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### RESEARCH ARTICLE

#### MATERNAL AND FETAL OUTCOME OF POSTDATE PREGNANCY IN WAD MADANI MATERNITY TEACHING HOSPITAL, GEZIRA STATE, SUDAN

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#### Abstract

**Background:** Post-term pregnancy by definition is a pregnancy that reaches 42 weeks of gestation or more. Post term pregnancy leads to an increased risk to the fetuses and neonates and increase their mortality and morbidity as well as an increased maternal morbidity

**Objective:** To study maternal and fetal outcome of postdate pregnancy in Wad Madani maternity teaching hospital, Wad Madani, Gezira State 2020

**Materials and Methods:** Observational, descriptive cross-sectional hospital-based study was conducted in Wad Madani maternity teaching hospital which located in Wad Madani city, Gezira state in central zone of Sudan within the period from March to September 2020 and covered postdate pregnant women. Data was gathered, processed and analyzed using SPSS.

**Results:** Study included 102 postdate pregnant women. Nearly half of them 49 (48%) were 30 – 39 years in age with mean age of  $31.2 \pm 8.4$  years. Most of them 74 (72.5%) were from urban residential areas, 69 (67.7%) were educated until secondary school level or above, 65 (63.7%) housewives and 61 (59.8%) were from low socioeconomic status. Clinically, 48 (47.1%) were multipara. Only 61 (59.8%) of them had regular antenatal care follow up. Also, 14 (13.7%) were obese, nine (8.8%) had positive past history of postdate pregnancy and three (2.9%) had positive family history of postdate pregnancy. Concerning the maternal outcome, the study found that caesarian section was 31 (30.4%), while 11 (10.8%) instrumental delivery, and 60 (58.8%) were delivered with vaginal delivery. The most common maternal complications were obstructed labour six (5.9%), followed by perineal tear, postpartum haemorrhage three (2.9%) and sepsis five (4.9%). No maternal mortality was reported. Blood transfusion was needed for 18 (17.6%) of them. Regarding the fetal outcome, female gender was reported in 54 (52.9%) of neonates, only seven (6.9%) were less than 2.5 kg while seven (6.9%) were more than 4 kg. Most neonates 92 (90.2%) were alive, nine (8.8%) stillbirth, one macerated stillbirth and no congenital malformation was reported. Moreover, low Apgar score

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(< 6) was reported in 11 (10.8%), meconium aspiration syndrome was four (3.9%), IUGR seven (6.9%) and RDS weretwo (2%).11 (12%) were admitted to NICU and only one (9.1%) were dead.

**Conclusion:** Based on the study results, we concluded that postdate pregnancy is vulnerable for considerable undesired maternal and fetal outcomes which should not be ignored. Therefore, the relevant preventive and curative measured should be implemented as a priority for this risky group of pregnant ladies in Sudan.

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## **Introduction:-**

Post-term pregnancy is a term used to describe a pregnancy that reaches gestational age of 42 weeks or more. The terms post-maturity, post-maturity syndrome and dysmaturity are not other terms for post-term pregnancy, but they are usually used for the description of the clinical manifestations of a newborn who was borne after 42 weeks of gestation, and they describe the features of a growth restriction that result from placental insufficiency as sequel of post-term pregnancy. [1]

In clinical practice, post-term pregnancy is defined as pregnancy that has reached to or after 42 weeks of gestation (294 days). Other synonymous terms like postdates, prolonged pregnancy and post-datism are terms used for the description of the same clinical condition. [2]

Using induction of labour at term could possibly reduce fetal complications from post-term pregnancy but risks from induction of labour increases such as failure of induction, hyperstimulation of the uterus and increase possibility of delivery by caesareansection may also increase doctors and patients concerns [1,3].

Pregnancies that exceed 42 weeks gestation increase maternal also associates with significantly higher rates of morbidity and mortality to the fetuses and neonates. [2] Intrauterine fetal demise at 37-43 weeks gestation is one of the important problems that directly associated with perinatal mortality that exceed the deaths occurring from the prematurity complications or the sudden infant death syndrome. [3]

Post-term pregnancy is also increasing the costs to the health system in terms of antenatal fetal surveillance and increased the need forlabour induction which can lead to increase stress for the pregnant women.

Features of post-term pregnancy like placental insufficiency, intrauterine infection and meconium aspiration are the main factors of perinatal mortality rates in cases of post-term pregnancy. The definition of perinatal mortality is number of stillbirths plus early neonatal deaths and the perinatal mortality at 42 weeks of gestation is two times the perinatal mortality at term. [3]

Morbidity to the fetus is also higher in post-term pregnancies and those pregnancies that continue after gestational age of fourty one weeks which includes macrosomia, dysmaturity, meconium aspiration syndrome. Post term pregnancy also considered as a risk factor for neonatal acidemia, decreased Apgar scores in five-minute, encephalopathy to the neonate, and death of the infants in their first year of life.[3]

Maternal complications from post-term pregnancy like labour dystocia; severe perineal trauma (third- and fourth-degree tears), due to increased birth weight; instrumental vaginal delivery; and increase in caesarean delivery rates are also increased. Caesarean section increases the incidence of bleeding, venous thrombo-embolism and endometritis [4]

The psychological and emotional effect of prolonged pregnancy should also be considered. As shown in studies conducted in women who reach 41 weeks of gestation, showed that the women preferred induction of labour over serial antenatal surveillance [5].

Maternal complications also increase in pregnancies that did not reach the gestational age of 42 weeks. Complications to mothers such as chorioamnionitis, birth canal trauma, Caesarean delivery, postpartum haemorrhage, and postpartum infections all increased after 39 weeks of gestation. [4]

Early confirmation of gestational age by ultrasound examination early in pregnancy has reduced the incidence of post-term pregnancy by half. Most of the cases who were diagnosed as post-term pregnancy are either a result from a prolonged gestation organ failure of estimation of date of delivery. [7]

Maternal and fetal Complications of postdate pregnancies such as oligohydramnios, meconium-stained amniotic fluid, macrosomia, post-maturity syndrome, and cesarean section. This why pregnancy that extend after 42weeks gestation must always dealt with as high-risk pregnancy. [8]

The objectives of our study were to study maternal and fetal outcome of postdate pregnancy in Wad Madani maternity teaching hospital, Wad Madani, Gezira state, Sudan in 2020.

### Objectives:-

To study maternal and fetal outcome of postdate pregnancy in Wad Madani maternity teaching hospital, Wad Madani, Gezira State, within March – September 2020.

### Study area design:

Prospective, descriptive cross-sectional hospital-based study was conducted in Wad Madani maternity teaching hospital which located in Wad Madani city, Gezira state in central zone of Sudan within the period from March to September 2020 and covered postdate pregnant women

### Inclusion criteria:

All women diagnosed with postdates during the period of study except those refuse to participate in the study.

### Study variables

Study variable can be classified as shown in the following table:

Main Categories	Variable
Independent	<p><b>Demographical data</b></p> <p>Age Occupation Education Tribe Residence Socioeconomic status</p> <p><b>Obstetrical data</b></p> <p>Gravity Parity Gestational age Regularity of ANC Comorbidities Pregnancy complications</p>
Dependent	<p><b>Mode of delivery</b></p> <p>Normal vaginal delivery Induced pregnancy Emergency caesarian section Elective caesarian section</p> <p><b>Maternal outcome/complications</b> <b>Fetal outcome/ complications</b></p>

**Ethical approval:**

Written permission was obtained from the administrative authority of Wad Madani maternity teaching hospital, Wad Madani, Gezira state, Sudan and from the study participants

**Data collection:**

The data of the study was collected by interview using comprehensive structured close ended questionnaire. The data collection tools covered all variables regarding the demographical, clinical/obstetrical characteristics, and maternal/fetal outcome data for all participants enrolled in the study.

**Data analysis:**

Data was processed and analyzed using SPSS and presented in tables and figures.

Descriptive statistics in term of frequency tables with percentages. Means and standard deviations were presented with relevant graphical representation for quantitative data.

**Results:-**

One hundred and two participants (postdate pregnant women) were included in this study. Nearly half of them 49 (48%) were 30 – 39 years in age with mean age of  $31.2 \pm 8.4$  years (table 1).

Most of them 74 (72.5%) were from urban residential areas, 69 (67.7%) were educated until secondary school level or above figure (1)

**Socio-demographic profile:**

65 of the patients (63.7%) were housewives and 61 (59.8%) were from low socioeconomic status figure (2).

**Parity and risk factors:**

Clinically, 48 (47.1%) were multipara (figure3), two thirds of the 69 (67.6%) were in gestational age of 41 – 42 weeks (figure 4). Only 61 (59.8%) of them had regular antenatal care follow up. Also, 14 (13.7%) were obese, nine (8.8%) had positive history of postdate pregnancy and three (2.9%) had positive family history of postdate pregnancy as detailed in table (2), figure (3)

**Maternal outcome:**

Concerning the maternal outcome, the study found that caesarian section was 31 (30.4%), while 11 (10.8%) instrumental delivery, and 60 (58.8%) were delivered with vaginal delivery (figure5). The most common maternal complications were obstructed labour six (5.9%), followed by perineal tear among only four (3.9%), postpartum haemorrhage three (2.9%) and sepsis five (4.9%). No maternal mortality was reported as shown in table (3). Blood transfusion was needed for 18 (17.6%) of them.

**Fetal outcome:**

In regard to the fetal outcome, gender was female gender was reported in 54 (52.9%) of neonates. only seven (6.9%) were less than 2.5 kg while seven (6.9%) were more than 4 kg as shown in table (4). The majority of neonates 92 (90.2%) were alive and well, nine (8.8%) were stillbirths, one (macerated stillbirth and no congenital malformation was reported. Moreover, low Apgar score (< 6) was reported in 11 (10.8%), meconium aspiration syndrome were four (3.9%), IUGR were seven (6.9%) and RDS were two (2%) as shown in table (5).

Our study showed that 11 (12%) of neonate were admitted to NICU, and only one (9.1%) was dead.

**Table (1):** - Distribution of the participants according to their maternal age - years (n = 102 postdate pregnant women).

Demographical characteristics		Percent (%)
Age - years	< 20 years	10.8
	20 - 29 years	37.3
	30 – 39 years	48.0
	≥ 40 years	3.9

Figure (1):- Distribution of the participants according to their education (n = 102 postdate pregnant women).

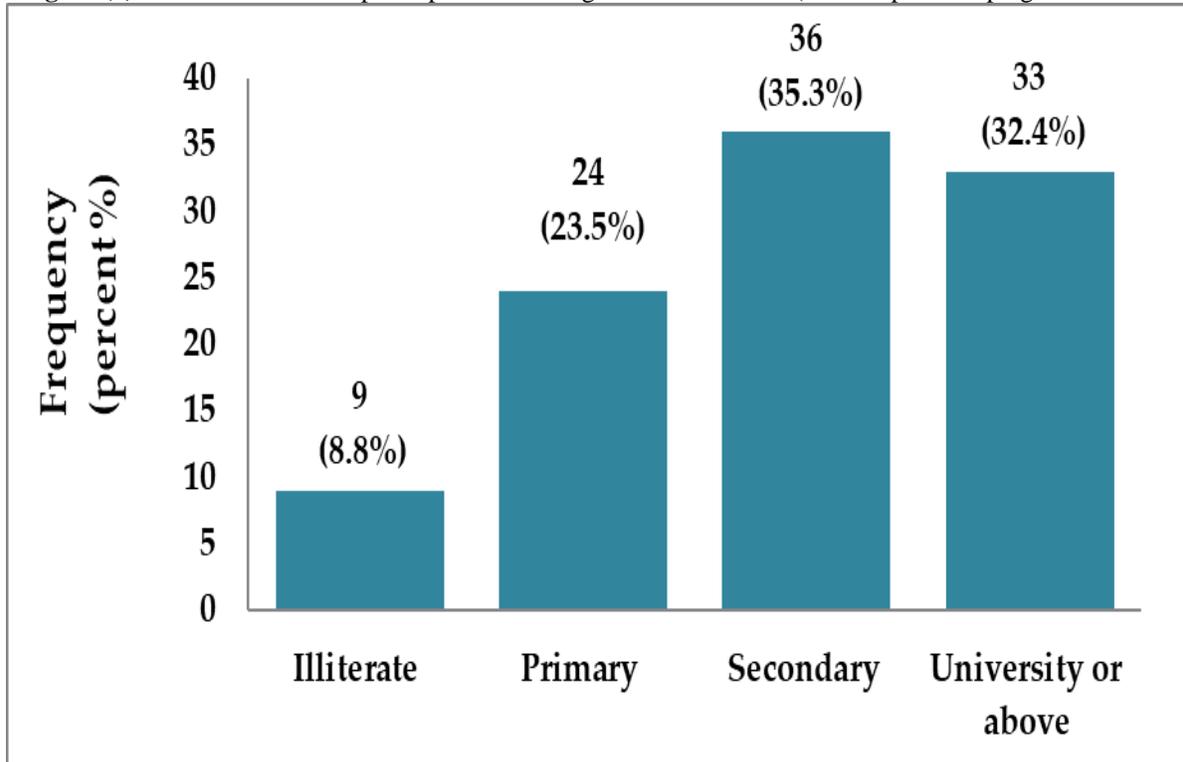


Figure (2): - Distribution of the participants according to their socioeconomic status (n = 102 postdate pregnant women).

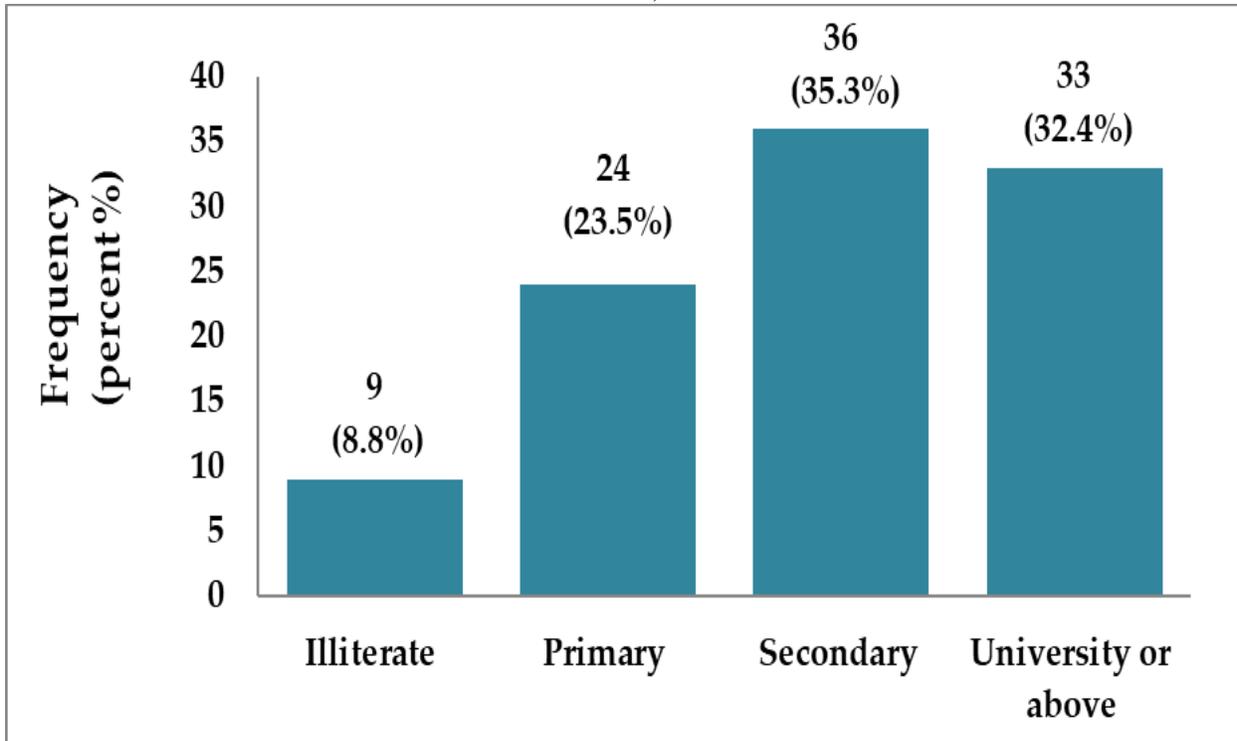


Figure (3):- Distribution of the participants according to their gravidity (n = 102 postdate pregnant women).

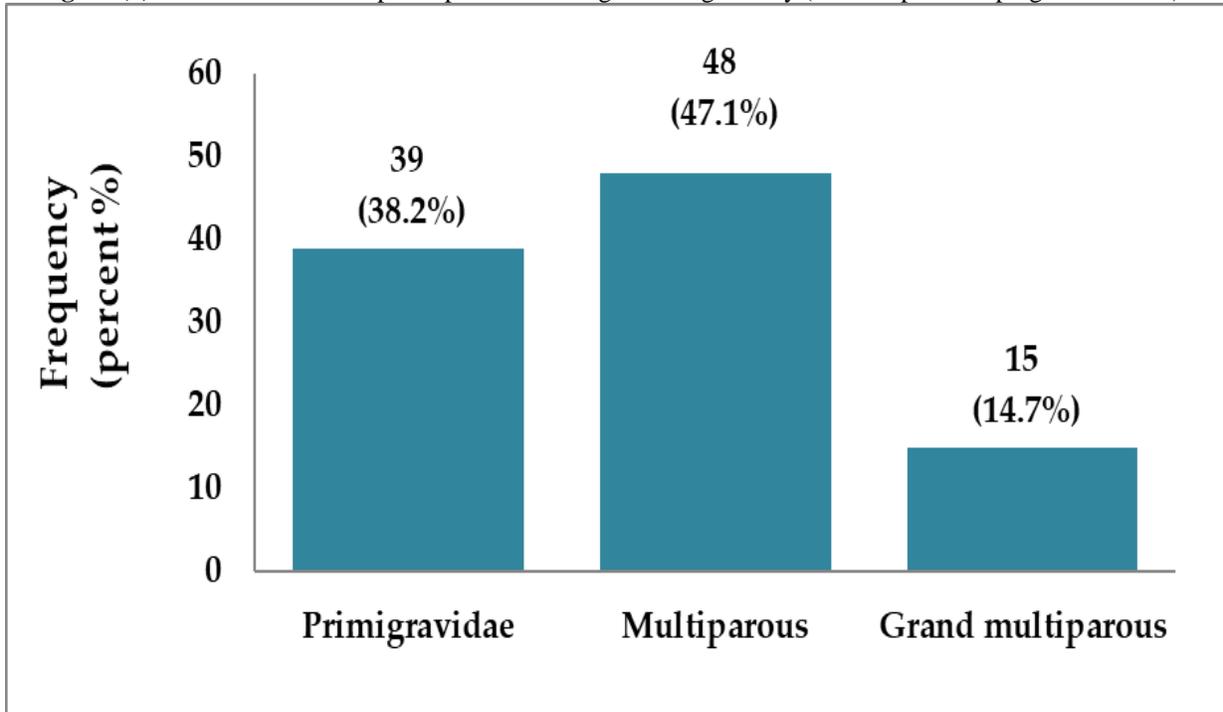
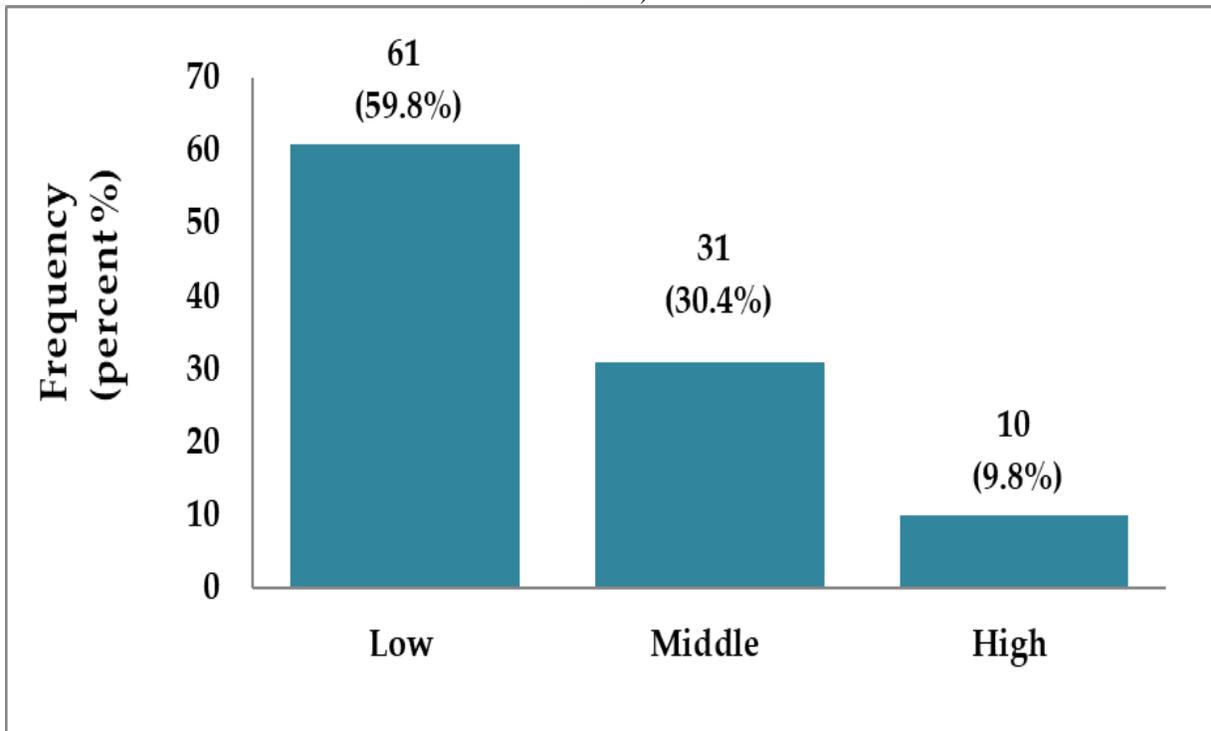
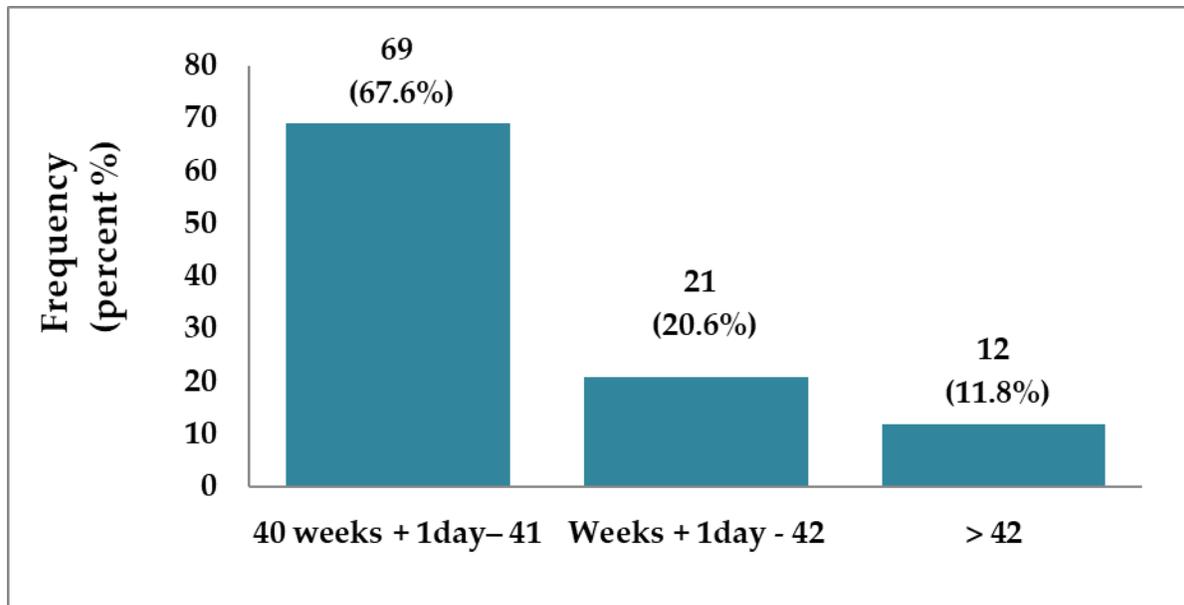


Figure (4):- Distribution of the participants according to their gestational age – weeks (n = 102 postdate pregnant women).





**Table (2):-** Distribution of the participants according to their associated factors (n = 102 postdate pregnant women).

Obstetrical characteristics		Percent (%)
Associated factors	None	74.5
	Obesity	13.7
	Previous history of Postdate Pregnancy	8.8
	Family history of Postdate Pregnancy	2.9

**Table (3):-** Distribution of the participants according to the maternal complications (n = 102 postdate pregnant women).

Maternal outcome		Percent (%)
Maternal complications	No complications	82.4
	Obstructed labour	5.9
	Perineal tear	3.9
	Postpartum haemorrhage	2.9
	Sepsis	4.9

**Table (4):-** Distribution of the participants according to the birth weight – kilograms (n = 102 postdate pregnant women).

Fetal characteristics		Percent (%)
Birth weight	< 2.5 kilograms	6.9
	2.5 - 3 kilograms	67.6
	3 - 4 kilograms	18.6
	> 4 kilograms	6.9

**Table (5):-** Distribution of the participants according to the fetal outcome (n = 102 postdate pregnant women).

Fetal outcome		Percent (%)
Fetal outcome	Alive	90.2
	Fresh Stillbirth	8.8
	Macerated Stillbirth	1.0
	Congenital malformations	0.0
Fetal complications	None	63.7
	Apgar score < 6	10.8
	Meconium aspirations syndrome	3.9
	Macrosomia	6.9

	<b>Intrauterine growth retardation</b>	6.9
	<b>Respiratory distress syndrome</b>	2.0

### Discussion:-

The objective of this to study maternal and fetal outcome of postdate pregnancy in Wad Madani maternity teaching hospital, Wad Madani, Gezira State, 2020 and covered 102 participants (postdate pregnant women).

Our study reported that nearly half of them 49 (48%) were 30 – 39 years in age with mean age of  $31.2 \pm 8.4$  years in comparison to study conducted in Ethiopia where 83.7% were in the age below 30 [9]. And like studies that agreed that childbirth at a young or advanced maternal age is associated with increased risk of adverse maternal perinatal outcomes, such as postpartum hemorrhage, eclampsia, and cephalopelvic disproportion, as well as adverse infant outcomes including preterm birth, poor fetal growth, low birth weight, neonatal mortality, and failure in induction.[9]

Most of the postdate ladies in our study were from urban residential areas, two thirds of them were educated until secondary school level or above and were from low socioeconomic status. We did not find a previous study that explains the direct relationship between the level of education and the deterioration of the outcome of the postdate pregnancy. Consequently, the relationship can be indirect because it is known in advance that the deterioration of the educational level in general negatively affects, for example, the awareness of the importance of antenatal follow-up and thus leads to a lack or irregularity of antenatal visits lead to the deterioration of the outcome of pregnancy in general, maternal, or neonatal, whether the pregnancy is postdated or even not.

Clinically, 48 (47.1%) were multipara, two thirds of them 69 (67.6%) were in gestational age of 41 – 42 weeks. Similarly, to study in Ethiopia were 50% of the patients were multipara, this study also agreed that maternal parity was also another important determining factor for failed IOL among postdate pregnant women and increased the chance of CS while nulliparous mothers were 1.9 times more likely to have a caesarian section. This result is supported by different literature. So, the parity of postdate pregnant women should be considered when planning for the delivery as a possible predictor for the mode of delivery. [9]

Our study reported that only 61 (59.8%) of them had regular antenatal care follow up. Which is like RCT done by Gülmezoglu et al stated that the absence or irregularity of antenatal care leads to deterioration in the outcome of pregnancy in general for the mother and the neonate [10]

Our study reported that 9 (8.8%) had positive history of postdate pregnancy. Compared to 15%, in study in Netherland. [11]

Concerning the maternal outcome, our study found that caesarian section was 31 (30.4%), while 11 (10.8%) instrumental delivery, and 60 (58.8%) were delivered with vaginal delivery. Likewise, study in Egypt, revealed that women with post term pregnancy were also had more cesarean delivery and more labor induction. [12] Moreover, study in Iran, stated that there was significant increase among postdate pregnant women in the rate of cesarean section [13]. Furthermore, in United States, found that, among the postdated women, the rates of operative vaginal delivery and primary cesarean delivery increased at 41 weeks of gestation [14]. They added that the cesarean indications of non-reassuring fetal heart rate and cephalo-pelvic disproportion and increased at 40 weeks of gestation. In similar issue, Kaplan B et al added that the routine induction of labor in postdate pregnancy may reduce perinatal morbidity, as indicated in previous reports, and confirmed in their study[15]. In US, Alexander JM et al stated that labor complications increased in postdate pregnancies, including oxytocin induction, length of labor, prolonged second stage of labor, forceps use, and cesarean delivery [16]. In India, Vandana Verma et al found that among postdated pregnancies 1.49 % were beyond 42 wks. 57.69 % patients delivered vaginally whereas 42.3 % patients needed cesarean section[17]. So, also other studies agreed the postdate pregnancy is associated with higher rates of more induction, more operative labour[18-21]. Therefore, management of pregnancies that progress past their expected dates should include counseling regarding the risks of increasing gestational age

Our study found that the most common maternal complications were obstructed labour 6 (5.9%), followed by perineal tear among only 4 (3.9%), postpartum haemorrhage 3 (2.9%) and sepsis 5(4.9%). Likewise, in Egypt, study revealed that women with post term pregnancy were significantly more likely to have obstructed labor, perineal tear, primary postpartum hemorrhage, and increased duration of labor [12]. Furthermore, in India, study reported that

postdated pregnancy was significantly increased risk of obstetric complications like oligohydramnios, perineal tear, atonic PPH and shoulder dystocia[22]. Also, in Denmark, study concluded that post-term delivery was associated with significantly increased risks of perinatal and maternal complications [23]. In similar context, in United States, study found that, among the postdated women, the rates of 3rd- or 4th-degree perineal laceration, and chorioamnionitis, all increased, and rates of postpartum hemorrhage, and endometritis [24]. Maoz O et al found that post-term pregnancies were more likely to be complicated with oligohydramnios, macrosomia, meconium-stained amniotic fluid, shoulder dystocia, and hysterectomy [25]. Accordingly, other studies agreed the postdate pregnancy is associated with adverse maternal outcomes [26].

Our study reported that most neonates 92 (90.2%) were alive, 9 (8.8%) stillbirths, 1 (macerated stillbirth and no congenital malformation was reported. Also, in Denmark, study concluded that post-term delivery was associated with risk of perinatal death [27]. Moreover, another study found that perinatal mortality rates were significantly higher at post-term as well [25]. So, many studies concluded that post-term delivery involves higher rates of adverse perinatal outcomes and is independently associated with significant perinatal mortality

Moreover, our study found that low Apgar score (< 6) was reported in 11 (10.8%), meconium aspiration syndrome was 4 (3.9%), IUGR 7 (6.9%) and RDS was 2 (2%). Likewise, in Egypt, study concluded that the newborns of patients with post term pregnancy had lower Apgar score at the one and five minutes, increased birth weight, meconium aspiration syndrome, and fetal distress[10].Also, in Canada, study reported that fetal distress and meconium release were twice as frequent and meconium aspiration eight times as frequent in post-term [26].Moreover, other study in Finland added that in comparison with full-term pregnancies, post-term birth had increased the risk for low Apgar score (<four) at one minute and five minutes, and whereas risks for CP, epilepsy, sensorineural defects, and perinatal mortality (0.91, 0.69–1.22) were not increased [28].

So, many studies agreed that post term pregnancy was associated with significant morbidity to the mothers and neonates.

Our study showed that 11 (12%) of neonate were admitted to NICU and only 1 (9.1%) were dead. Likewise, studies in Egypt, showed that pot-term patients had higher admission to the Neonatal Intensive Care Unit.<sup>[9]</sup> [10]. So, the outcome of prolonged pregnancy can be improved by proper counselling for follow up during pregnancy and proper monitoring and appropriate management during labour

Our study had some limitations. The number of study areas (102 study participants from one hospital) may negatively affect the probability of finding some other rare characteristics and outcomes of postdate pregnancies among women in Sudan.

### **Conclusion:-**

This study covered 102 postdate pregnant women in Wad Madani maternity teaching hospital from March to September 2020. The study concluded that the post-date pregnancy is associated with adverse outcomes like fetal distress, meconium aspiration syndrome and more need for ICU admissions and was associated with significantly increased risks of caesarian sections and maternal complications such as obstructed labour, perineal tears, postpartum haemorrhage, sepsis and need for blood transfusion **Conflict of interest statement:** We declare that we have no conflict of interest.

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