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The Incidence and Causes of Maternal Near Miss in a Pandemic at Georgetown Public Hospital Corporation

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ABSTRACT

Objective: This article determines the incidence, causes and socio-demographics factors of Maternal Near Miss at GPHC from June 1, 2021 to December 31, 2021.

Design and Method: A retrospective descriptive chart review was conducted during a seven-month period from June 1st, 2021 to December 31st, 2021 of all the pregnant patients who had suffered a Maternal Near Miss. A purposive sampling technique was employed in this study. Eligible patients were identified using a modified World Health Organization Maternal Near Miss criterion that Guyana has implemented. The data was collected and analyzed in an Excel format.

Results: There were a total of 4636 admissions during the study period with 2984 live births and 32 maternal near misses which accounted for 0.7% of all births. The Maternal Near Miss incidence ratio was 10.7 MNM/LB which indicates that for every 1000 live births there were 11 maternal near misses. There was a total of 9 maternal deaths that occurred during the study period. The Maternal Near Miss to Mortality Ratio was 32:9, resulting in a proportion of 3.5 MNM per MD. The primary causes of maternal near misses in the patients in this study were: obstetric hemorrhage, hypertensive disorder, ectopic or abortion and infection. Anemia was the main secondary cause of maternal near misses and ICU admissions.

Conclusion: The maternal near miss ratio in this research was slightly lower (10.7MNM/LB) than the study conducted at GPHC in 2019, which recorded a maternal near miss of 12.7 MNM/LB. There was an increase in obstetrical hemorrhage and a decrease in Hypertensive disorders which were main indications of MNM. This study discovered that for every maternal death, 4 mothers were saved whereas the 2019 study revealed 5 mothers were saved. It can be concluded that MNM rates remained stable during the pandemic compared to pre-pandemic period.

Keywords: Maternal Near Miss, Pandemic, Georgetown Public Hospital Corporation, GPHC

INTRODUCTION

Maternal health can be defined as the wellbeing of a pregnant woman during the various trimesters, childbirth and postpartum period. [1]Prevention of maternal death and reducing maternal morbidity is a challenge faced globally by many of the low- and middle-income countries. While there has been a significant decrease in maternal mortality over the last decade, it still remains an area of concern for the health sector globally.

The legacy of auditing maternal mortality is the key in the identifying the etiology of the deficits in maternal care. There is a higher frequency of Maternal Near Misses (MNM) compared to maternal death, as such significant attention needs to be placed on monitoring maternal near misses to improve obstetric care.

A Maternal Near Miss is where a woman, who is on the brink of dying, survives a complication that appeared during

pregnancy, childbirth or the postpartum period.[1]MNM has been used in both developed and developing countries to gather valuable information which the health sectors use to prevent maternal death.
In 2019, an MNM study conducted at GPHC demonstrated an incidence of 1%. [9].
There is little to no information on MNM during the novel SARS-Covid-19 pandemic. For this reason, we decided to assess whether the factors may have changed compared to the 2019 study and if our national and global trends have any similarity.
To curb the spread of the novel SARS-Covid-19 virus, many public health measures were put in place. There were transportation restrictions with less persons were attending clinics for fear of contracting the contagious infection. There was a disruption of services offered by health care facilities such as family planning services, antenatal clinic, chronic disease clinic, primary health care services and referral to specialized care institutions. These were all factors that were considered when evaluating the healthcare services during this time.
As a result of above-mentioned circumstantial factors, the primary objective of this study is to determine the incidence and primary causes of maternal near miss while the secondary objective is to identify sociodemographic factors that may have contributed to Maternal Near Miss during the novel SARS-Covid 19 pandemic.
The findings of this study will provide valuable information, raise awareness, and make available new approaches in preventing maternal morbidity and mortality in a future pandemic.

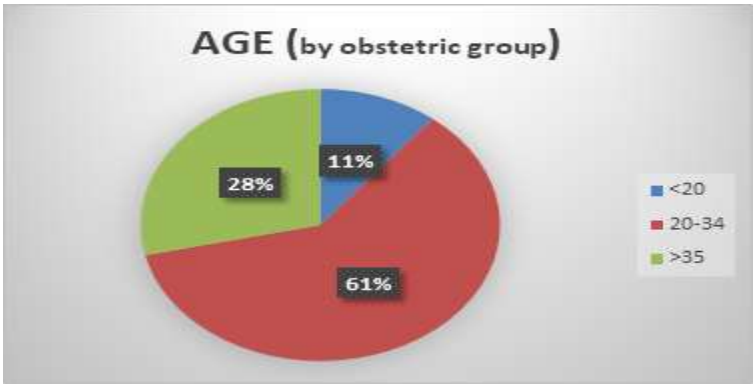
METHODOLOGY

Permission was granted from the Intuitional Review board of the Ministry of Health (Guyana) and the research committee of GPHC. A retrospective descriptive chart review was conducted for a seven-month period from June 1st 2021 to December 31st, 2021, of all the patients who had suffered a Maternal Near Miss.
A purposive sampling technique was employed in this study. All pregnant women who were admitted to the GPHC maternity department and were classified as a Maternal Near Miss were included in the study. Eligible patients were identified using a modified World Health Organization (WHO) Maternal Near Miss criterion that Guyana has implemented. (See annex) Patients who suffered a Maternal Near Miss or had a surgical intervention outside of GPHC and were referred for further management were excluded from this study. The charts were reviewed from the record department. The data collected from the medical records included age, parity, demographic, diagnosis, procedures and intervention done. The extracted data was compiled and analyzed in a Microsoft Excel spreadsheet. The researcher's computer was password protected to prevent data leakage and was kept in a secured location at all times.

RESULTS

There was a total of 4636 admissions during the study period and 2984 live births. There were thirty-two (32) cases of maternal near misses which accounted for 0.7% all births and Maternal Near Miss incidence ratio (MNM IR) of 10.7 MNM/LB. This means that for every 1000 live births there were 11 maternal near misses. During the study period there were a total of 9 maternal deaths that occurred. The Maternal Near Miss to Mortality Ratio was 32:9, resulting in a proportion of 3.5 MNM per MD. This proportion of 3.5 indicates that for every maternal death that occurred 4 (four) mothers were saved from a severe life-threatening condition.
During the study period a total of 32 maternal near miss were identified. However, only 28 charts were available for review.
The median age of the 28 patients reviewed was 26, The highest frequency of MNM occurred in the 20-34 age group with 61%

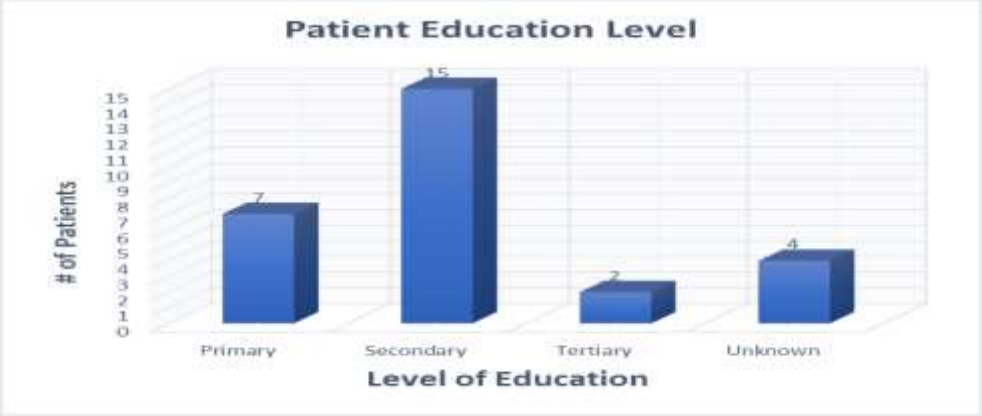
(n=17), followed by >35 years, 28% (n=8) and adolescents, 11% (n=3).



Pie Chart 1: Patient Age Distribution

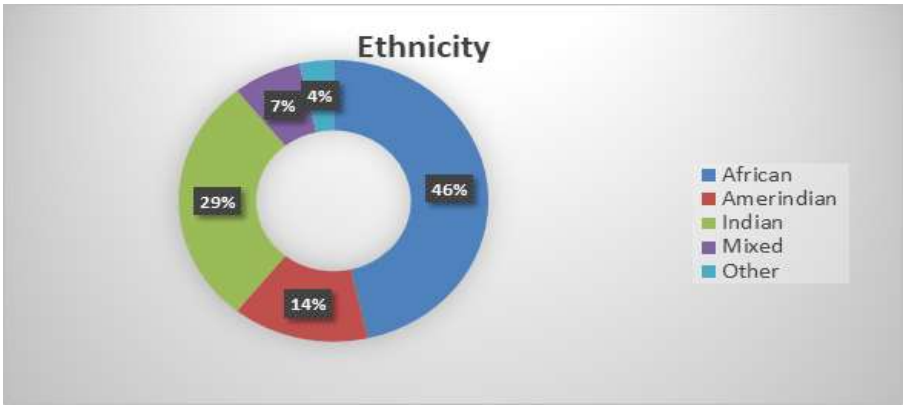
53 % (n=15) of the patients had completed secondary school, 25% (7) had a primary education and 7%(n=2) had a tertiary education.(See Barograph 1).

More than half of the patients 57 % (n=16) were from administrative region four, while 21 % (n=6) of patients were from administrative region 3. There were no maternal near misses from regions 6, 8, 9 and 10 during this time period.



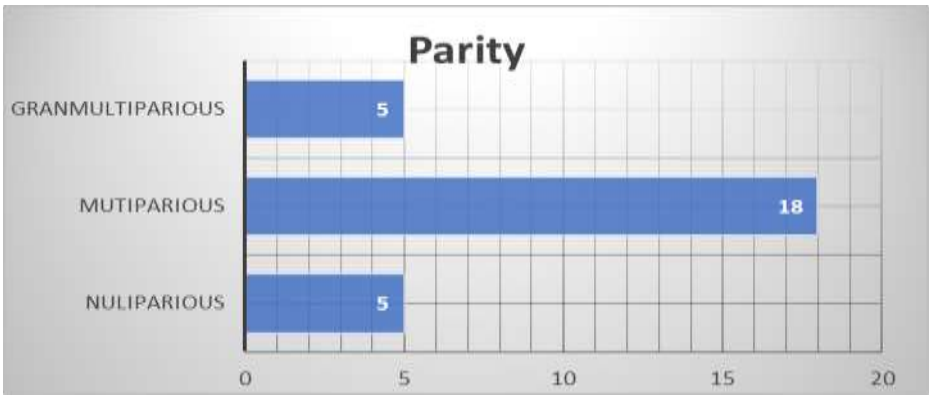
Barograph 1: Level of Education of Patient

The majority of the patients were of Afro-Guyanese ethnicity, accounting for 46% (n=13) of the total cases in this study. This was followed by the Indo-Guyanese ethnicity in 29% (n=8) and Amerindians in 14% (n=4) of the cases. In this study, Venezuelan migrants accounted for 3% (1) of the MNM cases.



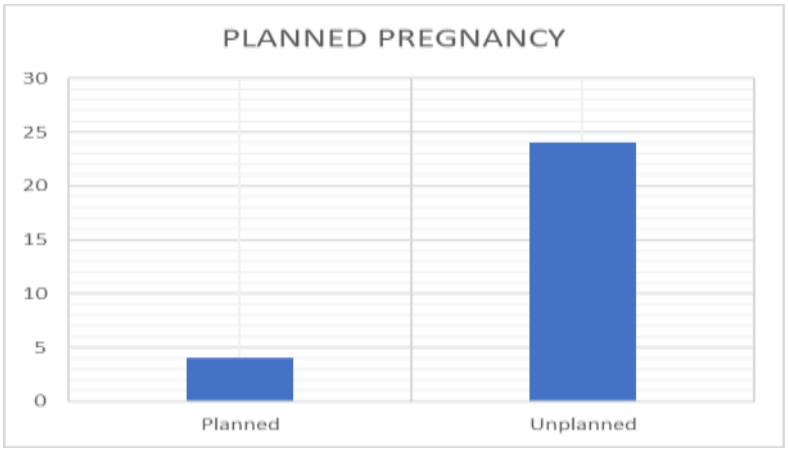
Pie Chart 2: Ethnicity Distribution of Patients

Multiparous and grand multiparous patients had a higher frequency of MNM with total of 82% (n=23) of the total cases. On the other hand, the nulliparous group accounted for 18% (n=5) of the cases.



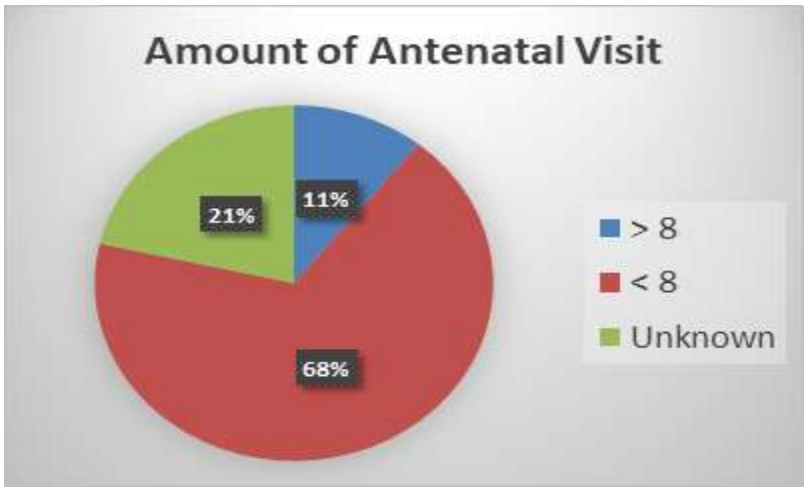
Barograph 2: Parity of Patients

It must be highlighted that 86 %(n=24) of the pregnancies in this study were unplanned and the patients were not utilizing any form of contraception.



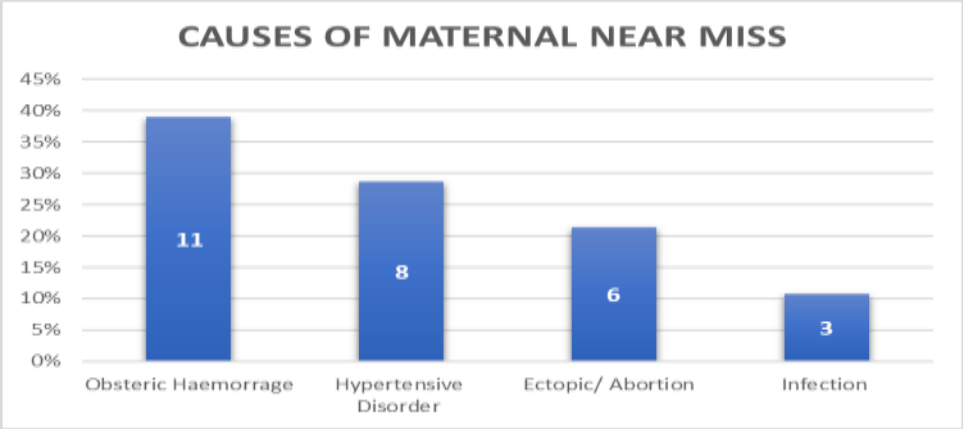
Barograph 3: Number of Planned and Unplanned Pregnancies

68 percent (n=19) of the population in this study had less clinic visits than the stipulated eight recommended by the WHO.



Pie Chart 3: Number of Antenatal Visits made by Patients in Study

The primary causes of maternal near misses in the study population were: obstetric hemorrhage, hypertensive disorder, ectopic or abortion and infection. Obstetric hemorrhage was the principal cause in 39% (n=11) of the MNM. Hypertensive disorder was the second leading cause with 28% (n=8). The third cause was ectopic/abortion which was responsible for 21% (n=6) of the MNM in this study while infection was the fourth at 10% (n=3) of maternal near misses in this study.



Barograph 4: Causes of Maternal Near Miss

Additionally, this study discovered that anemia was the main secondary cause of maternal near misses closely followed by ICU admissions. (ICU admission is a criterion for near miss)

DISCUSSION

The present study conducted at the GPHC assessed the cases of maternal near misses during a 7-month period in the COVID 19 pandemic revealed an overall incidence of 0.7 %. This finding is slightly lower than the incidence reported in a similar study done in the COVID 19 pandemic in Nepal [8] which revealed an incidence of 1.3%. Additionally, the incidence revealed in this study was comparable to a study done in India where the incidence was 0.7% and 1.4 % [2][3]) and much lower compared to studies done in several low resource countries: Democratic Republic of Congo, Guatemala, Belgravia, Pakistan, and Zambia where the incidence registered was 4 % [4]. Further, when compared to studies done in neighboring Suriname and Brazil, the incidence recorded in this study was significantly lower than the 13% and 12 % incidence registered in Suriname and Brazil, respectively. [6][7]. In addition, the incidence recorded in this study was marginally lower than the 1% incidence recorded in a previous study done at the same institution in 2019. [9]

The maternal near miss ratio documented in this research was slightly lower (10.7MNM/LB) than that of the study done at GPHC in 2019, which recorded a maternal near miss of 12.7 MNM/LB. In this study it shows that for every maternal death, 4 mothers were saved whereas the 2019 study revealed that for every maternal death 5 mothers were saved [9].

The main contributing causes of maternal near misses that were found in this study were obstetric hemorrhage 39%, hypertensive disorder (28.6%), ectopic & abortion (21.4%) and infection 10.7 %. This was on par with the top contributors of maternal near miss in several countries including, India, Latin American countries, and our neighboring Suriname [2-7]. This is also consistent with major contributors for Maternal Mortality worldwide. When we compared this to the local study done at GPHC in 2019, the top cause of maternal near miss were hypertensive disorder (57 %), obstetric hemorrhage 19% and systemic infections. This clearly shows that there was an increase in obstetric hemorrhage during the period of study and a decrease of Hypertensive disorder as causes of maternal

near miss in this study group. However, both studies were consistent with the top causes of maternal near misses [9]. We identified anemia as a contributing factor to maternal near miss and it was a common denominator of majority of the patients who suffered obstetric hemorrhage or abortion / ectopic pregnancies.

As was the case in similar studies, this study revealed that there were no significant differences in terms of antenatal care. 68 % of patients had fewer antenatal visit than the WHO recommended amount while 11% of the patients complied with the WHO recommended number of antenatal visits. Data on antenatal visits for 21 % of the patients were not found.

Regarding parity, mothers who were multiparous accounted for 64 % of the patients under study while nulliparous and grand multiparous shared a total of 18 percent each.

Another critical revelation of this study was the amount of planned and unplanned pregnancies. 86 % of patients under study did not have a planned pregnancy while the remaining 24 % had planned pregnancies. This finding was similar to the finding in the previous study done at GPHC. With regards to ethnicity, this study, like the one previously done in 2019 at GPHC, shows that African Guyanese were mostly affected, followed by Indo Guyanese and Amerindians in the previous study. [9]

CONCLUSION

In this study there were 32 maternal near misses, yielding an incidence of 0.7 %. For every maternal death, there were 4 maternal near misses. Near misses causes in this study was like those found locally, regionally, and internationally. It can be concluded that MNM rates remained stable during the pandemic compared to pre-pandemic period.

Recommendations

Maternal near miss is an indicator of quality of obstetric care. Increasing maternal near miss to mortality ratio yields improvement in obstetric care. As such, more frequent estimation of maternal near miss to mortality ratio should be done to evaluate the quality of obstetric care. Promoting health and awareness of family planning will have significant effects on obstetric care, as knowledge is needed for prevention and treatment.

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Conflict of Interest: None

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APPENDIX

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