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A study to assess the implementation and efficacy of saving mother score (SMS) in predicting maternal and fetal outcome among the intra natal mothers

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Abstract
Background: Saving Mother Score for early identification of sick mothers. Scoring application to detect & weigh the severity of sickness in intranatal mothers. A comprehensive scoring system can segregate the intranatal mothers into Normal, Need observation, Sick case. Recognize the sick cases help in timely referral to a higher center. This can be contribute to reduction of maternal morbidity & mortality at the hospital and community level. Thus the investigator intended to conduct the study with to assess the implementation and efficacy of Saving Mother Score (SMS) in predicting maternal and fetal outcome among the intranatal mothers admitted at Labour room of Pravara Rural Hospital, Loni (Bk).
Material and Method: A Non-experimental; descriptive study design with cross sectional approach was used in Pravara Rural Hospital Loni Bk. A total of 100 intranatal mothers were selected with help of non-randomized purposive sampling technique, to assess the implementation and efficacy of saving mother score to better outcome of maternal and fetal.
Results: Finding revealed that the overall mean score of maternal outcome of intranatal mothers was (6.19±3.22) and fetal outcome was (2.15±1.19) which interprets the "Need observation" respectively. There was significant association was found between maternal outcome & the variables like Educational Qualification, Weight of mothers and number of ANC Visit; similarly significant association was found between Neonatal outcome and the variables like Age, educational qualification, type of family, parity of mothers, hemoglobin level and number of ANC Visit. There was positive weak relationship (r 0.024) was found between the maternal outcome and neonatal outcome with their selected intranatal mothers.
Conclusion: The overall mean score of maternal outcome and fetal outcome which interprets which interprets intranatal mothers were "needs of observation" respectively. The findings highlighted that the SMS is effective to identify the high risk mothers during ANC period.

Keywords: Implementation, efficacy, saving mother score, maternal outcome and fetal outcome

Introduction

"Let each mother and children to be counted"

Women are the Centre of the family and their health is prime importance to the wellbeing of the whole family. Health of Women's is cardinal importance to the health of the society. In the last decade, considerable attention has been given the healthy women in their reproductive age by the health care providers and public health experts. The theme like "Pregnancy is a Special, lets keep its safe" have widely been perpetuated throughout the world.

Saving mother score is defined as a developed for early identification of at-risk pregnant women based on a combination of pregnancy-related risk factors, physiological variables, and biochemical tests [1].

The prevalence of high risk pregnancy in Asia about 20 to 30%. majority of 70-80% maternal mortality is due to Severe bleeding or hemorrhage (25%), Infections (15%), Unsafe abortions (13%), Eclampsia (12%), Obstructed labour (8%), Other direct causes (8%), Indirect causes like Malaria (20%) [2].

The maternal mortality ratio (MMR) per 1,00,000 live births in India total in130 per 1,00,000 and selected state wise shows that difference between maternal mortality rate includes Assam 237, Bihar 165, Madhya Pradesh /Chhattisgarh 173, Odisha 180, Rajasthan 199, Karnataka 108, Tamilnadu 66, Gujarat 91, Kerala 46 per 1,00,000 live birth and in Maharashtra 61 per 1,00,000 live birth in the year 2014-16 [3].

In Maharashtra from 68 (death per one lakh) a couple of years ago, we have come down to 61 deaths per lakh Maharashtra is now behind Kerala which has the lowest MMR of 46 death per one lakh. The targets to restrict the Maternal Mortality Rates had 70 death per one lakh by 2030 was achieved by Maharashtra in a short span of time due to various activities initiated to bring down Maternal Mortality Rate. Also the state was receive an awards

from union ministries on for June 29th 2019 for the feat [4].

The obstetric warning score might facilitate to identify pregnant women risk of deteteriation and to identification of abnormal physiology parameter and early intervention might prevent further complication and decreases maternal morbidity and mortality. He developed modified early obstetric warning system with physiology parameters are respiration rate, saturation, oxygen therapy, urine output, proteinuria, blood sugar level, pain score, lochia & reflexes. The scoring system of MEOWS patient one red or two yellow at any one time prepared with permission Northumbria Healthcare NHS Trust, UK [5].

Pre –experimental study to assess the effectiveness of massage therapy on severity of labour pains and anxiety among pregnant women's admitted in labour room during active phase of labour in selected Hospital, Jalandhar, Punjab, Study findings revealed that the pretest mean score of severity of labour pains was 82.91%.and post-test mean score was 22.66%. Whereas the Pretest mean score of anxiety was 25.53 and post-test mean score was 10.48. Hence the findings showed that there were decrease in the severity of labour pain and anxiety [6].

A Modified Early Obstetric Warning System (MEOWS) chart is used from 20 week gestation, when the women is admitted to maternity wards. The changes in physiology seen in normal pregnancy mean that any scoring system may need to be modified for this group of patients as pregnancy progression. The physiological parameters which includes in the MEOWS chart recorded on a National Early Warning Score Chart such as respiratory rate, oxygen saturation, Temperature, systolic blood pressure, heart rate, blood sugar, pain, lochial discharge, urine output, proteinuria and level of consciousness. A scoring system for MEOWS were green color pathway 0-4 score, Amber color pathway 5-6 and red color pathway more >7 score or acute concerned regarding sudden complication. The scoring system has been adopted a minimum standard of 4 hourly observations for all adult inpatients. The MEOWS System enables midwives to see baseline observation and observe all parameter over time more easily at a glance [7].

Study on effectiveness of physical activity interventions on pregnancy-related outcomes among pregnant women: A systemic review, Study finding mentioned the various researchers were recommended that the enhancing physical activity levels among these individuals had useful in alleviating pregnancy –related pain and psychological symptoms (anxiety and depression) reducing gestational weight gain and increasing self-efficacy. It's a positive effect of physical activity interventions on the wellbeing and physical and psychological health of pregnant women [8].

Study on effect of massage therapy on duration of labour: A randomized controlled trial (n=100), Study finding revealed that the duration of the first and second stage of labour in the massage receiving group is significantly decreased compared to the test group (p=0.004 and p=0.02 respectively). Also the APGAR score at minutes 1 and 5 in test group is significantly increased compared to control group (p<0.001) [9].

Material and Method

The Non – Experimental; descriptive study design with cross sectional survey approach was conducted among 100 intranatal mothers admitted in labour room on Pravara Rural Hospital, Loni (BK). Before commencement of the study, ethical approval was obtained from the Institutional Ethical Committee, and official permission was received from the authority. The pregnant mothers who were above 19 years of age, Provides written informed of consent for participation in the study, Available during data collection period were included in the study by using the non – probability; purposive sampling method.

The pregnant mothers who are, admitted at ICU and has high risk pregnancy and critically ill and unable to participate in study were excluded from the study. The purpose of study was explained to pregnant mothers with self-introduction and consent was obtained to participate in the study. Mothers was made comfortable and instruction related to tools was given to facilitate co-operation and participation in the study. The data was collected by interviewing the mothers or care giver and the data was noted in the Proforma. Assessed the maternal chacteristics of intranatal mothers was obtained with the help of patient health record / file. Followed by the Saving Mother Score was obtained from the direct clinical observation of mothers during labour period by using the proforma was carried throughout the delivery process. Assessed the maternal outcome and fetal outcome by using Saving Mother Score. The saving mother score of maternal outcome for intranatal mothers was obtained which includes such as Type of delivery, progress of labour, If augmented the method drug used, Bishop score, blood pressure, temperature, pulse, respiratory rate, saturation (SpO2), urine output, neurological status, Mental status of the mother. (Table No. 1 Shows the interpretation chart for efficacy of saving mother score for maternal outcome scoring key was divided into three parts i.e. 0-5 normal, 6-9 need observation and 10-14 sick case)

Table 1: Scoring procedure of tool for assessment of maternal outcome for intranatal mothers

SN	Levels of maternal outcome	Actual Scoring
1	Normal	0-5
2	Need observation	6-9
3	Sick Cases	10-14

The fetal Outcome of intranatal mother obtained which includes such as Condition of new born baby, weight of baby, APGARscore Gestational age was used. (Table No. 2 shows the interpretation chart for efficacy of saving mother score for fetal outcome scoring key was divided into three parts i.e. 0-1 normal, 2-4 need observation and 5-7 sick case).

Table 2: Scoring procedure of tool for assessment of fetal outcome for intranatal mothers

SN	Levels of Fetal outcome	Actual Scoring
1	Normal	0-1
2	Need observation	2-4
3	Sick Cases	5-7

The collected data was tabulated and analyzed using appropriate statistical methods like descriptive statistics (mean, SD and mean percentage) and inferential statistics (chi – square test).

Results

Findings related to socio demographic variables: Finding revealed that the half of (50%) of mothers were in age group of

19-22 years followed by (32%) of them were in the age group of 23-26 years, higher percentage (44%) of intranatal mothers had primary education, most (90%) of them were living in rural area, Half (51%) of intranatal mothers belong to joint family, (57%) of them were home makers, Highest percentage of intranatal mothers (48%) had per capita income more than Rs.15,197 and most of them (78%) were belongs Hindu.

Findings related to Maternal Chacteristics of intranatal mothers

In line with maternal chacteristics of intranatal mothers showed that, Majority (80%) had height >145 cm, (40%) had 51-60 kg of weight, significant percentage (39% & 38%) had (8-10gm%) & (10-12 gm%) of Hemoglobin respectively, Majority (72%) of intranatal mothers had three ANC visits and most (94%) of them completed immunization status (T.T.).

Findings related to Assessment of maternal outcome of intranatal mothers based on Saving Mother Score

Table No. 3 mentioned the Study findings shows that of saving mother score of intranatal mothers according to their maternal outcome shows that majority (45) of intranatal mothers were requires "need observation" (37) were "Normal" and only (18) of intranatal mothers were "Sick cases". It depicts that the majority of intranatal mothers were in need of observation and sick case respectively.

Table 3: Assessment of maternal outcome of intranatal mothers based on Saving Mother Score

SN	Saving Mother Score	No. of Mothers	Level of Maternal outcome
1	0-5	37	Normal
2	6-9	45	Need observation
3	10-14	18	Sick case
	Total	100	

Findings related to Assessment of Mean and SD score of maternal outcome and fetal outcome of intranatal mothers

Table No. 4 mentioned the Study finding shows that overall mean score of maternal outcome of intranatal mothers was (6.19±3.22) and fetal outcome was (2.15±1.19) which interprets the "Need observation" respectively.

Table 4: Assessment of Mean score of maternal outcome and fetal outcome of intranatal mothers

SN	Outcomes	Mean	SD
1	Maternal Outcome	6.19	3.22
2	Fetal outcome	2.15	1.19

Association between the maternal outcome and fetal outcome with their selected demographic data and maternal characteristics

There was significant association was found between maternal outcome & the variables like Educational Qualification, Weight of mothers and number of ANC Visit; similarly significant association was found between Neonatal outcome and the variables like Age, educational qualification, type of family, parity of mothers, hemoglobin level and number of ANC Visit. However significant association was found between fetal outcome and the variables like age, educational qualification, type of family, parity of mothers, hemoglobin level and number of ANC Visit. Hence it is stated that the significant association was found between fetal outcome with their selected demographic data and maternal characteristics.

Correlation between maternal outcome and fetal outcome of intranatal mothers

Karl Pearson's Correlation between Maternal and neonatal outcome of intranatal mother's shows that there was positive weak relationship (r 0.024) was found between the maternal outcome and fetal outcome with their selected intranatal mothers.

Discussion

Description of demographic data of intranatal mothers

Half (50%) were in the age group 19-22 years, and (32%) of them were in the age group of 23-26 years. This finding was supported by Gupta CP, Choudhary J, Chahar D and Yadav SK (2018), who also found that (52%) were in 20-25 years age group and (36%) were in 26-30 years of age group.[10] Higher percentage (44%) of intranatal mothers had primary education, (25% and 18%) of intranatal mothers had secondary education and no formal education respectively. It was consistent with study carried out by Sirapo-ngam Y, Putwatana P, Kitrungroj L and Piratchavet V (2002) who also observed that (65 %) completed formal primary education [11]. Majority of (90%) intranatal mothers were living in rural area and only (10%) only living in Urban. Half of (51%) intranatal mothers belong to Joint family and (49%) of intranatal mothers were Nuclear family. It was concurrent study carried out by Madhavi LH and Singh HKG (2011), who also observed in (48.70%) were nuclear type of family and (51.30%) living in joint type of family. Also the majority of pregnant mothers residing in rural areas [12]. Highest percentage of intranatal mothers (57%) were home maker and (29%) of them were daily wages. It was consistent with study carried out by Dhaliwal JS, Lehl G, Sodhi SK and Sachdeva S (2013), who also found that most of patient (78.4%) housewive [13]. Highest percentage of intranatal mothers (48%) had income more than Rs.15, 197 and (35%) of intranatal mothers had income Rs. 5694-7594. Majority intranatal mothers (78%) were Hindu religion, and (13%) were Muslim. This findings were supported by Dahake ST and Shaikh UA (2019), who also observed that majority (63.5%) were Hindus while Muslims constituted the second largest group [14].

Description of maternal characteristics of intranatal mother

More than half percentage of (52%) were primi intranatal mothers and (48 %) intranatal mothers were in multipara. It was consistent study carried out by Gao M, Scott k and Koupil (2019), who found that about (41.1%) were Primi mothers and (38.2%) multipara mothers admitted for endometriosis diagnosis [15]. Majority (80%) of intranatal mothers were between the height of >145cm and (16%) of intranatal mothers were in 141 -145 cm. It was concurrent with the study carried out by Garg A, Kumar L and Garg N (2016), who found (45.75%) patients had height in between 141 to 145 cm and (40 %) mothers had height 146 to 150 cm [16] Highest percentage (40%) of intranatal mothers were 51-60 kg of weight and (34%) of intranatal mothers were 61-70 kg. These finding was supported by Berquier JB, Salanave B, Desenclos JC and Castelbon K. (2017), that most (64.2%) were normal weight, (18%) were overweight and (10.2%) were obese

[17]. Highest percentage (39% & 38%) of intranatal mothers had 8-10gm% Hb level and 10-12gm% level respectively. This finding was supported by Kadry S, Sleem C, Samad RA (2018), who found pregnant women where (58.33%) are normal 12-16 g/dl and (41.67%) are abnormal < 12 g/dl [18]. Majority (72%) of intranatal mothers were taken three ANC visit, (11%) of intranatal mothers were equally visited such as two and more three duration ANC visit respectively. It was consistent with study done by Haftu A, Hagos H, Mehari MA and G/her B (2018), who also found the adherence to complete to ANC is (49.9%) and the follow up till postpartum period was (100%) [19]. Highest percentage (94%) of intranatal mothers had taken T. T Injection dose completely and only (6%) of intranatal mothers had taken incomplete doses of T.T. injection. It was concurrent with the study carried out by Mamaro MD, and Hanforce LK (2018), who also found majority (72.5%) mothers were protected at birth against tetanus [20].

Association between maternal outcome and fetal outcome with their selected demographic data and Maternal Chacteristics

Study findings revealed that significant association was found between maternal outcome and the variables like Educational Qualification, Weight of mothers and number of ANC Visit (3.86). However significant association was found between fetal outcome and the variables like Age, Educational Qualification, Type of Family, Parity of mothers, Hemoglobin level and number of ANC Visit (3.86). This finding was supported by Nazari M, Zainiyash SYS, Lye MS, Zalilah MS, Heidarzadeh M (2013), who was found that the significant difference found in maternal characteristics like maternal age, maternal education, gravida, parity, maternal weight gain during pregnancy [21].

Conclusion

These results highlighting that (SMS) Saving Mother Score chart helped in early identification of sick mother's. Initiation of appropriate treatment at appropriate time results in significant improvement of maternal and fetal outcome. The findings revealed majority of Intranatal mothers requires "needs for observation" & "sick case" respectively. The overall mean score of maternal outcome and fetal outcome which interprets which interprets intranatal mothers were "needs of observation" respectively. The results highlighted that the SMS is effective to identify the high risk mothers during ANC period.

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Financial Disclosure

None to declare.

Conflict of Interest

None to declare.

Informed Consent

The informed consents have been obtained from the intranatal mothers.

Author Contributions

DG: Literature exploration, research data collection, statistical analysis and first draft. LVR: Guide, concept, research design, literature exploration and final draft. VB: Research guidance, clinical support, co-ordination.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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