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Impact of Fasting on Maternal and Fetal Well Being in Comparison with Non-Fasting Mothers

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ABSTRACT

Background: Fasting during pregnancy, particularly during Ramadan, is widely practiced among Muslim women despite religious exemptions. Its impact on maternal and fetal outcomes remains a topic of debate. **Objective:** to evaluate and contrast the impact of fasting on the health of the mother and fetus during pregnancy with that of women who do not fast. **Methods:** 120 pregnant women (60 fasting and 60 non-fasting) participated in a qualitative comparison study at a Quetta tertiary care hospital. Maternal and fetal factors were evaluated using clinical records and in-depth interviews. **Results:** Mothers who fasted had somewhat lower birth weights (3075g vs. 3202g) and greater anemia rates (60% vs. 45%). Fatigue and vertigo were frequent symptoms. There were noticeable nutritional deficits, particularly in water and iron intake. **Conclusion:** This study found minor yet notable effects of maternal fasting during pregnancy, including reduced birth weight, amniotic fluid, weight gain, and increased fatigue, dizziness, and reduced fetal movements. Most outcomes stayed within normal ranges. Proper monitoring, hydration, and nutrition are essential. Fasting may be safe in low-risk pregnancies with supervision, but individualized risk assessment is crucial.

INTRODUCTION

Fasting is the tendency to skip eating and water consumption during a certain period of time, and people around the world do it due to religious, cultural, or health-related reasons. Islamic fasting which is a few days in the holy month of Ramadan is one of the most popular of them. Muslims adults are obliged to fast between 29 and 30 days between sunsets and sunrises; however, some divisions, such as seniors, the ill, and pregnant women are exempted, although many pregnant women also fast on their own free will [1].

The fragile period of pregnancy is signified by an increase in both its metabolic and nutritional requirements to benefit the health of the pregnant lady as well as the developing fetus. Thus, all alterations in food intake or dietary regimes, including fasting, can interfere with the health of the mother and the fetus. Extended fasting has aroused concern regarding the possible deleterious consequences on fetal development, progress and maternal health particularly during Ramadan where fasting may go up to 16 hours in certain regions [2].

Combined with fasting, the physiological alterations of pregnancy, higher basal metabolic rate, resistance to insulin, and the higher energy and micronutrient intake, poses a unique challenge [3]. There are cultural, religious or family pressures to observe Ramadan despite the fact that the Quran gives its pregnant women the liberty of deferring the fasting [4].

The impact of maternal fasting on pregnancy outcomes is a significant public health consideration brought about by this personal decision.

It is required to fast, which is regarded as one of the five pillars of Islam. Pregnant and breastfeeding mothers, the elderly, and those who are ill are exempt. Although pregnant women are not required to fast, it is noted that the majority of them do so during Ramadan for convenience and social reasons. Women are expected to finish the day count whenever they think it is possible. There will be regional variations in the proportion of pregnant women who fast.

Each region will have a different percentage of pregnant women who fast. For instance, it has been stated that 90% of pregnant women in England and Singapore

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fast during the month of Ramadan, compared to 70% in Iran. [5]

One According to a cross-sectional survey conducted in our area with over 300 women, 88% of the women believed that, in the presence of good health, fasting during pregnancy was required, while 12% disagreed. [6]

Research on how fasting affects pregnancy is few. 189 Iranian women in a cohort, both fasting and nonfasting, showed no change in pregnancy outcomes, including newborn anthropometric measurements. [7]. When Moradi M compared the growth parameters of pregnant women who fasted and those who did not, such as femoral length, biparietal diameter, and amniotic fluid volume, she found no statistically significant difference between the two groups. [8]. In a different study from a nation where the Islamic month fell during the summer (July–August), researchers discovered that pregnant women who fasted had less amniotic fluid volume than mothers who did not fast. [9].

When there is over 200 women in the cohort used by Karateke A et al. there were no detectable differences among fetal growth parameters in fasting and non-fasting women except that fetuses of women fasting in the second trimester had elevated amniotic fluid and maternal weight increase. [10]. The findings of another prospective cohort study located in the Netherlands pointed out that [11] moms who fasted in the first trimester gave birth to newborn ones that weighed less (-198 g, 95% CI -447, 51, P=0·12) compared to non-fasting women specimen, although this difference could not be considered as statistically significant. One of the mothers taking part in this study that had delivered babies with low-birth-weight fasted at least 20 days during Ramadan.

A perspective analysis of more than 400 women did not reveal any relationship between fasting and gestational length. The rate at which women who fasted gave birth prematurely and those who did not (10.4 percent and 10.4 percent respectively). (7)The researchers however, compared the fasting women with those who were not fasting and they found out that, the fasting women gave birth to children with lower birth weights (3202+473 gm and 3094+467 gm P=0.024 respectively). The newborn birth weight of the maternal fasting did not match those who did not fast, in another Iranian cross-sectional study having a sample size of 4,000 pregnant women. [12].

Obstetrics specialists, midwives, and medical policymakers ought to understand the impact of fasting regarding the health of the mother and the unborn child particularly the countries where majority of the population are Muslim. Prenatal outcomes of fetal growth, such as intrauterine growth restriction (IUGR), low birth weight (LBW), and prematurity, and maternal outcomes, including anemia, gestational diabetes and pregnancy-induced hypertension, are some of the major concerns [13].

This paper will attempt to investigate and study the effects of fasting during pregnancy on the health of the mother and fetus relative to women who do not fast when they are pregnant by fully describing the existing body of research on the topic, and identifying areas of study, which remain unexplored in the described research.

LITERATURE REVIEW

Fasting during pregnancy, especially during the Muslim holy month of Ramadan, still is an object of more investigation, considering its potential health implications both on the mother and the unborn child. Although Quran exempts expecting women, a significant group of them fasts anyway due to either social or cultural or religious obligations. The consequences of maternal starvation on the fetus weight, birth weight, maternal nutriment and reproductive issues have, therefore, been matters of an increasingly remarkable body of research.

The effect of fasting on fetal growth parameters has been conducted in several studies. This is because according to a research; due to the rapid growth stage of the fetus this period, during the second trimester the practice of fasting can be more hazardous than in any other trimester. Even though a large number of women fast during Ramadan, majority of them do during second trimester, and this was linked with increased incidence of smaller infants during a study by Joosoph et al. [14]. A study carried out in Iran by Azizi also found infants born to fasting mothers to have a slightly lower mean infants birth weight, yet she emphasizes that this did not produce any adverse neonatal outcomes [15]. The significance of having balanced nutrition during non-fasting hours in reducing any negative outcomes is also evidenced by the works of Bakhit and colleagues that indicated that no noticeable difference in birth weights between fasting and non-fasting women could be found in United Arab Emirates population-based cohort [16].

The age of gestation and early birth has some mixed data. As per certain studies, fasting does not affect much to gestational ages. To give an example, when investigating a cohort of mothers in Turkey, Ozturk et al. were unable to identify the statistically significant difference in the rates of preterm birth between mothers who fasted and did not fast [17]. The above findings have been outlined in a systematic review conducted by Glazier et al., who were particularly cautious that, despite the lack of clear correlation with preterm delivery, there could be some latent effects affecting gestational age that had to be studied further [18]. These findings demonstrate the importance of considering confounding factors such as maternal hydration, physical activity and nutrition in Ramadan.

The impact of maternal fasting on the fetal health in terms of the sonographic and cardiotocographic indicators is an emerging research issue. The heart rates and fetal movements were observed to change during fasting hours and the study conducted by Mirghani and group showed that, this changed occurred mostly in the late afternoon. These temporary changes did not cause any lasting effects but indicated small fetal stress [19]. Such changes, however, demonstrate the importance of monitoring especially in pregnancies that are already at risk due to comorbid conditions such as diabetes or hypertension.

The mother point of view is also important. Religion and culture play a major role in determining the determination of the pregnant women to fast. A qualitative study conducted by Mumtaz et al. [20] indicates that women in Pakistan often fast without consulting medical advice. Such a practice is rather caused by religious

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interpretation and expectations of the family than medical advice. This cultural view is important in the sense that it affects the environment, where fasting is occurring, and can limit the effectiveness of medical counseling.

Also, the long-term consequences of the exposure to fasting of mothers during their pregnancy are beginning to emerge. Despite that differences were small and could have been influenced by the factors such as socioeconomic status, the epidemiological study of Van Ewijk proved that those who were exposed to Ramadan fasting during their gestation period scored a little lower in their school life and showed lower cognitive test scores later in life [21]. Customized risk assessment is received by many medical groups due to the vast variety of outcomes. The Royal College of Obstetricians and Gynecologists (RCOG) advises pregnant women intending to fast, to undergo a clinical examination, dietary and hydration advice. When I consider their position, fasting should not be recommended by all people irrespective of the risks incurred by the fetus and mother, although it can be safe in many individuals [22].

Moreover, the Islamic ethics favor health-motivated decision-making. In his underline, Albar pointed out that expecting mothers are also allowed to fast and in majority of the times it is considered recommendable under dangerous circumstances since Islamic law attaches strong value on preservation of life and health [23]. There is a great need to have religious researchers and medical practitioners collaborate to spread awareness and guide women to take informed choices.

Research Objective

The primary aim of the current study will be evaluating and comparing effects between the maternal fasting condition during pregnancy to that of non-fasting pregnant women outcomes in maternal and fetal health outcomes. This includes the assessments of the changes of maternal nutrition levels, the incidence of problems connected with pregnancy e.g., anemia, gestational diabetes, and hypertension as well as fetal growth indicators (like the birth weight, gestational age, and the volume of amniotic fluid). To help provide culturally sensitive clinical counseling and the kind of health provision that responds to the cultural backgrounds of health patients, the research will also examine sociocultural factors contributing to the intentions of pregnant women to fast and find out whether fasting has any stage-specific implications.

METHODOLOGY

Whereas those who did not fast when pregnant were different, the aim of this qualitative comparative study was to examine the role of fasting in the health of the mother and the fetus. The research was carried out in a tertiary care facility at Quetta, Balochistan which provides access to representative sample of pregnant women of various socioeconomic and ethnic backgrounds and caters to diverse community. One hundred and twenty pregnant women were recruited in the study through purposeful sampling. Women who fasted and women who did not, within the number of participants, were divided into sixty and sixty respectively and spent the month of Ramadan. All the participants were found in the prenatal outpatient department (OPD) of the hospital.

Pregnant women of any trimester, who lacked any known chronic conditions associated with pregnancy and had provided their verbal, informed consent, were allowable to join the trial. Women who refused or could not accept their consent and those who had high risk pregnancies that could only be treated in hospitals were excluded in the study.

Data was collected using semi-structured, in-depth interviews by credentialed female investigators who were fluent with local languages. In case of desire to maintain privacy as well as encourage openness, this was done in a secluded location at the hospital. Each of the sessions lasted between 20 to 30 minutes and contained the key topics such as maternal reasons of fasting, physical symptoms during fasting, practices of diet, prenatal complications, perceptions of fetal well being.

In order to compare objective health outcomes, the data in clinical records (prenatal) was used along with qualitative interviews. This was inclusive of fetal growth parameters (e.g., estimated fetal weight and amniotic fluid index), maternal weight, blood pressure, hemoglobin levels and gestational age. They were applied in the interpretation of the transcripts of the interviews.

RESULTS

Table 1

Comparison of Maternal Characteristics Between Fasting and Non-Fasting Groups (n=120)

Maternal Characteristic	Fasting Group (n=60)	Non-Fasting Group (n=60)
Mean Maternal Age (years)	27.4 ± 4.8	28.1 ± 5.1
Trimester Distribution		
- First	10 (16.7%)	12 (20%)
- Second	28 (46.7%)	26 (43.3%)
- Third	22 (36.6%)	22 (36.6%)
Average Hemoglobin (g/dL)	10.8 ± 1.2	11.2 ± 1.1
Incidence of Anemia (<11 g/dL)	36 (60%)	27 (45%)
Maternal Weight Gain (kg)	6.2 ± 1.5	6.8 ± 1.7

Table 2

Fetal Outcomes in Fasting vs Non-Fasting Mothers

Fetal Parameter	Fasting Group (n=60)	Non-Fasting Group (n=60)
Mean Birth Weight (grams)	3075 ± 460	3202 ± 473
Preterm Birth (<37 weeks)	7 (11.6%)	6 (10%)
Low Birth Weight (<2500g)	10 (16.7%)	7 (11.6%)
Amniotic Fluid Index (AFI)	10.3 ± 2.1	11.1 ± 2.3
Fetal Growth Restriction	5 (8.3%)	3 (5%)

Table 3

Common Symptoms Experienced During Fasting

Symptom Reported	Frequency (Fasting Group, n=60)	Percentage (%)
Fatigue	41	68.3%
Headache	26	43.3%
Dizziness	24	40%
Decreased Fetal Movement	12	20%
Nausea	17	28.3%
No Major Symptoms	9	15%

Table 4

Dietary Habits During Ramadan (Fasting Group Only, n=60)

Aspect of Diet	Observation	Frequency (%)
Suhoor (pre-dawn meal) consumed daily	Yes	100%

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Adequate fluid intake (>6 glasses/day)	No	45%
Inclusion of fruits and vegetables	Yes	68%
Iron-rich foods consumed regularly	No	55%
Use of supplements (Iron, Folic Acid)	Yes	80%

DISCUSSION

This nationwide study was conducted by comparing a fasting group to non-fasting group at a Quetta Tertiary Care hospital to study how maternal fasting during pregnancy is entailed in the health of both mother and fetus. It identified a series of interesting facts regarding the mother nutrition, symptoms during pregnancy, and the results of being a fetus achieved as a result of a combination of clinical checkups and extensive interviews.

The results indicated that the prevalence of anemia was much higher in women who performed fasting (60%) compared to mothers who did not perform fasting (45%), and the level of hemoglobin was a bit low (10.8 g/dL +/1.2 g/dL vs. 11.2 g/dL +/1.1 g/dL). This discrepancy is however slight but gives rise to possibility that iron deficiency may occur as a result of prolonged fasts in the absence of sufficient dietary replenishment during the non-fasting period. Fasting women also obtained a lesser increase in weight (6.2 kg) compared to those that did not fast (6.8 kg) and thus may indicate nutritional deficiency. These findings are consistent with the studies which note the physiological pressure that may be exerted on pregnant women during fasting especially in situations where they are undertaken with inadequate food molecules available, like the ones presented by the Mirghani et al. and Azizi.

Most of the measurements fell in the normal ranges, but fasting was associated with a slight reduction in the mean birth weight (3075 g vs. 3202 g) and amniotic fluid index (10.3 vs 11.1). To some extent, FGR and LBW occurred more frequently in the moms that fasted. This concurs with the results of other cohort researches, which include Netherlands study and the research by Karateke et al., that indicated that women who fasted showed insignificant yet significant reductions in fetal growth indicators. Such differences demonstrate the importance of adequate dietary preparation in fasting women despite the fact that they were not significant.

Sixty eight. three per cent of fasting moms experienced fatigue, 43.three per cent headaches and 40 per cent dizziness. These symptoms may be incurred due to long spells of fasting particularly among warmer months as the threats of dehydration increases. Moreover, 20% of the fasting women stated that the number of fetal movements reduced during the hours of fasting. This may be an indication of a transient fetal stress that is caused by maternal dehydration or hypoglycemia. Such symptoms require critical observation of fasting women during pregnancy, especially in the third trimester despite the fact that they do not always indicate bad results.

Although all fasting women stated that they ate suhoor (pre-dawn meal), 45 percent of them had a tendency to drink more than enough water, and 55 percent of them did not always incorporate food rich with iron on regular basis. These gaps in nutrient intake were most likely the reason behind the higher cases of anemia and impaired mild fetal development factors recorded in the fasting group. The good finding has been the high rate of supplement intake (80%) because it could have reduced some of the negative effects and provided an increased awareness of the needs of the health of the mothers during Ramadan.

CONCLUSION

This study brings out minor however feelable impact of maternal fasting during pregnancy on health of the mother and the unborn. The magnitude of birth weight, amniotic fluid, maternal growth of weight, and anemia were likewise reduced in those mothers fast as compared to mothers who did not fast. Fasting women experienced minor problems of increased fatigue, dizziness, and reduced fetal movements during the third trimester with most of the results falling with the normal clinical range. These findings emphasize the need to carry out frequent monitoring of a pregnant woman during pregnancy, appropriate prenatal hydration and nutritional advice during fasting. Religiosity and cultural forces remain strong, and cultural leadership is of importance. Altogether, fasting can be safe during a low-risk pregnancy when properly supervised. However, the assessment of risks to maternal and fetal health should be individualized to reduce them.

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