



Original Research Article

A study of risk factors and obstetric outcome of antepartum haemorrhage in a tertiary care hospital of eastern India

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ABSTRACT

Background: Antepartum haemorrhage (APH) is haemorrhage in or inside the genital tract after 28th weeks of pregnancy but before the delivery of baby. There are two main types of APH i.e. 'placenta praevia', 'abruptio placentae' and others are unexplained or extra-placental and local causes.

Objective: Aim of our study was to know the different causes of APH along with foeto-maternal outcome.

Materials and Methods: This observational study was carried out in a tertiary care hospital during the period of January, 2019 to December, 2019 i.e. the period of one year. Women with more than 28th weeks of gestation and presenting with bleeding per vagina were our study subject. Demographic data, cause of bleeding, mode of delivery and foetomaternal outcomes were tabulated. From the descriptive data, percentages, proportions and significance were calculated by using SPSS software of 24th version.

Results: 112 women were studied, which was actually 1.2% of total delivered women in the study period. Study showed placenta praevia and abruptio placentae were 54.5% and 35.7% respectively as a cause of APH. It was seen that incidence of APH increased with age and parity and associated past history of uterine operations. Study showed adverse foetomaternal outcome was more prevalent in APH in the form of post-partum haemorrhage, retained placenta, puerperal infection, coagulation failure and preterm birth, neonatal jaundice, foetal asphyxia, sepsis and increased perinatal and maternal mortality.

Conclusion: Women with past history of uterine operation have an increased risk of developing APH. Women with APH has to be considered as high risk pregnancy and needs institutional supervision.

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1. Introduction

In India, every year more than 1,00,000 mother die due to pregnancy related causes. Most of these deaths are preventable. Haemorrhage is one of the deadly complications in obstetrics. Haemorrhage accounted for nearly 30% of the maternal mortality of which antepartum Haemorrhage (APH) constitutes 2-5% of the cases.^{1,2}

The World Health Authority defines antepartum haemorrhage as bleeding after 28th week of pregnancy i.e. the period of viability.^{1,3,4} On an average 0.5 to 5% of all pregnancies are complicated by antepartum

haemorrhage,^{5,6} with 0.33% to 0.55% being the incidence of placenta praevia and abruptio placenta being about 0.5-1%.⁷

APH is commonly divided into four main types, i.e. placenta praevia, placental abruption and the rest others are undetermined and local/others causes.⁵

Placenta praevia is labelled when placenta implanted partially or completely in the lower uterine segments and placental abruption is the condition when normally implanted placenta is separated partially or completely from the uterine wall.^{2,4}

Research shows risk factors for placenta praevia are, previous history of uterine scar, manual removal of placenta, uterine curettage, myomectomy, advanced maternal age

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and multiparty. Exact cause of placental abruption is unknown but often were associated with preeclampsia, pre-labour rupture of membrane and abdominal trauma, cigarette smoking.^{5,8} Local causes such as cervical polyp and cervical carcinoma are rarely found present in APH.

Maternal complication of APH include malpresentation, premature labour, caesarean section, retained placenta postpartum haemorrhage, haemorrhagic shock, rarely disseminated intravascular coagulation and acute renal failure.⁵ Foetal complications include prematurity, neonatal jaundice, intrauterine death, still birth and perinatal mortality.⁴

The developed world has already reduced maternal mortality from APH by implementing small family norms with increased family planning acceptances, availability of institutional delivery and sophisticated neonatal care units.

Objectives of our study was to evaluate incidences of different types of APH, mode of delivery and foetomaternal outcome of the pregnancy in our study which was complicated by antepartum haemorrhage (APH).

2. Materials and Methods

The present study was conducted among the women admitted under the department of Obstetrics and Gynaecology of a tertiary care hospital in eastern India within the one-year period of January, 2019 to December, 2019. Women who attended our emergency or outpatient department with a complaint of bleeding at 28th weeks of gestational age or thereafter but before the delivery of baby, were our study subject. During the study period, a total number of 9334 women were delivered among which 112 were diagnosed as third trimester bleeding per vagina. All booked and unbooked women of third trimester bleeding per vagina were included in this study.

The Institutional Ethics Committee approved the study, and the study was performed in accordance with its recommendations and that of that of Helsinki Declaration of 1975 that was revised in 2000. All women participating in this study gave a written informed consent. Women excluded from the study subject were those having low lying placenta or retro placental haematoma detected on routine antenatal sonography or during caesarean section but remained asymptomatic throughout pregnancy. History of pre-existing coagulation disorder or women with anti-coagulants were also excluded from the study subject. Women ++with bleeding before 28th week of gestation and those with bleeding later due to initiation of labour with excessive show were also excluded from the study. The study was based on history and clinical examination supplemented by ultra-sonogram whenever possible.

History of previous pregnancies and their outcome, whether induced or spontaneous abortion, any surgical procedures undertaken like dilatation and evacuation (D/C), caesarean section, manual removal of placenta or

exploration of uterus were recorded. Routine antenatal investigations and along with foetal lie, presentation, maturity was also taken. Diagnosis of APH was done by antenatal sonography. As per standard guide line classifications, diagnosis and mode of delivery of placenta praevia and abruptio placentae was made. Cases, where cause of bleeding was undetermined, were labelled as unexplained variety.

The fundamental areas of concern in this study were as follows-

1. To find out the incidence of third trimester bleeding in the study period.
2. Evaluation of the women were done with full medical, surgical and obstetrical history, clinical examination, relevant investigations and obstetrical management.
3. Foetomaternal outcome was recorded within the study group.

The age, parity, socioeconomic status, past gynaecological and obstetrics history and cause of antepartum haemorrhage were recorded in percentages and proportions. Mode of delivery and associated foetomaternal complications were measured by chi-square test and significance of P value at 0.05 and 0.01 level. All of the data were calculated in SPSS 24th version.

3. Results

In this study 9334 deliveries were conducted, of which 29 cases were of multiple pregnancy, all of which were twins. During this study period, 112 women were admitted with third trimester bleeding per vagina. Two of the studied subject delivered twin babies. So the number of babies in the studied subject was 114. The incidence of third trimester bleeding per vagina was 1.19% in this study group.

In the present study, APH was found in four different categories i.e. placenta praevia, abruptio placentae/placental abruption, undetermined cause and other/local causes. From these 61(54.5%), 40(35.7%), 7(6.2%) and 4(3.6%) women were from placenta praevia, abruptio placentae, undetermined cause and others categories respectively. Highest 43(38.4%) women of APH were from 26-30 years' age group and the lowest 5 (4.5%) women were from below 20 years' age group. (Figure-1)

In the present study, according to parity, incidences of different types of APH was classified. Women with primi, second and multi gravida of placenta praevia were 8(7.1%), 20(17.8%), 33(29.5%) respectively and abruptio placentae were 8(7.1%), 15(13.4%), 17 (15.2%) respectively. (Table-1)

In the present study, according to updated Kuppuswamy scale for 2007,⁹ socio-economic status of the women was categorised into five groups. Women with APH of 5 (4.5%), 9(8.0%), 24(21.4%), 31(27.7%) and 43(38.4%) were from 'upper', 'upper middle', 'lower middle', 'upper lower' and

‘lower’ group of socio-economic status respectively. (Table-2)

In our study, past obstetrics history of caesarean section, APH, myomectomy and intra uterine foetal death (IUFD) were 11(18.1%), 2(3.3%), 1(1.6%) and 1(1.6%) respectively in the women of placenta praevia. In the women of abruptio placentae, the number of caesarean section and IUFD were 3(7.5%) and 2(5%) respectively. In the present study, history of induced abortion where uterine curettage was needed were, 5(8.2%) and 2(5%) women of placenta praevia and abruptio placentae respectively and in one woman of placenta praevia, there was history of abortion but in that woman uterine curettage was not needed. In the present study, only one woman of placenta praevia had a history of manual removal of placenta following vaginal delivery in previous pregnancy. (Table-3)

In our study, among the women of placenta praevia, delivery performed by caesarean section, spontaneous vaginal delivery and vaginal delivery after labour induction by artificial rupture of membrane (ARM) with oxytocin drip were 53(47.3%), 3(4.9%) and 4(6.5%) respectively and among the women with abruptio placentae it was 16(40%), 9(22.5%) and 13(32.5%) respectively. There was 2(5%) women of abruption placentae who required instrumental delivery by using ventouse, and caesarean hysterectomy was required in one woman with central placenta praevia due to intractable postpartum haemorrhage. Mode of treatment in different categories of APH were found highly significant ($P < 0.01$). (Table-4)

In present study, birth asphyxia was classified into nil (Apgar score 7-10), mild (Apgar score 4-6) and severe (Apgar score 0-3) according to Apgar score after 5 minutes. In this study, nil, mild, severe form of birth asphyxia and still birth was present in 55(48.2%), 4(3.5%), 3(2.6%), 1(0.9%) new-born of placenta praevia and in new-born of abruptio placentae it was 19(16.7%), 14(12.3%), 6(5.3%), 1(0.9%) respectively. Among the seven, six (5.3%) and one (0.9%) new-born of undetermined type of APH was from nil and mild asphyxia group according to Apgar score. According to Apgar score, birth asphyxia within different types of APH was found highly significant ($P < 0.01$).

One maternal mortality occurred in a woman of concealed type of placental abruption who was admitted in a condition of severe haemorrhagic shock, coagulation failure and had delivered a stillborn baby vaginally.

In the present study sepsis, convulsion, respiratory distress syndrome, jaundice and diarrhoea were present in 8(7%), 2(1.7%), 4(3.5%), 16(14%) and 1(0.9%) neonate respectively. There were 4(3.5%) early neonatal death during their seven days stay in hospital. In this study, maternal complications in the form of postpartum haemorrhage, retained placenta, puerperal infection, coagulation failure and renal failure were present in 11 (9.8%), 3(2.7%), 9(8%), 1(0.9%) and 1(0.9%) women

respectively. (Table-5)

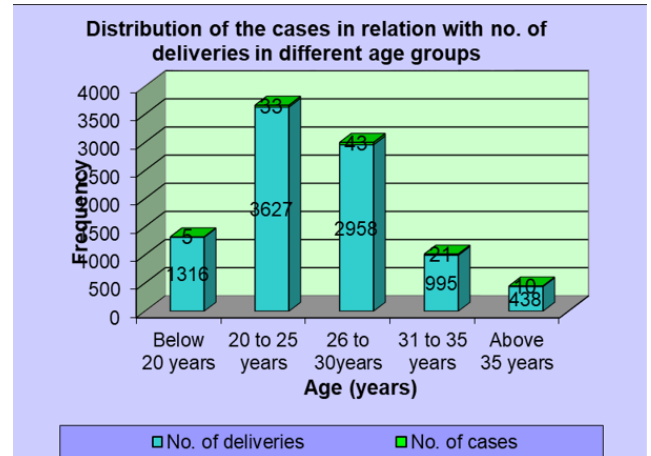


Fig. 1: Distribution of women in relation with no of deliveries in different age groups.

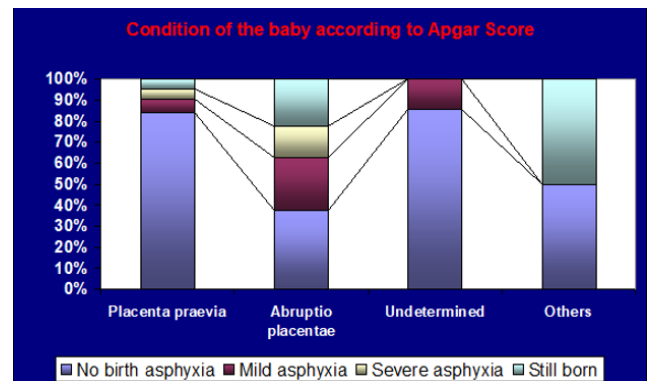


Fig. 2: Different types of antepartumhaemorrhage according to Apgar score after 5 min.

4. Discussion

Incidence of antepartum haemorrhage (APH) varied widely with demographic profiles and different geographical areas.

In our present study, majority of women 33/112(29.5%) were from to 26 to 30 years of age group. Incidence of different causes of APH were 61/112(54.5%), 40/112(35.7%), 7/112(6.2%) and 4/112(3.6%) of women were from placenta praevia, abruptio placentae, undetermined and other causes respectively. Maximum number of women 26/112(23.2%) with placenta praevia were from 26-30 years’ age. Most commonly affected women 14/112(12.5%) with placental abruption were from 20-25 years’ age.

From the literature review, Yadav et al⁴ reported in their study that 25-29 years’ age were commonest age group in their study which was quite similar to our study. In their study, placenta praevia, abruptio placentae and unclassified

Table 1: Distribution of women in relation to age (n=112)

Age Categories	Placenta praevia (n=61)		Abruptio placentae (n=40)		Undetermined cause (n=7)		Other (n=4)		Total (n=112)		Mean age \pm SD (years)
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	
Below 20 years	3	2.7	2	1.8	0	0	0	0	5	4.5%	27.49 \pm 5.09
20-25 years	18	16.1	14	12.5	1	0.9	0	0	33	29.5%	
26-30 years	26	23.2	13	11.6	3	2.7	1	0.9	43	38.4%	
31-35 years	10	8.9	6	5.3	3	2.7	2	1.8	21	18.7%	
Above 35 years	4	3.6	5	4.5	0	0	1	0.9	10	8.9%	
Total	61	54.5	40	35.7	07	6.2	04	3.6	112	100%	
Primigravida	8	7.1	8	7.1	2	1.8	0	0	18	16.1%	
Second gravida	20	17.8	15	13.4	3	2.7	1	0.9	39	34.8%	
Third gravida	18	17.1	9	8.1	0	0	3	2.7	30	26.8%	
Fourth gravida	11	9.8	6	5.3	0	0	0	0	17	15.2%	
Fifth gravida or more	4	3.6	2	1.8	2	1.8	0	0	8	7.1%	
Total	61	54.5	40	35.7	7	6.2	4	3.6	112	100%	

Table 2: Socio-Economic status according to modified Kuppuswamy scale.

Socio-Economic status	No of women	Percentage
Upper	05	4.5%
Upper middle	09	8.0%
Lower middle	24	21.4%
Upper lower	31	27.7%
Lower	43	38.4%
Total	112	100%

Table 3: Past uterine operation and obstetrics history in relation to present study cases.

Past obstetric history and uterine operation	Placenta praevia (n=61)	Abruptio placentae (n=40)	Undetermined (n=7)	Others (n=4)
Caesarean section	11 (18.1%)	3 (7.5%)	0	02(50%)
Ante Partum Haemorrhage	2 (3.3%)	0	0	01(25%)
Myomectomy	1 (1.6%)	0	0	0
Intrauterine Foetal Death	1 (1.6%)	2 (5%)	0	0
Abortion Induced and Spontaneous	Required Uterine Curettage	5 (8.2%)	2 (5%)	0
	Not Required uterine Curettage	1 (1.6%)	0	0
Manual Removal of placenta	1 (1.6%)	0	0	0
Total	22(36.06%)	07 (6.25%)	0	03

Table 4: Mode of treatment given to the different types of third trimester bleeding p/v cases

Treatment given	Placenta praevia (n=61)	Abruptio placentae (n=40)	Undetermined (n=7)	Others (n=4)	Chi-squared test and P value
Spontaneous Vaginal delivery	3(4.9%)	9(22.5%)	1(14.3%)	3(75%)	χ^2 : 46.3820 DF: 12 P < 0.0001
Vaginal delivery following ARM	46.5%	13(32.5%)	4 (57.1%)	0	
Oxytocin drip					
Instrumental delivery	0	2(5%)	0	0	
Caesarean section	53(47.3%)	16(40%)	2(28.6%)	1(25%)	
Hysterectomy	1(1.6%)	0	0	0	
Total	61	40	07	04	

Table 5: Foeto-maternal complications according to different types of antepartum haemorrhages:

Categories	No Birth Asphyxia (Apgar at 5 min in between 7-10)	Mild asphyxia (Apgar at 5 min in between 4-6)	Severe asphyxia (Apgar at 5 min in between 0-3)	Still Birth	Total	χ^2 test, P value
Placenta praevia >>	55 (48.2%)	4 (3.5%)	3 (2.6%)	1 (0.9%)	63 (55.3%)	χ^2 : 29.7204 DF: 9 P=0.005
Abruptio placentae	19 (16.7%)	14 (12.3%)	6 (5.3%)	1 (0.9%)	40 (35.1%)	
Undetermined group	6 (5.3%)	1 (0.9%)	0 (0%)	0 (0%)	7 (6.1%)	
Others	2 (1.7%)	1 (0.9%)	0 (0%)	1 (0.9%)	4 (3.5%)	
Total (n=114)	82 (71.9%)	20 (17.5%)	9 (7.9%)	3 (2.6%)	114 (100%)	
Perinatal complication n=114				Maternal complication n=112		
Sepsis		8 (7%)		Post-partum haemorrhage	11 (9.8%)	
Convulsion		2 (1.7%)		Retained placenta	3 (2.7%)	
Respiratory distress syndrome		4 (3.5%)		Puerperal Infection	9 (8%)	
Jaundice		16 (14%)		Coagulation failure	1 (0.9%)	
Diarrhoea		1 (0.9%)		Renal failure	1 (0.9%)	
Early neonatal death		4 (3.5%)		Maternal Death	1 (0.9%)	

[¥ Multiple findings of a single patient taken in this above table, >> there was two twin baby present in placenta praevia]

variety were 76.8%, 20.5% and 2.7% respectively. In their study, incidences of placenta praevia was slightly more than finding of our study.

In another study, conducted by Majumder et al³ it was also found that 26-30 years' age group was most commonly affected age group of APH in their study.

In the present study, according to parity most commonly affected group of antepartum haemorrhage were 39/112 (34.8%) women from second gravida of which placenta praevia and abruptio placentae were 20/112 (17.8%) and 15/112 (13.4%) respectively.

A study conducted by Patvekar et al¹⁰ found placenta praevia, abruptio placentae and indeterminate type were 29%, 66% and 5% respectively. In their study, incidences were differing from our study, which may be due to different geographical locations of study.

A study reported by Majumder et al³ found 66% APH were placenta praevia, of which 12% were primigravida, 48% were 2-4th gravida and 6% were from 5th gravida onwards. In the same study, it was also found that 34% of APH were from abruptio placentae and within these 6% were primigravida, 23% were 2-4th gravida and 5% were from 5th gravida or more. In their study, there were increased preponderance of APH of both categories towards higher parity. Their findings were consistent with our study findings.

In our study, according to updated Kuppaswamy scale for 2007,⁹ socio-economic status of the women was classified into five groups. Highest number 43 (38.4%) of women were from lower socio economic status.

On literature review, it was seen that there was paucity of data on socio economic status of women with APH. A

study conducted by Mukherjee S et al¹¹ found two-third of women with abruptio placentae were more in upper lower (112/318) and lower (102/318) socioeconomic status.

In the present study, prior history of caesarean section, APH, myomectomy and IUFD were present in 11/61 (18.1%), 2/61 (3.3%), 1/61 (1.6%) and 1/61 (1.6%) women of placenta praevia respectively and in abruptio placentae 3/40 (7.5%), and 2/40 (5%) had a history of caesarean section and IUFD respectively.

A study conducted by Ayushma J et al¹² found 21% of women with APH had prior history of caesarean section in their study group. In another study reported by Patvekar M et al,¹⁰ 17.3% and 34.7% of women with placenta praevia had a past history of caesarean section and abortion with curettage respectively. Their study findings were quite similar to our study finding.

In our study group, spontaneous vaginal delivery, vaginal delivery after labour induction by ARM and oxytocin, instrumental delivery by using ventouse and caesarean section were 3/61(4.9%), 4/61 (6.5%), 0/61(0%), 53/61 (47.3%) respectively, and within the women with placenta praevia the corresponding figures were 9/40 (22.5%), 13/40 (32.5%), 2/40 (5%) and 16/40 (40%) respectively and in abruptio placentae and in the undetermined group of APH, the figures were 1/7(14.3%), 4/7 (57.1%), 0/7 (0%), 2/7 (28.6%) respectively. Only one obstetric hysterectomy was required in a woman of central placenta praevia with severe postpartum haemorrhage. Mode of treatment according to different type of APH was highly significant ($p < 0.01$) found.

In the present study, two women of twin pregnancy were associated with placenta praevia, so there was 63 new-born present among the 61 women of placenta praevia. Twin gestation is associated with larger placental site for which there was more chances of placenta encroaching the lower uterine segments easily and leading to increased incidence of placenta praevia said by Strong TH and Brar HS.¹³ In their study, majority of placenta praevia (86.9%) were terminated by caesarean section and abruptio placentae was mostly delivered vaginally of which spontaneous vaginal delivery 9 (22.5%) and labour induction by ARM followed by oxytocin drip were 13 (32.5%). Most of the women of the undetermined origin were also delivered vaginally.

The study conducted by Wasnik SK et al² found, rate of caesarean section was 90% in their APH group. In a similar study, reported by Lankoande M et al,¹⁴ it was found rate of caesarean section in placenta praevia and abruptio placentae (i.e. retro placental hematoma) were 56.9%, 43.1% and vaginal birth in placenta praevia and abruptio placentae were 66.6%, 33.4% respectively. Their finding was very similar to finding of our study. Another study reported by Senkoro EES et al¹⁵ found that women with placenta praevia had tenfold higher odds of caesarean delivery. These

findings were also consistent with our study findings.

In another study, Patil Y et al¹⁶ reported that emergency caesarean section, elective caesarean section and vaginal delivery of placenta praevia were 55%, 30%,15% respectively, in abruptio placentae it was 50%, 40%, 10% and undetermined type it was 58%, 35% and 7% respectively. The mode of delivery in their study was found significant (<0.05).

In our study, postpartum haemorrhage, retained placenta, puerperal infection, coagulation failure following complication of disseminated coagulation (DIC), acute renal failure was 11/112 (9.8%), 3/112 (2.7%), 9/112 (8%), 1(0.9%) and 1/112 (0.9%) respectively with one (0.9%) maternal death of a woman with placental abruption.

Another study, conducted by Singhal S et al⁶ reported that caesarean section, postpartum haemorrhage, coagulation failure and maternal mortality were 43.8%, 21.8%, 3.8% and 2.2% respectively in their similar study.

In another study, conducted by Majumder S et al³ it was found that caesarean section, postpartum haemorrhage, retained placenta, coagulation failure due to DIC were 66%, 2%, 1%, 2% respectively but without any maternal death. Most of the figures were similar to our study.

Outcome of pregnancy with APH were considered as increased foetomaternal complications. In our study, mild asphyxia and severe asphyxia of new-born distinguished by Apgar score of 4-6 and 0-3 respectively. Among the women of APH, mild asphyxia was present in 20 (17.5%) of which 14 (12.3%) was from abruptio placentae and severe asphyxia was present in 9 (7.9%) women of APH in which 6 (5.3%) were from placental abruption. Total 03 (2.6%) still birth was present in our study. Distribution of babies according to Apgar score were highly significant ($p < 0.01$).

A study conducted by Wasnik SK et al² found birth asphyxia was 16% in their similar study, though their figure was a little lower than that of our study figure. Birth asphyxia was more common in our study, may be due to our adoption of stringent diagnostic criteria to select asphyxia in new-born.

In our study, perinatal complications of sepsis, convulsion, respiratory distress, jaundice and early neonatal death were found in 8 (7%), 2 (1.7%), 4(4%), 16 (14%), 1 (8.8%) and 4 (3.5%) within delivered new-born of APH respectively.

A study conducted by Yadav MC et al⁴ found neonatal jaundice was present in 26.8% of APH but among the women of placenta praevia it was present in each (30/30) new-born. Their findings were contradictory with the finding of our study, that may be due to study conducted in different geographical locations, or may be due to there was small sample size.

In another study reported by Sharmila G et al¹ it was found that still birth and neonatal death were 31.37% and 5.8% respectively. Their neonatal death rate was almost

similar to our study but still birth rate of our study was relatively lower, that may be due to availability of better obstetrical care.

5. Conclusion

Vaginal bleeding during third trimester of pregnancy may lead to grave consequences of women's life. From our study, we found that risk of APH increased with past history of uterine operations and rate of caesarean delivery with adverse foetomaternal outcomes was also increased in the women with APH. But it may be concluded that regular antenatal care, identifying the major degree of APH to provide care in tertiary care hospital and also availability of neonatal intensive care is required for better outcome.

6. Authors' contributions

All author exclusively contributed in this work and read and approved the final manuscript.

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8. Conflict of Interest

The authors declare they have no conflict of interest.

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