.4)
LBW $\leq$ 2499	3 (10.3)	48 (8.6)	51 (8.6)
Total	29 (100)	561 (100)	590 (100)
P > 0.05			
Neonatal Jaundice	No (%)	No (%)	No (%)
Yes	9 (31)	154 (27.9)	163 (28.1)
No	20 (69)	397 (72.1)	417 (71.9)
Total	29 (100)	551 (100)	580 (100)*
P > 0.05			
Breast Feeding	No (%)	No (%)	No (%)
Yes	27 (93.1)	546 (98.6)	573 (98.3)
No	2 (6.9)	8 (1.4)	10 (1.7)
Total	29 (100)	554 (100)	583 (100)*
P < 0.05			

\*Seven were dead, could not be followed

Hyperemesis gravidarum affect 28.1% of participant; 41.4% of working mothers and 27.5% of workless mothers. Obstetric history reveals that apart from primigravidae, 42.5% of participants gave history of abortion. More than half of working mothers (52.5%) aborted at least once whilst, 42.1% of workless mothers experience at least one abortion. PROM occurred in 3.2% of participants; working mothers were significantly suffered PROM more frequently (13.8%) than workless mothers (2.7%). Moreover, working mothers were more anemic (42.9%) than workless mothers (41.7%).

Violence against women represented in 8.1% of participants that was physically abused; working mothers were beaten (13.8%) more than workless mothers (7.8%). In addition, 8.3% of participants were exposed to trauma; traumatized working mothers were significantly higher (20.7%) than workless mothers (7.7%) (table 5).

Table 5: Maternal Work and Health Status

History of Abortion	Working	Workless	Total
	No (%)	No (%)	No (%)
No	9 (47.4)	240 (57.7)	249 (57.2)
Yes	10 (52.6)	176 (42.3)	186 (42.8)
Total	19 (100)	416 (100)	435 (100)
P > 0.05			
Maternal Hemoglobin	No (%)	No (%)	No (%)
≥ 11	16 (57.1)	320 (58.3)	336 (58.2)
≤ 10.9	12 (42.9)	229 (41.7)	241 (41.8)
Total	28 (100)	561 (100)	577 (100)
P > 0.05			
Physical Abuse	No (%)	No (%)	No (%)
No	25 (86.2)	517 (92.2)	542 (91.9)
Yes	4 (13.8)	44 (7.8)	48 (8.1)
Total	29 (100)	561 (100)	590 (100)
P > 0.05			
Trauma	No (%)	No (%)	No (%)
No	23 (79.3)	518 (92.3)	541 (91.7)
Yes	6 (20.7)	43 (7.7)	49 (8.3)
Total	29 (100)	561 (100)	590 (100)
P < 0.05			

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Hyperemesis gravidarum	No (%)	No (%)	No (%)
No	17 (58.6)	407 (72.5)	424 (71.9)
Yes	12 (41.4)	154 (27.5)	166 (28.1)
Total	29 (100)	561 (100)	590 (100)
P > 0.05			
PROM	No (%)	No (%)	No (%)
No	25 (86.2)	546 (97.3)	571 (96.8)
Yes	4 (13.8)	15 (2.7)	19 (3.2)
Total	29 (100)	561 (100)	590 (100)
P < 0.01			
Mode of Delivery	No (%)	No (%)	No (%)
Cesarean Section	7 (24.1)	60 (10.7)	67 (11.4)
Vaginal Delivery	22 (75.9)	501 (89.3)	523 (88.6)
Total	29 (100)	561 (100)	590 (100)
P < 0.05			

**Discussion:**

The Basic Law-Art. 25 stated that “*Work is the right of every citizen, as well as a duty and honor. The Palestinian National Authority seeks to provide work for every citizen who is capable of it*” The participation rate of Palestinian women in the labor force does not exceed 14% (Palestinian Women Research & Documentation Center-PWRDC, 2008). Meanwhile, the current study findings revealed that the rate of working the pregnant participants is 4.9%. The low rate of working women in the current study is interpreted as the study population was only pregnant women attending health facilities in the Gaza Strip while the PWRDC facts depend on a large scale study covered all Palestinian women in the West Bank as well as Gaza Strip. Study neonates who suffered at least one morbidity problem constituted 55.1%; 58.6% of them among neonates of working mothers while 54.9% were among neonates of workless mothers.

Working mothers delivered LBW neonates at a higher rate than housewives, the incidence rate of LBW was (10.3%) for the working mothers and (8.6%) for the non-working. This observation was supported through a study which found that the incidence of LBW neonates among working mothers was nearly 4 times higher than housewives (Alaa El Dine, 2004). National LBW study in Egypt showed that working mothers had a significant higher rate of LBW

neonates (12.4%) while housewives had a lower incidence (9.6%) (EDHS, 2001). Physical exertion or upright posture may reduce uterine blood flow and thus impede the supply of oxygen and nutrient to the fetus. In addition, the work has physical and psychological burden on pregnant women.

Physiological jaundice appeared in 28.1% of newborns; 31% of working pregnant women gave birth to jaundiced infants while 27.9% of housewives gave birth to jaundiced infants. About 98.6% of workless mothers breastfed their infants while, 93.1% of working mothers breastfed their infants.

Obstetric history reveals that apart from primigravidae, more than half of working mothers (52.5%) aborted at least once whilst, 42.1% of workless mothers experience at least one abortion. Anemia is quite prevalent among pregnant women in developing countries. In the present study, the pregnant women with hemoglobin less than 11 gm/dl constituted 41.8%. Reviewing the literature explores that anemia among Palestinian pregnant women was 55% (MOH, 2001), which exactly coincides with the result of EDHS (EDHS, 2003) regarding anemia among Egyptian pregnant women. Premature rupture of membranes affects 3.2% of the current study participants. PROM occurs in 1% of pregnancies (Stoll & Kliegman, 2004).

The assessment of mother's experience of violence is sensitive, under-reported, and under-documented consequently, 8.1% of participants declared frankly they were physically abused during the current pregnancy, those residing the camp and village are more physically abused (9.5%) while, those residing the city are less physically abused (5.3%). A community-based study to identify and to reduce violence against females said that 60.9% of studied Egyptian women have been beaten since marriage though only 4% have beaten at the time of study (El Rafie & Mekheimer, 2003). It apparently the Gazan's women were beaten twice at the time of the study (8.1%) than the Egyptian women (4%) but it is clarified when one knows that in the former study the question was the beating in the pregnancy period whilst, in the second study only at the time of the study.

Wife beating is un-humanitarian act; it affects women physical health, and undermines their self-confidence. Its negative impact is not

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restricted on mother's health only but it extends to all family members and even to all society. Physically abused mothers usually are of low social class. It limits women's access to security, food, shelter, education, and even to health care.

**Recommendations:**

- 1- Further studies evaluating the effect of work-related exposures on adverse pregnancy outcome
- 2- Conduct a wide research to determine the impact of type and duration of maternal work during pregnancy on maternal and infant health.
- 3- Facilitate antenatal services to the pregnant working mothers.
- 4- Construct specific preventive programs for the pregnant working mothers.
- 5- Develop Palestinian acts regarding working pregnant mothers to involve a well paid long maternity leave particularly, during the third trimester and the first postpartum six months.
- 6- Concentrate resources on improving antenatal and obstetric care.
- 7- Educational programs through mass media to increase the awareness of Palestinians about the dangers of domestic violence not only on pregnant women but also against females in general.
- 8- Employed pregnant women have to work a reduced schedule.
- 9- Employed pregnant women have to work from home.

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