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ASSESSMENT OF PREGNANCY COMPLICATIONS AND THEIR ASSOCIATED RISK FACTORS: A PROSPECTIVE OBSERVATIONAL STUDY IN A GOVERNMENT HOSPITAL

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Abstract:

Aim: The objective of this study is to evaluate the common pregnancy complications and their associated consideration of danger among pregnant women at the Government General Hospital. **Methodology:** A prospective, cross-sectional observational study was conducted at the Government General Hospital in Guntur over a six-month period. Participants were recruited through the gynaecology department, where informed consent was obtained. Data collection involved patient interviews and review of medical records. The collected data were subsequently entered into an Excel spreadsheet, facilitating descriptive analysis and interpretation of results. **Results:** Among the 300 pregnant women studied, a higher incidence of complications was noted when the baby is three months old (56%) in comparison to the first and second trimesters (48%). Women aged 21 to 25 exhibited the highest frequency of complications (48%). Dependents experienced complications more significantly than working women, with 286 dependents affected. The most prevalent complications included anaemia (46.3%), urinary tract infections (19.3%), hypertension (19%), thyroid disorders (17%), gestational diabetes mellitus (11.6%), and eclampsia (6%). Associated risk factors identified were inadequate intake of iron-rich foods (76.25%), poor hygiene practices (79.3%), a family history of hypertension (49.12%), exposure to passive smoking (58.8%), physical inactivity (68.5%), and preeclampsia (95.83%). Our findings indicate that vitamin and mineral supplements were prescribed to 86% of the pregnant women receiving treatment, while anthelmintics (22%) and antihypertensive (11.6%) were administered based on observed side effects and symptoms. A total of 13 women reported experiencing three complications during their pregnancies. **Conclusion:** This prospective observational study concludes that the most frequently observed complications among pregnant women were anaemia, urinary tract infections, hypertension, thyroid disorders, gestational diabetes mellitus, and eclampsia. The primary risk factors associated with these complications included inadequate consumption of iron-rich foods, poor hygiene, family history, passive smoking, physical inactivity, stress, and preeclampsia.

Keywords: Pregnant Women, Prevalence, Complications, Risk factors.

Introduction

A woman's experience during pregnancy is unique. Pregnancy induces a variety of complex physiological alterations in the female body, which might provide health hazards [1]. This period is one of the most critical phases that can influence a child's health throughout their lifetime [2]. During pregnancy, substantial physical and psychological transformations occur. These changes can affect pregnant women's health and safety, as well as the

health of their unborn children, even in the most straightforward pregnancies [3].

During pregnancy, there are concurrent alterations in hormonal levels and the body's energy metabolism [4]. This period is associated with a notable decline in a woman's physical capabilities and endurance. Both pregnancy and the postpartum phase are characterized by a poorer functional status for women of reproductive age compared to other life stages [5]. Experts in mother and child health care throughout pregnancy work hard to alleviate

their patients' concerns during this time [3]. Primary care physicians are tasked with the wellness management to ladies who were of childbearing age prior to, during, and after pregnancy, requiring a thorough comprehension of the wellness transformations that transpire during this period [5]. Throughout the trimesters, there was a notable deterioration in quality of life [3]. Research indicates that poor health status prior to, during, and following pregnancy is consistently associated with insufficient physical activity and financial constraints regarding food and housing. It has been established that physical activity, as a modifiable health risk factor, provides benefits for both expectant mothers and their developing children [5]. Consequently, the intergenerational transmission of non-communicable diseases and obesity may be exacerbated during pregnancy [2]. The correlation between maternal nutritional state throughout gestation and fetal development is crucial [6]. A deficiency in magnesium has been linked to worse perinatal outcomes when experienced during pregnancy [7]. To mitigate complications, calcium supplementation was initiated before having a child and continued through the first half of pregnancy. These conditions pose significant risks as they are major contributors to premature births, also the risk of death and illness for the mother and her unborn child [8]. Human pregnancy is characterized as a metabolically active phase, marked by significant alterations in maternal body weight and an increase in adipose tissue [9]. The intake of carotenoids during pregnancy plays a crucial role in influencing pregnancy outcomes [4]. Historically, metrics related to pregnancy outcomes, such as morbidity and mortality rates, have been deemed crucial. However, these metrics alone are inadequate, as the assessment of population health must encompass both the improvement of living conditions and the preservation of life [3]. Research has shown that exercise, a controllable potential danger, offers significant benefits to both expectant mothers and their developing fetuses. It is recommended that pregnant women participate in a minimum of 150 minutes of moderate physical exercise each week. Preterm birth [6-9], responsible for approximately one million neonatal deaths annually, stands as the leading cause of mortality among neonates and children between five years of age globally [10]. Furthermore, the implementation of repeated testing throughout pregnancy for all women poses not only financial burdens but also operational challenges [11].

Aim and Objectives

Aim

The aim of the present prospective cross sectional study is to "Assess the prevailing pregnancy complications and associated risk factors" in Guntur Government General Hospital.

Objectives

- To assess the major complications and their prevalence in pregnancy.
- To assess the risk factors associated with pregnancy complications.
- To evaluate the relation between period of pregnancy and Complications.
- To assess the impact of occupational status on Complications during pregnancy.

Methodology

Study Design: A Prospective, Cross Sectional Study

Study Site: Gynaecology, Department at Guntur Government General Hospital, Guntur.

Sample Size: 300 Subjects were included in the study

Study Period: 6months, that is from November 2023 to May 2024

Eligibility Criteria

Inclusion Criteria

1. Pregnant Women from Inpatient and Outpatient departments were involved.
2. Different types of Pregnancy complication cases were included.
3. Patients with all trimesters were considered.

Exclusion Criteria

4. Post pregnant women were excluded.
5. Miscarriage pregnancies were excluded.
6. Patients with low response to study were excluded.
7. Patients who doesn't show consent towards study were also excluded.

Study Procedure: A prospective, cross-sectional observational study was conducted over a six-month period at the government general hospital in Guntur. We approached the gynaecology department and informed about the study to get participants consent. Information was gathered through patient interviews and from their medical records. The collected data was entered in Excel sheet and this is helpful to perform the descriptive analysis to draw the results.

Data Collection and Assessment of Study

Observations: To gather data from patients and medical records, a legitimate and trustworthy patient-specific data collection form was developed. After being evaluated through many standard approaches, the profile form was developed. The data collection form include the information related to

- Patient demographic details
- Pregnancy Complication

- Hypertension
- GDM
- Eclampsia
- UTI
- Thyroid
- Anemia
- Associated risk factors for above complications
- Other complications
- Treatment plan

Result

The 300 patients we have also considered in the study, most of them (48%) were within the age interval of 21-25 years followed by 26% of pregnant women with 16-20 years of age and 21% in between 26-30 years. We have also including some women with late pregnancies with the age above 36 years during our study period.(TABLE-1)

TABLE: 1 AGE OF THE PREGNANT WOMEN

AGE INTERVAL	FREQUENCY	PERCENTAGE
16-20	78	26
21-25	145	48
26-30	63	21
31-35	11	3
36-40	2	0.6
41-45	1	0.3

The total 40 week pregnancy period was divided into three trimesters. Where the first 12 week duration starting from the first day of last menstrual period is considered as the first trimester. From week 13-28, we consider it as second trimester and from week 29-40 as third Trimester. During our study, we have taken a note of pregnancy period to know about the connection between complications raised and period of pregnancy. We found that most of the pregnant women i.e., about 56%, 33%, 11%, are in third trimester, second trimester and first trimester respectively. (FIGURE-1)

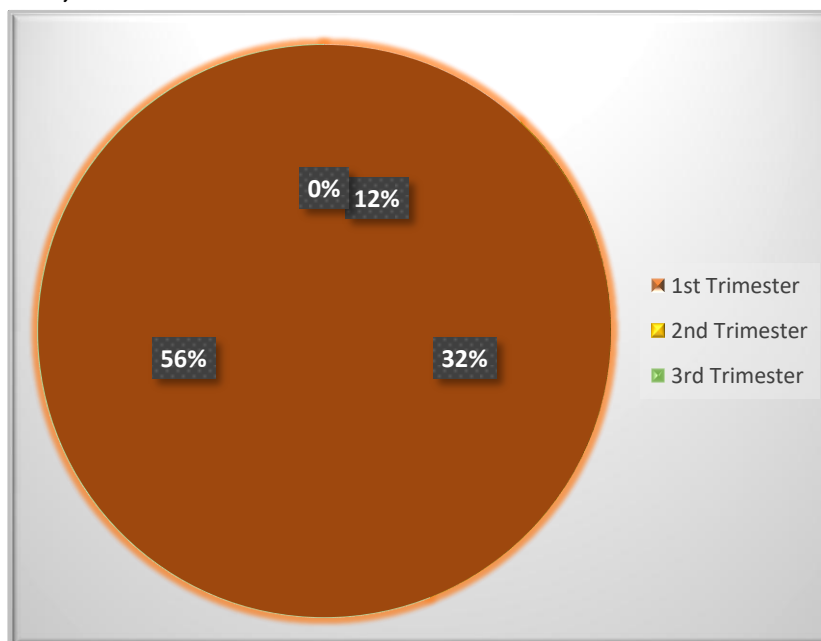


Figure-1: Period of Pregnancy

In order to know about the connection between occupation and the complications in pregnancy, we make note on the occupational status and found that most of the women (286 of 300) in our study were dependents and not working. Only 4.67% of our sample has been noted as working women. (Figure - 2)

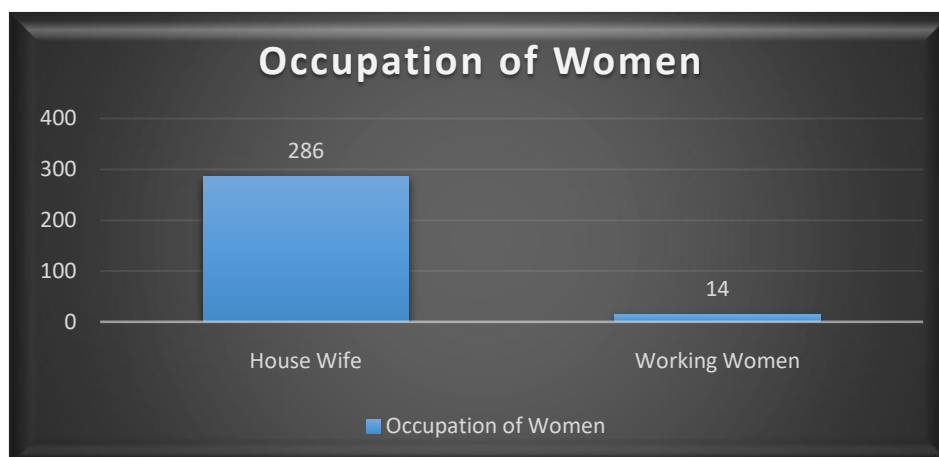


Figure-2: Occupation

The most common complications reported in the pregnant women are Anemia, Hypertension, Gestational diabetes, UTI's, Eclampsia and Thyroid. Majority of pregnant women have reported with Anemia (46.3%) followed by Urinary Tract Infections (19.3%) and Hypertension (19%).Thyroid was reported in 17% and gestational diabetes in 11.6% of pregnant women, followed by Eclampsia in 8% pregnant women.(TABLE-2)

Table-2: Complications during Pregnancy

COMPLICATIONS	FREQUENCY	PERCENTAGE
HYPERTENSION	57	19
ANEMIA	139	46.3
GDM	35	11.6
ECLAMPSIA	24	8
UTI	58	19.3
THYROID	51	17

When we have considered the risk factors for Hypertension in pregnant women, it was found that most common risk factor is Family History; it was complained by 49.12% patients. Other risk factors associated with hypertension in pregnant women are Obesity (35%), Passive smoking (24.56%), Excess Salt consumption (21.05%), Lack of proper nutrition (19.29%), Lack of Exercise (10.52%) and stress (6.6%). (Figure-3)

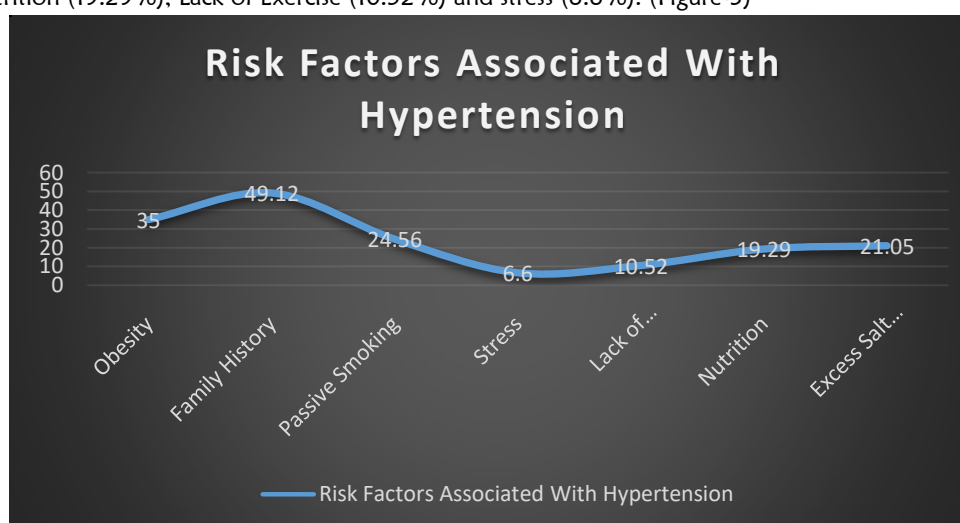


Figure-3: Risk Factors Associated With Hypertension

When we have considered the additional risk factors linked for Anemia in pregnant women, it was found that most common risk factor is Lack of Iron Rich Foods, it was complained by 76.25% patients. Other risk factors associated with Anemia in pregnant women are teenage pregnancy (56.11%), having vomitings due to morning

sickness (48.2%), having history of Anemia in pregnancy (40.28%), having heavy pre pregnancy menstrual flow (38.84%), closely spaced pregnancies (38%) having history of anemia (23.74%) and having more than one baby in womb (7.91%). (FIGURE-4)

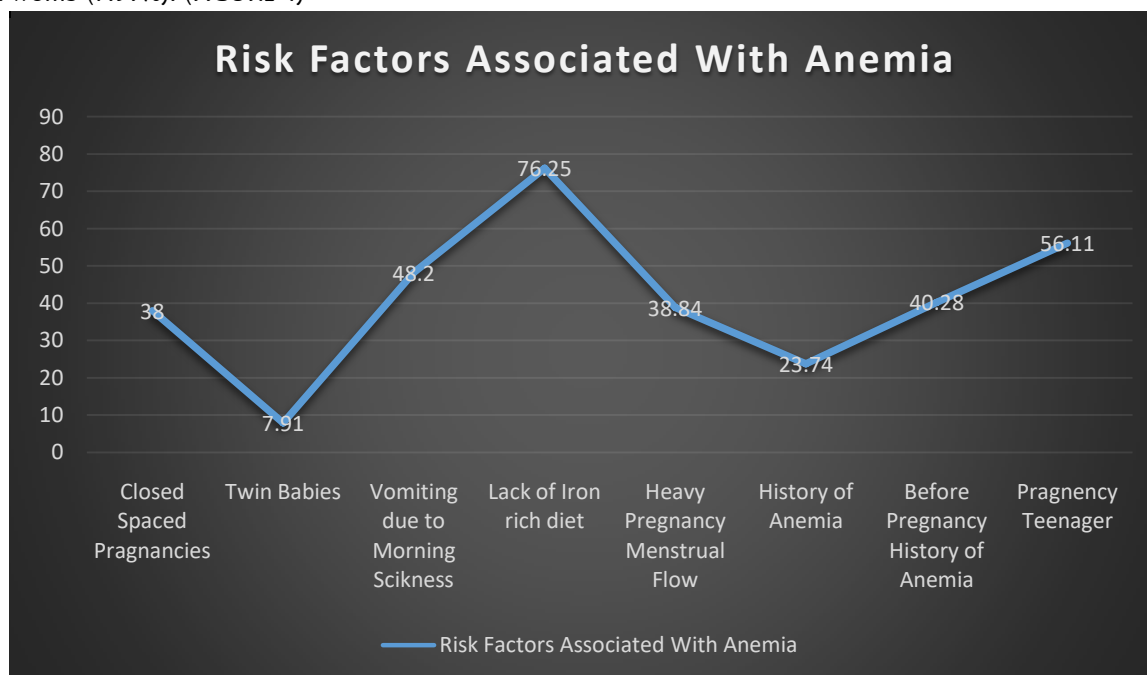


Figure-4: Risk Factors Associated With Anemia

When we have considered the risk factors for Gestational Diabetes Mellitus in pregnant women, it was found that most common risk factor is Physical Inactiveness; it was complained by 68.5% patients. Additional risk factors linked with Gestational Diabetes Mellitus (GDM) which are in pregnant women are having PCOD health issue (62.85%), family history (40%), having GDM during previous pregnancy (34.28%), hormonal imbalance (22.85%), over weight (20%) and having history of diabetes (11.42%). (Figure-5)

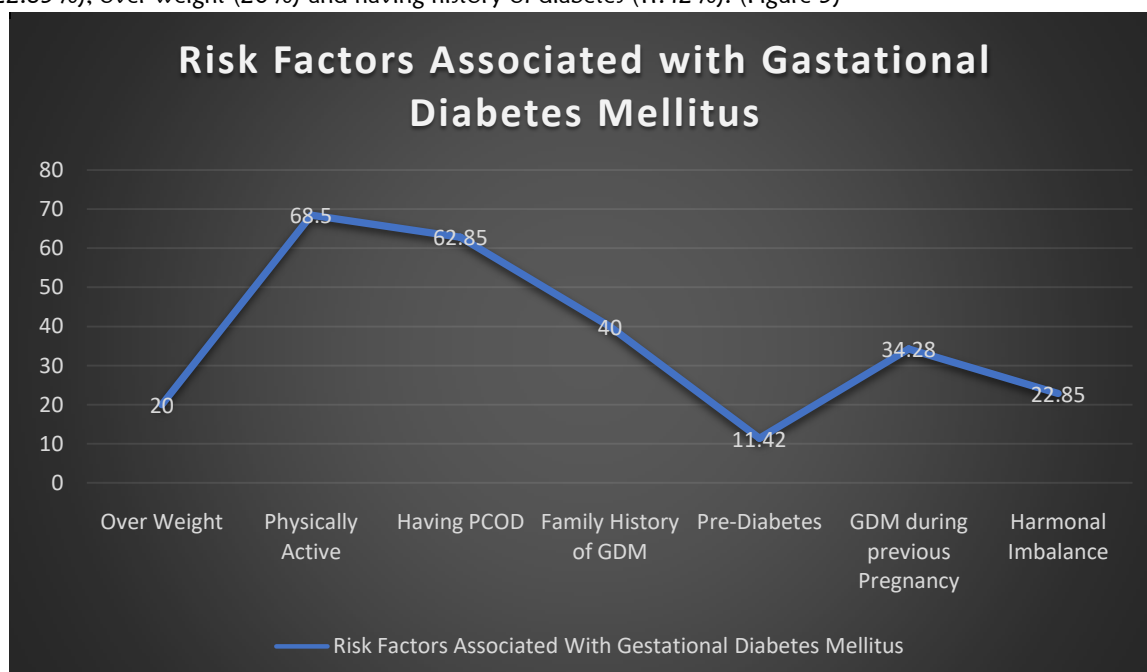


Figure-5: Risk Factors Associated With Gestational Diabetes Mellitus

When we have considered the risk factors for Eclampsia in pregnant women, it was found that most common risk factor is Pre-eclampsia, it was complained by 95.83% patients. Other risk factors associated with Eclampsia in pregnant women are stress (75%), family history (58.33%), obesity (33.33%), age (16.66%) and multiple gestation, renal disorder, autoimmune disorder (4.16% each). (Figure-6)

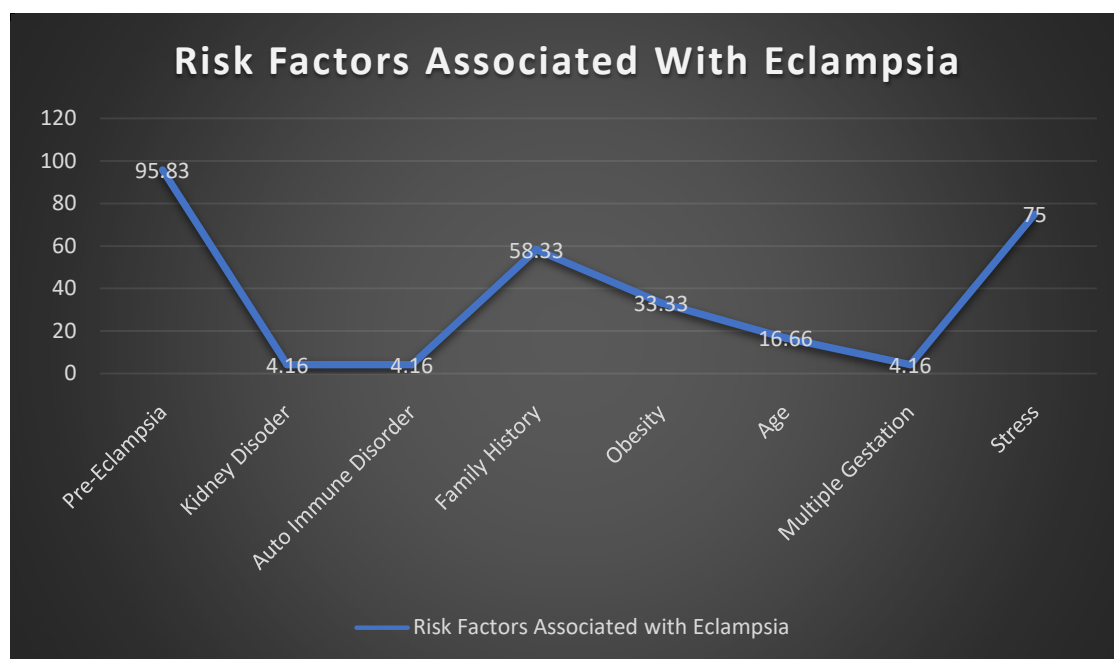


Figure-6: Risk Factors Associated With Eclampsia

When we have considered the risk factors for Urinary Tract Infections (UTI) in pregnant women, it was found that most common risk factor is Poor hygiene, it was complained by 79.3% patients. Other risk factors associated with UTI's those who are in pregnant women are having low socio-economic status (63.79%), holding of urine longtime (50%), genital infections (50%) and increased uterus size (6.89%). (Figure-7)

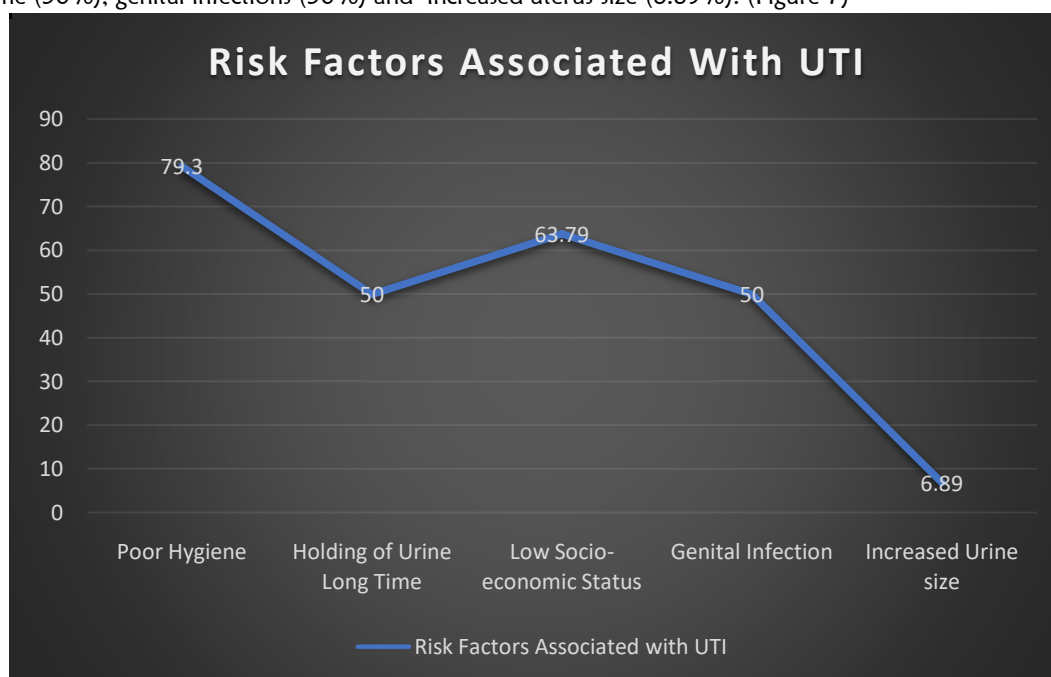


Figure-7: Risk Factors Associated With Urinary Tract Infections

When we have considered the factors for Thyroid in pregnant women, it was found that most common risk factor is Passive Passive smoking, it was complained by 58.8% patients. Other risk factors which are associated with thyroid disorders who are in pregnant women are having family history or autoimmune disorder (15.6%), having thyroid gland surgery (7.84%), treatment with high dose of lithium and iodine (3.92%) and disorder of pituitary gland (1.96%). (FIGURE-8)

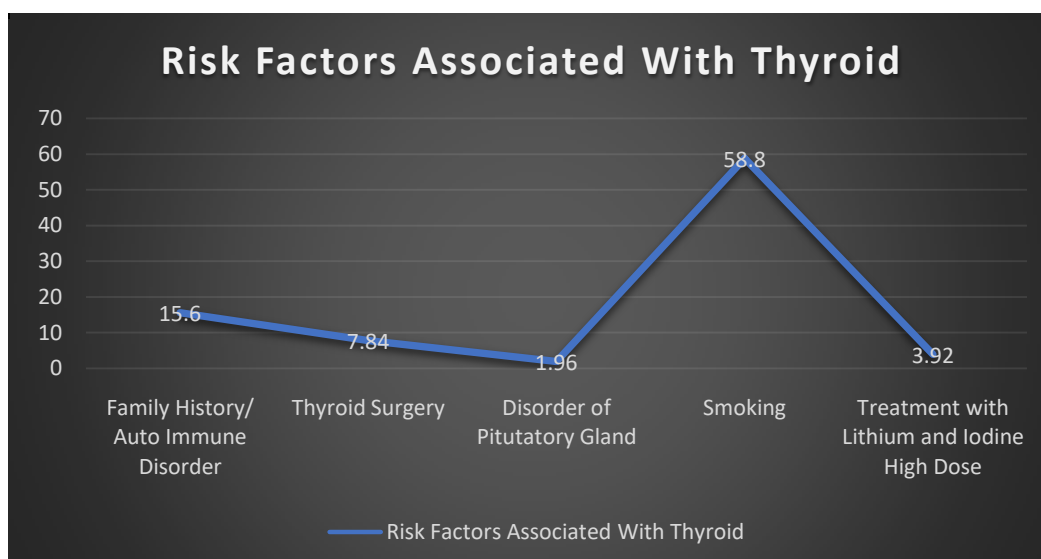


Figure-8: Risk Factors Associated With Thyroid

Most pregnant women in our study (86%) were given nutritional supplements, such as vitamins and minerals. Depending on their complications and symptoms, they received various treatments, including pain relievers, antibiotics, antifungals, anti-parasitics, anti-nausea medications, anti-seizure drugs, muscle relaxants, diuretics, bronchodilators, antihistamines, laxatives, antacids, proton pump inhibitors, blood pressure medications, diabetes medications, hormone supplements, thyroid medications, blood clotting inhibitors, and antipsychotics. Out of 300 women studied, two required blood transfusions, and 26 were advised to follow a strict diet plan. (TABLE-3)

Table-3: Treatment Classification

CLASS OF DRUGS	FREQUENCY	PERCENTAGE
Analgesics	24	8
Anti Bacterials	37	12.3
Anti Fungals	12	4
Anti Helminthics	66	22
Anti Emetics	13	4.3
Anti Epilectics	6	2
Anti Spasmodics	1	0.3
Diuretics	5	1.6
Bronchodilator	6	2
Anti Histamines	6	2
Laxatives	3	1
Antacids	1	0.3
Anti Hypertensive	35	11.6
Anti Diabetics	9	3
Hormone Supplements	8	2.6
Nutrition Supplement	258	86
Thyroid Product	18	6
Anti Fibrinolytics	4	1.3
Blood Transfusion	2	0.6
Anti Psychotics	2	0.6
Proton Pump Inhibitors	29	9.6
Diet Plan	26	8.6

Most women have reported more complications during their comparison of third trimester of pregnancy with first and second trimesters. (Table-4)

Table-4: Complication Relation to the Period of Pregnancy

COMPLICATION	PERIOD OF PREGNANCY	FREQUENCY	PERCENTAGE
Hypertension (57)	1-3 months	3	5.2
	4-6 months	18	31.57
	7-9 months	36	63.15
Anemia (139)	1-3 months	21	15.1
	4-6 months	46	35.6
	7-9 months	72	51.7
GDM (35)	1-3 months	2	5.7
	4-6 months	12	34.2
	7-9 months	21	60
Eclampsia (24)	1-3 months	4	16.6
	4-6 months	8	33.3
	7-9 months	12	50
UTI (58)	1-3 months	8	13.7
	4-6 months	17	29.3
	7-9 months	33	56.8
Thyroid (51)	1-3 months	8	15.6
	4-6 months	17	33.3
	7-9 months	26	50.9

The evaluation of the influence of occupational position on the incidence of complications showed no substantial disparities between employed women and those who are financially reliant. Nevertheless, specific problems were identified as more prevalent among employed women, including hypertension, anemia, and eclampsia. In contrast, financially independent women demonstrated a greater incidence of gestational diabetes mellitus that are pregnant, urinary tract infections, and thyroid abnormalities. (Table-5)

Table-5: Complication Relation to the Occupation of Pregnant Women

COMPLICATION	OCCUPATION	FREQUENCY	PERCENTAGE
HTN	Dependent (286)	52	18.18
	Working Women (14)	5	35.9
ANEMIA	Dependent (286)	129	45.1
	Working Women (14)	10	71.8
GDM	Dependent (286)	35	12.23
	Working Women (14)	0	0
ECLAMPSIA	Dependent (286)	19	6.6
	Working Women (14)	5	35.9
UTI	Dependent (286)	57	19.9
	Working Women (14)	1	7
THYROID	Dependent (286)	50	17.48
	Working Women (14)	1	7

An analysis of the complications experienced by pregnant women reveals that the highest incidence of complications reported by any individual is three. During the study period, 13 women indicated that they encountered three complications throughout their entire pregnancy. Additionally, 50 patients reported experiencing two complications, while the majority of participants noted having faced one complication during their pregnancy. (Table-6)

Table-6: Number of Complications in Pregnant Women

PERIOD OF PREGNANCY	NO.OF COMPLICATIONS	FREQUENCY	PERCENTAGE
1st Trimister	1	26	74.2
	2	6	17.14
	3	3	8.57
2nd Trimister	1	80	81.63
	2	13	13.26
	3	5	5.1
3rd Trimister	1	132	79.04
	2	31	18.56
	3	4	2.39

Discussion

This prospective observational study investigated pregnancy complications and their related risk factors in a cohort of 300 pregnant women at the Government General Hospital in Guntur. The results indicate a notable prevalence of complications, especially in the third trimester, where the incidence reached 56%. This observation aligns with earlier research that suggests an elevated risk for both maternal and fetal health during the later stages of pregnancy [28, 29].

In our investigation, we identified a 19% prevalence of hypertension among pregnant women. In contrast, Wilson et al. (2000-2003) documented prevalence rates of 6.2%, 8.5%, and 10.9% in groups categorized as subclinical hypothyroid, subclinical hyperthyroid, and euthyroid, respectively. The discrepancies in these findings may stem from differences in sample size, the characteristics of the study population, or the criteria used to classify thyroid dysfunction [38].

Moreover, Wilson et al. emphasized the association between subclinical hypothyroidism and severe preeclampsia, which corresponds with our observation that preeclampsia emerged as a significant risk factor (95.83%) for complications. This indicates that thyroid dysfunction could play a critical role in the development of hypertensive disorders during pregnancy, thereby underscoring the importance of implementing routine thyroid screening in antenatal care [38].

Anemia was identified as the most common complication, affecting 46.3% of the population studied. This finding is consistent with the research conducted by Jeffrey N Bone et al [16], which underscored the correlation between the severity of anemia during early pregnancy and negative maternal outcomes. The elevated incidence of anemia within our cohort can likely be linked to insufficient consumption of iron-rich foods (76.25%), substandard hygiene practices (79.3%),

and the socio-economic conditions of the population. These observations reflect patterns noted in other studies that highlight the influence of nutritional deficiencies on pregnancy outcomes, as discussed by Tomomi Kotani et al [39].

Urinary tract infections (UTIs) were identified in 19.3% of the patients. This result aligns with numerous case studies that demonstrate an increased incidence of UTIs in pregnant women, attributed to physiological alterations and urinary stasis [21]. The correlation between UTIs and insufficient hygiene practices noted in our research underscores the necessity for enhanced educational initiatives aimed at pregnant women.

Hypertension was observed in 19% of the study participants, which aligns with wider epidemiological patterns linking advanced maternal age, obesity, and various other risk factors to heightened incidences of gestational hypertension [33, 36]. The data indicating that physical inactivity (68.5%) and a familial history of hypertension (49.12%) are significant contributors to this risk corroborate existing literature that emphasizes the importance of lifestyle changes as preventive strategies [35].

Gestational diabetes mellitus (GDM) was identified in 11.6% of the study participants, reflecting trends observed in research conducted by Minxue Shen and colleagues, which highlight the increasing incidence of GDM linked to advanced maternal age and obesity [30]. The necessity for early detection and intervention in GDM to mitigate potential findings of Lorie M. Harper and colleagues underscore long-term health risks for both moms and their children [33].

Thyroid disorders were detected in 17% of the female participants, highlighting the importance of regular screening due to the possible consequences for both maternal and neonatal health [38]. Additionally, the significant occurrence of stress and its correlation with complications during pregnancy,

as observed in our research, is corroborated by literature that connects psychological well-being to pregnancy outcomes [37].

Eclampsia occurred in 6% of cases, underscoring a significant complication linked to untreated hypertension and preeclampsia [30]. The significance of meticulous oversight and administration of hypertensive disorders in pregnancy is crucial, especially in populations with elevated risk factors.

The correlation between passive smoking (58.8%) and negative pregnancy outcomes is consistent with numerous studies indicating that exposure to environmental tobacco smoke poses risks to both maternal and fetal health [34].

In summary, our research highlights the complex characteristics of pregnancy complications and the various risk factors linked to them. Recognizing these factors such as insufficient nutrition, substandard hygiene practices, and lifestyle decisions establishes a basis for focused interventions designed for help improve the health results of both moms and their infants. Improved public health initiatives, particularly educational programs centred on nutrition and lifestyle changes, are essential for mitigating these risks in pregnant populations.

Conclusion

The findings of this prospective observational study involving pregnant women indicate that the most frequently encountered complications include anaemia, urinary tract infections, hypertension, thyroid disorders, gestational diabetes mellitus, and eclampsia. The primary risk factors associated with these complications encompass a deficiency in iron-rich foods, inadequate hygiene practices, a family history of these conditions, exposure to passive smoking, lack of physical activity, elevated stress levels, and the presence of preeclampsia. An analysis of the entire duration of pregnancy revealed that the majority of complications arose during the third trimester. Furthermore, when examining occupational status, no substantial changes were noted between employed women and those who were financially reliant. However, it was noted that hypertension, anaemia, and eclampsia were more prevalent among working women, while conditions such as thyroid disorders, urinary tract infections, and gestational diabetes mellitus were more common in financially independent women.

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