

Comparing the Outcome of Early and late Antenatal care (ANC) Among Primigravida Patients in Klerksdorp, South Africa. A Survey Approach

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Abstract

Early and Late ANC maybe the difference between positive and and negative foetaland maternal outcomes. The study was carried out in the community of Klerksdorp in South Africa, targeting primigravidato confirm or refute the literature findings around antenatal care and expand discussion around the development of ANC with a view to make them specific and tailored to local situations. A sample of 50 being 30% of the weekly births was randomly chosen from mothers attending postnatal care around clinics in Klerksdorp. A questionnaire was administered by way of interviews. The results showed that majority of the mothers had booked late for their ANC and outcomes show statistically significant correlation with timing for their bookings. The study concludes that Klerksdorp primigravida are younger requiring suitable and properly packaged-to- age campaign programs to educate them in their comfort zones. There is significant statistical evidence linking the standard ANC tests at clinics to positive fetal and maternal outcomes. Intervention programs for late ANC mothers need be tailored informed by evidence based research to change negative associated outcomes.

Introduction

One of the key issues of study and concern in the public health is, maternal and child health. Maternal health which includes focuses on morbidity and mortality as outcomes is being positively re-shaped in this 21 century. Largely, due to the past epidemiological status of maternal mortality globally, efforts are being geared towards safer pregnancy outcomes, safer mother and child, safe and effective family planning, good antenatal care, and quality maternal health in general.

Primigravida (gravida 1) women are more at risk for multiple morbidities and mortality as regards pregnancy induced hypertension (PIH), anaemia, pre-eclampsia, and eclampsia among others. Thus, a good maternal, antenatal, perinatal, and postnatal care for pregnant women cannot be over-emphasised as part of global initiatives to promote maternal health. This project looks specifically at women with their first pregnancy –primigravidas, and how early or late antenatal care might have influenced the outcome of pregnancy. The outcome

of interest in this study include; pre, peri, and postnatal issues and complications both for the expectant mother and the child. Most of the primigravida who attended Klerksdorp Hospital, in Klerksdorp, South Africa are in their teen years; and teenagers are documented to be twice as prone to pregnancy complications as compared to older adults(Saxena, et al., 2010). HIV/AIDS is another epidemic in South Africa that could either be transmitted to the child or prevented via ANC visit.

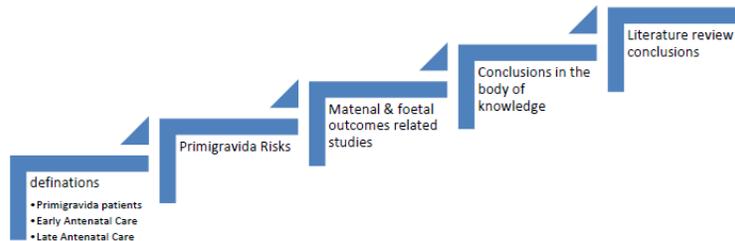
Primary factors that could affect the outcome of pregnancy according to literature include lifestyle of the pregnant woman, illicit use of drug, smoking, alcohol, nutrition; environmental and social and cultural factors . Nutrition is an important health determinant that can affect the outcome of pregnancy. Research has documented the adverse effects of smoking and alcohol use during pregnancy, but the effect of these substances in micronutrient levels are not well established(Pandit & Kale, 2011). Cigarette smoking during pregnancy can result in spontaneous abortion, preterm delivery, reduced birth weight, and sudden infant death syndrome. Knowledge about benefits of antenatal care among pregnant women leads to reduced maternal mortality. There is enough evidence on how ANC has impact the outcome of

pregnancy among primigravida women positively, but not on whether attending the ANC early or late as any differential outcome!

The purpose of this cross sectional study however, is to compare if early or late antenatal care attendance has any effect on the outcome of pregnancy.

Literature review

Conceptdiagram



The literature review will follow the concept diagram depicted above.

Primigravida patient

Primigravida patient is a woman in her first pregnancy (Farlex , 2012). Women can be further classified as younger **primigravida** or elderly **primigravida** referring to woman less than 35 years of age and over 35 years of age respectively in their first pregnancy. Woman can also be said to be **gravida I**, or **gravida II** referring to first pregnancy and second pregnancy respectively.

Antenatal care (ANC)

Antenatal care is the care you receive from health care professionals during pregnancies (NHS, 2015). The care ranges from midwife care, share care (GP and the midwife), consultant care (for known pre-existing conditions) and independent midwife care who charge a fee for the care, at birth and or after birth (MWOL Ltd, 2013). Primigravida are expected to have at least 10 appointments with the health professionals while gravida II and above may have as few as 7 visits depending on personal circumstances(NICE Guidelines (CG 6), 2008). The appointment to a GP or a hospital is considered early when it happens in the first trimester. In the 2nd trimester ANC is considered late. The study adopts the South African medical association recommendations on the cut off for late and early ANC. The World Health Organisation (WHO) recommends a focused goal approach to all women in pregnancy against a high risk approach intended to classify women as “low risk” or “high risk” whereof ANC exposure to 90% of African women is expected to save babies lives by 14% or 160 000 babies.

Early and late antenatal care (ANC)

Early ANC is when a pregnant Woman visits the GP or the clinic in the first trimester of her pregnancy. This gives a chance for the health care professionals to identify and initiate surveillance of the mother and the fetus so as to recognize and manage pregnancy related complications, recognizing and treatment of underlying and concurrent illnesses, screening for conditions and diseases such as anemia and HIV infection and providing family advice and support for healthy home behaviors and birth emergency preparedness (Lincerto, Mothebesaone-Anoh, & Patricia Gomez, 2013)

Primigravida risks

Saxena, Salham, Chattopadhyay, Kohli, Nandan & Adhish. (2010) observed that teenage girls are twice likely die of pregnancy and childbirth related complications to older woman. Underutilization of ANC by adolescence mothers rather than maternal age was proffered as the major determinant to outcomes in teenage pregnancies(Danish, Fawad, & Abbasi, 2010).The

research also found no significant effect of ANC on the occurrence of anaemia, PIH, preterm birth and low weight. A lack of ANC was found to influence the severity of anaemia and incidence of intrauterine deaths. The study concluded that improvement of general health and nutrition of the girl child, increasing the age of marriage and subsequent childbearing along with timely and quality ANC reduces the risks faced by primigravida. Some of the risks identified include anaemia, PIH, IUGR, fetal loss and LBW babies. Danish, Fowad, Abbasi(2010) found instrumental delivery amongst unbooked pregnant women at 87.5% against 12.5% of booked , caesarian section in

unbooked was higher at 70.5% compared to booked patience 23.5%. 20% of unbooked patients presented in emergency with obstructed labour, 19.8% had pregnancy induced hypertension and fetal distress in 43.2%. The study concluded that primigravida were a high risk patient and comprehensive ANC must be provided to this group to have better maternal and fetal outcomes.

Conclusively, It is generally held and agreed in literature that primigravida are high risk patients requiring timely and quality ANC. The risks vary from exacerbation of pre existing conditions, life threatening complications in pregnancies, complications in delivery for the mother and the child and fetal outcomes such as fetal distress, poor Apgar outcomes and avoidable conditions and exposure to diseases that could be avoided by a quality ANC. While these risk factors are agreed a further investigation is warranted to see if such conclusion hold in a different sample and that no additional risks related to ANC are associated with primigravida and how may these be dealt with in the context of improving public health of primigravida mothers.

Methodology

The research methodology employed in this study is across sectional survey. The research would have liked to employ a retrospective cohort study but due to the time constraints and the stringent requirements for accessing clinical records for a study commissioned within the South African borders. Additionally to the credit of the research, most studies in the body of knowledge have used the retrospective cohort approach, the study will show if there are any significant statistical differences when a survey is employed. The analysis will simulate the cohort approach of investigating any linkages between exposure and outcomes of disease to the baby and mother.

The survey is however, cost effective and still can collect the required data. Most of the data is either already known by the mother or is recorded on the mother and baby clinic card. The sampling frame was the list of all primigravida mothers in Klerksdorp who gave birth within

the past 3 months. These were identified and chosen randomly from those attending postnatal care at the clinics in Klerksdorp. A questionnaire was administered to those willing to participate in the research by way of a face to face interview. This had the advantage of having the researcher explain medical terms to the participants and obtaining certain sensitive information by probing.

A suitable questionnaire was designed and administered to a sample of 50 mothers over a period of one week. Participants in the survey were limited to only those who would have given their consent. The collected data was collated and analyzed using SPSS and excel spread sheets.

Results

I found that 44% of the respondents had made their ANC bookings in the first trimester of their pregnancy which we classified as early ANC. 56% of the respondents started ANC late i.e. after the first trimester of their pregnancy as illustrated in fig 4.1 below

Late & Early ANC distribution

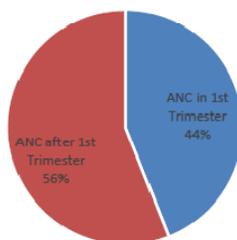


Fig 4.1 Sample composition

Of those that started ANC early 27,2% had underlying conditions prior to their pregnancy and 18,2% of these conditions were HIV related . Among those who started ANC late , however, 35,7% had underlying conditions prior to their pregnancy and 28,6% of these conditions were HIV related but a lower non vaginal percentage of delivery was recorded at 14,3% of the late ANC participants. Fig 4,2 below illustrates these findings.

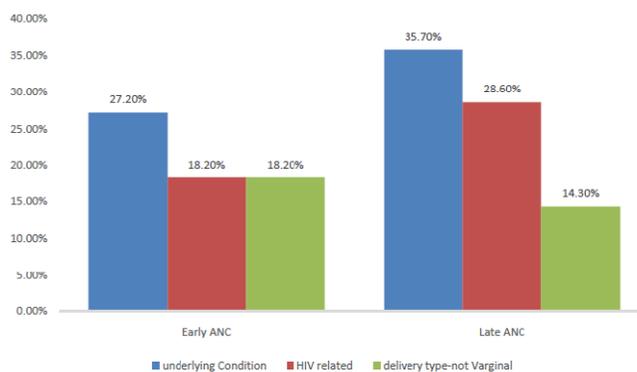


Fig 4.2 Early & Late ANC

In terms of the outcomes the following table shows the maternal outcomes which the study was able to record and calculate.

Maternal outcomes

	Outcomes				
	Gestation Period (weeks)	Age average (yrs)	Average ANC Appointments	BMI	Days admitted (avg)
Early ANC	37,08	22,42	6,00	31,13	1,58
Late ANC	36,46	18,31	6,46	30,79	1,60
Standard dev Early ANC	1,24	3,50	1,86	8,83	1,16
Standard dev late ANC	2,79	1,89	1,66	11,54	1,60

Fig 4.3 Maternal outcomes

The data is further represented as in fig 4.3 were the gestation period was an average of 37.08 weeks for early ANC and 36.46 for late ANC with a standard deviation of 1.24 and 2.79 respectively. Those who started the antenatal care early were much older with an average age of 22.42 years, against those who started late with having an average age of 18.31 years. The standard deviations for the age was 3.5 and 1.89 respectively. According to Shehadeh (2000), elderly primigravida are 35 years and above hence this study shows that Klerksdorp primigravida mothers are , however, of a younger age with an average age of 22.42 years for early bookers and 18.31 years for late bookers. The average number of bookings is 6 for early

bookers and 6.46 bookings for late bookers. Later bookers are more likely to develop complications that prolong their stay in hospital or clinic. An average length of admittance was calculated to be 1.6 days for the late ANC respondents against 1.16 days for early ANC. Obesity is a critical problem for mothers in Klerksdorp with average BMI above overweight mark into obesity reading 31.13 for early bookers and 30.79 for late bookers.

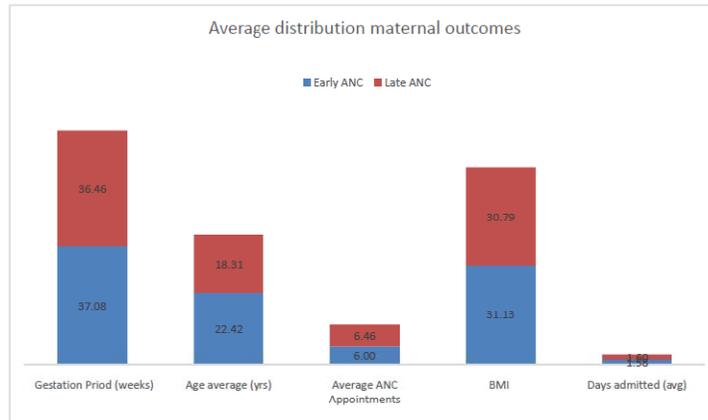


Fig 4.4 Average distribution of maternal outcomes

Foetal outcomes investigated by the study revealed that Apgar rating for Early ANC mothers was better than that of late ANC mothers. The outcomes were 8.75 and 8.23 out of 10 with standard deviation of 1.22 and 1.01 respectively. Baby weight outcomes also came out better for early ANC babies at an average of 2.61 kg to 2.35 kg being the average for late ANC babies. Shehadeh (2000) argues that low birth weight is equal to < 2500g putting the average for late ANC babies in the low birth weight category. Further to this, early ANC babies have a 9% chance of picking up complications compared to 50% chance for late ANC babies with a deviation of 2.08.

	Apgar	Baby weight	Baby complications
Early ANC	8,75	2,61	9,00%
Late ANC	8,23	2,35	50,00%
Standard dev Early ANC	1,22	0,22	0,00
Standard dev late ANC	1,01	0,36	2,08

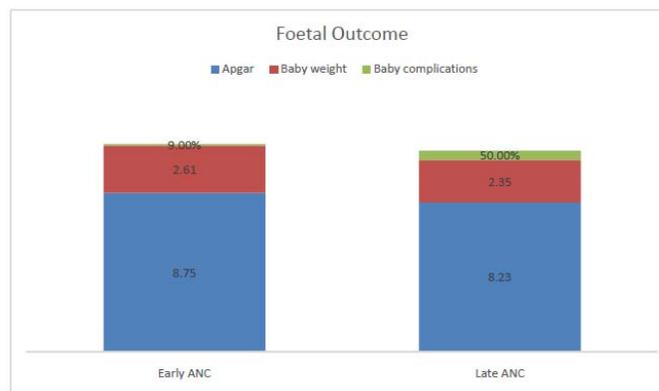


Fig 4.5 Foeta

Further illustrated in Fig. 4.6 below
 Outcomes Correlation to timing of ANC
 he result show a very strong positive correlation between the timing of ANC in months and

BMI outcomes at birth for the mother, and with the day's the mother is likely to stay in hospital and the number of ANC visits. The is considerate of the scale for a social science study measure..The coefficient of correlation are 0.38, 0.31 and 0.30 respectively. There is a very weak negative correlation between timing of ANC and gestation outcomes outcomes of -0.04.

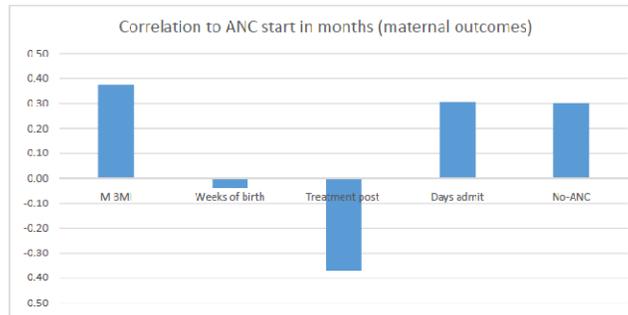


Fig 4.6

For babies the result show very strong negative correlation between timing of ANC and birth weight, Apgar rating and complications in babies. These show a reading of -0.55, -0.33 and

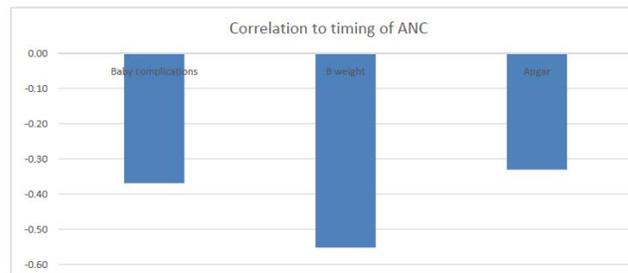


Fig. 4.7

Discussion

The majority of our participants booked their pregnancies late in the second trimester a situation which points to gaps in the awareness campaigns which requires to be conducted in places like schools, and youth gatherings. Youth need to be targeted because the average age of our participants was 20 years; and schools , colleges and gathering maybe good targets to educate them on the benefits of early ANC both to the mother as well as the baby. The high prevalence of underlying conditions particularly HIV related affecting 27.2% and 18.2% respectively of those that booked early for their ANC. The compositions increase precariously if considered the entirety of the sample raising prevalence of HIV to 24% , making a strong case for good quality ANC for Klerksdorp residents.

Comparing maternal outcomes for early ANC and Late ANC revealed an average of 37 weeks gestation period with standard deviation of 1.24 dropping to 36 weeks for Late ANC with a wide spread around the mean at SD 2.7. The correlation coefficient for the ANC timings and gestation period was close to zero meaning there was a weak link. Early ANC will not impact the gestation period. The research found a link between ANC timing and BMI at birth, length of admittance due to complications and number of visits. There was very strong positive correlation between these variable with the timing of ANC. Early booked mothers are likely to fare much better than unbooked or late bookers. We can also make inference of the success of the ANC programs offered in Klerksdorp clinics in reducing weight and the possibility of complications during delivery. The intervention program after mothers have booked early does seem to lag behind in nullifying the effects of their late ANC timing. Further investigation may be required to investigate if intervention for late booking by increasing the number of ANC appointments is a viable investment for the clinics.

The outcomes for babies with complications, weight and Apgar ratings show strong

correlation with ANC timings. The earlier pregnant women book for their ANC the better the outcomes for baby, This is a function of a working ANC program delivered by the health professionals in Klerksdorp community as the early ANC participants contributes

significantly to these correlations. There is, however, room for improvement to plug out gaps in the awareness campaign particularly improving the targeting of youths who form the bulk of the mothers. Babies from early ANC mothers have a 9% chance of having complications whilst those born by late ANC mothers has a 50% chance of picking up complications.

Conclusion

Early ANC goes a long way in ensuring positive outcomes for both the mother and baby. Klerksdorp primigravida are younger requiring suitably and properly packaged to the age campaigns programs to educate them in their comfort zones. There is significant statistical evidence linking the standard ANC procedures at clinics to positive fetal and maternal outcomes. Intervention programs for late ANC mothers need to be informed by evidence based research to change negative associate outcomes.

Because of the significant difference between the outcomes of early ANC (9% complication chances) to late ANC (50% complication chances), this study recommends that primigravida, who are regarded as more prone to complication(s) and higher risk group should attend ANC early to reduce the chances of having complication(s). Primigravida with HIV/AIDS will also be identified earlier for adequate intervention to prevent mother – to – child transmission of the virus.

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