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Proportion and Early Maternal Results in Teen Primegravida Presenting in Active First Stage of Labor: A Cross-Sectional Analysis at Tanzania's Iringa Regional Referral Hospital

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Abstract:

- ***Background:***

Teen pregnancy is connected with a high prevalence of problems for both the mother and the fetus. Teenage pregnancies are estimated to be between 8 and 25% in developing nations due to child marriages. The study's goal was to determine the amplitude and immediate obstetric outcomes of teenage primigravidae who arrived at Iringa Regional Referral Hospital in the active first stage of labor.

- ***Methodology:***

The research investigation involved a healthcare-based cross-sectional survey with prospective follow-up, with 210 teenage Primegravida (11–19 years) participating. To achieve the needed information, data were gathered using a pretested checklist. The data were analyzed using Statistical Package for Social Sciences (SPSS) version 23.0.

- ***Results:***

About 1921 deliveries in the health facility in the course of the study period. Out of the 1921 population, 210 (10.9%) were teenage Primegravida. 137 (65.2%) babies were born spontaneously through the vagina. The maternal issues noted were perianal tears (32.4%), PPH (4.8%), and the cervical tear (3.3%). The identified pregnancy concerns comprise low Apgar score (<7) (9.5%), low birth weight (6.7%), 15.7% neonates requiring NICU hospitalization, and 4.3% neonatal mortality.

- ***Conclusion:***

The increased incidence and harmful outcomes seen in teenage Primegravida in this study might be linked to their poor education level and single status. This demands deliberate and continuing efforts to address the issue, as well as education on teenage pregnancy prevention, in order to reduce adolescent pregnancy and its complications.

Keywords: *Immediately Outcome, Obstetrics, Teenage, and Prime Gravida.*

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I. INTRODUCTION

According to World Health Organization teenage is the transition from childhood to adulthood which occurs at around period between 10- 19 years and it is the time where there are a lot of psychosocial, mental, structural and functional changes that occur to prepare a girl for taking the responsibility of adulthood (1). If a girl becomes pregnant at this critical moment of growth there is likelihood of undesired outcomes and therefore there is a need to address the teenage pregnancy as it is associated with a lot of complication to the mother and the new born.

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Teens below the age of 20 years they can conceive as early few weeks before starting normal menstruation (1). Pregnancy in teenage in the world is considered as one of the most serious health, economic and social problem of public importance and one of the high risk pregnancy although the outcome is less satisfactory than of the pregnancy in general population (1).

In high income countries like Italy and Spain, there is low rate of teenage pregnancy about 6 births per 1000 women below 20 years and this may be accounted by social stigma and this explains about the low rate of abortion among teenage (2). Again some incidence of teenage pregnancy reported from various countries like United States of America 22%, Great Britain 15%, Canada 11%, France 6% and Sweden 4% (3). There is decline in teenage pregnancy rates in United States of America and this appears to be following the patterns observed in other developed countries, where improved contraceptive use has been the primary determinant of declining rates (4). In India, the studies show that about 16% of women, aged 15-19 years, have already started childbearing (5)

Some studies show that, teenage pregnancy is more in developing countries where about two thousand girls under 18 years of age give birth each day (3). This can be explained by the fact that majority of the girls are married before they turn 18 years (6).

It has found that about 1 in 3 teenage becomes pregnant and about more than half of all teenage births occur most in the countries like Democratic Republic of Congo, Ethiopia and Nigeria and it is becoming a major problem of public health importance (8). Some studies show that, teenage pregnancy is more in developing countries where about two thousand girls under 18 years of age give birth each day (3). This can be explained by the fact that majority of the girls are married before they turn 18 years (6).

During review of literature it was found that in developing countries there are many problems apart from teenage pregnancy itself which may lead to failure of utilization of antenatal care (8). These problems include lack of resources, contraceptives, reproductive advice inaccessible and also religious beliefs that disapprove of artificial birth control methods (8).

Pregnancy during adolescence is a high-risk pregnancy since it is connected with a high frequency of problems to the mother and fetus such as preterm delivery, low birth weight, cervical tear, and postpartum hemorrhage (9). These complications are thought to be due to immaturity of the teenage mothers physically (10).

Teenage pregnancy is an issue of public health importance because teenagers make about one fifth of the whole population (11). In impoverished nations, the incidence of adolescent pregnancies ranges between 8-25%, which can be explained by child marriages. For example, in Nigeria, it ranges from 1.7% to 11.8% (12).

It is estimated that the rate of teenage pregnancy in developing countries is found to be 20-times higher than that in developed countries and are at higher risk than their older counterparts (13). In sub-Saharan African the rates of teenage pregnancy range from 143 per 1000 and in countries like Nigeria, the incidence of teenage pregnancy ranges from 1.7% to 11.8% (14).

In Tanzania the incidence of teenage pregnancies is very high for example in one community based study done in Mtwara showed that about 600 cases of teenage pregnancies are reported every year (15,16) and this can be explained by poverty leading to early marriage (17,18). Another study done in Morogoro showed that the incidence of teenage pregnancies is 17.8% (19). In a study done at Muhimbili national hospital showed that the incidence of teenage pregnancy is 2.5% (20). The most common complication of the teenage pregnancies include cervical tear, postpartum hemorrhage, asphyxia and low birth weight to mother and fetus respectively (20).

Pregnancy during teenage is associated with a lot of obstetric complications as shown by some studies done (9,21). Many studies show that teenage Primegravida get complications like postpartum haemorrhage, cervical tear, and foetal complications include low birth weight and asphyxia. These complications largely depend on the age of the teenage (1,13,22–24).

In Tanzania the findings are limited but the incidence of teenage pregnancies is very high for example in one community based study done in Mtwara showed that about 600 cases of teenage pregnancies are reported every year (15). Another study done in Dar es Salaam found that the prevalence of teenage pregnancy is 2.6% and the most common maternal complications are cervical tear and PPH (25).

The information on the immediate obstetric outcomes among the teenage Primegravida are limited in our setting since the available studies were based on the prevalence of teenage pregnancy (19). This study was done to try to fill the gap of our awareness and knowledge on teenage Primegravida and associated complications in hospital setting. Also there are no published studies done at Iringa regional referral hospital and so the need of the study.

II. METHODOLOGY

- *Study Design*

From February to May 2018, a hospital-based descriptive cross-sectional study was conducted at the Iringa Regional Referral Hospital labor ward to investigate Proportion and Early Results in Teen Primegravida Presenting in Active First Stage of Labor.

- *Study Area*

The study was carried out at the labor ward of the Obstetrics and Gynaecology department at Iringa Regional Referral Hospital in Tanzania's Southern Highlands. The region has a total physical size of approximately 35,743

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square kilometres. It is split into four administrative districts; Iringa Municipal Council, Kilolo District Council, and Mufindi District Council. In 2012, the region's population was 941,238, with 452,052 males and 489,186 women (26). The region is bordered to the north by Singida and Dodoma, to the south by Njombe, to the east by Morogoro and to the west by Mbeya.

Iringa Regional Referral Hospital has a bed capacity of 445, with 377 actual beds, of which 47 are obstetrics beds. The obstetrics section employs one specialist, one medical doctor, three assistant medical officers, 51 nurses, and 8 cleaners. Anaesthetists perform neonatal resuscitation. The total number of patients admitted in 2017 was 50,394. Pregnant women delivered 5979 times, with 3500 Caesarean sections (58.54%) and 2479 SVDs (41.46%). The overall number of maternal death rates was 24; this was according hospital data 2017.

➢ *Study Population*

The study population included all women who delivered at Iringa Regional Referral Hospital during the study period. Women who gave birth between February and May 2018 were included in the study; however obstetric outcomes and social demographic information were only collected for teenage Primegravida, while women with medical issues such as mental illness were omitted.

➢ *Sample Size Calculation and Sampling Technique*

The sample size was calculated using the formula as used by Leslie Kish.

$N = z^2 * p(1-p)/d^2$

Where

N=desired sample size

z= the standard normal deviate, set at 1.96 which corresponds to the 95% confidence limit.

p= Expected population proportion of teenage Primegravida delivery 11.6% (27)

1-p = proportion of people without complications 88.4%

d =Margin of error (5%).

So, 157 was the minimum sample size. Purposive sampling was used to pick Iringa Regional Referral Hospital from among other hospitals in Iringa in the municipality. All pregnant women were then purposefully chosen based on the study's inclusion criteria. The teenage Primegravida data was recorded.

➢ *Data Collection Procedure and Instrument Used*

A systematic questionnaire was used to collect the data. The total number of births each day was recorded from the beginning to the end of the study. The partograph was used to acquire and record the needed information from the Primegravida, such as her age, last regular menstrual period, projected delivery date, and residence. A medical examination of the mother and fetus revealed cervical and perianal injuries, an Apgar score, and other problems. A low Apgar score was defined as a value less than 7 after five minutes. Postpartum hemorrhage was identified in women who had vaginal delivery and lost 500 ml or more of blood, or 1000 ml if they had a cesarean birth. Pens, pencils, and rubbers are also used to capture data.

➢ *Data Management and Analysis*

The data collected was analyzed using SPSS version 23. Categorical variables were summarized as proportions and percentages. The numerical data were reported as means, medians, and standard deviations. The connection between fetal and maternal outcomes was shown to be substantial ($p<0.05$) using chi-square analysis.

➢ *Ethical Consideration*

The University of Dodoma and other authorities at Iringa Regional Referral Hospital provided clearance. Respondents provided informed consent, and confidentiality was ensured and preserved at all levels, with no identities recorded. The approach used for data collecting did not damage the subjects, and the information gained was only used for research purposes. Additionally, advice and counseling were provided.

III. RESULTS

➢ *Demographic Features of Study Participants*

During the study period, which ran from February to May 2018, there were 1921 deliveries, with 210 of them being teenage Primegravida whose information was recorded. The age range for teenage Primegravida was 11 to 19 years, with a mean of 17 and a standard deviation of 1.3 years. The age group between 18 and 19 years had a considerable number of participants, with 137 (65.2%); 149 (71%) of the teenage Primegravida were unmarried; the bulk of them are primary school leavers, 147 (70.0%); and roughly 149 (66.2%) are from rural areas.

Table 1 Demographic Characteristics of Study Participants (N= 210)

Variable	Frequency	Percent
Age Group		
11-14	6	2.9
15-17	67	31.9
18-19	137	65.2
Marital Status		
Single	149	71.0

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Married	61	29.0
Education Level		
Primary	147	70.0
Secondary	62	29.5
College/University	1	0.5
Residence		
Urban	71	33.8
Rural	149	66.2
Gestation Age		
Preterm	11	5.3
Term	192	91.4
Post term	7	3.3

➢ *Prevalence of Teenage Primegravida N = 1921*

During the study, 210 (10.9%) of the 1921 births were made by teenage Primegravida at the Iringa regional referral hospital. During the trial, another 1711 (89.1%) non-teenage Primegravida participated.

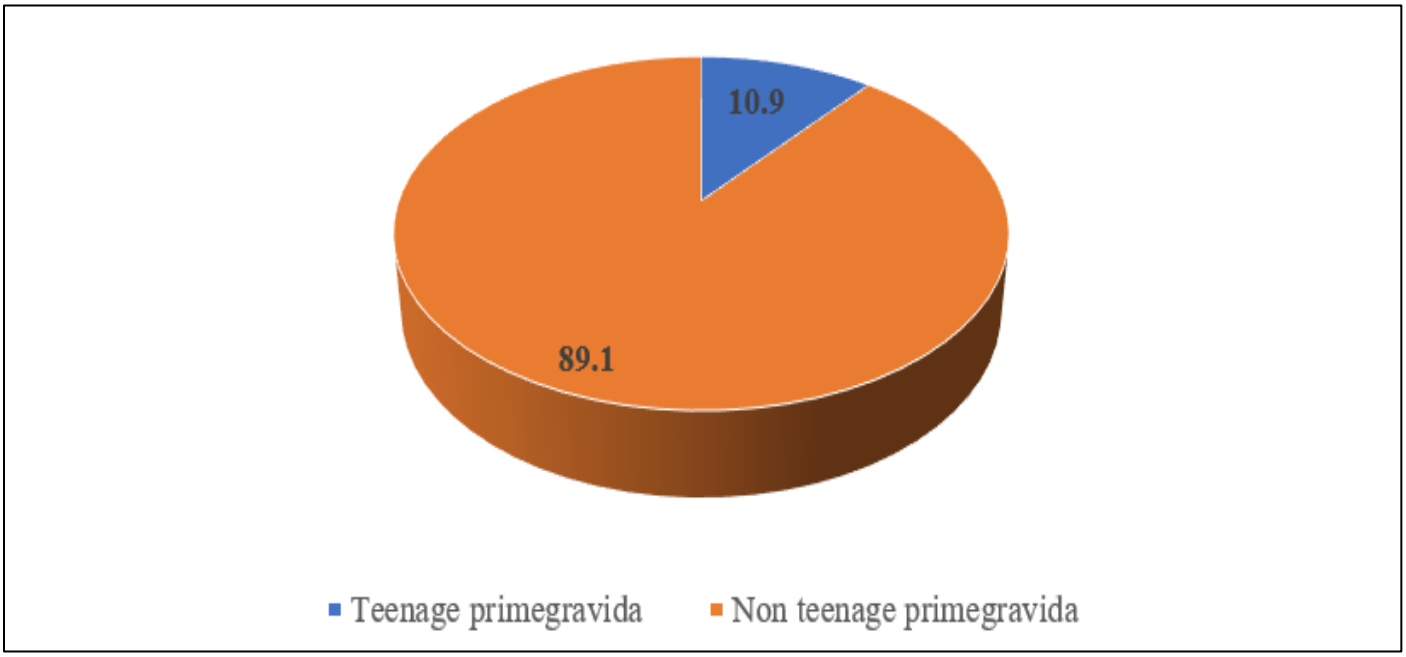

Fig 1 Prevalence of Teenage Pregnant Women Delivering IRRH

➢ *Mode of Delivery of Teenage Primegravida Involved in the Study*

The majority of the teenage Primegravida 137 (65.2%) had spontaneous delivered, and 73 (34.8%) via caesarean delivery (p = 0.635).

Table 2 Mode of Delivery Among Adolescent Primegravida Hospitalized in Active First Stage of Labor at Iringa Regional Referral Hospital (N=210)

Variables	age group (In years)			Total	p value
	11-14	15-17	18-19		
Mode of delivery					
SVD	4 (66.7%)	45 (67.2%)	88 (64.2%)	137 (65.2%)	0.635
C/section	2 (33.3%)	22 (32.8%)	49 (35.8%)	73 (34.8%)	0.635

➢ *Maternal Outcomes of Teen Primegravida Participants in the Study*

Less than half of the teens in the study experienced problems (85, 40.5%), with perianal tear (68, 32.4%), PPH (10, 4.8%), and cervical tear (7, 3.3%) being observed in teenage primigravidae. Perianal tear 68 (32.4%) was higher in the 18-19 age group, while postpartum hemorrhage 5 (7.5%) and cervical tear 5 (3.6%) were higher in the 15-17 age group.

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Table 3 Maternal Outcomes of Teen Primegravida Women Delivering at Iringa Regional Referral Hospital (N=210)

Complications		age group (In years)			Total
		11-14	15-17	18-19	
PPH	Yes	0 (0.0%)	5 (7.5%)	5 (3.6%)	10 (4.8%)
	No	6 (100.0%)	62 (82.5%)	132 (96.4%)	200 (95.2%)
Cervical tear	Yes	0 (0.0%)	2 (3.0%)	5 (3.6%)	7 (3.3%)
	No	6 (100.0%)	65 (97.0%)	132 (96.4%)	203 (96.7%)
Perineal tear	Yes	2 (33.3%)	20 (29.9%)	46 (33.6%)	68 (32.4%)
	No	4 (66.7%)	47 (70.1%)	91 (66.4%)	142(67.6%)

➢ *Fetal Outcomes in Teenage Prime Gravida*

In the study, 20 (9.5%) of the babies born by teen primigravidae had low APGAR scores, with a large proportion of low APGAR scores in the age group 15-17 years (8, 11.9%). All 6 (100.0%) fetuses born by teens aged 11-14 years had APGAR scores > 7. The overall requirement for neonatal admission was 33 (15.7%), with a high rate of 15 (22.4%), particularly among those aged 15 to 17. The total immediate death rate of neonates of teen Primegravida participants in the trial at Iringa Regional Referral Hospital was 9 (4.3%), with a high rate of 6 (9.0%) in the 15-17 year age group.

Furthermore, 14 (6.7%) of the babies born to teen Primegravida women during the study had low birth weight, whereas 23 (11.0%) had birth weights greater than 3500 g. A significant proportion of 7 (10.4%) of low birth weight was discovered in fetuses born to teenagers aged 15 to 17.

Table 4 Fetal Outcomes of Teen Primegravida Women Delivering at IRRH (N=210)

Complications	age group (In years)			Total
	11-14	15-17	18-19	
APGAR SCORE				
<7	0 (0.0%)	8 (11.9%)	12 (8.8%)	20 (9.5%)
>7	6 (100.0%)	59 (88.1%)	125 (91.2%)	190 (90.5%)
BIRTH WEIGHT				
Low BWT	0 (0.0%)	7 (10.4%)	7 (5.1.0%)	14 (6.7%)
Normal BWT	6 (100.0%)	52 (77.6%)	115 (83.9%)	173 (82.3%)
Big baby	0 (0.0%)	8 (11.9%)	15 (10.9%)	23 (11.0%)
NEED NICU				
Yes	0 (0.0%)	15 (22.4%)	18 (13.1%)	33 (15.7%)
No	6 (100.0%)	52 (77.6%)	119 (86.9%)	177 (84.3%)
NEONATAL DEATH				
Yes	0 (0.0%)	6 (9.0%)	3 (2.2%)	9 (4.3%)
No	6 (100.0%)	61 (91.0%)	134 (97.8%)	201 (95.7%)

➢ *Comparison of Fetal-Maternal Outcomes in Teenage Prime Gravida Aged 11-17 and 18-19 Years.*

The age group of 18-19 years was shown to have greater maternal and fetal problems than the age group of 11-17 years; however the difference was not statistically significant (p > 0.05).

Table 5 Comparison of Feto-Maternal Outcomes of Teenage Primegravida Aged Between 11-17 and 18-19 Years at Iringa Regional Referral Hospital (N=210)

Outcomes		age group (In years)		OR (95% CI)	p value
		11-17	18-19		
Maternal					
Cervical tear	Yes	2 (2.7%)	5 (3.6%)	0.7(0.54_6.9)	0.537
	No	71 (97.3%)	132 (96.4%)		
Perineal tear	Yes	22 (30.1%)	46 (33.6%)	0.8(0.5_1.6)	0.612
	No	51 (69.9%)	91 (66.4%)		
PPH	Yes	5 (6.8%)	5 (3.6%)	1.9(0.5_6.9)	0.300
	No	68 (93.2%)	132 (96.4%)		
FETAL					
Low APGAR score (<7)	Yes	8 (11.0%)	12 (8.8%)	0.8(0.3_2.0)	0.605
	No	65 (89.0%)	125 (91.2%)		
Low birth weight	Yes	7 (9.6%)	7 (5.1%)	1.9(0.7_5.9)	0.250
	No	66 (90.4%)	130 (94.9%)		
Neonatal death	Yes	6 (8.2%)	3 (2.2%)	4.0(1.0_16.5)	0.068
	No	67 (91.8%)	134 (97.8%)		

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IV. DISCUSSION

During this time, the prevalence of teenage Primegravida who delivered at Iringa Regional Referral Hospital was 10.9%, which means that there are 100 teenage Primegravida deliveries for every 1000 women who deliver at Iringa Regional Referral Hospital. This conclusion is consistent with the findings of a study conducted at SDM Medical College Dharwad, which reported a 10.3% prevalence of teenage pregnancy(12). Our findings are slightly higher than those of studies conducted in Nepal and the United States, which found that the prevalence of teenage pregnancy was 9.7% and 8.75%, respectively (9,28). On the other hand, our findings are higher than those obtained in studies conducted at Omdurman Maternity Hospital in Sudan, Dar es Salaam at Muhimbili National Hospital in Denmark, Nigeria, and Kuala Lumpur in Malaysia, which found that the prevalence of adolescent pregnancy was 4.3%, 2.6%, 1.8%, 1.7%, and 1.1%. (Ezegwui et al., 2012; Mahgoub 2005; Muganyizi & Balandya 2013; Sulaiman et al. 2013; Ugianskiene et al. 2015).

According to the current study, 65.2% of teenagers gave birth spontaneously, while 34.8% had a cesarean section. The findings are congruent with those from a research conducted in Rome, where only 32.2% of teenagers underwent cesarean delivery. (13). Teenagers aged 11-14 years had a higher rate of spontaneous vaginal delivery than teenagers aged 18-19 years (66.7% vs 65.2%), although the difference was not statistically significant. Similar findings were seen in studies conducted in Niger and Bengal, which revealed that 66.2% and 65.7% of teenagers delivered spontaneously vaginally and by cesarean section, respectively. (6,30). The current study discovered that problems among teenage Primegravida include 4.8% postpartum hemorrhage, 3.3% cervical tear, and 32.6% perianal tear. Perianal tears were found to be the most prevalent complication in all teenage Primegravida, independent of age group. In the teenage age group of 18 to 19 years, perianal tear was shown to be the major complication, with additional problems in low rates such as PPH 3.6% and cervical tear (3.6%), however it was not statistically significant ($p > 0.05$). Unlike the study conducted in Denmark, which found that acute maternal problems include 52.8% perineal tear and 16% postpartum hemorrhage (29).

The current study discovered that there was no immediate maternal death among teens, which is comparable with a study conducted in Nigeria, which revealed no maternal death among teenage pregnant women. (10) unlike the study done in India where 2.5% of teenage pregnant women died immediately after delivery (31). The use of prenatal clinics, early arrival at health facilities among teenage Primegravida, and close monitoring of labor progress all contribute significantly to the lower rate of immediate maternal deaths and may be the causes for the results obtained. Furthermore, the use of health services among pregnant women in our setting is increasing, particularly in towns.

The study indicated that immediate fetal problems include 9.5% poor APGAR score (<7), 6.7% low birth weight, 15.7% needing Neonatal Intensive Care Unit hospitalization, and 4.3% dying soon after birth. Fetuses born to teens aged 18-19 years had 5.1% lower birth weight, 8.8% lower APGAR score, and 2.2% neonatal death than fetuses born to teenagers aged 11-14 years, who did not have any difficulties, however the data were not statistically significant ($p > 0.05$). The current study's findings are close to those from a study conducted in Bengal, where 5.1% of neonates died within 24 hours following delivery (22)

Other studies found higher incidence of prenatal problems, such as one conducted in India, which revealed a high rate of neonatal death: 10% of babies born to teenagers died shortly after birth. (31) While some studies revealed modest rates of fetal problems, such as the one conducted in the United States of America, which discovered that 9.7% of newborns had low birth weight and 2.0% had low APGAR scores (<7) (28).

- *Strength of the Study*

The study used a high sample size (n=210) to represent the study population. The research questions were answered by the research results. The findings reveal rapid obstetric outcomes for teenager Primegravida who arrive at Iringa Regional Referral Hospital's labor unit in the initial stage of labor.

V. CONCLUSION AND RECOMMENDATION

This study discovered that teenage Primegravida was quite common in the study population and was related with an elevated risk of unfavorable maternal and newborn outcomes. These findings may be influenced by socio-demographic factors such as low education level and unmarried status. The findings show the importance of targeted interventions to improve maternal and infant health among adolescent moms.

To reduce teenage pregnancies and increase early antenatal care use, adolescent-friendly family planning services must be strengthened and comprehensive health education provided. Furthermore, strengthening intrapartum surveillance, training healthcare providers in obstetric and neonatal care, and assuring the availability of well-equipped neonatal care facilities are crucial to decreasing complications and improving maternal and newborn outcomes.

- *Ethical Considerations*

The hospital's administration approved the trial, and the University of Dodoma gave ethical clearance. Respondents gave their consent and were aware of their freedom to withdraw from the study with no penalty.

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- Contributions from the authors. SMM carried out the research, analyzed the data, and authored the manuscript. ALM reviewed and guided the research development, analysis, and publication preparation processes. The final manuscript has been approved by all authors.

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