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EFFICACY OF ANTENATAL CARE IN PREGNANT WOMEN IN URBAN AND RURAL AREAS– A DISCUSSION

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ABSTRACT

The results of studies carried out to assess the efficacy of antenatal care in pregnant women show that all parameters were better in urban women than rural and were better in PHC covered rural women than uncovered ones. Therefore, early and periodical prenatal care is essential for the benefit of mother and child health.

KEYWORDS: Antenatal Care, Comparison Between Urban & Rural Areas

Interest to evaluate the efficacy of antenatal care in pregnant women at different level of human settlements arose to assess the disparity in antenatal care provided and outcome of pregnancy in relation to other contributing factors. The motive of study was to assess the effectiveness of antenatal care to pregnant women and hence to minimize the complications related to pregnancy and safer outcome, thereby reducing the maternal and neonatal mortality.

MARERIALS AND METHODS

Studies were conducted in urban areas of Delhi and in village Nizampur district during 2017 and 2018 to compare the effect of antenatal care on outcome of pregnancy in different populations of selected areas in urban and rural areas. Only primigravida and second gravida women were included in the study. These women were registered at 16 weeks of gestation at respective places and all available antenatal care and advice were provided to them. In group-2 some missed antenatal visits were noticed. The women in group-3 did not avail the antenatal care because of poverty, low literacy and ignorant about this facility but their outcome of pregnancy were assessed. Immunization with two doses of tetanus toxoid, in group-1 and group-2 showed reduction in neonatal mortality.

RESULTS AND DICUSSION

The age, sex and parity of pregnant women were comparable in all the three groups as proposed in study protocol.

Different parameters were observed during the antenatal visits of pregnant women and analyzed statistically for final results and presented by bar diagrams and discussed here in light of cause and effect.

The study was conducted in 150 pregnant women, enrolled in three groups of 50 women each from urban, rural and remote areas. Gestation period of nine month in women is associated with multiple physiological changes and other added pathological risks, which require constant health care advice and supervision throughout the course of pregnancy for safer outcome. Women in metropolitan cities are at privilege to utilize proper and adequate antenatal care. In rural areas medical care to pregnant women is mainly provided by trained midwife and Accredited Social Health Activists (ASHAs) under National Rural Health Mission (NRHM) whereas women in remote areas are deprived of antenatal care. Regarding the number of antenatal visits WHO recommends a minimum of six visits during the course of gestation, the present study also included six antenatal visits starting from 16 weeks of pregnancy.

Previous study by Erci (2003) and Gupta and Tajali (2015) have shown that literacy rate and family income of pregnant woman had a correlation with outcome of pregnancy. Higher is the socio-economic status and literacy safer the outcome. The results from our study are also consistent with the former studies (Fig 1& Fig. 2).

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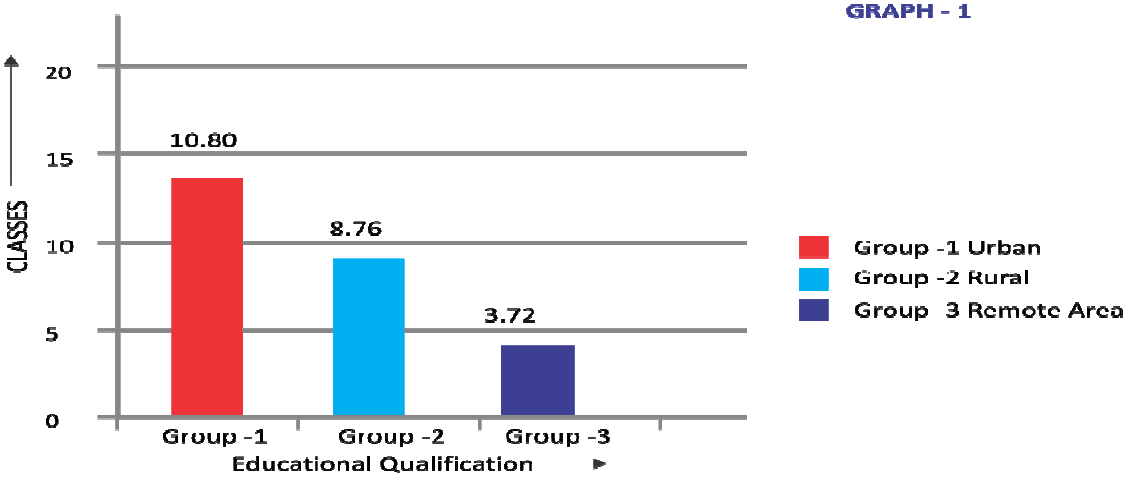
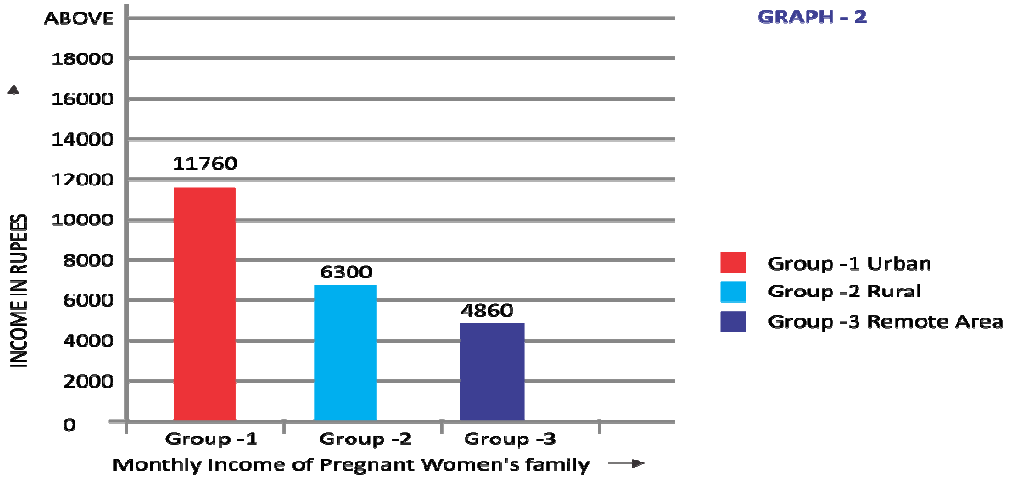
GRAPH - 1



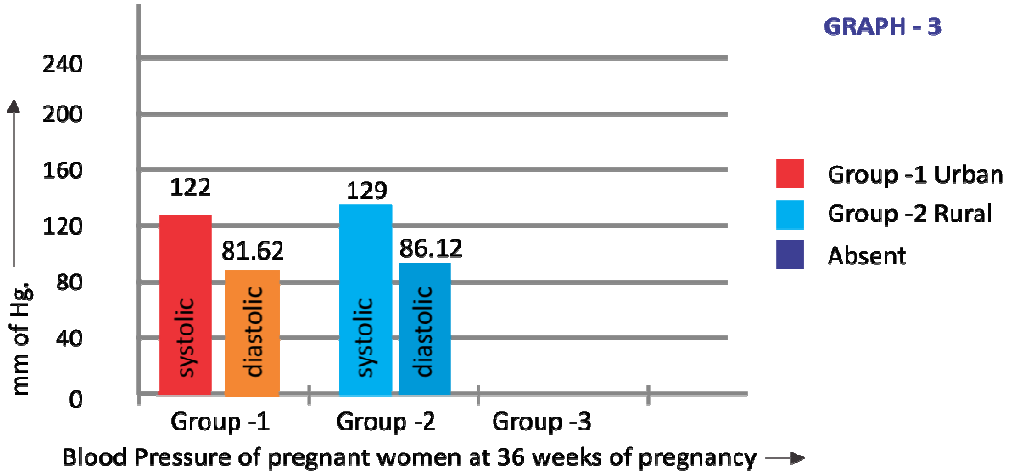
Yibetal et. al. (2016) also revealed in their study the inequalities in utilization of antenatal care in slum areas of Addis Ababa, our study also depicted the similar results in group-3 and missed visits in group-2 women.

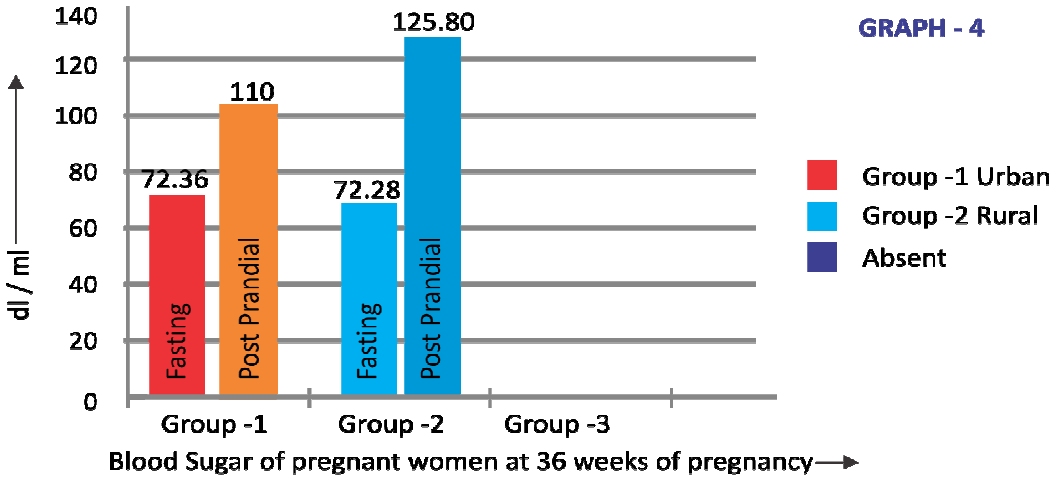
GRAPH - 2



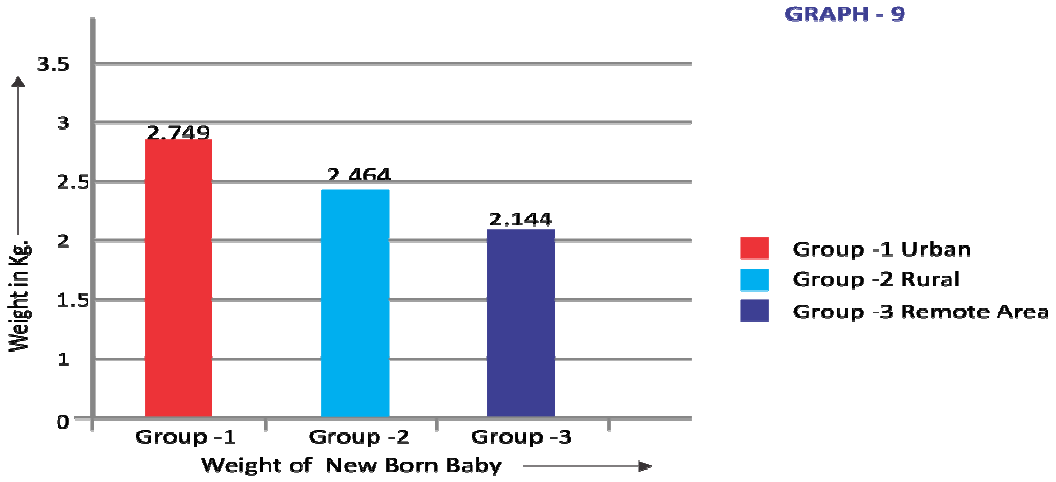
Blood pressure and blood sugar of pregnant women were nicely controlled in group-1when compared with group-2 (Fig 2) women in group were more prone to pregnancy induced hypertension and pre-eclamsia. Similar findings were also reported by Monica and Mufuta (2015).

GRAPH - 3

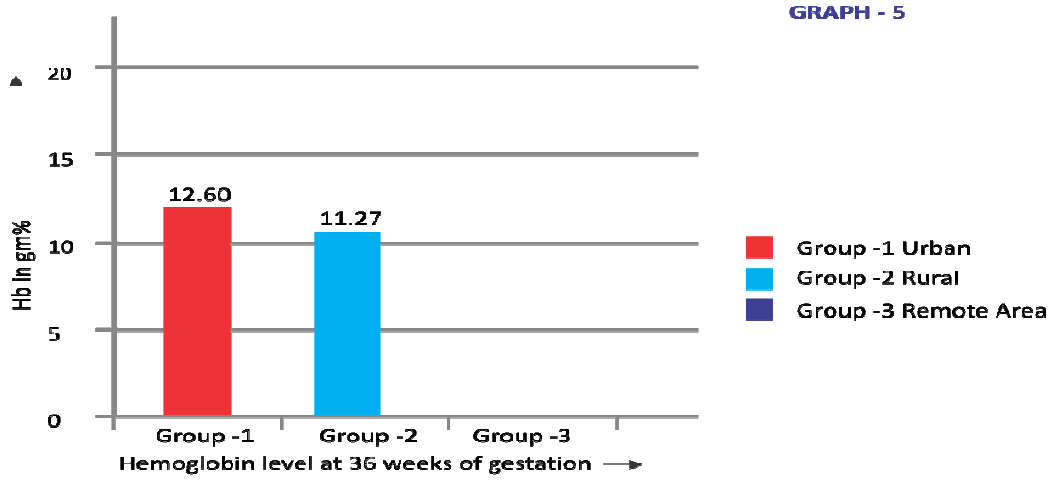




Higgins and de Swiet (2001) revealed the deleterious effects of pregnancy induced hypertension (PIH) in mother and baby had low birth weight. The present study also showed low birth weight in group-2 women (Fig 9) who had high blood pressure.

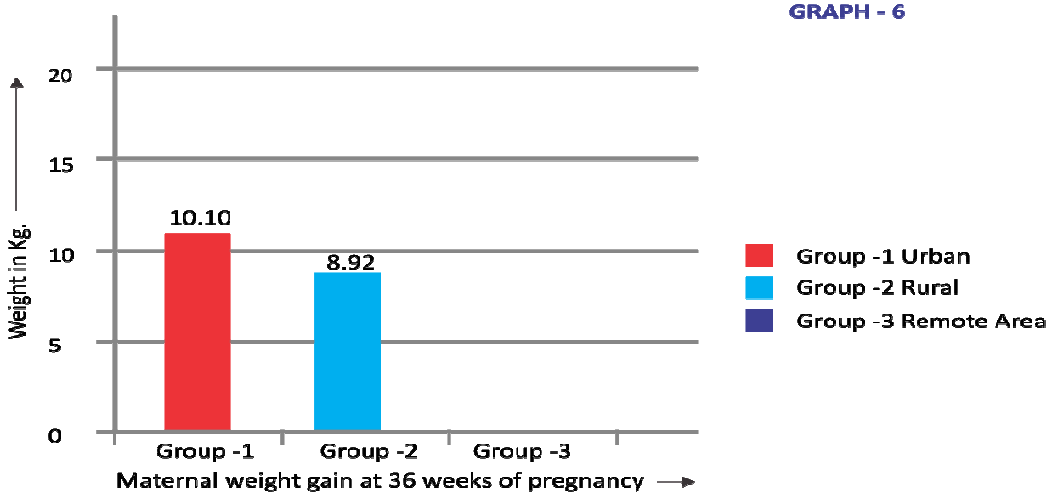


Anemia is a common finding in pregnancy because of increased intra vascular blood volume and heamo-dilution, though the hemoglobin level in group-1 women remained significantly higher than with the other two groups. Similar results were reported by Abderahuim and Elgoni (2010).



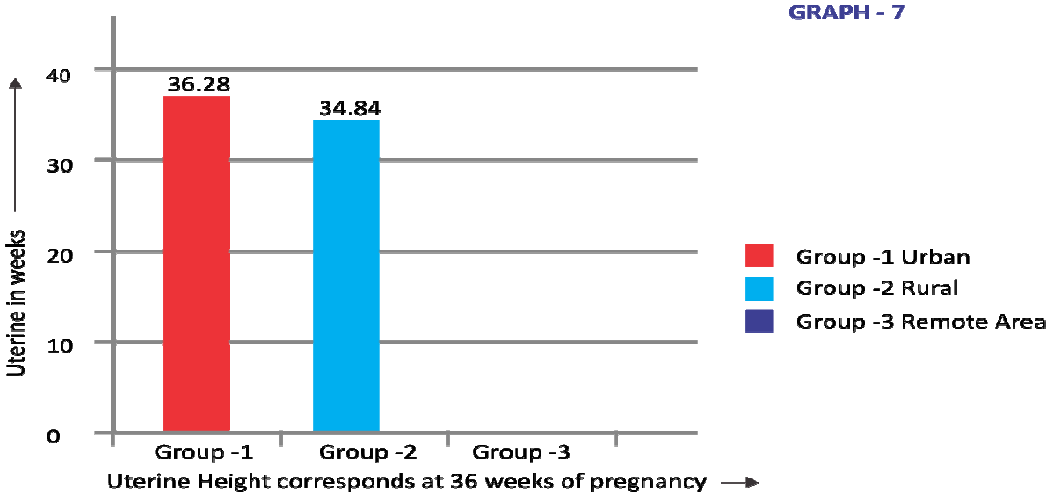
Maternal weight gain in group-1 was statistically significantly higher as compared with group-2 and group-3 women (Fig 4). Christopher et al.(2013)also suggested similar views on affecting the maternal weightby prenatal care.

GRAPH - 6



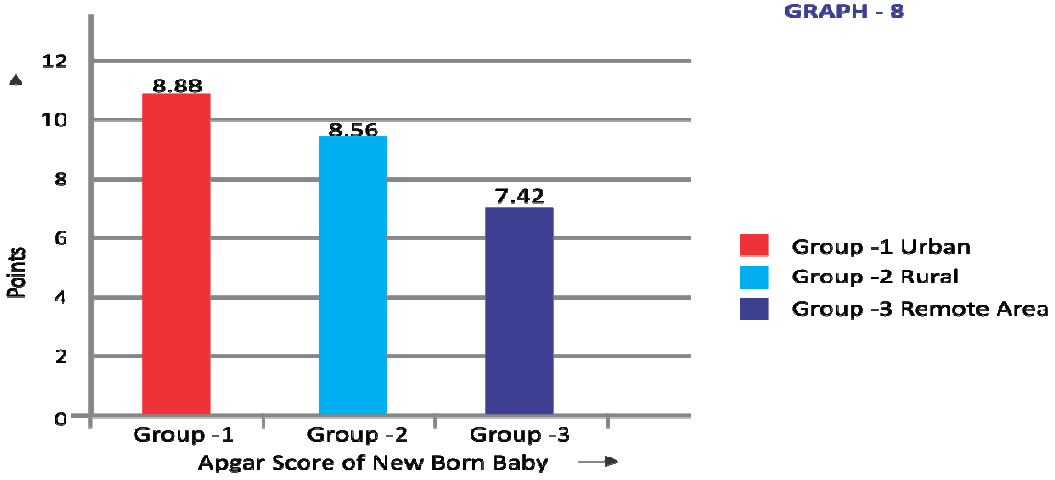
Uterine height attained by group-1 women was statistically significantly higherthan other groups. This in turn supports the positive role of regular antenatal care received by the pregnant women in group-1.

GRAPH - 7



The APGAR score of babies born to group-1 women remained significantly higher than the other two groups. This suggests that condition of babies at birth in group-1 was significantly better than the babies born to group-2 & 3 women. It was further observed that condition of babies born to group-2 women was better than the group-3 (Fig. 8). In other words the babies in group-3 had lowest score and were vulnerable to higher risk for survival.

GRAPH - 8



DISCUSSION

Interest to evaluate the efficacy of antenatal care in pregnant women at different level of human settlements arose to assess the disparity in antenatal care provided and to see the outcome of pregnancy in relation to other prevailing and contributing factors. The motive of study was to provide adequate and uniform antenatal care to every pregnant woman worldwide and hence to minimize the complications related to pregnancy, thereby safer outcome and reducing the neonatal and maternal mortality rate.

The present scientific study was conducted in 150 pregnant woman, these were enrolled in three groups of 50 women each. The women were picked up from urban, rural and remote areas. The nine month gestation period in human species is associated with multiple physiological changes, added pathological risks and other contributing factors like poverty, educational qualification, geographical variants, physical distance and available health facilities etc. Thereby considering above mentioned factors it requires a constant health care supervision and advice throughout the course of pregnancy for safer outcome of pregnancy without any complications. Women in metropolitan cities are at privilege to utilize proper and adequate antenatal care. In rural areas medical care to pregnant women is mainly provided by trained midwife and Accredited Social Health Activists (ASHAs) under National Rural Health Mission (NRHM) whereas women in remote areas are deprived of antenatal care. Regarding the number of antenatal visits WHO recommends a minimum of six visits during the course of gestation, the present study also included six antenatal visits starting from 16 weeks of pregnancy.

Previous study by Erci B (2003) and Rajiv Gupta (2015) have shown that low literacy rate and family income of pregnant woman had a positive correlation with poor outcome of pregnancy and have proved as a barrier for safe outcome. Higher is the socio-economic status and literacy of pregnant woman showed safer the outcome. The result from our study is also consistent with above published studies and similar results were noted. Yibetal T, Yohana 2016 revealed in their study the inequalities in utilization of available antenatal care in slum areas of Addis Ababa, similar results were also observed in our study that most of women in group-2 missed antenatal visits and group-3 women did not avail the prenatal care at all. Blood pressure of pregnant women were nicely controlled in group-1when compared with group-2, which were more prone to pregnancy induced hypertension and pre-eclamsia. Higgins JR 2001 revealed in their study the deleterious effects of pregnancy induced hypertension (PIH) in mothers and babies delivered to them had low birth weight. The present study conducted by us also showed low birth weight in group-2 women who had high blood pressure. Maternal weight gain in group-1 was statistically significant when compared with group-2 and group-3 women.

Anemia is a common finding in pregnancy because of increased intra vascular blood volume and heamo-dilution, though the hemoglobin level in group-1 women remained significantly higher than with the other two groups. Study carried out Blencowe H. Lawn 2010 in their study revealed that immunization by two doses of tetanus toxoid reduces neonatal mortality due to convulsive disease tetanus the similar results were also observed in our study i.e. none of the neonate in group-1 threw convulsion though the neonates in group-2 & 3 threw convulsions and required medical care. Incidence of neonatal tetanus has reduced dramatically after administration of two doses of tetanus toxoid therefore our study supports the study conducted by Roper, Vandelear et al 2007 for reduction of this lethal and

convulsive disorder. Hollowell J, Oakley L, 2011 has proved the role of prenatal care in their study especially in socially disadvantaged and vulnerable women the efficacy of antenatal care to reduce the infant mortality rate, the similar results were also observed in our study that early registration and prompt health and hygienic advice showed better results in disadvantaged societies. Toan K Tran, 2011 showed significant disparities in rural and urban Vietanam on utilization of antenatal services, the similar results were also noted in our study that rural and illiterate women missed the fruitful opportunity of antenatal care. A similar study conducted by Tann CJ, Kizza M, Morison L, (2007) in Entebbe, Uganda a community survey that 96 % women reported for antenatal care a similar observation was also made in our study but some women often missed their periodical antenatal visits. The study conducted by Clara and Carine Ronsmans 2013 in pregnant women in sub-Saharan Africa showed high level of HIV infection leading into high incidence of direct obstetric complications among HIV infected women but contrary to it in our study we did not find any case of HIV infected woman. Therefore in India the incidence of HIV in pregnant women was negligible however it requires a further elaborate study to comment. Zoe Weir, Judith Bush, Stephen C Robson, 2010 conducted a detailed study on physical activity in obese pregnant women and concluded that a healthy life style levels of physical activity during pregnancy contributes to improved pregnancy outcomes. We also observed in our study that the moderate stretch exercise and routine house hold activities during last trimester of pregnancy have shown beneficial effects on conduct of vaginal delivery hence we recommend and promote moderate physical activity in antenatal period. A similar study conducted by E D Watson B Oddie et al 2015 has also shown the similar effect and recommended the light exercise but the highly energetic sports are discouraged. Study by Natasha and Christopher conducted a study on air travel by pregnant women and observed that there is risk of deep main thrombosis (DVT) on long journeys. In our study we did not encounter much of women who travelled long distance by air route, so it is difficult to comment.

Though a few cases of long journey by road transport were encountered in this study without any adverse effect like abortions but minor ailments like pedal edema and exhaustion were observed. Ibrahim, Yorifugi et al 2012 concluded in their study that regular antenatal visits especially in third trimester had lowered neonatal mortality because of prompt detection of adverse events and subsequent admission for management, a similar observations were also made in our study that regular visits had shown adequate birth weight and better trend in APGAR score.

Pregnancy induced hypertension (PIH) was persistently noted in group-2 pregnant women in our study which in turn led on to low birth weight babies, few women in group-1 suffered high blood pressure but that was appropriately resolved by prescribing anti-hypertensive therapy, therefore our study correlates well with the study published by Monica Muti and Mufuta Tshimanga 2015 that they conducted in a African country Harare. Salani R, Billinqsly CC, Crafton SM. Carried out a detailed study for association of cancer with pregnancy, a lone case of hydatedform mole was reported in our study for that MTP and further treatment was advised at oncology centre. It is obvious that the incidence of malignancy was quite low and correlates well with their published study. Abdel Aziem A Ali, Mohammed M Osman et al (2010) carried out a study on the correlation of family's literacy on outcome of pregnancy in Kassala in eastern Sudan which revealed that low literacy of family is associated with high parity rate, poor antenatal visits to centers and complicated outcomes. The present study conducted by us also showed the identical findings that low literacy of the family is one of major contributing factor for high rate of complications as they do not attend antenatal clinics and follow the health advice, especially given by midwives. Rajendra Raj Wagle, Svend Sabroe carried out a elaborate study on physical distance and socio-economic status of pregnant woman on outcome of pregnancy in Nepal and concluded that poor socio-economic status and long physical distance from the hospital have acted as barriers to obtain health care. Similar observations were made in our study that poor transport facilities in rural set up and low socio-economic status are the main barriers to attend the hospital, therefore mobile health services are recommended to achieve this goal. Michelle A. Kominiarek and Priya Rajan 2016. Conducted a study on nutritional needs during pregnancy and evaluated that calorie requirement differs significantly when compared with non-pregnant populations. Furthermore an individualized approach to nutritional counseling of women's access to food, socio-economic status and food choices as per body mass index (BMI) is considered for adequate calorie. So they conducted a study for extra nutrition required during antenatal and lactating period. Similar instances were also reported in our study that low birth weights of new born babies in group-2 & group-3 may be due to low nutritional value of food. Habtamu K. Kasaye, Zerfu Mulaw Endale et al (2017) conducted a study on pregnant women in Ethopia who preferred a home delivery even after booked for antenatal care

similar observations were made in our study that majority of women in rural set up preferred home delivery rather than the institutional deliveries even after availing antenatal care. The key determinants for home delivery were poor socio-economic status, lack of transport facilities, sudden onset of labor, lack of privacy and decision taken by chief member of house. Peter C. Kawungezi, Douglas AkiiBua, et al (2015) considering high maternal and neonatal mortality in sub-Saharan Africa, their study showed the disparity in outcome of pregnancy in urban and rural setup in Uganda, similar observations were made in our study that population in rural set up is more prone to pregnancy related complications when antenatal visits are ignored and in deliveries conducted at home. Melissa Whitworth, Leanne Bricker, James P Neilson et al (2010) conducted a routine diagnostic ultrasound study in early pregnancy for assessment of fetal well being, congenital malformations and to avoid adverse outcomes. It was recommended that ultrasound in early pregnancy detects the multiple pregnancies and any evidence of fetal malformation but contrary to their study we did not find any major incidence of congenital malformation in rural setup they did not undergo this investigation. A rising trend for ultra sound was observed in recent years because of public awareness about this facility may be for intra uterine sex determination, though it has been totally banned in India and punishable offence as this has lead to male/ female sex ratio in last decade Hala Abdullahi, Gasim I Gasim et al (2014) conducted the study on anemia during pregnancy leading to adverse maternal and perinatal outcomes. They administered iron and folic acid supplement and observed higher birth weight of babies in contrast to the women who did not receive this supplement. Women in our study also responded well on administration of iron and folic acid with adequate levels of hemoglobin and enhanced birth weight of newborn baby. Laura A. Magee, Anouk Pels et al (2014) carried out an extensive study on pregnancy induced hypertension its deleterious effects and management, the women in our study also suffered high blood pressure in all the three groups but only group-1 women could avail anti hypertensive treatment with excellent results. Manas P. Roy, Uday Mohan et al (2013) conducted a study on various factors affecting the utilization of antenatal care by pregnant women in rural Lucknow, India and concluded that scanty visits and late registration are the main hurdles for safer outcome of pregnancy similar determinants were also found in our study and proved deleterious for safer outcome of pregnancy. Abdel Aziem A Ali, Ishag Adam et al (2011) carried out a study on maternal mortality during 2005-2009 in Kassala hospital in eastern Sudan and reported 132 maternal deaths out of 20485 live births but contrary to it we did not encounter any maternal death in our study. It will not be appropriate to comment upon maternal mortality precisely from this study because the sample size is comparatively small in respect to above mentioned study. Evans J, Heron J research et al (2001) conducted a study on postnatal psychosis in recently delivered mothers and most of women admitted to hospital within first month contrary to it we did not encounter much significant number of women who suffered from post natal psychosis. This may be the result proper prenatal care and mind make up to face the stress of pregnancy and delivery. In context to smoking in antenatal period a study by Mc Cowan LM Dekker GA, et.al (2009) revealed that these women are more prone to adverse effects like low birth weight of baby, premature delivery and miscarriage and still births, on the other hand in our study we did not encounter much number of women who smoked in antenatal period and no adverse effects were noted i.e. in India incidence of smoking is quite low.

Eventually after relying on the observed data and analytical results it is concluded that antenatal care definitely has a safe role to play if it is instituted in initial stage of pregnancy provided with regular periodical checkups. It is recommended that deliveries must be conducted in well established hospitals to avoid the impending complication.

REFERENCES

Abderahuim D. Haggaz and Elgoni A., 2010. Anemia and low birth weight in western Sudan: Trans R. Soc. Tropical Medicine & Hygiene, **104**(3): 234-236.

Blencowe H., Lawn J., Roper M. and Cousens S., 2010. Tetanus toxoid Immunization to reduce mortality from neonatal tetanus, International Journal of Epidemiology, **39**:102-109.

Christopher Pell, Arantza M. and Florence Were, 2013. Factors affecting antenatal care attendance: Results from quantitative studies in Ghana, Kenya and Malawi. Published in January 15, 2013 http// doi, org/ 10 1371 journal. Pone 0053747.

Watson E.D., Oddie B. and Demitri Constantinou, 2015. Exercise during pregnancy: knowledge and beliefs of medical practitioners in South Africa: a survey study BMC Pregnancy Childbirth, **15**: 245.

Erci B., 2003. Barriers to utilization of prenatal care services in Turkey. Journal of Nursing Scholarship, **35**(3): 269-273.

Evans J., Heron J., Helen Francomb and Sarah O., 2001. Depressed mood during pregnancy and after childbirth. British Medical Journal; 323:257.

Gupta R. and Tajali N., 2015. Knowledge regarding antenatal care services, its utilization, and delivery practices in mothers (aged 15-49) in a rural area of north India. Tropical Journal of Medical Research, **18**(2): 89-94.

Hala Abdullahi, Gasim I. Gasim, Ahmed S., Abdulmutalab M. Imam and Ishag A., 2014. Antenatal iron and folic acid supplementation use by pregnant wpmen in Khartoum, Sudan. BMC Res Notes, **7**: 498.

Higgins J.R. and de Swiet M., 2001. Blood pressure measurement and classification in pregnancy. The Lancet. **357**: 131-135.

Ibrahim J.A., Yorifuji T.A., Tsuda T.B., Kashima S.C. and Doi H.A., 2012. Frequency of antenatal care visits and neonatal mortality in Indonesia, Journal of Tropical Pediatrics, **58**:184-8.

Laura A. Magee, Anouk Pels, Michael Helewa, Evelyne Reyand Peter von Dadelszen, 2014. Pregnancy Hypertension, and management of hypertensive disorders of pregnancy. Pregnancy Hypertension: An International Journal of Women's Cardiovascular Health, **4**(2):105-145.

Roy M.P., Mohan U., Singh S.K. and Srivastva A.K., 2013. Determinants of Utilization of Antenatal Care Services in Rural Lucknow, India. J Family Med Prim Care, **2**(1): 55-59.

Mc Cowan L.M., Dekker G.A., Chan E., Stewart A., Hunter M., Moss-Morris R. and North R.A., 2009. Spontaneous preterm birth in women who stop smoking early in pregnancy BMJ, 26; 338:b1081. 10. 1136/bmj.

Melissa Whitworth, Leanne Bricker, James P. Neilson and Therese Dowswell, 2010. Ultrasound for fetal assessment in early pregnancy. Cochrane Database Syst Rev. 2010; (4): CD007058.

Monica M. and Mufuta T., 2015. Prevalence of pregnancy induced hypertension and pregnancy outcomes among women seeking maternity services in Harare, Zimbabwe. BMC Cardiovascular disorder. 15: 111.

Rob Stephenson and K. Miriam Elfstrom, 2012. Community Influences on Antenatal and Delivery Care in Bangladesh, Egypt, and Rawanda. Public Health Rep., **127**(1):96-106.

Roper M.H., Vandelear J.H. and Gasse F.L., 2007. Maternal and Neonatal tetanus, The Lancet, **370**:1947-59.

Toan K. Tran, Chuc T.K., Nguyen and Hinh Nguyen, 2011. Urban-rural disparities in antenatal care utilization: a study of two cohorts of pregnant women in Vietnam. BMC Health Service Research, **11**: 120.

Yibeltal T., Yohana S. and Mashslla G., 2016. The adequacy of antenatal care services among slum residents in Addis Ababa, Ethopia. BMC Pregnancy and Childbirth, **16**: 142.