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Complications Factor of Gestational Diabetes Mellitus among Pregnant Women in Atbara Teaching Hospital

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Abstract*: Gestational diabetes mellitus (GDM) is associated with poor pregnancy outcomes and increased long-term risk of metabolic diseases for both mother and child. The prevalence of diabetes of all types is approximately 5.4 % all over the world. The study aimed to identify the complications factor of Gestational diabetes mellitus among pregnant women in Atbara Teaching Hospital obstetric and Gynecology Clinic.* ***Methods and Material****: - A descriptive cross-sectional hospital base study was carried out. 165 pregnant women from Atbara Hospital obstetric and Gynecology Clinic were chosen. Questionnaire and oral glucose tolerance test (OGTT) are used to collect the data about the participants and to determine Gestational diabetes mellitus.* ***Results****: 52.1%, of the age group of the respondents (31-40 years). 55% of the participants are obese. (47.3%) of the respondents educational level was secondary school. 51.1% of the study group has diabetes in their previous pregnancy. (63.6%) of the respondents are not completed the pregnancy (aborted). (55.2%) of the respondents have a member in the family has diabetes. (63%) of the respondents are used folic acid as a dietary supplement for pregnancy. (44.8%) of the respondents has Gestational diabetes during this study. 77.6% of the respondents gave birth to twins in one of their previous births. 86.7% of the respondents had no problems in the womb, cervix or placenta. The majority of the respondents (86.7%) are not used special diet for diabetes. 45.5% of the respondents their average monthly household income considers as medium. (85.5%) Explain that they are not following the directions of their healthcare professional. The majority of the respondents 86.1% are not done any exercise during pregnancy.* ***Conclusion: -*** *Gestational diabetes mellitus has many consequences for both the mothers and the babies. Primary prevention such as preventing obesity before pregnancy, maintain a healthy diet, and counseling are needed before a woman gets pregnant.* ***Recommendation: -*** *Routine screening of pregnant women and healthy lifestyle are strongly recommended and urgent care is need for those mothers who are diagnosed with gestational diabetes in order to reduce complication for both the mothers and the neonates.*

Keyword: *Gestation, Diabetes Mellitus, women health, complication*
Abbreviations: *SDG (Sudanese Pound)*

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I. Introduction

The World Health Organization (WHO) defined "Gestational Diabetes Mellitus (GDM) as glucose intolerance first detected during pregnancy" (WHO, 2013). Various adverse maternal and neonatal outcomes were complicated by GDM (Hartling et.al, 2012), while its complex care requires risk reduction strategies beyond the control of blood glucose level (Metzger and Buchanan, 2007).

Globally, GDM affects an estimated 15% of the pregnant women, 87.6% of the hyperglycemia were in low and middle-income countries. It is one of the challenging health problems of sub-Saharan African countries (Ogurtsova et.al, 2017).

A review indicated that the occurrence of GDM in sub-Saharan Africa was 14% (Mwanri, et.al, 2015) and Middle East and North Africa ranged from 8.4 to 24.5% (Zhu, and Zhang, 2016) though the study used different screening and diagnostic criteria. Research findings also showed that the prevalence of GDM varied to a certain extent among regions in Africa. For example, East (Mwanri, et.al, 2014) and West Africa reported 6 and 14%, respectively. Variations were also noted within sub-regions, like Rwanda and Tanzania, where the prevalence was 8.3 and 19.5%, respectively. Two decades ago, the prevalence of GDM in the rural area of North Ethiopia was reported as 3.7%. Additionally, a survey done in the same region (North Ethiopia) found a prevalence of 13% among urban women which was higher than that of women in rural areas (5%). However, the study used only fasting blood glucose test as diagnostic criteria for GDM. (Management Sciences for Health; 2015)

According several studies, the increasing occurrence of GDM was related to advanced age, family history of diabetes, inactive physical activity, obesity, and risky behaviors (Oppong et.al, 2015). Studies had also recognized that there was association between dietary habits during pregnancy and GDM. However, there had been no concrete consensus on the effects specific dietary aspects and the risk for GDM (Moses and Shand, 1997).

Gestational diabetes mellitus commonly identified during the second or third trimester of pregnancy as a result of the placental hormone plays an important role in the adverse effect on glucose metabolism. As pregnancy progresses, various hormones such as estrogen, progesterone, leptin, cortisol, placental lactogen, and placental growth hormone promote a state of insulin resistance. Primarily, human placental lactogen produced by placenta raises maternal blood glucose level and makes a woman's body less sensitive to insulin leading to a higher-than-normal blood glucose level and perhaps GDM. (Plows et.al, 2018)

Women with gestational diabetes are at on increased risk of complication during pregnancy and at delivery. Women and their children are also at increased risk of type (2) diabetes. Incidence rate of diabetes in pregnancy women range from 0.1 to 0.5 every 100 pregnancy (Plows et.al, 2018).

Anne-Sophie Morissetet (2010) suggested that women can manage their weight through nutritional prevention approach to help reduce the risk of gestational diabetes mellitus. The research correlated higher dietary fat and low carbohydrate intakes during pregnancy period to higher risk for gestational diabetes mellitus. Also, the lack of physical activity due to sedentary lifestyle has been linked to gestational diabetes mellitus development (Alison, 2006).

The best methods of prevention are for mothers to practice healthy behaviors such as physical activity and healthy diet to help avoid or impede the most of diabetes mellitus (Fernata, 2007). It is also, best for mothers and their newborns to have access to good health care as well as quality care for good counseling and advise so as to prevent the increasing prevalence.

General Objective:

To identify the complications factor of Gestational diabetes mellitus among pregnant women at Atbara Teaching Hospital obstetrics and Gynecology Clinic

Specific Objective:

-To determine the prevalence of Gestational diabetes among pregnant women attending the Atbara Teaching Hospital obstetrics and Gynecology Clinic

- To determine factor associated with Gestational diabetes among pregnant women attending the Atbara Teaching Hospital obstetrics and Gynecology Clinic

Justification and Important of the Study:

- There are no enough researches in Gestational diabetes among pregnant women at Atbara area.
- This research will be the basis for many researches at Atbara area.
- Women and children are the largest segment of society, making it necessary to pay attention to their health and provide care for them.
- Problem of high prevalence of diabetes among pregnant women, leading to many complications during pregnancy and after birth.

II. Methodology

Design of the study

A descriptive-cross sectional hospital based study.

Study Area

Atbara Teaching Hospital located in River Nile State, Atbara locality- Sudan. The hospital was built at 1904. The hospital was consist of 18 department: surgery, medicine, pediatrics, ophthalmology, OBS, and gyn., Orthopedic surgery, ENT, x ray, Ultrasound, center of dialysis, hematology, anesthesia, cardiovascular, psychiatry and neurology, forensic medicine, urology, CCU, ICU. There are 45 consultants, 31 general practitioners, 9 pharmacists, and other health care provider.

Study population

All the pregnant women attending obstetrics and gynecology clinic during the collection of the research data

Sample Size

165 women were selected from those attending obstetrics and gynecology clinic Atbara Hospital using convenience sampling during the collection of data

Data Collection

1- Questionnaire.
2- Oral Glucose Tolerance Test (OGTT).
3- Medical record

Ethical Consideration

Verbal consent was taken from the pregnant women attending obstetrics and gynecology clinic in Atbara Teaching Hospital-Sudan.

III. Result

	Frequency	Percent %
Age		
20 - 30	48	29.1
31 - 40	86	52.1
41 - 50	31	18.8
Total	**165**	**100.0**
Education		
Illiteracy	**8**	**4.8%**
Primary	**35**	**21.2%**
Secondary	**76**	**46.1%**
University	**46**	**27.9**
	165	**100.0**

Table (1) Characteristic of study group according to age, Education N=165

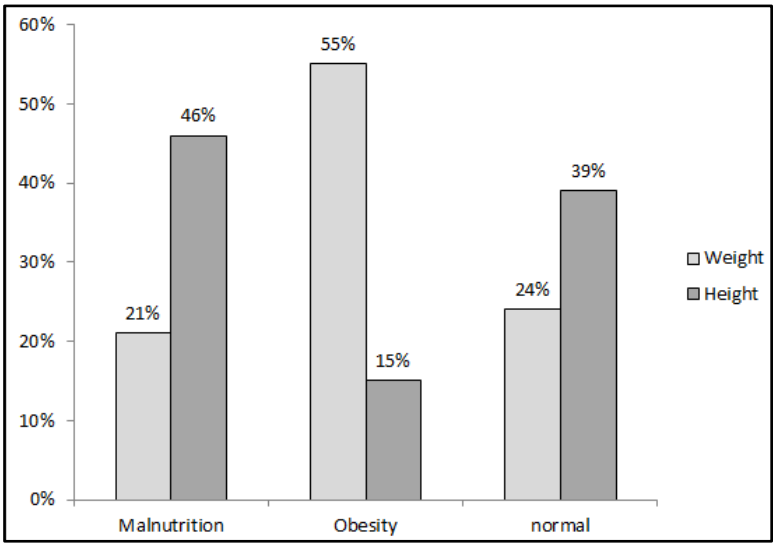

Figure (1) Nutrition status of the study group

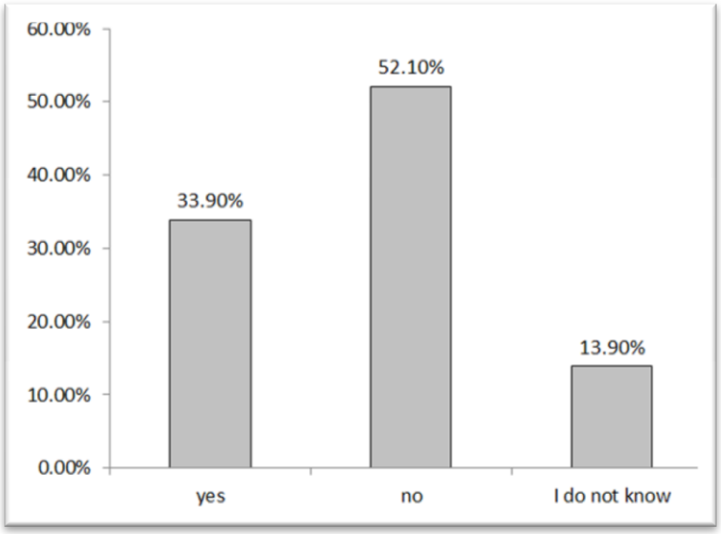

Figure (2) Pregnant women with a previous history of GDM+

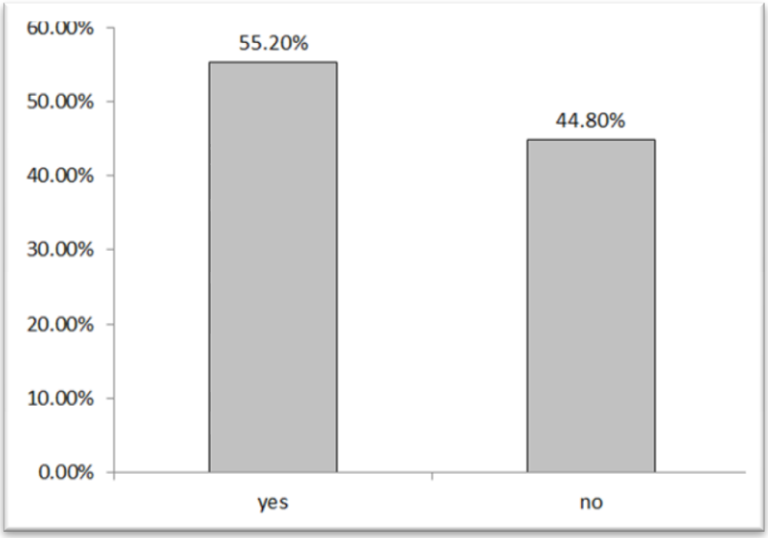

Figure (3) Family history of Diabetes

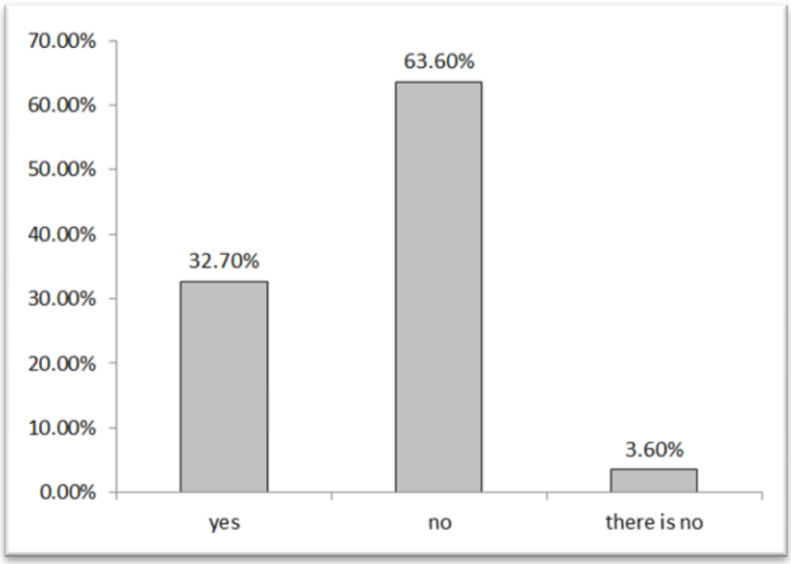

Figure (4) Proceeding of the pregnancy.

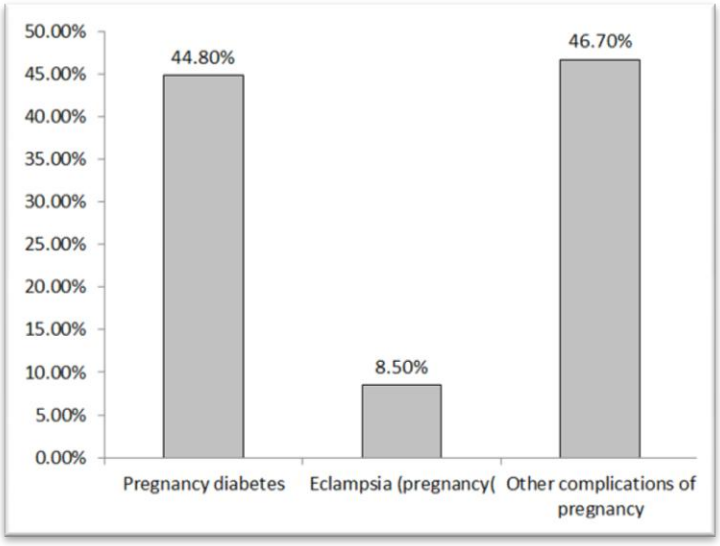

Figure (5) Prevalence of Gestation Diabetes

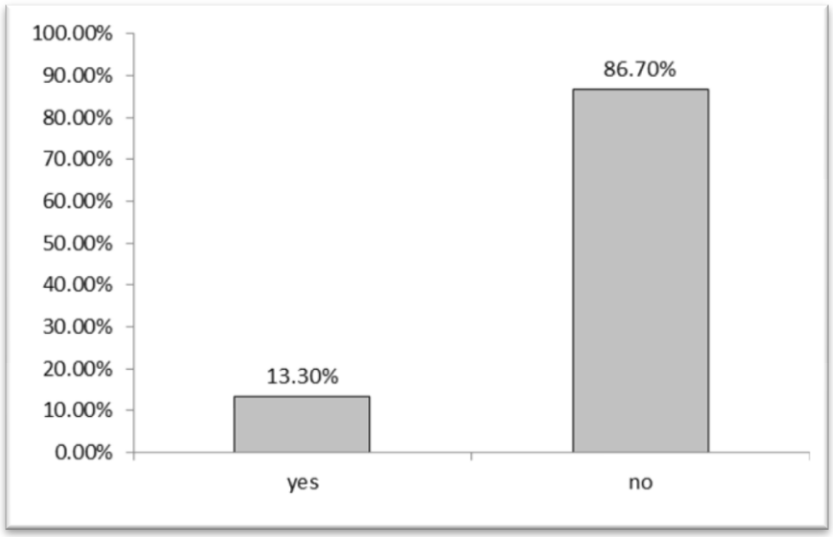

Figure (6) Problems in the womb, cervix or placenta

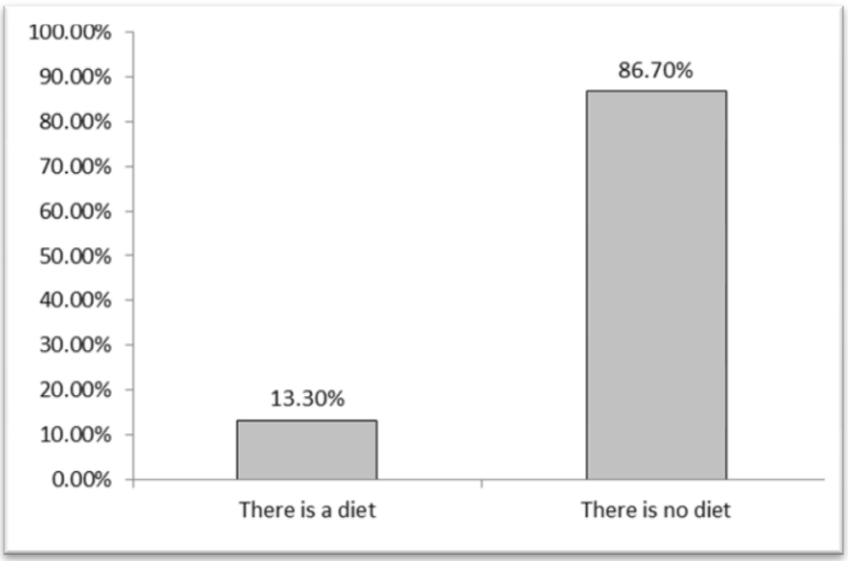

Figure (7) Special diet for pregnant women

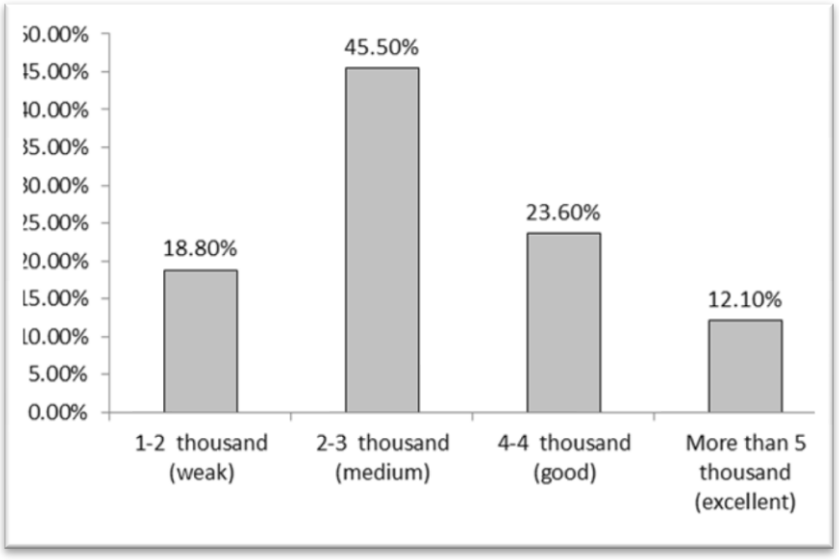

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Figure (8) Income/ SDG (Sudanese Pound)

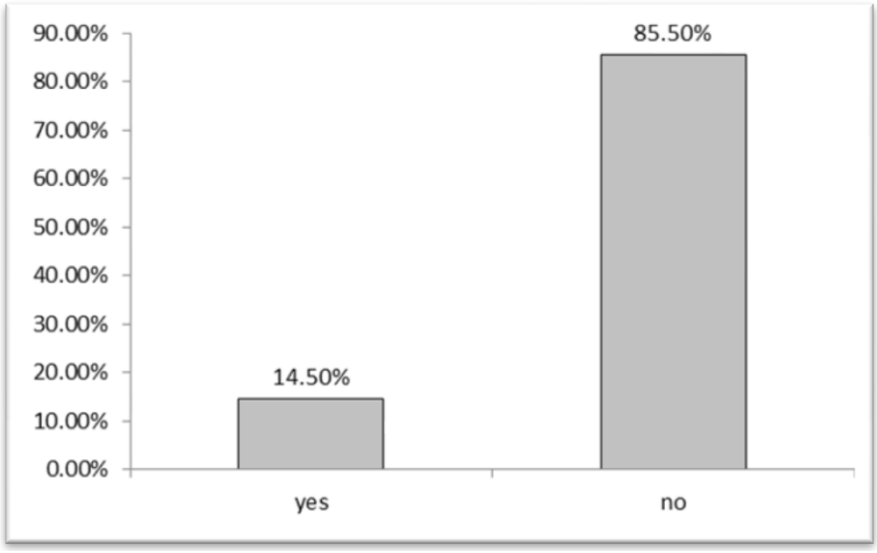

Figure (9) Physical Activity

IV. Discussion

Women aged 31–40 years (52.1%) were the largest group in this study. According to various authors, the likelihood of developing diabetes during pregnancy increases with maternal age. (A. Ben-Haroush, et.al, 2003). More than two thirds (70.9%) of the respondents educational level was secondary level. Not surprisingly, level of education was significantly associated with knowledge on diabetes. (Alex Fong, et al, 2014). Table (1)

Maternal overweight and obesity are risk factors for several complications during pregnancy and delivery. (A. Z. Khambalia, 2013), In this study, more than three quarters (78.8%) of the respondent's weight range from 61-90 kg, this compared to the majority (93%) of the respondents height was less than 170cm. The result 55% was the obesity among the study group. Figure (1)

51.1% of the study group has diabetes in the previous pregnancy Figure (2). This finding was agreed with those of studies in Egypt (Rudy Bilous and Richard Donnellym, 2010), Nigeria (Spong, et.al, 1998)), Colorado (Thomas A. Buchanan and Anny H. Xiang, 2005). Pregnant women with a previous history of GDM had more increased of developing of the problem during the pregnancy. Women who have had gestational diabetes mellitus during their first pregnancy are at higher risk of developing gestational diabetes in their subsequent pregnancies. Also evidence suggests that 30 to 50 percent of women diagnosed with gestational diabetes mellitus will go on to develop type II diabetes mellitus diabetes in future. (Xiaoping, et al; 2012)

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Similarly, GDM was higher in women with family history of diabetes. 55.2% of the study group has diabetes within the family member (Figure 3) the finding was in line with evidence in the World Health Organization (WHO, 2013)) and studies in Iran (Xiao ping et al, 2012). Moreover, living standards and lifestyles of families are more likely similar resulting in sharing the related risk factors (Zhu Y, and Zhang C., (2016).

63.6% of the respondent the pregnancy is not completed because they aborted before the research finished. Figure (4). This result agrees with the statement "The frequent occurrence of GDM showed the presence of risk factors in succeeding pregnancies" (Wang et al., (2013)

Gestational diabetes mellitus was diagnosed according to the WHO 2013 guidelines, Oral Glucose Tolerance Test (OGTT) at week 32–34 of gestation**.** 44.8% of the participants had Gestation Diabetes. Figure (5)

86.7% of the study group has no problems in the womb, cervix or placenta. Figure (6)

There are no relation between Gestational Diabetes Mellitus and the health problem in womb, placenta and cervix in this study.

86.7% of the study group has no adequate diet concerning the condition as Gestational diabetes mellitus case Figure (7). Healthy diet to help avoid or impede the most of diabetes mellitus is recommended. Higher dietary fat and low carbohydrate intakes during pregnancy period are to higher risk for gestational diabetes mellitus. (Anne-Sophie Morisset, 2014).

45.5%) of the respondents their average monthly household income was 2-3 thousands SDG (medium) According to Ministry of Finance, Chapter One, law of wages -2000-Sudan. Figure (8). The quality of health care services depends on income, which determines the type of coverage a family receives (American Diabetes Association, 2014). The high –risk groups for gestational diabetes mellitus are women with low socioeconomic status and uneducated. (Alex Fong, et al, 2014).

85.5% of the respondents are not practice any active physical activity. Figure (9). The lack of physical activity due to sedentary lifestyle has been linked to gestational diabetes mellitus development. (Alison, et al; 2006)

V. Conclusion

This study concluded that age, education level, give birth of twins, Diabetes in the previous pregnancy, special diet, income and follow healthcare profession are the most factors associated with gestation diabetes. Problems in womb, cervix and placenta have no association with gestation diabetes. Complication associated with gestation diabetes, include abortion, Eclampsia, and high infant's weight. Knowledge, physical activity is very poor. Prevalence of gestation diabetes is well notice.

VI. Recommendations

-Routine screening of pregnant women and healthy lifestyle are strongly recommended and urgent care is need for those mothers who are diagnosed with gestational diabetes in order to reduce complication for both the mothers and the neonates.

-Health authority should increase heath awareness for pregnant women with diabetes and providing them with the necessary health information

- Health authority should enable pregnant women to receive the necessary health services.

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