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Original Article

Prevalence of Preeclampsia in Adolescent

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ABSTRACT

Adolescent pregnancy is one of the most highlighted social and public health issues present at a global level with varying prevalence rate. It represents a massive risk group in reproductive terms due to the excessive burden of growth along with reproduction. Pregnancy at such a young age may lead to premature delivery, pre-eclampsia, and massive fetal deaths. These adverse outcomes are influenced by in adequate prenatal care, poor socioeconomic status, and weight gain during pregnancy. The prevalence rate of preeclampsia is twice as higher in teenagers than any other age group of women. **Objective:** To know the prevalence of pre-eclampsia in adolescent pregnancy and to find out the relationship of pre-eclampsia with age group, body mass index, and education of pregnant young girls. **Methods:** An observational (cross-sectional) study was conducted on 383 females selected through a nonprobability convenience sampling technique. The study was conducted at Aziz Bhatti Shaheed Teaching Hospital within the duration of 5 months after approval of the synopsis. Data were analyzed by using SPSS 21.0. Chi-square and person correlation tests were used to find out the association of pre-eclampsia with age group, body mass index and education. **Results:** The mean age of the participants was 20 ± 1 years. Total 383 females were chosen for the study. Results showed that n=114 (29.8%) were suffering from preeclampsia while n 269 (70.23%) were not. There was a significant relationship of pre-eclampsia. **Conclusions:** The prevalence is quite prominent in pregnant females showing that are at a higher risk of adverse pregnancy outcomes. However, the study also shows that the majority of women suffering from pregnancy-induced hypertension were illiterate. Therefore, health literacy is important for females to interpret and apply healthcare information for making accurate health decisions in such a critical aspect of life.

INTRODUCTION

Among all complications, hypertension is commonly seen in pregnancy [1]. Approximately, 5 to 10% of women are affected by hypertensive diseases while the incidence rate being increased from the last two decades. Factors such as advanced maternal age, obesity along with associated co-morbidities are contributing to the increased incidence rates of these disorders. Pregnancy at any age is a very crucial aspect of life. It affects the person biologically as well as psychologically. Adolescent pregnancy is one of the most highlighted social and public health issue present at a global level with varying prevalence rate. It represents as a massive risk group in reproductive terms due to the excessive burden of growth along with reproduction [2].

Pregnancy at such a young age may lead to premature delivery, pre-eclampsia and massive fetal deaths [3]. These adverse outcomes are influenced by inadequate prenatal care, poor socioeconomic status, and weight gain during pregnancy [4]. The prevalence rate of preeclampsia is twice as higher in teenagers than in any other age group of women [5]. Preeclampsia is categorized into mild and severe. About 25% of cases are observed to be severe in nature while 75% are considered mild[18] just like other heterogeneous diseases, (for instance: diabetes type 1 and
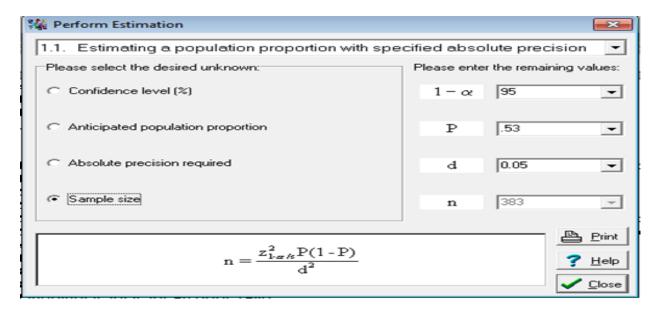
2). The early (mild) stage is considered as a time-space less than 34 weeks while the later (severe) stage begins from a period greater than 34 weeks of pregnancy.

About 4-14% of women suffer from HELLP syndrome while affected by preeclampsia [6]. HELLP syndrome is a severe form of preeclampsia accompanied by high rates of maternal and neonatal morbidity [7]. These signs and symptoms of preeclampsia are visible at a later stage of preeclampsia, usually during the late second to the early third trimester. Moreover, it results from abnormal interrelation between fetal and maternal tissue, from 8 to 18 weeks' gestation period. There is no specific treatment, preventive measures, and authentic predictors present at the moment, except delivery [8]. The suggested delivery time for severe preeclampsia is about 32 to 34 weeks of the gestational period which is still a very difficult alternative to adapt in this critical situation [9]. Although the problem of adolescent pregnancy is being studied at a global level, an agreement regarding the obstetric risks is lacking. Extensively, age-specific studies regarding maternal complications remain limited [10].

The purpose of this study is to briefly assess the prevalence of pregnancy-related hypertensive disease called pre-eclampsia. Preeclampsia is a prominent hypertensive disorder in teenage pregnancy. And one of the most common causes of pregnancy-related mortality. This issue is quite common in our area due to girls getting married at a very young age but unfortunately there is not enough work done regarding such a prominent hypertensive disorder. This research is being conducted to highlight this issue in the teenage population and its rate of incidence.

METHODS

An observational cross-sectional study was conducted in Aziz Bhatti Shaheed Teaching Hospital, Gujrat. The completion of the study took about 3 months after the approval of the synopsis from November 2021 to February 2022. The sample size was calculated as 383 and details are given below:

The sampling technique was nonprobability judgment sampling.

Inclusion Criteria:
- Age (17-21 years)
- Blood pressure ($\geq$140 mmHg systolic and $\geq$90 mmHg diastolic) was considered high
- Restricted to 1st pregnancy
- Gestation period not late than 2nd trimester

Exclusion Criteria:
- Family history of hypertension
- Previous history of chronic hypertension

- Diabetic patients and obese patient
- Other chronic illnesses: Cardiovascular, neurological, gastrointestinal, renal pathologies, etc.
- Smoking, substance abuse

This study was conducted in Dist. Gujarat Punjab Pakistan at Aziz Bhatti Shaheed Teaching Hospital Gujrat. This was an observational cross-sectional study that recruited 383 pregnant females. The subjects who met the inclusion criteria were selected. The data were collected using a Sphygmomanometer to access the blood pressure of participants, a weight machine to measure weight, a measuring tape to measure their height, and a semi-designed questionnaire was used to record data with the reliability of Cronbach's Alpha 0.70. Written consent was taken from all the participants before recruitment.

The data were assessed through a statistical package for social sciences (SPSS) version 21.0. For quantitative variables, mean and standard deviation (SD) were calculated. Frequency and percentage were used to display the qualitative data. P-value <0.05 was appraised as a significant value. All results were calculated at a 95% confidence level. Chi-square test and correlation were opted to evaluate the association of pre-eclampsia with demographic variables.

RESULTS

The mean age of the female participants was 20.1±1.03 years. There were n=172 (44.91%) females from urban area and n=211 (55.09%) from rural area. Suffering from preeclampsia, prevalence according to socioeconomic status shows that n=28 (7.31%) belonged from upper class, n=230 (60.05%) were from middle class and n=125 (32.64%) from lower class. Out of 382 females n=151 (39.43%) females suffering from Preeclampsia were illiterate, n=18 (4.70%) went to primary school, n=35 (9.14%) went to middle school, n=97 (25.33%) went to high school, n=81 (21.15%) were under graduated and n=1 (0.26%) were graduated. Body Mass Index of the females was also calculated the results of which show that n=1 (0.26%) of females suffering from preeclampsia were underweight, n=134 (34.99%) had normal weight and n=248 (64.755%) were overweight. (Table: 1).

Variables	Construct	Frequency (Percentage)
Age Group (years)	17-18 years	37 (9.7%)
	19-20 years	173(45.2%)
	21 years	173(45.2%)
Socio-economic Status	Upper class	28(7.3%)
	Middle class	230(60.1%)
	Lower class	125(32.6%)
Residential Area	Urban	172 (44.9%)
	Rural	211(55.1%)
Education	Illiterate	151(39.4%)
	Primary school	18(4.7%)
	Middle school	35(9.1%)
	Matric	97(25.3%)
	Intermediate	81(21.1%)
	Graduated	1(0.3%)
Body mass index	Underweight (>20Kg/m2)	1(0.3%)
	Normal weight (20-24.9Kg/m2)	134(35.0%)
	Overweight (25-29.9Kg/m2)	248(64.8%)
Preeclampsia	Yes	114(29.77%)
	No	269(70.23%)

Table 1: Frequencies and percentages of demographic variables

The mean ± SD of the age of women was 20.1±1.03, the mean and standard deviation of age of marriage was 18.2±1.1 years, the mean ± SD of SBP and DBP was 137±10.6, 90±9.5 mmHg, the mean ± SD of temperature

was 98.9± 0.5, the mean ± SD of pulse rate was 81.7±7.7 bpm, the mean ± SD of BMI value was 25.8±2.3. (Table: 2).

Variables	Mean ±S.D
Age (Years)	20.08 ±1.02
Age of Marriage (Years)	18.22 ±1.10
Systolic Blood Pressure (mmHg)	134.64 ±10.57
Diastolic Blood Pressure (mmHg)	86.66 ±9.49
Temperature (°F)	97.97 ±0.51
Pulse Rate (beat/min)	81.74 ±7.71
BMI (kg/m^2)	25.82 ±2.24

Table 2: Descriptive statistics of demographic variables

Association between preeclampsia and age was found to be a non-statistical significant difference with p-value of 0.749. Association between preeclampsia and area was found to be non-statistical significant difference with p-value of 0.393. Association between preeclampsia and socioeconomic status was found to be non-statistical significant difference with p-value of 0.837. Association between preeclampsia and education was found to be a statistical significant difference with p-value of 0.020. The strength of the association was weak positive with the p-value 0.127. Association between preeclampsia and Body Mass Index was found to be non-statistical significant difference with p-value of .630. (Table: 3).

Variables	P-value	Spearman Correlation (r)
Age group vs preeclampsia	0.749	-0.027
Preeclampsia vs Area	0.393	-0.044
Preeclampsia vs Socioeconomic status	0.837	0.008
Preeclampsia vs Education	0.020	0.127
Preeclampsia vs Body Mass Index	0.630	-0.032

Table 3: Chi square association and correlation between Pre-eclampsia and demographic variable

DISCUSSION

In the current study, a sample size of 383 females was taken from Aziz Bhatti Shaheed Teaching Hospital to calculate the prevalence of preeclampsia in adolescent females. The mean age of the participants was 20. The age of the participants was divided into 3 categories (17-18), (19-20), and (21). Other variables such as area, socioeconomic status, education, and BMI were taken into account which was also divided into categories. The overall prevalence of preeclampsia in the current study is 114 (29.77%). Prevalence according to age groups was found to be (9.66%) in the age group 17-18, (45.17%) was the prevalence in age group 19-20 and 21. The prevalence according to the area was n=172 (44.91%) in urban area and n=211 (45.17%) in rural area. Prevalence according to socioeconomic status was n=28 (7.31%) in upper class n=230 (60.05%) in middle class and n=125 (32.64%) in lower class. Prevalence according to educational status showed that n=151(39.43%) females were illiterate, n=18 (4.70%) went to primary school, n=35 (9.14%) went to middle school, n=97 (25.33%) went to high school, n=81 (21.15) were under graduated and n=1 (0.26%) were graduated.

Body Mass Index of the females was also calculated the results of which showed that n=1 (0.26%) females suffering from preeclampsia were underweight, n=134 (34.99%) had normal height and n=248 (64.755) were overweight. In this study, the association between preeclampsia and education was found to be statistically significant with p-value of 0.020. And the strength of the association was weak positive with the p-value of 0.172. The results of the study showed no association of preeclampsia with any other variable such as age group, area, socioeconomic status and BMI.

Previously, a cross-sectional study was conducted in which a sample size of 422 was selected. Whereas the sample size in the current study was n=383. The result of the previous study shows that among these 422 women, 33(7.9 percent) were suffering from gestational hypertension [11]. Whereas the result of the current study showed the

prevalence to be n=114(29.77%). Similarly, another cross-sectional study was conducted with a sample size of 1126 females. The mean ages of the selected women were 22±5 years. Out of selected 1126 females, 42 females (3.7%) were suffering from pre-eclampsia while 1084 (96%) were not suffering from pre-eclampsia [12]. The result of this study revealed that health awareness programs should be administered for prevention and health precaution. The present study had a sample size of n=383 with the mean age of participants being 20. Results showed that n=114 (29.77%) of adolescents were suffering from preeclampsia in teenage pregnancy in the 2nd trimester while they were pregnant for the first time.

The prevalence of preeclampsia according to the current study is (29.77%) which is quite high compared to the previous studies. The highest prevalence rate is observed in the age group of 19 to 21, which was approximately 45.17% while in teenagers in age group 17 to 18 was 9.66%. This massive increase in the prevalence of preeclampsia maybe is due to the current situation of COVID-19 which is a global pandemic that has caused a significant increase in stress worldwide. Pregnancy is a very crucial part of any female life and even slight variation in the surrounding environment can result in immense problems. Another highlighted aspect of the study analysis shows that the majority of the women suffering from preeclampsia were Illiterate. It shows that somehow it is linked to the illiteracy of the females. Therefore, health literacy is important for females to interpret and apply healthcare information for making accurate health decisions in such a critical aspect of life. Due to the absence of a defined pattern of pre-eclampsia, similar screening method was used for diagnosis that is used for the general population. The study might be subjected to observational biases due to the nature of the study.

In expert clinics, complete care should be provided to pregnant adolescents by integral, complete, and multidisciplinary programs in order to decrease prenatal and maternal risks, which include pregnancy-induced hypertension. The assistance of Women's Health Physiotherapist should be taken to engage in physical activities such as aerobic exercises, breathing exercises, walking, and stretching which can help in lowering hypertension. Self-care is an essential part that can help in lowering the prevalence of gestational hypertension. Proper diet, physical activity, and timely checkups are recommended to prevent more severe effects of preeclampsia.

CONCLUSIONS

The study indicated that prevalence rate is quite prominent in pregnant females showing a higher probability of unfavorable pregnancy consequences. However, the study also showed that the most of these females suffering from pregnancy induced hypertension were illiterate. Therefore, health literacy is important for females to interpret and apply healthcare information for making accurate health decisions in such a critical aspect of life.

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