VALUE OF SEMIOBJECTIVE GRADING SYSTEM IN IDENTIFYING THE VULNERABLE GROUP FROM OBSTETRIC POPULATION

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It has been studied that relatively small percentage of obstetric population gives rise to disproportionately large percentage of perinatal wastage and such group of obstetric population has been called "High Risk".

At present due to Socio-economical changes, size of families has been altered. Majority of families consists of one to three children. Every child is increasingly becoming a wanted child and so as an obstetrician if high-risk group of obstetric population is identified and specific care is provided to that mother and newborn, one can help in reducing damage and death to perinatal group.

The method for identifying high-risk obstetric population should be simple so that it can be used by doctors as well as by paramedical personnel, as our majority of population stays in rural area and antenatal care is provided by these paramedical personnel e.g. Auxillary Nurse Midwife.

In this study, we have selected a semiobjective grading system of Nesbitt for identification of high-risk obstetric population. To find out usefulness of this grading system, we have studied incid-

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ences of prenatal complications, premature deliveries, complications of labour, abnormal delivery, birth weight of newborns and perinatal morbidity and mortality in patients of high-risk and low-risk, detected by this system.

As per this grading system of Nesbitt, an antenatal as well as intranatal patient is given certain penalty-points as per her history and findings. From these total penalty points, an index is derived i.e. MCHC index in antenatal patient and labour index in intranatal patient. If she fails in this index, she falls into high-risk group. Total index can be derived from both these indices.

FIGURE-1
PERINATAL MORBIDITY AND MORTALITY IN HIGH RISK POPULATION ACCORDING TO MC HC INDEX AND LABOR INDEX.
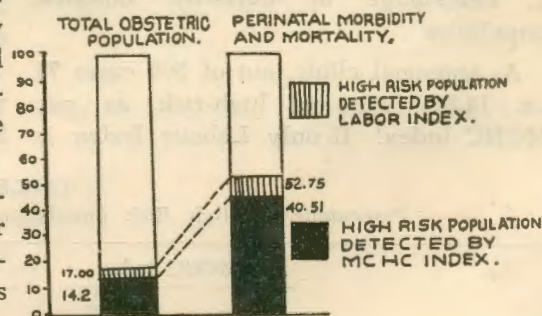
For the above mentioned purpose, 500 patients attending antenatal clinic at Civil Hospital, Ahmedabad were studied and same were followed during labour and first week of puerperium.

The Maternal and Child Health Care Index (MCHC Index) was applied to patients attending antenatal clinic and Labour Index was applied at the time of delivery to find out additive effect.

MCHC Index = 100—Total penalty score of all factors of MCHC Index.

When patient's MCHC Index was less than 70, patient was considered as high-risk patient.

Labour Index = 100—Total penalty score of factors of Labour Index.

When it was less than 70, patient was considered as a high-risk patient.

Total Index = 200—(Penalty points of MCHC Index and Labour Index).

If total index was less than 150, patient was considered as a high risk patient.

TABLE I
Critaria for Identifying Low Risk and High Risk Patients

Index	Low risk patients	High risk patients
MCHC Index	70 or >70	< 70
Labour Index	70 or >70	< 70
Total Index	150 or >150	<150

Observations

1. *Percentage of high-risk obstetric population*

At antenatal clinic, out of 500 cases 71 i.e. 14.2% were of high-risk, as per MCHC Index. If only Labour Index is applied, out of the same 500, few more were caught as high-risk—i.e. 85 (17%) and as per Total Index application out of 500, 115 patients (23%) were of high-risk.

2. *Comparision of Prenatal complication in high and low risk patients*

Different prenatal complications taken into consideration were anaemia, malnourishment, obesity, heart disease, systemic illness, prediabetes etc. Out of 500 antenatal cases, 176 had these sort of complications. These complications were more frequent in high-risk patients. 67.61%, 55.29% and 65.22% of high-risk patients as detected by MCHC. Labour and Total Indices had these complications, while 29.84%, 31.08% and 26.23% of low risk patients had these complications.

3. *Incidence of premature delivery in high and low risk patients*

Out of these 500 antenatal cases, 51 patients (10.20%) delivered prematurely.

If we see rate of premature delivery in low and high risk patients, rate of premature delivery is much higher in high-risk patients, as compared to low risk patients. As per MCHC Index, Labour Index and Total Index calculations, rate of premature deliveries was 18.31%, 45.88% and 34.78% in high-risk group, while it was only 8.86%. 2.89% and 2.86% in low risk patients.

TABLE II
Percentage of High Risk Population According to Different Indices

	MCHC Index		Labour Index		Total Index	
	No.	%	No.	%	No.	%
Total No. of cases	500	100.00	500	100.00	500	100.00
High Risk Patients	71	14.20	85	17.00	115	23.00
Low Risk Patients	429	85.80	415	83.00	385	77.00

TABLE III
Comparison of Prenatal Complication in High and Low Risk Patients

	MCHC Index		Labour Index		Total Index	
	No.	%	No.	%	No.	%
No. of cases with prenatal complication	48	(67.61)	47	(55.29)	75	(65.22)
No. of High risk patients	71		85		115	
No. of cases with prenatal complication	128	(29.84)	129	(31.08)	101	(26.23)
No. of low risk patients	428		415		385	
Total No. of cases with prenatal complication	176	(35.20)	176	(35.20)	176	(35.20)
Total No. of general patients	500		500		500	

TABLE IV
Comparison of Premature Delivery in High and Low Risk Patients

	MCHC Index		Labour Index		Total Index	
	No.	%	No.	%	No.	%
No. of Premature delivery	13	(18.31)	29	(45.88)	40	(34.78)
No. of High Risk Patients	71		85		115	
No. of Premature delivery	38	(8.86)	12	(2.89)	11	(2.86)
No. of Low Risk Patients	429		415		385	
Total No. of Premature delivery	51	(10.20)	51	(10.20)	51	(10.20)
Total No. of Patients delivered	500		500		500	

4. Complications of Labour

Complications of labour like premature rupture of membranes, induction of labour, prolapse of umbilical cord, cephalopelvic disproportion, foetal malpresentation, uterine inertia, foetal distress, postpartum eclampsia, all were more common in high-risk patients than in low risk patients. In high risk patients they were present in 45.07%, 43.53% and 47.83% of cases as detected by MCHC, Labour and Total Indices, while complications of labour were less frequent in low risk patients, detected by above three indices and they were in 12.35%, 11.57% and 7.79% of low risk patients.

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TABLE V
Comparison of Complication of Labour in High Risk and Low Risk Patients

	MCHC Index		Labour Index		Total Index	
	No.	%	No.	%	No.	%
No. of Complication	32	(45.07)	37	(43.53)	55	(47.83)
No. of High Risk Patients	71		85		115	
No. of Complication	53	(12.35)	48	(11.57)	30	(07.79)
No. of Low Risk Patients	429		415		385	
Total No. of Complication	85	(17.00)	85	(17.00)	85	(17.00)
Total No. of Patients	500		500		500	

5. *Mode of delivery*

Comparing spontaneous labour and abnormal delivery by forceps, breech, caesarean section etc., incidence of abnormal delivery was much higher in high-risk groups, especially in high risk group calculated by MCHC Index.

In high risk group, as per MCHC Index 46.47% of patients delivered by some assistance and 53.63% had spontaneous delivery, while in low risk group as per same Index, 89.74% had spontaneous delivery while only 10.26% had abnormal delivery. Also in high-risk group detected by Labour and Total Indices, percentage of abnormal delivery was higher e.g. 30.59% and 24.35%, while it was only 12.29% and 12.73% in low risk patients.

6. *Relation of High-Risk Pregnancy with Birth Weight of New born*

Baby was considered low birth weight when its weight was less than 3.0 kg.

TABLE VI
Comparison of Mode of Delivery in High Risk and Low Risk Patients

Mode of delivery		Total cases	MCHC Index		Labour Index		Total Index	
			HR	LR	HR	LR	HR	LR
Spontaneous	No	423	38	385	59	364	87	336
	1	84.60%	53.63%	89.74%	69.41%	87.71%	75.65%	87.27%
Abnormal	No	77	33	44	26	51	28	49
	1	15.40%	46.47%	10.26%	30.59%	12.29%	24.35%	12.73%
Total	No	500	71	429	85	415	115	385
	1	100%	100%	100%	100%	100%	100%	100%

TABLE VII

Comparison of Weight of Newborn in High Risk and Low Risk Patients
*5 new-born having unknown weight are excluded.

	MCHC Index No.	%	Labour Index No.	%	Total Index No.	%
No. of Low birth weight newborn	27	(38.03)	42	(47.73)	55	(47.01)
No. of high risk Patient	71		88		117	
No. of Low birth weight newborn	132	(30.56)	117	(28.19)	104	(26.94)
No. of low risk patient	432		415		386	
Total No. of Low birth weight	159	(31.61)	159	(31.61)	159	(31.61)
Total No. of Patients	*503		503		503	

Table VII shows that according to MCHC, Labour and Total Indices, more babies were born with low birth weight in high risk group, e.g. 38.03%, 47.73% and 47.01% while 30.56%, 28.19% and 26.94% in low risk patients respectively.

7. *Perinatal outcome*

As seen in Table VIII, out of total 500 patients, 55 babies were either still-birth or died in first week of birth giving perinatal mortality 10.83%.

TABLE VIII

Comparision of Perinatal Outcome in High Risk and Low Risk Patients.

		Total	MCHC Index HR	LR	Labour Index HR	LR	Total Index HR	LR
Mortality	No.	55	26	29	45	10	47	08
	%	10.83	32.91	06.68	49.45	02.40	39.17	02.06
Morbidity	No.	28	06	22	03	25	07	21
	%	05.51	07.60	05.13	03.30	06.00	05.83	05.41
Normal Survival	No.	425	47	378	43	382	66	359
	%	83.66	59.49	88.11	47.25	91.60	55.00	92.53
Total No. of Newborn	No.	508*	79	429	91	417	120	388
	%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Perinatal mortality was higher in high risk patients. It was 32.91%, 49.45% and 39.17% in high risk patients detected by MCHC, Labour and Total Indices respectively. Perinatal mortality was comparatively much less in low risk patients. It was only 6.68%, 2.40% and 2.06% in low risk patients detected by MCHC, Labour and Total Indices.

Same was observed for perinatal morbidity. No significant difference was noted in high risk and low risk patients as shown in Table VIII.

Discussion

Here an attempt is made to detect high-risk obstetric population attending antenatal out door clinic of Civil Hospital, Ahmedabad by applying MCHC Index suggested by Nesbitt. Same 500 patients were followed during labour and Labour Index was applied as suggested by Dr. Nesbitt. Few more high-risk patients as an additive value were detected by Labour Index i.e. some additive value with Labour Index. If Total Index was applied, few more patients fell in high-risk group. Thus in detecting percentages of high-risk population Total Index is more helpful. In Civil Hospital, Ahmedabad, 23% of obstetric population was of high-risk as per Total Index, while only 14.2% as per MCHC Index and 17% as per Labour Index.

Comparative study of prenatal complication, premature delivery, complications of labour, abnormal delivery, birth weight of new born, perinatal morbidity and mortality was done in low risk and high-risk patients detected as per three indices and it was found that more unfavourable results were detected in high risk group patients as compared to low risk group patients. In some aspects MCHC Index was helpful while in some aspects, Labour or Total Index was helpful.

When over all perinatal mortality and morbidity in this high risk group were studied, following figure gives self explanation.

40.51% of perinatal mortality and morbidity was present in 14.2% of high risk obstetric population detected by MCHC Index, while it was 52.75% of high risk obstetric population detected by Labour Index, and so if a simple method is suggested to find out this 17% of obstetric population at high risk and concentration is given to their antenatal, intranatal, and postnatal care, one can help in bringing down perinatal morbidity and mortality.

For detection of high risk patients, this semiobjective method is easier, convinient and can be taught to paramedical worker by giving printed cards, so that by finding out penalty score, detection of high risk patients becomes easier.

References

1. Nesbitt, R. E. L. Jr. and Aubry, R. H.: Am. J. Obstet. Gynec. 103: 972, 1969.