

Socioeconomic Impacts of Risks Associated with Pre-eclampsia during Pregnancy in Imo State

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Abstract

Preeclampsia risk is a global pandemic that poses a serious threat to global health. It is recognized as a chronic and debilitating disease that is associated with significant complications. As a result, it significantly reduces life expectancy, can cause multi-system morbidities, increases healthcare costs, and ultimately results in the premature death of both the mother and the fetus. All forms of preeclampsia carry unacceptable human, societal, and financial costs for Imo State, regardless of income. Therefore, in Imo State, Southeast Nigeria, this study looked into the socioeconomic effects of the risks associated with pre-eclampsia during pregnancy. This study employed both descriptive and analytical study designs. Data gathering techniques included target, stratified sampling, and random sampling. A total of 3690 people from around the state made up the sample size. Questionnaires were used as the research tool for data collection. Tables and charts with the generated data were created. Statistically descriptive: The significant difference between the perception of risk variables by individuals and patients was measured using chi-square. Regarding the socioeconomic effects of preeclampsia risks, respondents were generally in agreement that these risks can result in job loss, with 56.19%, or 1190 out of 2700 responses, saying "Yes," 12.84%, or 272 out of 2700 responses, saying "No," and 656 out of 2700 respondents, or 30.97% of the responses, saying "No idea." However, there was a very high significant variation among their responses. Additionally, they agreed that preeclampsia risks can result in subpar performance at work. Preeclampsia risks had a negative socioeconomic influence on the patients'.

Keywords: *Impacts, Imo State, Pre-eclampsia, Risks, Socioeconomic.*

Introduction

Pre-eclampsia risks during pregnancy are the main factor in morbidity and mortality. It is the second most common factor in maternal deaths worldwide [1]. Worldwide, pre-eclampsia accounts for 2 to 8% of pregnancy problems. Preeclampsia is linked to 9% of maternal mortality in Africa [2, 3], From a global perspective, many fatalities are connected to the dangers of preeclampsia during pregnancy in developing nations [4] According to the World Health Organization, developing nations have a far higher incidence of the risks associated with preeclampsia during pregnancy than more

developed ones [5, 6] Preeclampsia typically develops near term and after 20 weeks of pregnancy. It is a pregnancy disease associated with newly developed high blood pressure (sBP) 160 mmHg or diastolic blood pressure (dBP) 110 mmHg, with or without the presence of proteinuria [7].

One of the most dreaded pregnancy problems is preeclampsia. It might be linked to certain placental abnormalities, particularly those that manifest early in pregnancy. Such abnormalities pose significant dangers to the infant [8]. This might involve a lack of nutrients and oxygen, which have an impact on fetal growth. Preeclampsia, according to [9], is

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one of the consequences of pregnancy marked by high blood pressure and mostly liver and renal dysfunction. Preeclampsia is often said to begin around week 20 of pregnancy [10] and is also characterized by an earlier development of proteinuria and hypertension [11, 12]. Preeclampsia risk factors include epidemiologic risk factors, or medical conditions, which may not be changed. It was noted that the cause of preeclampsia may be unknown due to the multi-factorial processes influencing the final event [13].

The main traditional risk factors of preeclampsia, according to [14], are chronic hypertension, multiple gestations, and underlying maternal renal disease. The delayed onset of parenthood and obesity are other concerns. Preeclampsia can result in serious situations if untreated, complicating both the mother's and the baby's health, according to [15].

Additionally, there are numerous consequences and related socioeconomic issues associated with preeclampsia. Its management places higher financial burdens on pregnancies with complications. Preeclampsia is thought to have affected 2.9 million people in Nigeria. Although there is a lack of information regarding the associated risk of preeclampsia prevalence in Imo State, Nigeria [1,16], this is due to a number of socio-cultural, economic, and biological indices that are rapidly changing, such as an aging population, decreased physical activity, a general lack of knowledge regarding healthy lifestyle and wellness behavior, shifting dietary patterns, etc [17].

It is challenging to develop comprehensive socioeconomic Risks Associated with Preeclampsia during Pregnancy in Imo State due to the lack of trustworthy statistical data. The current study's objective is to compare the socioeconomic risks connected to preeclampsia during pregnancy in Imo State, Nigeria. The findings of this investigation are anticipated to contribute to the implementation of effective

preeclampsia management and general preventative strategies in Imo State, Nigeria.

Materials and Methods

Study Area

The study was conducted in Imo State, Nigeria. Imo State is one of the 36 States of Nigeria, it is located in the Southeast geopolitical zone. Imo State lies within latitudes 4°45'N and 7°15'N, and longitude 6°50'E and 7°25'E with an area of around 5,100sqkm. It is bordered by Abia State on the East, by the River Niger and Delta State on the west, by Anambra State to the north and Rivers State to the south. Besides Owerri, Imo State's major towns are Isu, Okigwe, Oguta, Orlu, Mbaise, Mbano, Mbaitoli, Mbieri, Orodo, Nkwere and Orsu [18].

Study Design

Descriptive and analytical study designs were used in this study [19]. This included socioeconomic Risks Associated with pre-eclampsia during pregnancy. Descriptive design was used to investigate the Risks Associated with pre-eclampsia during pregnancy, while analytical design was used to analyse the determinants of the distribution. Consequently, the study was divided into three sections namely:

Survey Methods and Sampling Technique

Random, target and stratified sampling survey methods were used in this study [20] Random sampling was used in collecting data from the LGAs, target was used in collecting data from the hospitals, while stratified was used for the entire state, in which case each LGA was used as a stratum.

Sample Size

Sample Size was calculated by Sample Size Calculator with survey software using confidence interval 5% and 90% as well as confidence level 95%. There are no recent

information on the exact population size of Imo State as distributed by gender, age, profession, and other determinants. This study based its population inferences from the 2006 official census. According to citipopulation.de (2022), Imo State reported a population of 3,927,563 from the 2006 official census. The population is projected to reach 5,408,800 in 2016 at a population growth of 3.3% from the 2006 population.

According to the 2006 census, the population of males was 1,976,471 (50.3%) and females was 1,951,092 (49.7%). No significant difference between the numbers of males and females.

Since there was no official data stating the number of women of childbearing age, one can estimate from the data above. Age groups 0-14 years (1,415,929) and 65+ years (170,069) were excluded since they are either too young or too old. This leaves the 15-64 years (2,341,565) group. Overall female population in 2006 is 49.7%. Estimating the female population from the overall 15-64 years group was $0.497 * 2,341,565 = 1,163,75$.

Questionnaire 1: 2700 (no of questionnaires administered to each LGA depended on the population of the LGA) respondents for the general populace.

Questionnaire 2: 540 (20 from each LGA) respondents for the category of Risks Associated with Pre-eclampsia during pregnancy.

Method of Data Collection

Research instruments for data collection was questionnaires and materials such as blood pressure measuring kits, measuring tape and weighing balance was used for physical examination.

Questionnaires

Well-structured questionnaires were used to obtain data from respondents; the questionnaires were arranged in the following order:

Questionnaire 1

This was used to indicate information from the general populace. It was organized into Socioeconomic impact of Risks Associated with Preeclampsia during pregnancy.

Ethical Consideration

Letters of approval/permission to administer questionnaires on respondents were presented to the management of health institutions for approval before they were administered to respondents.

Also, the consent of those with Risks Associated with Preeclampsia during pregnancy was sought before they were presented with questionnaires. Similar consent was sought from the general public before the questionnaires were administered to them.

Data Presentation and Statistical Analysis

Correlation and regression analysis was used to measure the relationship that exists between Risks Associated with Preeclampsia during pregnancy and age in which case r (correlation coefficient) and r^2 (coefficient of simple determinant) were obtained using SPSS statistical software version 17.0.

Generated data were put into Tables and Charts. Descriptive Statistics: mean, relative standard error and standard deviation was used to measure the level of correlation among data that were obtained in line with various parameters that were considered in this study. This was conducted using SPSS statistical software version 17.0 [21].

Chi-square was used to measure patients' perception of risk factors in pre-eclampsia and complications. Coefficient of variation (% CV) was used to measure the variability of data that was obtained from the various LGAs, and it was calculated using computer-aided software – GenStat Statistical Software [22].

Results

This research work titled: “socioeconomic impacts of Risks Associated with Pre-eclampsia during pregnancy in Imo State. The data and results that were obtained from this research study were presented in Tables.

Socioeconomic Impact of Risk of Preeclampsia (1)

The results on the socioeconomic impact of preeclampsia are laid out in Table 1 below.

Greater number of the participants 1190 (56.19%) answered positively to the first question in the Table seen in the first column which stated: ‘can preeclampsia lead to loss of job?’ out of the remaining participants, 656 (30.97%) had no idea and 272. (12.84%) answered negatively. A chi-square test provided a value of 107.1825 (0.022960694) which was very highly significant at $p < 0.05$ loss of job.

According to the responses of the participants, 1288 (54.19%) participants think that preeclampsia cannot lead to desertion of patients by family and friends, 569 (23.94%) participants think it can and 520 (21.88%) participants had no idea.

A chi-square test provided a value of 173.61335 which was very highly significant at $p < 0.05$ confidence interval.

Majority of the respondents 1078 (54.80%) stated ‘No’ to preeclampsia leading to stigmatization of patient, 460 (23.39%) stated ‘Yes’ and 429 (21.81%) stated ‘No idea’. A chi-square test provided a value of 469.5797 which was not significant at $p > 0.05$ confidence interval.

Socioeconomic Impact of Preeclampsia risks (2)

Table 2 seen below presents the Socioeconomic impact of preeclampsia (2) according to the responses of the participants.

The results showed that majority of the respondents 1233 (62.81%) agreed that preeclampsia can lead to poor performance of patients at work, 450 (19.12%) had no idea and

only 280 (14.26%) of the respondents disagreed. A chi-square test of significance gave a value of 39.23 ($p = 0.999$) which was not significant at $p = 0.05$. To the statement used in the questionnaire to assess if preeclampsia can lead to loss of resources due to cost of drugs and hospital care, over half of the respondents 1327 (62.18%) stated ‘Yes’, 408 (19.12%) stated ‘No idea’ and only 399. (18.69%) of the respondents stated ‘No’. A chi-square test provided a value of 74.41581 which was significant at $p < 0.05$ confidence interval.

Socioeconomic Impact of Preeclampsia (3)

The Socioeconomic impact of preeclampsia (3) is shown in Table 3 below.

To the questionnaire item which stated, ‘can preeclampsia lead to restricted movement’, more than half of the respondents 464(%) answered in the affirmative, 462 (23%) of the respondents stated, ‘No idea’, and 411(18.61%) stated ‘No’. A chi-square test provided a value of 46. 51.75337 (0.994029) which was not significant at $p = 0.05$.

The results showed that 1010(44.29%) respondents answered positively to being poor contributes to pre-eclampsia 691(30.30%) answered negatively and 579 (25.39%) respondents had no idea. A chi-square test having degree of freedom of 52 provided a value of 348.7711758 which was very highly significant at $p < 0.001$.

The results showed that 1043 (42.39%) respondents stated, ‘Yes’ to being rich contributes to preeclampsia, 836 (33.98%) stated No, and 581 (23.61%) respondents stated, ‘No idea’. A chi-square test provided a value of 454.6299454 ($p < 0.001$) which was very highly significant at $p < 0.001$.

Table 1. Socioeconomic Impact of Preeclampsia (1)

Local Govt. Area	Can preeclampsia lead to loss of job?			Can preeclampsia lead to desertion of patient by friends and family?			Can preeclampsia lead to stigmatization of patient?		
	Yes	No	No idea	Yes	No	No idea	Yes	No	No idea
Aboh Mbaise	49	10	16	40	32	10	15	30	14
Ahiazu Mbaise	44	6	10	40	27	9	10	20	17
Ehime Mbano	22	13	19	15	44	18	13	33	12
Ezinihitte Mbaise	26	18	22	23	47	13	19	37	24
Ideato North	38	12	20	16	50	22	19	36	20
Ideato South	40	16	24	24	60	12	14	41	17
Ihitte/Uboma	41	14	23	19	57	20	14	44	23
Ikeduru	37	12	9	18	28	17	19	22	17
IsialaMbano	37	10	20	22	55	18	15	44	17
Isu	53	10	22	21	57	18	13	65	12
Mbaitoli	32	14	19	17	42	16	17	25	12
NgorOkpala	50	7	25	15	45	15	10	34	11
Njaba	60	8	27	14	46	18	15	36	12
Nkwerre	49	7	25	14	45	21	12	45	13
Nwangele	45	7	28	19	49	21	15	41	9
Obovo	46	9	39	20	50	23	19	44	10
Oguta	43	12	37	20	51	21	18	47	12
Ohaji/Egbema	36	10	29	25	54	23	18	45	13
Okigwe	40	7	30	20	53	16	20	48	13
Onuimo	44	6	24	19	66	19	22	49	16
Orlu	67	10	15	30	45	15	28	37	20
Orsu	50	6	29	23	48	20	21	46	13
Oru East	54	8	25	21	47	21	20	40	17
Oru West	51	6	20	22	54	23	16	47	15

Owerri Municipal	42	10	25	20	50	17	19	49	18
Owerri North	40	10	45	12	25	55	20	27	38
Owerri West	54	14	29	20	61	19	19	46	14
Total	1190 (56.19%)	272 (12.84%)	656 (30.97%)	569 (23.94%)	1288 (54.19%)	520 (21.88%)	460 (23.39%)	1078 (54.80%)	429 (21.81%)
Mean	44.07	10.07	24.30	21.07	47.70	19.26	17.04	39.93	15.89
St. D	± 1.8696	±0.6291	± 1.5311	±1.2832	± 1.9522	± 1.5548	± 0.7595	±1.8772	±1.1149
X²-value (p-value)	107.1825 (0.022960694)	173.61335 (7.0231 × 10 ⁻⁹)							

***=Very highly significant at p<0.001

Table 2. Socioeconomic Impact of Preeclampsia Risks (2)

Local Govt. Area	Can preeclampsia lead to poor performance of patients at work?			Can preeclampsia lead to loss of resources due to cost of drugs?		
	Yes	No	No idea	Yes	No	No idea
Aboh Mbaise	47	15	10	50	13	9
Ahiazu Mbaise	30	8	10	36	14	12
Ehime Mbano	27	5	9	45	15	14
Ezinihitte Mbaise	40	7	11	49	13	15
Ideato North	45	6	12	42	10	10
Ideato South	40	5	17	50	15	11
Ihitte/Uboma	48	7	16	47	11	18
Ikeduru	42	5	14	47	16	12
IsialaMbano	50	10	18	42	17	15
Isu	50	10	21	46	14	12
Mbaitoli	52	7	12	52	12	10
NgorOkpala	52	10	20	49	16	11
Njaba	47	11	18	45	17	12
Nkwere	40	10	20	49	16	18
Nwangele	41	10	15	42	20	18

Obowo	45	11	16	40	16	10
Oguta	46	10	17	43	18	19
Ohaji/Egbema	46	10	15	41	22	18
Okigwe	46	12	16	42	18	19
Onuimo	40	15	18	47	20	18
Orlu	82	17	20	58	10	21
Orsu	47	16	22	70	11	14
Oru East	46	13	18	62	12	14
Oru West	43	14	20	71	16	12
Owerri Municipal	45	14	20	57	16	12
Owerri North	45	4	20	53	9	38
Owerri West	51	18	25	52	12	16
Total	1233 (62.81%)	280 (14.26%)	450 (22.92%)	1327 (62.18%)	399 (18.69%)	408 (19.12%)
Mean	45.6667	10.3703	16.6667	49.1481	14.7778	15.1111
St. D	± 1.7879	±0.7551	± 0.7808	± 1.6336	± 0.6367	± 1.0956
X²-value (p-value)	39.23546 (0.999965)	74.41581 (0.555102)				

NS=Not significant at p=0.05; ***=Very highly significant at p<0.001

Table 3. Socioeconomic Impact of Preeclampsia (3)

Local Govt. Area	Can preeclampsia lead to restricted movement?			Does being poor contribute to preeclampsia?			Does being rich contribute to preeclampsia?		
	Yes	No	No idea	Yes	No	No idea	Yes	No	No idea
Aboh Mbaise	55	15	20	18	11	32	20	45	17
Ahiazu Mbaise	32	14	19	20	14	17	12	46	22
Ehime Mbano	43	13	17	46	15	19	17	45	19
Ezinihitte Mbaise	50	11	16	52	12	22	47	30	16
Ideato North	50	15	16	22	48	19	13	53	17
Ideato South	50	17	22	33	48	12	61	23	14
Ihitte/Uboma	47	18	22	46	17	24	14	70	13

Ikeduru	42	21	10	34	12	15	55	17	13
IsialaMbano	49	20	22	49	17	26	29	50	20
Isu	46	23	20	36	12	29	52	29	12
Mbaitoli	33	17	22	29	55	22	45	24	22
NgorOkpala	44	13	19	50	11	17	25	44	21
Njaba	40	14	12	44	17	18	19	50	25
Nkwerre	46	15	13	29	48	10	55	26	22
Nwangele	46	19	22	29	42	12	25	41	20
Obowo	46	14	17	42	32	13	47	19	21
Oguta	50	13	18	39	14	29	50	19	24
Ohaji/Egbema	49	19	20	46	25	10	52	17	21
Okigwe	49	16	13	34	45	14	58	20	17
Onuimo	55	14	18	40	45	16	60	22	18
Orlu	65	11	20	46	12	35	55	13	30
Orsu	55	13	10	55	20	10	56	10	23
Oru East	53	12	11	49	29	15	48	29	17
Oru West	53	10	15	41	20	19	47	23	19
Owerri Municipal	64	14	15	29	19	48	29	13	46
Owerri North	59	17	16	20	24	32	26	17	43
Owerri West	62	13	19	32	27	44	26	41	29
Total	1333 (60.37%)	411 (18.61%)	464 (21.01%)	1010 (44.29%)	691 (30.30%)	579 (25.39%)	1043 (42.39%)	(836 (33.98%))	581 (23.61%)
Mean	49.37	15.22	17.18	37.41	25.59	21.44	38.63	30.96	21.52
St. D	± 1.5406	± 0.6186	±0.7319	± 2.0354	± 2.7540	± 1.9402	± 3.2274	± 2.9456	± 1.5306
X²-value (p-value)	51.75337 (0.994029)	348.7711758 (3.04552×10 ⁻³⁵)							

NS=Not significant at p<0.001

Socioeconomic Impact of Preeclampsia (4)

The Socioeconomic impact of preeclampsia (4) is displayed in Table 4 below.

On whether preeclampsia contributes to anxiety/worry in patients, 1326 (58%) respondents agreed that it does, 530 (23%) had no idea and 419 (18%) disagreed. A chi-square of test of significance provided a value of 272.1349 which was very highly significant at $p < 0.001$.

When asked if preeclampsia contributes to depression in patients, 1260 (53%) respondents which represented the highest number of participants answered positively, 550 (23%) respondents had no idea and 582 (24%) respondents answered negatively. A chi-square of test of significance provided a value of 380.3031 which was very highly significant at $p < 0.001$.

Table 4. Socioeconomic Impact of Preeclampsia (4)

Local Govt. Area	Does preeclampsia contribute to anxiety/worry in patient?			Does preeclampsia contribute to depression in patients?		
	Yes	No	No idea	Yes	No	No idea
Aboh Mbaise	55	13	13	29	17	40
Ahiazu Mbaise	38	10	13	31	14	20
Ehime Mbano	70	10	10	68	14	12
Ezinihitte Mbaise	44	14	14	59	13	16
Ideato North	55	15	15	42	58	19
Ideato South	48	18	13	48	15	29
Ihitte/Uboma	56	11	10	30	22	14
Ikeduru	39	10	17	48	13	17
IsialaMbano	53	15	18	60	14	17
Isu	50	13	16	55	23	16
Mbaitoli	49	10	13	42	17	10
NgorOkpala	64	18	17	25	23	15
Njaba	53	14	14	11	60	12
Nkwerre	56	19	22	60	13	21
Nwangele	43	22	16	54	14	12
Obowo	48	14	22	53	12	21
Oguta	45	24	16	62	14	14
Ohaji/Egbema	47	29	22	58	16	21
Okigwe	49	22	19	50	20	20
Onuimo	44	23	16	55	22	15
Orlu	80	5	11	54	10	15
Orsu	52	23	12	44	20	29
Oru East	51	14	15	58	22	16
Oru West	50	23	22	60	19	20
Owerri Municipal	32	10	48	30	29	50
Owerri North	25	7	50	32	16	44
Owerri West	30	13	56	42	52	15
Total	1326	419	530	1260	582	550

	(58%)	(18%)	(23%)	53%	(24%)	(23%)
Mean	49.11	19.63	19.63	46.67	21.56	20.37
St. D	±2.20	± 1.14	±2.31	± 2.69	± 2.58	± 1.91
X²-value (p-value)	272.1349 (9.0872×10 ⁻²³)			380.3031 (1.23738×10 ⁻⁴⁰)		

***=Very highly significant at p<0.001

Discussion

Preeclampsia Risks in Imo State: Socioeconomic Effects

The hazards of preeclampsia have been proven to negatively affect the residents of Imo State. Other studies have used a variety of indicators, such as occupation, education, income, or geographical deprivation, to measure socioeconomic status. These indicators may represent many aspects of socioeconomic status [3].

Risks of preeclampsia have been identified as one of the causes of subpar performance at work. Lower socioeconomic groups in Western societies are more likely to develop preeclampsia. Smoking, physical inactivity, and obesity are linked to increased preeclampsia risks and have a lower socioeconomic status as well [23].

Due to elevated blood pressure, pre-eclampsia concerns have also led to movement restrictions in pre-eclampsia patients. As a result, it slows down the rate at which people socialize with one another.

Loss of resources has also been caused by preeclampsia concerns. For instance, Imo State pre-eclampsia risk patients pay between 4,000 and 6,000 naira per week for their care. That indicates that some patients spent up to 24,000 naira or more each month. This demonstrates unequivocally how preeclampsia risks have a

detrimental effect on patients' financial resources. According to reports, over 4 billion dollars are reportedly spent each year to combat the pre-eclampsia risks worldwide; this amount is predicted to rise in the upcoming years.

The links between socioeconomic class and preeclampsia outcomes have been explained by a variety of processes. Poorer access to healthcare, conflicting demands, financial constraints, a lower quality of life, and worse health behaviors and stress, which can lead to hormonal changes, are a few of these.

Conclusion

The risks of preeclampsia are rapidly endangering the health of Imo State residents, as many sufferers are ignorant of their condition. Across the state, pre-eclampsia risks were distributed differently depending on age and occupation. Additionally, it has had a detrimental effect on people's socioeconomic lives.

Conflict of Interest

There is no conflict of interest.

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