REVIEW OF LITERATURE

For this study literature reviewed is classified under the following sub categories

1] Review of literature related to incidence &prevalence of near miss cases/Severe Acute Maternal Mortality Morbidity
2] Review of literature related to near miss/Severe Acute Maternal Mortality Morbidity
4] Review of literature related to usage of maternal services.

Review of literature related to incidence & prevalence near miss cases/Severe Acute Maternal Mortality Morbidity

1] Lale Say et al (2004) in their article titled, WHO systematic review of maternal morbidity and mortality: the prevalence of severe acute maternal morbidity (near miss)stated the articles in three categories -disease specific, management specific, organ-system dysfunction/ failure based. There is a need to set uniform criteria to classify patients under SAMM. Prevalence of SAMM can be a measure of maternal health & quality of care indicator.

2] Olufemi T et al (2005) in their article titled, Near-miss obstetric events and maternal deaths in Sagamu, Nigeria a retrospective study concluded that to determine the frequency of near miss & the nature of near miss cases. There is a suboptimal quality of care received by critically ill obstetric patients. A marked reduction can be achieved in present maternal mortality ratio by development of evidence-based protocols. Reduction in maternal mortality can also be targeted by improving the usage of maternal services to managesevere morbidities.

3] Asri A et al (2008) in their article titled, Obstetric near miss and deaths in public and private hospitals in Indonesia revealed that the purpose to document the prevalence & causes of near miss cases & maternal deaths in four hospitals in West Java, Indonesia. The prevalence of near miss was greater in public hospitals. The common criterion for near miss organ dysfunction was vascular dysfunction. The most common diagnosis associated with near miss was haemorrhage & hypertensive diseases.

4] Shrestha NS et al (2010) in their article titled, Near miss maternal morbidity and maternal, suggested that maternal mortality has been the key indicator of maternal health. Recently the review of near miss cases has been found to be useful to investigate maternal mortality. There is
an urgent need to develop an effective audit system to for maternal care was felt. Majority of the women were not registered in the hospital & therefore suggestive of delay in seeking health care & delay in timely referral.

5] Roopa P et al (2013) in their article titled, Near Miss- Obstetric Events and Maternal Deaths in a Tertiary Care Hospital: An Audit concluded that viral infections are the leading cause of maternal mortality. Other leading cause of near miss events are haemorrhage & hypertensive disorders.

6] Galvão LPL et al (2014) in their article titled, The prevalence of severe maternal morbidity and near miss and associated factors in Sergipe, Northeast Brazil elaborated that there is a great need to investigate SAMM or NM & the associated risk factors for the global reduction of maternal mortality. Factors like hypertensive disorder, higher age, previous abortion, LSCS, non-adherence to antenatal care, current caesarean delivery, bad perinatal results were associated with SAMM/NM. There is a need for complex management as there is an existence of more than one criterion for near miss eligibility.

7] EwnetuFL et al (2017) in their article titled, Incidence and causes of maternal near-miss in selected hospitals of Addis Ababa, Ethiopia revealed the causes of majority maternal near miss cases were hypertensive disorders following by obstetric haemorrhage & anaemia. It was also seen that the near miss cases occurred before the arrival of the women in the public hospitals. Efforts need to be made in improving the management of life-threatening obstetrical complications during hospitalization.

8] Kalra P and Kachhwaha CP (2018) in their article titled, Obstetric Near Miss Morbidity and Maternal Mortality in a Tertiary Care Centre in Western Rajasthan concluded that identifying the near miss cases five factor scoring system was used. It included organ system failure, ICU admission, blood transfusion, extended intubation, and surgical intervention. ICU admission & surgical intervention were the commonest factors amongst the near miss cases. Haemorrhage, hypertension & sepsis were the major causes of near miss mortality & morbidity. There is an advanced need felt to develop an effective audit system for near miss obstetric mortality & morbidity.

Review of literature related to near miss/SAMM
9] Ganatra BR et al (1998) in their article titled, Too far, too little, too late: a community-based case-control study of maternal mortality in rural west Maharashtra, India discussed that the existing services are too little to offer health services to the patients. There is an urgent need for inclusion of immediate & accessible medical management to tackle with the problem of maternal mortality & morbidity. Also the article focuses on the fact that there should be stepwise hierarchical referral system. Effective triaging is needed with decentralization of obstetric case management. This study emphasised on targeting on the attributable risk which included delaying in the first pregnancy, treatment of anaemia & at least one health contact in every trimester of pregnancy.

10] Geller SE et al (2006) in their article titled, A descriptive model of preventability in maternal morbidity and mortality concluded that the descriptive model was made to categorize preventable events in maternal mortality & morbidity. Poor documentation, recognition of high risk, inappropriate treatment & inadequate diagnosis were a crucial category & start of cascade of preventable events. Emphasis on making of evidence based model for preventable events in maternal mortality & morbidity.

11] Zwart JJ et al (2010) in their article, Ethnic disparity in severe acute maternal morbidity: a nationwide cohort study in the Netherlands revealed the differences about ethnic disparity in outcome of obstetric health care. Ethnic differences contribute to increased risk of obstetrical complications. The results are suggestive of the fact that there are more opportunities for quality improvements & by targeting health care reforms.

12] Cecatti JG et al (2011) in their article titled, Pre-validation of the WHO organ dysfunction based criteria for identification of maternal near miss revealed the WHO criterion that allows evaluation of severity of complications & enables to build a plan to care providers for urgent referrals. There is a necessity for provision of protocol for early recognition of severe cases of maternal near miss & take remedial measures in reducing maternal mortality. The WHO classification is relatively easy to use & could make it possible to triage severe cases of obstetric complications. However in addition to this criterion there is a need of capacity building of health care workers & upgradation of health care facility.

13] Bhattacharyya S et al (2014) in their article titled, Developing a framework to review near-miss maternal morbidity in India: a structured review and key stakeholder analysis stated today’s Indian scenario of thrust for promoting institutional delivery, resulting in compromise on quality
A structured review was administered to identify near miss cases in order to develop a framework. The methods used were facility based near miss case review, confidential enquiries, criterion based clinical audit, structured case review & home based interviews. The stakeholders analysed the fact that there has to be availability & maintenance of good documentation system, a local leadership & staff commitment.

14] KuruvillaS et al (2014) in their article titled, Success factors for reducing maternal and child mortality stated many avenues done to reduce maternal mortality. In a similar purview there are some success factors for reducing maternal & child mortality is a priority in MDGs. A statistical & econometric analysis of data was done from low & middle income countries. The success factors in fast track countries found out was health sector investment, strategies to mobilize partners across society, decision making, long term vision, & adaptation to change.

Review of literature related to complications of maternal mortality

The worldwide burden of maternal mortality is been unnoticed. There are large differences in the risk which are primarily related to unavailability of care facilities & the associated complications.

15] Baskett TF & Sternadel J (1998) in their article titled, Maternal intensive care & near miss mortality in obstetrics focused to determine the level of near-miss maternal mortality & morbidity due to severe obstetrical complications in a tertiary hospital. The information which was generated was coded in a perinatal database for the women’s who required transfer for critical care to a general hospital. A thorough notification was made on the basis of complications necessitating transfer, specialised consultants & the services required. Efforts to reduce maternal complications can be best achieved by developing agreed protocols for the management of complications.

16] Brahìn BJ et al (2001) in their article titled, An analysis of anaemia & pregnancy related maternal mortality stated that epidemiological parameters depict the effect of anaemia on maternal mortality. There is a need of policy implications for the reduction in anaemia related complications to prevent maternal mortality. The most important phenomenon is that with good antenatal care & obstetric care most anaemia related deaths can be preventable.

17] Wei-Hong Z et al (2005) in their article titled, Incidence of severe pre-eclampsia, postpartum haemorrhage and sepsis as a surrogate marker for severe maternal morbidity in a
European population-based study: the MOMS-B survey reflected on three surrogate marker for severe maternal mortality i.e pre-eclampsia, postpartum haemorrhage & sepsis. It applied a simple & straight forward approach to allow population based comparison between developed countries. The leading marker was seen to be haemorrhage followed by severe pre-eclampsia.

18] Vangen S et al (2008) in their article titled, Prevalence and risk factors of severe obstetric haemorrhage stated the prevalence, causes, risk factors & acute maternal complications. This study indicates that severe obstetric haemorrhage can be used as an indicator for assessing the quality of obstetrical care. It focuses on preventable risk factors obstetric management & non preventable risk factors such as maternal age, ethnic background & medical diseases. These factors could be addressed by extra efforts during labour management.

19] Almerie Y et al (2010) in their article titled, Obstetric near-miss and maternal mortality in maternity university hospital, Damascus, Syria: a retrospective study focussed on a newly recognised tool in maternal care is investigating near miss cases that can help in identification of women who are at risk of maternal death. Near miss cases were identified on the basis of disease specific criteria including haemorrhage, hypertension, dystocia, infection & anaemia. The study emphasised on the importance of developing protocols to prevent/manage postpartum haemorrhage & training health care professionals to manage fatal conditions.

20] Adler AJ et al (2012) in their article titled, Incidence of severe acute maternal morbidity associated with abortion: a systematic review depicts to measure the burden of SAMM in relation to abortion. There is an urgent need to ascertain the use of stringent criteria of near miss developed by WHO as it will greatly enhance our understanding of the burden of unsafe abortions in population.

21] Maswine SandBuchmann E(2017) in their article titled, A systematic review of maternal near miss and mortality due to postpartum haemorrhage concluded that global effort is needed to focus on management of PPH. Also efforts in the direction of training the health workers & strengthening of health care system are needed. The present study broadly reflected on the causes & effects of severe PPH. The study finding indicates that the consequences of PPH are reflected in maternal death audits. Along with funding & policy to raise the standard of health care there is a need to ensure availability of drugs & interventions to stop haemorrhage.

Review of literature related to usage of maternal services
22] **Rose NM et al (2007)** in their article titled, Use pattern of maternal health services and determinants of skilled care during delivery in Southern Tanzania: implications for achievement of MDG-5 targets focused on the fact that there is a discrepancy in the rate of maternal deaths as there is a huge difference in the use & accessibility of maternal health care services. There is a recommendation to increase the achievement towards MDG targets like improving the coverage of health facilities, increasing the awareness on danger signs of pregnancy/delivery & counselling on birth preparedness.

23] **LaleS & Rosalind R (2007)** in their article titled, A systematic review of inequalities in the use of maternal health care in developing countries: examining the scale of the problem and the importance of context concluded that half a million women still continue to die after two decades of Safe Motherhood campaign. These deaths can be prevented by the usage of health-care interventions. The outcome of these studies showed wide variation in the use of maternal health care usage. Differences were found out in factors related to health care users or health care supplies. The findings of the study focused on urban-rural differences, economic differences. The evidence that was reviewed stated that there was a marked difference between the usages of maternal health care greatly both within & between countries. Also the differences were depicted in the view that urban women, wealthier women, could utilise the services more likely than rural & poor women.

24] **Singh S et al (2010)** in their article titled, Determinants of utilization of Maternal and Child health services in a rural area of Uttar Pradesh, (India) focussed on the coverage of MCH services, its utilizations & the various barriers responsible for non-utilization of maternal services. Barriers in utilization of MCH services were unawareness, non-availability of services, & false perception. Health education & counselling is the best way to overcome these lacunae.

25] **Dale H et al (2011)** in their article titled, A systems approach to improving maternal health in the Philippines focussed on the fact that it is very necessary to assess the effectiveness of health system wide improvements on maternal health outcomes. There is a need to compare a province which fast tracked the implementation of health system reforms with other provinces with less systematically & intensely carry out the implementation. There are several challenges as the health information system remains a stumbling block in effective monitoring & evaluation.

26] **Tim E et al (2014)** in their article titled, Mobilizing communities to improve maternal health: results of an intervention in rural Zambia focussed to determine whether complex
community intervention can increase the use of maternal health care usage. These community interventions were associated with showing of significant improvements in women’s knowledge of antenatal care, obstetric warning signs, usage of emergency transport & deliveries conducted by skilled birth attendant.

27] LangloisEV et al (2015) in their article titled, Inequities in postnatal care in low- and middle-income countries: a systematic review and meta-analysis concluded systematic review & meta-analysis to rule out inequities in postnatal care. The main aim of the study was to assess the socioeconomic, geographical & demographic inequalities. The women lived in urban living were using the postnatal services more as compared to rural livings. The study concluded that low & middle income countries remained inequitable & varied markedly with socioeconomic status & between urban & rural residents.

**Review of literature related to development of standards for maternal near miss**

28] Bracea Vet al (2004) in their article titled, Quantifying severe maternal morbidity: a Scottish population study concluded that there is an urgent need to categorize & define severe maternal morbidity which can be proven useful measure as a quality indicator of maternal services. It is possible & relatively simple to set up at national level a reporting system for mortality & morbidity.

29] Metin GA et al (2004) in their article titled, WHO systematic review of maternal mortality and morbidity: methodological issues and challenges suggested that there need to be efforts made towards leadership; consensus building & resources are important & beneficial for improvements of standards to monitor the burden of maternal mortality. In order to map the attainment of goal there is a need of visualising incidence & prevalence of maternal mortality & morbidity.

30] Oladapoet OT et al (2009) in their article titled, National data system on near miss and maternal death: shifting from maternal risk to public health impact in Nigeria focussed to create a national data system on maternal near miss & maternal mortality in six geopolitical zones in Nigeria. The facilities provided for every woman will be evaluated to identify areas of substandard care through clinical audit. The outcome of the study would help the health practitioners, policy makers & international partners about the strengths & weaknesses for comprehensive obstetric care.
31] Joao PS et al (2011) in their article titled, The world health organization multicounty survey on maternal and newborn health: study protocol focussed to determine the prevalence of MNM, evaluate the quality of care, use of near miss concept in perinatal health. A study protocol was outlined using MNM & criterion based clinical audit approach. Thus, there will be a provision of comprehensive evaluation of implementation status of critical life saving interventions in the continuum of maternal care.

32] Nelissen E et al (2013) in their article titled, Applicability of the WHO Maternal Near Miss Criteria in a Low-Resource Setting focussed to validate & refine the WHO near miss criteria in low-resource setting. The clinical WHO criterion was validated for identification of maternal deaths. In the local context applicability of WHO near miss criteria is depended. Good validation of clinical criteria was shown. However, laboratory & management based criteria could not be used. Furthermore there should be an addition of disease based criteria as it helps in reflecting severe maternal morbidity.

33] NecocheaE et al (2015) in their article titled, Implementation of the Standards-Based Management and Recognition approach to quality improvement in maternal, newborn, and child health programs in low-resource countries highlights that to respond to common challenges faced by health system there is a development of Standard- Based Management and Recognition (SBM-R). This study describes key steps in SMB-R methodology focusing on provider performance assessment. SMB-R focuses on evidence based methods which are proven to have positive effects on health care quality, audit & evaluation.

34] Deller B et al (2015) in their article titled, Task shifting in maternal and newborn health care: Key components from policy to implementation focussed on task shifting as a way to address human resource crisis. Its implementation requires a sound policy, regulatory foundation, attention to job responsibilities, education & training, and service delivery support. Accessibility to lifesaving maternal health care services requires innovative methods to ensure sufficient human resources are available to address to the health needs of the women.

35] Haver J et al (2015) in their article titled, Experiences engaging community health workers to provide maternal and newborn health services: Implementation of four programs concluded scaling up of community based intervention has the potential to reduce maternal mortality. Community health care workers can take an active role in delivery of health care. Protocol for capacity building of community health workers was achieved by giving them refresher training.