

Original Research Article

A comparative study of morbidities in pregnant women of urban and rural area of central India

Priti N. Tiwari, Sushama S. Thakre, Subhash B. Thakre, Sagar M. Pandey*, Hitesh C. Tayade

Department of Community medicine, IGGMC, Nagpur, Maharashtra, India

Received: 02 March 2022

Accepted: 19 March 2022

*Correspondence:

Dr. Sagar M. Pandey,

E-mail: Prititiwari2017@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: For each mortality, there are number of various morbidities, which directly or indirectly affect health of mother and foetus. Data on morbidity pattern of rural and urban pregnant women reveals varied morbid pattern. There is a shortage of data on morbidity pattern of the pregnant women. Objective of the study was to assess morbidities in pregnant women of the rural and urban areas of central India attending ante-natal clinics of study institute.

Methods: The present cross-sectional study was conducted in ANC OPD of tertiary health care centre and rural health training centre (RHTC) attached to tertiary health care centre in central India. Both urban and rural pregnant women were attending the ANC clinic. The study was conducted from December 2020 to January 2022. In all 330 pregnant women were enrolled and considered for final analysis.

Results: Prevalence of maternal morbidities in an urban and rural area of central India was found to be similar that is 152 (92.12%). Anemia was the most common morbidity among both urban and rural participants, 90.61%.

Conclusions: Prevalence of maternal morbidities in both urban and rural areas of central India was found to be high.

Keywords: Morbidities, Urban, Rural, Anemia, Pre-eclampsia

INTRODUCTION

Pregnancy is an important stage in every woman's life. It is a period that all woman wishes to experience at least once in their lifetime. It is the desire of every mother-to-be, to go through a safe and healthy pregnancy.¹ Also, it is the responsibility of the health system to provide safe pregnancy and childbirth to every woman, the outcome to be measured in terms of healthy mother and child.² While the majority of pregnancies and births are uneventful, all pregnancies are at risk. Approximately 15% of all pregnant women are anticipated to develop a grievous complication that will need skilled care and small number will require major obstetrical intervention to survive.³ Maternal health is evaluated through the measurement of mortality and morbidity indicators. But, in India only mortality indicators are accessible.²⁻⁵

India, with a population of more than a billion and decadal growth of 17.70%, maternal mortality is

alarmingly high.⁶ Approximately 295,000 women succumb to death during and following pregnancy and childbirth in 2017. Most of these deaths about 94% occurred in low-resource settings, and majority of them were preventable.⁷ However, maternal mortality is just the tip of the iceberg of the health problems of women. Most of the women do not die of causes related to pregnancy, instead suffer severe morbidities.⁸⁻¹⁰ In developing countries, pregnancy and childbirth related complications are the leading causes of disability among women aged 15-44 years. The world development report estimated that 18 percent of the burden of disease for these women is due to maternal causes.¹¹⁻¹²

Antenatal period is the most common time for maternal morbidities. Prevalence of maternal morbidities in India was found to be 80% and 67.46%.^{13,14} Maternal anemia is a burning public health problem and most commonly encountered medical problem in pregnancy.¹⁵ Anemia is directly responsible for 20% maternal death and is an

indirect cause in another 20%.¹⁶ Various studies from India reported prevalence of anemia ranging from 20%

to 100%.^{17,18,19,20} Anemia in pregnancy results in adverse maternal outcomes like puerperal sepsis, antepartum haemorrhage, post-partum haemorrhage, maternal deaths and also adverse foetal outcomes. Obstetric haemorrhage is the most common direct cause of maternal morbidity and amongst this antepartum haemorrhage is the most common cause of morbidity and mortality accounting for half of these deaths.²¹ Preeclampsia-eclampsia rank second after haemorrhage as direct cause of maternal mortality. In India 7-8% of maternal deaths are directly associated with hypertensive disorders of pregnancy. In the mothers, pre-eclampsia later in life can cause development of cardiovascular diseases such as chronic hypertension, ischemic heart disease and stroke.²² Prevalence of antepartum haemorrhage in various studies is reported as 1.31% to 44.2%.^{23,24} Infectious diseases like malaria, tuberculosis, urinary tract infection and HIV also contributes significantly to maternal morbidity. According to HIV sentinel surveillance during 2016-2017, prevalence of HIV was 0.28%.²⁵

Though there had been improvements in obstetric care over the past few decades, maternal morbidity and mortality still remains a challenge in the developing countries. The statistics which are published focus only on mortality. Also, various health programmes related to the reproductive health, majority of them targeted to reduce the mortality. For each mortality, there are number of various morbidities, which directly or indirectly affects health. There is shortage of data on morbidity pattern of the pregnant women.¹⁹ About half of the total population that is 48.46% is contributed by female and 50.83% of this is reproductive age group women.²⁶ So if India intends to accomplish the goal of health for all, far wider care must be given to women's health and their crucial roles in health and development because maternal health affects the health of whole family, community and thus society.²⁷ Most of the studies conducted in urban area were mainly focused on near miss studies in the intensive care unit. While the morbidities in the rural study area were still unexplored. Studies available had focussed on individual health problems. Comprehensive studies on maternal morbidities are lacking. So to fill this gap, the present study was started with objective to study morbidities in pregnant women of rural and urban area of central India attending ante-natal clinics of study institute.

METHODS

The present cross-sectional study was conducted in ANC OPD of Indira Gandhi government medical college and hospital, Nagpur and RHTC attached to this tertiary health care centre. After necessary approval from the institutional ethics committee this study was conducted from December 2020 to January 2022. Women who were not willing to give informed consent were excluded from the study.

Sample size

Sample size was determined by taking into account a prevalence of morbidities in urban and rural pregnant women 55.5% and 40.1% respectively.^{15,16}

The sample size was estimated by using the formula as follows:

$$N = \left\{ \left\{ (1.96 \sqrt{[2 \times 0.4783 \times (1 - 0.4783)]} + 0.842 \sqrt{0.5556(1 - 0.5556) + 0.401(1 - 0.401)}) \right\}^2 / (0.5556 - 0.401)^2 \right\}$$

$$N = 162.74 \approx 163$$

Therefore, 165 pregnant women from Urban area and 165 pregnant women from rural area were selected in the study.

Ethical considerations

Approval from institutional ethics committee (IEC) was obtained before commencing the study.

Data collection

Data collection was done by visiting the antenatal clinic (ANC) of RHTC and the outpatient department (OPD) at tertiary health care centre in central India every Monday and Thursday respectively. Out of those pregnant women visiting ANC OPD, the first four women willing for participation were enrolled by using consecutive sampling till sample size was achieved. A pilot study was conducted on 25 participants from urban and 25 participants from rural areas to check the feasibility of the study and to test the validity of the data collection tool. An equal proportion of participants were selected from each trimester. Data were collected by personal interview. Clinical examination and the necessary investigation were carried out.

Statistical analysis

Data analysis was done by using statistical software Microsoft office excel 2013, Epi info 7.1.4, 2014. Descriptive analysis was done by using numbers, proportions and percentages. Chi-square test and Fisher exact test was used to finding the association. Yates correction was applied wherever necessary. An independent t-test was used to compare mean values.

RESULTS

The mean age \pm SD was found to be 25.40 \pm 3.93 years and 25.18 \pm 3.76 years respectively for urban and rural participants (t=0.51, p=0.61). Table 1 shows that among urban and rural participants, maximum that is 124 (75.15%) and 138 (83.63%) were in age group of 21 to 30 years respectively. Majority of study participants were

Hindu both from urban and rural area that is 90 (54.54%) and 142 (86.06%) respectively. From both urban and rural area, majority of participants 86 (52.12%) and 128 (77.58%) respectively were educated to more than middle school. Majority of study participants both from urban 143 (86.67%) and rural 150 (90.91%) area were unemployed. Among urban participants, more than half that is 85 (51.51%) were living in Joint family and maximum from rural participants, 73 (44.24 %) were living in nuclear family. Most of the study participants from both urban and rural were taking mixed diet 122 (73.94%) and 94 (56.97%) respectively.

Table 2 shows that maximum study participants both from urban and rural were in third trimester 94 (56.96%). Table 3 shows that most common complaint in first trimester was vomiting 16 (53.34%). Weakness was the most common complaint in second 23 (20.53%) and third trimester 19 (10.10%). Figure 1 shows that prevalence of maternal morbidities in urban and rural area of central India was found to be similar that is 152 (92.12%). Anemia was the most common morbidity among both urban and rural participants, 90.61% (Figure 2) Table 4 shows that, proportion of anemia in urban participants was 147 (89.09%) and that in rural participants it was 152 (92.12%). The difference in proportion of anemia at urban and rural was not statistically significant. Among the urban participants, proportion of pre-eclampsia was found to be 8 (7.14%) and it was 1 (0.91%) among rural participants. This difference was statistically significant (p=0.043). Table 5 shows that mean haemoglobin ± SD of urban study participants found to be 9.63±1.09 gm% ranging from 7 gm% to 13.6 gm%. Mean haemoglobin ± SD of rural study participants found to be 9.45±1.05 gm% ranging from 6.4 gm% to 12.6 gm%. When independent t

test was applied, there was no statistically significant difference between mean haemoglobin of urban and rural participants. (t=1.05, p=0.295).

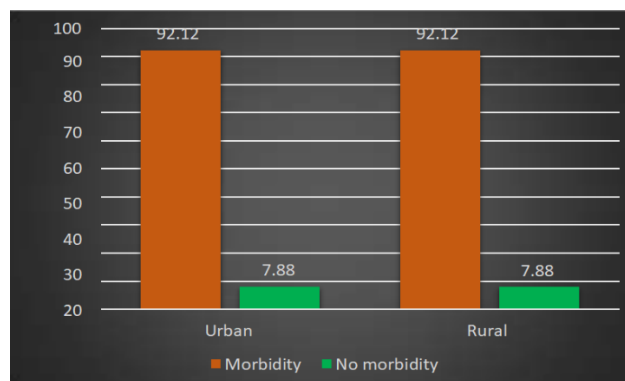


Figure 1: Proportion of maternal morbidities in study participants.

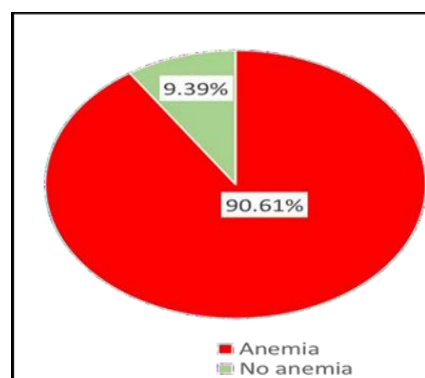


Figure 2: Proportion of anemia among study participants.

Table 1: Distribution of study participants according to sociodemographic factors.

Sociodemographic factors	Urban		Rural		Total		
	N	%	N	%	N	%	
Age (Completed years)	≤20	21	12.73	16	9.70	37	11.21
	21-30	124	75.15	138	83.63	262	79.40
	≥ 31	20	12.12	11	6.67	31	9.39
Religion	Hindu	90	54.54	142	86.06	232	70.30
	Muslim	69	41.82	19	11.52	88	26.67
	Buddhist	2	1.21	4	2.42	6	1.82
	Christian	4	2.43	0	0	4	1.21
Education	Upto middle school	79	47.88	37	22.42	116	35.15
	More than middle school	86	52.12	128	77.58	214	64.85
Occupation	Unemployed	143	86.67	150	90.91	293	88.79
	Employed	22	13.33	15	9.09	37	11.21
Type of family	Nuclear family	66	40	73	44.24	139	42.12
	Joint family	85	51.51	48	29.10	133	40.30
	3 generation family	14	8.49	44	26.66	58	17.58
Socioeconomic class*	I, II, III	98	59.39	94	56.97	192	58.18
	IV, V	67	40.61	71	43.03	138	41.82
Type of diet	Vegetarian	43	26.06	71	43.03	114	34.55
	Mixed	122	73.94	94	56.97	216	65.45

*Classified according to modified BG Prasad scale²⁸

Table 2: Distribution of study participants according to trimester.

Trimester	Urban		Rural		Total	
	N	%	N	%	N	%
I	15	9.10	15	9.10	30	9.10
II	56	33.94	56	33.94	112	33.94
III	94	56.96	94	56.96	188	56.96
Total	165	100	165	100	330	100

Table 3: Distribution of study participants according to complaints and trimester.

Complaints	First Trimester, n=30		Second trimester, n=112		Third trimester, n=188	
	N	%	N	%	N	%
Vomiting	16	53.34	5	4.46	6	3.19
Weakness	3	10	23	20.53	19	10.10
Dizziness	3	10	21	18.75	5	2.66
Headache	0	0	3	2.68	2	1.06
Backache	5	16.67	8	7.14	9	4.79
Burning micturition	1	3.34	0	0	0	0
Fever	1	3.34	0	0	2	1.06
Swelling on feet	0	0	1	0.89	16	8.51

Table 4: Distribution of study participants as per morbidities.

Morbidities	ICD 10	Total 330		Urban, n=165		Rural, n=165		X ² , p, df=1
		N	%	N	%	N	%	
Anemia	O99.0	299	90.60	147	89.09	152	92.12	0.569, (0.450)
Hyperemesis gravidarum	O21	3	0.91	2	1.21	1	0.61	0.00, (1.00)
Sickle cell disease	D57.1	7	2.12	5	3.03	2	1.21	0.583, (0.444)
Sickle cell trait	D57.3	5	1.51	5	3.03	0	0	(0.06#)
Known case of type II diabetes mellitus	O24.1	2	0.61	2	1.21	0	0	(0.498#)
Malaria	O98.81	1	0.30	1	0.61	0	0	(1.00#)
HIV infection	O98.7	1	0.30	1	0.61	0	0	(1.00#)
Pre-eclampsia	O14	n=222		n=112		n=110		4.057, (0.043*)
		9	4.10	8	7.14	1	0.91	

*P value statistically significant, # Fisher exact test.

Table 5: Comparison of mean haemoglobin level among urban and rural participants.

Mean haemoglobin ± SD (gm%)	Urban	Rural	Independent t test, t and p value
	9.63±1.09	9.45±1.05	1.05, 0.295

DISCUSSION

In the present cross-sectional study, prevalence of maternal morbidities in urban and rural area of central India was found to be similar that is 152 (92.12%). Anemia was found to be the most common morbidity among both urban and rural participants. In the present study, among urban participants, majority 54.54% were Hindu followed by Muslim 41.82% and among rural participants, majority 86.06% were Hindu. Shwetha et al showed higher Muslim (55.6%) participants similar to our study at urban area.¹⁸ In our study, Muslim participants

are more among urban as compared to census because our tertiary care institute is having more number of Muslims inhabitants surrounding to it. In the present study, most common complaint in first second and third trimester was vomiting (53.34%) and weakness (20.53%, 10.10%) respectively. Similar results in study conducted by Mittal et al found vomiting in 42.07%, weakness 93.29%.¹³ Study by Patel et al revealed that, from the women who had antenatal morbidity, majority had complaint of weakness (70.4%).¹⁵ Patel et al found vomiting in 18.75%, headache (12.50%), and convulsion (10.94%).²⁰ In urban and rural area overall proportion of maternal morbidities found to be 92.12% in the present study. In our study, prevalence of morbidities were found to be equal in both urban and rural areas. This might be because of good and accessible health services in rural area of RHTC. Prevalence of maternal morbidity as per the study conducted by Jalpa et al, Mittal et al, Singh et al and Tatyana et al was 88.87%, 80%, 67.46%, 21.2% respectively.^{3,13,17,21} The proportion of pre-eclampsia was

7.14% in urban area and 0.91% in rural area in the present study. Similarly, study conducted by Bindu et al, reported the prevalence of PIH was 10.7% among primipara and 9.1% among multipara.²³ Proportion of HIV in present study was 0.30%. It was comparable with national seroprevalence of 0.28%.²⁴ In the present study. Overall proportion of anemia found to be 90.61% both in urban and rural area of central India. Study conducted by Mohammed et al, Priyanka et al and Mishu et al reported prevalence of anemia 100%, 99.12%, 98% respectively which was higher than our study.^{25,26,27}

CONCLUSION

Prevalence of maternal morbidities in both urban and rural area of central India was found to be high. The most common morbidity found in pregnant women was anemia. Proportion of anemia in pregnant women from rural area was slightly higher as compared to urban area.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- Shirpurkar M, Shewte M, Joshi P. Pattern of obstetrics complication among pregnant females admitted in a tertiary care centre in central India. Int J Reprod Contraception Obstet Gynecol. 2015;4(2):338.
- Park K. Textbook of Preventive and Social Medicine 25th ed. Jabalpur: M/s Banarsidas Bhanot publishers. 2019;610.
- Suthar J, Patel K. Morbidity Pattern Study among Pregnant Women Attending Antenatal Clinic at Community Health Centre. Indian J Pharm Pract. 2018;10(4):276-81.
- The global health observatory, WHO. Available at: <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/26>. Accessed on 20th November 2020.
- Koblinsky M, Chowdhury ME, Moran A, Ronsmans C. Maternal morbidity and disability and their consequences: Neglected agenda in maternal health. J Heal Popul Nutr. 2012;30(2):124-30.
- Decadal growth in population since 1901. Available at: https://www.censusindia.gov.in/2011census/PCA/A-2_Data_Tables/00%20A%202-India.pdf. Accessed on 20th November 2020.
- WHO Maternal mortality key facts. Available at: <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>. Accessed on 20th November 2020.
- WHO Global health Observatory (GHO) data. Maternal mortality. Available at: https://www.who.int/gho/maternal_health/mortality/maternal/en/index1.html. Accessed on 20th November 2020.
- Special bulletin on maternal mortality in India 2016-18 sample registration system. Office of the registrar general, India. Available at: https://censusindia.gov.in/vital_statistics/SRS_Bulletins/MMR%20Bulletin%202016-18.pdf. Accessed on 20th November 2020.
- Ray S, Bhandari P, Prasad JB. Utilization pattern and associated factors of maternal health care services in Haryana, India: a study based on district level household survey data. Int J Reprod Contraception Obstet Gynecol. 2018;7(3):1154.
- Padma GR. Maternal Morbidity in Rural Andhra Pradesh Maternal Morbidity in Rural Andhra Pradesh. Centre for economic and social studies Begumpet, Hyderabad. 2004;(63):1-34.
- Dutta DC. Textbook of Obstetrics including perinatology and contraception, 9th ed. New Delhi: Jaypee Brothers Medical Publishers. 2018;1-612.
- Rathod M, Parmar D, Unadkat S, Kaliya M, Patel N, Goel A. An Assessment of Maternal Morbidity Pattern among Reproductive Age Group Women in a District of West Gujarat: A Community Based Cross Sectional Study. Indian J Community Fam Med. 2018;4(01):40-6.
- CENSUS 2011. Office of the Registrar General and Census Commissioner, India Ministry of Home Affairs 31st March 2011. Available at: https://www.thehindu.com/multimedia/archive/00517/India_Census_2011__517160a.pdf. Accessed on 20th November 2020.
- Patel NA, Mehta JP, Unadkat S, Yadav SB. A Study on Various Determinants of Maternal Morbidity Amongst Married Women in Reproductive Age Group in Urban Slums of Jamnagar, Gujarat. Int J Cur Res Rev. 2016;8(24):19.
- Quraishi SR, Gaydhanker AP, Dhumale GB. Levels and determinants of maternal morbidity in Sangli, Maharashtra, India: a community based study. Int J Community Med Public Heal. 2017;4(3):769-74.
- Rosendo T, Roncalli A, Azevedo G. Prevalence of Maternal Morbidity and Its Association with Socioeconomic Factors: A Population-based Survey of a City in Northeastern Brazil. Rev Bras Ginecol e Obs /RBGO Gynecol Obstet. 2017;39(11):587-95.
- Shwetha NPK. Prevalence of anemia among pregnant women A cross-sectional study. Int J Med Sci Public Heal. 2019;7(4):12.
- Rathod M, Parmar D, Unadkat S, Kaliya M, Patel N, Goel A. An Assessment of Maternal Morbidity Pattern among Reproductive Age Group Women in a District of West Gujarat: A Community Based Cross Sectional Study. Indian J Community Fam Med. 2018;4(01):40-6.
- Patel R, Baria H, Patel HR, Nayak S. A study on pregnancy induced hypertension and foetal outcome among patient with PIH at tertiary care hospital, Valsad. Int J Community Med Public Heal. 2017;4(11):4277-81.
- Singh R, Chauhan R, Nandan D, Singh H, Gupta SC, Bhatnagar M. Morbidity profile of women during

- pregnancy: A hospital record based study in western UP. *Indian J Community Heal*. 2012;24(4):342-6.
22. Malik A, Jee B, Gupta SK. Preeclampsia: Disease biology and burden, its management strategies with reference to India. *Pregnancy Hypertens*. 2019;15(11):23-31.
 23. Bindu KH, Devi EH. Effect of pregnancy induced hypertension on pregnancy outcome: a hospital based cross sectional study at a tertiary care hospital. *Int J Reprod Contracept Obstet Gynecol*. 2018;7950:1984-7.
 24. Nair H, Panda R. Quality of maternal healthcare in India: Has the National Rural Health Mission made a difference? *J Glob Health*. 2011;1(1):79-86.
 25. Mohammed AK, Patil AM, Sajjanar BB, Yendigeri SM, Honakeri VP, Fathima N et al. Prevalence of anaemia in pregnancy in hospital based population in Bijapur, Karnatak. *J Evol Med Dent Sci*. 2013;2(35):6673-82.
 26. Mangla M, Singla D. Prevalence of anaemia among pregnant women in rural India: a longitudinal observational study. *Int J Reprod Contraception, Obstet Gynecol*. 2016;5(10):3500-5.
 27. Mandve P, Nawale K, Motghare VM, Pajai S. Study of anemia in antenatal care patients: A retrospective study. *J South Asian Fed Obstet Gynaecol*. 2014;6(3):133-8.
 28. Pandey VK, Aggarwal P KRM. Modified BG prasad socio-economic classification, updated – 2020. *Indian J Community Heal*. 2020;32(1):124-5.

Cite this article as: Tiwari PN, Thakre SS, Thakre SB, Pandey SM, Tayade HC. A comparative study of morbidities in pregnant women of urban and rural area of central India. *Int J Community Med Public Health* 2022;9:1890-5.