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ASSOCIATION OF DEMOGRAPHICS VARIABLE WITH PRE-ECLAMPSIA AMONG MULTIGRAVIDA PREGNANT WOMEN ATTENDING ANTENATAL CARE

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Abstract

Background: Pre-eclampsia is a significant concern in pregnancy, especially among multigravida women. Pre-eclampsia remains one of the leading causes of maternal and perinatal morbidity and mortality worldwide, posing a significant challenge to maternal healthcare systems.

Objective: To evaluate the association of demographic variables with pre-eclampsia among multigravida pregnant women attending antenatal care.

Materials and Methods: A cross-sectional analytical study was conducted at the Gynaecology OPD of Tertiary Care Hospitals Lahore Punjab. The study participants were multigravida women with pre-eclampsia. A Sample of n=271 was recruited, and a validated questionnaire was used to collect data from each participant. Data were entered into SPSS version 24 for analysis.

Results: The majority of the participants belonged to urban areas (63.1%), 32-35 years old were (38.6%), educational status was matric (41%), (87.1%) were housewives, 79.4% participants weight between 65-74kg. The respondents' educational status, her husband's educational status and body weight p value <0.05 show these demographics were associated with pre-eclampsia while biological variables intended or unintended pregnancies, high Gravidity, and fewer visits to the hospital for antenatal care were associated with pre-eclampsia.

Conclusion: It is concluded that the prevalence of pre-eclampsia was 56.8%, demographic variables are Predictor characteristics that were linked to pre-eclampsia including the participant's low level of education, and overweight (p value<0.05).

Keywords: Prevalence of Pre-Eclampsia, Pregnancy, Antenatal, demographic variable association

Introduction

Pre-eclampsia is a multi-system hypertension disorder that only happens during pregnancy. Pre-eclampsia, a hypertension syndrome that commonly manifests after 20 weeks of pregnancy, is the most frequent cause of maternal and newborn morbidity and mortality worldwide (Belay & Wudad, 2019).

Pre-eclampsia (PE), a multisystem disorder linked to pregnancy with no known cause, affects several different organ systems. To identify the primary factor causing PE, investigations are currently ongoing. Nonetheless, two steps are thought to be involved. The decidua of the fetus is invaded by

fetal trophoblasts during the first stage, which is characterised by the impairment of localised placental hypoxia. In the second stage, aberrant pro-inflammatory, antiangiogenic, and angiogenic factor expression as well as the release of placental blood-related factors into the mother's circulation are involved (Turpin et al., 2015).

According to a recent systemic review of global mortality, Pakistan has the third-highest rate of maternal, fetal, and child mortality. Eclampsia is responsible for 34% of mater mortality in Pakistani tertiary care hospitals among women were admitted for delivery (Soomro et al., 2019).

The major risk factors include a history of pre-eclampsia chronic hypertension, pregestational diabetes antiphospholipid syndrome, and obesity, among others. Other risk factors include advanced maternal age, nulliparity, history chronic kidney disease, and use of assisted reproductive technologies. Relatively rare risk factors are a family history preeclampsia and mother carrying a trisomy 13 fetus. General susceptibility to preeclampsia has been extensively studied (Rana et al., 2019).

The early identification of risk factors, such as history of pre-eclampsia, antiphospholipid syndrome, nulliparity obesity, advanced maternal age, chronic hypertension, kidney disease, diabetes, multiple pregnancies, etc., is essential for t effective treatment of pre-eclampsia. To facilitate early detective efforts have been made to create a reliable method of p eclampsia screening. According to these methods, a screening model for early onset pre-eclampsia in nullipara that is accuracy is a combination of maternal serum biomarkers in the early stages of pregnancy, such as pregnancy-related plasma Protein Inhibit-A, and placental growth factor (Kongwattanakul et al., 2018).

Pre-eclampsia may be a topic that medical providers discussing with low-risk pregnant patients out of concern that will unnecessarily heighten worry. There is a lack of reliable information on this subject. In fact, compared to norm treatment, a pre-eclampsia education leaflet enhanced knowledge without raising worry in pregnant women who were hospitalized for hypertension. Pregnant women attending a high-risk cli reported less anxiety after participating in a Web-based programme on placental problems (Bukuru et al., 2023).

Pre-eclampsia is quite distressing since it can result in a number of difficulties for both the mother and the unborn children. The frequency and baseline-related characteristics must be assessed in order to accomplish this, especially among high-risk groups like pregnant women. Health care professionals may hesitate discussing pre-eclampsia with low-risk pregnant women because they think it may needlessly increase anxiety in pregnant women's. When frequency and risk factors well known through this study it act as evidence to practice it in clinical setting and give awareness to every pregnant women about pre-eclampsia. Pregnant women should therefore be urged to seek medical attention, since increase the likelihood that pre-eclampsia if detected early and that complications avoided in early phase.

Consequently effectively manage pre-eclampsia risk factors, this study can assist medical professionals and expectant mothers in making better educational intervention choices. Factors are assessed in this study now increase awareness and automatically decrease the burden on the health care system and national economy.

Research Objective

To evaluate the association of demographic variables with pre-eclampsia among multigravida pregnant women attending antenatal care.

Materials and Methods

A cross-sectional analytical study was conducted at the gynaecology OPD Tertiary Care Hospital Lahore Punjab. The study duration was November 2023 to April 2024. Once the data was collected, it was entered into SPSS version 24. Data was presented in descriptive and inferential statistics. In descriptive statistics frequency and percentage were used in tables. For inferential statistics, a chi-square test was applied to check the association between demographic variables of pre-eclampsia. If p-value <0.05 was considered statistically significant.

Results

Table 1. Demographic Characteristics of the Respondents

Variables	Frequency	Percentage
Place of residence		
Rural	100	36.9%
Urban	171	63.1%
Age of respondents		
< 18-25 years	17	6.3%
26-30 years	92	33.8%
31-35 years	105	38.6%
> 35 years	56	21.3%
Religion		
Islam	204	75.4%
Christianity	67	24.6%
Respondent‘s educational status		
Illiterate	58	21.3%
Primary	20	7.4%
Matric	111	41%
Intermediate	65	24%
Certificate and above	17	7%
Respondent‘s occupational status		
House wife	237	87.1%
Private Employee	25	9.2%
Merchant	0	0%
Student	9	3.7%
Husband occupational status		
Farmer/ personal shop	179	65.8%
Employee	60	22.1%
NGO employee	4	1.5%
Merchant	28	10.6%
Husband educational status		
Illiterate	32	11.8%
Matric	91	33.6%
Intermediate	114	42.1%
Certificate and above	34	12.5%
Current body weight		
<65kg	33	12.4%
65-74kg	216	79.4%

>74kg	22	8.2%
Pre-eclampsia		
Confirm Diagnose pre-eclemptic	154	56.8%
BP high and not confirm diagnosis	116	43.2%

Table 1 shows concerning women's demographic characteristics in this study show most of the participants were urban 171(63.1%), and 100(36.9%) were from rural areas. Concerning women's demographic characteristics in this study shows that the majority of the participants aged between 31-35 years 105(38.6%) were involved in the study. The participants were from the age group 26-30 years, 100(33.8%), participants were age group of > 35 years, 56(21.3%) and 6.3% participants were from the age group of 18-25 years. The participants belong to religion Islam were 204(75.4%), 67(24.6%) were belong to Christianity religion. The majority of the participants educational status were matric 111(41%), 65(24%) were intermediate, 58(21.3%) were illiterate, while 17(7%) were certificate and above.

The most of the participants were house wife 237(87.1%), 25(9.2%) were private employee while 9(3.7%) were students. The majority of the participants' husbands' occupational status was farmer/ personal shops, 60(22.1%) were employers, 28(10.6%) were merchants and only 4(1.5%) were NGO employees. The majority of the participants husband educational status were intermediate 114(42.1%), 91(33.6%) were matric, 34(12.5%) were certificate and above while 32(11.8%) were illiterate. The majority of the participants weight between 65- 74kg, 216 (79.4%), 33(12.4%) were < 65kg while 22(8.2%) were more than 74kg. The diagnosed pre-eclamptic was 154(56.8%) and 116(43.2%) BP high but the diagnosis was not confirmed.

Table 2. Demographic Characteristics Association with Pre-Eclampsia

Variables	**P value**
Place of residence	0.241
Age of respondents	0.298
Religion	0.066
Respondent‘s educational status	0.000
Respondent‘s occupational status	0.652
Husband occupational status	0.105
Husband educational status	0.000
Current body weight	0.002

Table 2 shows concerning women's demographic characteristics in this study show most of the participants were urban and rural area no were associated with pre-eclampsia. In this study shows that the majority of the participants age were no association with pre-eclampsia. The participants belonged to a religion that had no association with pre-eclampsia. The participant's educational status was associated with pre-eclampsia.

The participant's housewives, private employees, and students were not associated with pre-eclampsia. The majority of the participants' husbands' occupational status had no association with pre-eclampsia. The majority of the participants' husbands' educational status was associated with pre-eclampsia. The participants' weight is associated with pre-eclampsia.

Table 3. Obstetric characteristics of respondents and association with pre-eclampsia

Variables	Frequency	Percentage
Age at first pregnancy		
< 18 years	19	7%
>18 years	252	93%
Status of current pregnancy		
Intended\ planned	214	79%
Unintended\ unplanned	57	21%
Presence of current multiple pregnancy		
Yes	14	5.1%
No	257	94.9%
Gravidity		
< 2	0	0%
2-3	143	52.8%
> 3	128	47.2%
Ever had history of ANC follow up during previous pregnancy		
Yes	187	69%
No	84	31%
History of abortion		
Yes	37	13.7%
No	234	86.3%

Table 3 shows that the majority of the participants aged at first pregnancy 252(93%) more than 18 years, while 19(7%) were below 18 years and had no association with pre-eclampsia. The majority of the participants pregnancy were planned 214(79%), while 57(21%) were unplanned. Only 4(1.5%) participants were pregnant with twins while 267(98.5% were pregnant with single fetus and had no association with pre-eclampsia. The majority of the women's Gravidity were 143(52.8%), 2-3 Gravidity and 128(47.2%) were more than 3 gravida while primigravida were excluded from the study and existing association with pre-eclampsia. The majority of women parity 2-3, 149(55%) and 98(36.1%) were more than 4 parity while 24(8.9%) were less than 2 parity. The majority of the participants had a history of ANC follow-up 187(69%) while 84(31%) did not check up properly at the hospital and had an association with pre-eclampsia. The majority of 234(86.3%) had no history of abortion while 34(13.7%) had a present history of abortion and no association with pre-eclampsia.

Table 4. Obstetric Characteristics Association with Pre-Eclampsia

Variables	P value
Age at first pregnancy	0.943
Status of current pregnancy	0.02
Presence of current multiple pregnancy	0.338
Gravidity	0.034
Ever had history of ANC follow up during previous pregnancy	0.051
History of abortion	0.916

Table 4 shows that participants' age at first pregnancy had no association with pre-eclampsia. The participant's pregnancy was planned or unplanned and has an association with pre-eclampsia. Participants who were pregnant with twins or single fetuses had no association with pre-eclampsia. The women's Gravidity exists in association with pre-eclampsia. The participants had a history of ANC follow-up exist association with pre-eclampsia. The participants' history of abortion had no association with pre-eclampsia.

Discussion

The current study shows that women's demographic characteristics most of the participants were urban 171(63.1%), 100(36.9%) from rural areas and areas of residence have no association with pre-eclampsia. A study conducted by Mohammed in 2017 the findings were contradictory to present study in which majority of the participants were belong to rural area (Mohammed et al., 2017).

The present study shows that the majority of the participants age between 31-35 years 105(38.6%), involved in the study and have no association exist with pre-eclampsia. A study conducted by Baly, 2019 findings were similar to discovering a substantial correlation between pre-eclampsia and maternal age. Compared to respondents who were older than or equal to 30-35, those who were younger than or equal to 24 had a lower likelihood of being pre-eclampsia women1. A study (Soomro 2019) was consistent with the present study the pregnant women aged 35 years and older had a higher prevalence (9.29%) of pre-eclampsia (Soomro et al., 2019). This outcome was in line with the research by Bilano 2014 which also found that growing maternal age is a risk factor for pre-eclampsia (Bilano et al., 2014).

This could be explained by the fact that arteries become clogged with age, potentially leading to significant consequences like heart attacks or strokes. When a woman ages, her body becomes less able to digest salt from food, has a poorer diet, gets less exercise, and eventually becomes hypertensive (Okube et al., 2018).

In the current study, the participants belonging to religion Islam was 204(75.4%), and had no association with pre-eclampsia. A study conducted was similar to the present study most pre-eclamptic participants belong to Orthodox and Muslims (Kongwattanakul et al., 2018). A study's findings were contradictory to the present study in which 70.9% of participants were Orthodox Christian (Bukuru et al., 2023).

In current study the majority of the participants' educational status were matric 111(41%) and exist association with pre-eclampsia. In a study conducted by Mohammed 2017, the findings were contradictory to the present study in which the common educational level of participants 88.8% were primary level (Mohammed et al., 2017). A study conducted by Smaroo et al., 2019 also suggested that a lower level of education is a risk factor for the onset of eclampsia and pre-eclampsia. One explanation for this could be that inadequate prenatal care and low socioeconomic status are typically linked to low education levels, and pre-eclampsia may have developed as a result of ignorance (Turpin et al., 2015).

In the current study, most of the participants were housewives 237(87.1%) and had no association with pre-eclampsia. A study conducted by Mohammed 2017 the findings were contradictory to present study in which 41.7% participants were house wives (Mohammed et al., 2017).

In the current study, the majority of the participants' husbands' educational status was intermediate 114 (42.1%) and had an association with pre-eclampsia. In a study conducted by Mohammed 2017 the findings were contradictory to the present study in which the common educational level of participant's husband 88.8% were primary level (Mohammed et al., 2017).

In current study the majority of the participants weight between 65-74kg and exist association with pre-eclampsia. A study Soomro, S., et al, 2019 was consistent as weight and BMI increase, increase the risk of pre eclampsia (Soomro et al., 2019). The prevalence of diagnosed pre-eclampsia was 154 (56.8%).

In the current study the majority of the participants aged at first pregnancy 252(93%) were more than 18 years, while 19(7%) were below 18 years and have no association with pre-eclampsia. A study

conducted by Mohammed 2017 the findings were contradictory to the present study in which the majority of the participants age at first pregnancy 24-29 years (Mohammed et al., 2017).
In the current study that only 14(5.1%) participants were pregnant with twins while 257(94.9% were pregnant with single fetuses and had no association with pre-eclampsia. In a study conducted by Mohammed 2017 the findings were similar to the present study in which only 5% participants were having twins' pregnancy (Mohammed et al., 2017). This may be because pre-eclampsia is associated with the presence of the soluble substance, a circulating antigenicity molecule of placental origin that functions as a key player in pre-eclampsia by blocking the signals of vascular endothelial growth factor and placental growth factor (PIGF) in the mother's vasculature (Bdolah et al., 2009).
In the current study, the majority of the women's Gravidity were 143(52.8%), 2-3 Gravidity and 128(47.2%) were more than 3 Gravidity while primigravida were excluded from the study and exist association with pre-eclampsia. A study conducted by Mohammed 2017 the findings were contradictory to present study in which majority of the participants were Gravidity 3-4 (Mohammed et al., 2017). The results show that the majority of women parity 2-3, 149(55%) and 98(36.1%) were more than 4 parity while 24(8.9%) were less than 2 parity and existed association with pre-eclampsia. In a study conducted by Mohammed 2017 the findings were similar to the present study in which 2-4 parity (Mohammed et al., 2017). In current study the majority of the participants had the history of ANC follow-up 187(69%) while 84(31%) not checkup properly to hospital and exist association with pre-eclampsia. A study conducted by Mohammed, 2017 the findings were contradictory to present study in which majority of the participants have 6-8 visits while only 10.3% participants no visit to doctor foe ANC (Mohammed et al., 2017).

Conclusion

It can be concluded that the prevalence of pre-eclampsia was 56.8% which majority of the participants belonged to urban areas, aged between 31-35 years, were overweight before pregnancy 70% of participants were below matric level education and their husbands' educational status also below matric 46.4%. The educational status of participants and their spouse have association with pre-eclampsia, un-booked status in hospital due to low visit in pregnancy for follow-up high Gravidity due to unplanned pregnancies. Therefore, both urban and rural inhabitants should be encouraged to seek family planning for reproductive age group and medical attention for pregnant women, as this can help diagnose pre-eclampsia as soon as possible and stop complications from developing that could lead to eclampsia.

Recommendations

- Nurses should aware to high risk groups, tentatively filter high risk groups on ANC and conduct workshops for regular monitoring of BP and prevention to other risk factors.
- Increase community and families' awareness with appropriate community health services that achieve the needs of reproductive age group about family planning and pregnant women's for regular monitoring through mass media, social media and brochure or flayers in local language should be distributed to raise awareness about pre-eclampsia.
- Local health worker must be involved in door to door activity for guiding and efforts should be made for reducing weight before conceiving, proper use of Family planning methods and regular monitor BP in pregnancy.

Limitations

- Sample consist of specific demographics or drawn from only two location.
- The data were collected during pregnancy, could not determine the fetal and pregnancy outcomes.

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