

# A Cross-sectional Study on the Prevalence and Clinico-social Profile of High Risk Pregnancies in Rural Tamil Nadu, India

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## ABSTRACT

**Introduction:** Around 10-30% of mother during their antenatal period can be classified as high risk and out of these 70-80% accounts to perinatal morbidity or mortality. Special care must be given to women with high risk pregnancies to make sure the best possible outcomes. Early identification and regular follow-up of high risk pregnancies will reduce the loss of mother as well as newborn.

**Aim:** To identify the prevalence of high risk pregnancies and factors associated with it in rural Tamil Nadu, India.

**Materials and Methods:** The present community-based cross-sectional study was conducted in rural field practice area in the Department of Community Medicine, Annapoorna Medical College, Salem, Tamil Nadu, India. High risk pregnancies were identified using a pretested semi-structured questionnaire and a scoring system developed by Dutta and Das (1990) on 235 women of more than 20 weeks of pregnancy. The association between high risk pregnancies and socio-demographic variables

were analysed. The frequency, percentage and analytical statistics was done using Pearson's Chi-square test.

**Results:** The prevalence of high risk pregnancy among total of 235 pregnant mothers who were interviewed was found to be 15.32%, Moderate and high risk pregnancies combined were 42.13%, whereas 57.87% were of low risk pregnancy with no known risk factors. Major risk factors identified were anaemia (33.19%), undernutrition (31.06%), previous Lower Segment Caesarean Section (LSCS) (13.62%), abortion (8.51%). Early and late age at pregnancy was not associated with moderate to high risk pregnancy. Parity and high socio-economic condition were significantly associated with high risk pregnancy.

**Conclusion:** The present study found that 42.13% pregnancies were moderate to high risk pregnancies. Early detection of these high risk pregnancies must be done at primary healthcare level using a uniform scoring system by a trained health workers, which may reduce the adverse events.

**Keywords:** Anaemia, Perinatal mortality and morbidity, Primiparous, Risk factors, Scoring system

## INTRODUCTION

Without little or no advance warning signals antenatal women may face life threatening complications which can occur during pregnancy [1]. The term high risk pregnancy is used to identify the pregnancy in which a mother or her foetus or both are at higher risk of developing complications during pregnancy or childbirth than in a normal pregnancy. In India, around 30% of pregnancy is high risk which may be responsible for 75% of perinatal mortality if left unidentified [2]. All the pregnancies need to be evaluated for high risk pregnancy through routine antenatal care which mainly aims at detecting the high risk pregnancy at the earliest [3]. In 2017, approximately 810 women died due to preventable causes related to pregnancy and childbirth everyday worldwide [4]. An estimate by World Health Organisation (WHO) and other agencies showed that overall Maternal Mortality Rate (MMR) in developing regions 20 times higher than that of developed regions [5]. States of Kerala, Maharashtra, Andhra Pradesh, Gujarat and Tamil Nadu have already achieved the goal of a MMR of 100 per lac live births [6]. Initiatives like Pradhan Mantri Surakshit Matriva Abhiyan and SUMAN- Surakshit Matriva Aashwasan by Government of India has highlighted the importance of early identification of high risk pregnancy [7-9].

To identify the high risk pregnancy at the earliest, it is essential to use a simple and relevant risk assessment scoring system and one such widely used scoring was developed by Dutta S and Das XS in 1990 [10]. According to which, to detect high risk mothers, the pregnancy were classified into three groups namely low risk group (score of 1-2), moderate risk group (score of 3-5) and high risk group (score of 6 or above) [11]. Limited studies were conducted in India regarding the prevalence of high risk pregnancy and also uniform scoring system had not been practiced to identify the high risk pregnancy

at primary healthcare level [12-18]. With this background, cross sectional study was conducted with the objectives of identifying the prevalence of high risk pregnancies and factors associated with high risk pregnancies in rural field practice area of Annapoorna Medical College and Hospitals, Salem, Tamil Nadu, India.

## MATERIALS AND METHODS

A community based cross-sectional study (Descriptive epidemiology) was conducted in the Rural Field Practice Area of Annapoorna Medical College and Hospital, Salem, Tamil Nadu, India, i.e., Magudanchavdi from September 2021 to January 2022. Ethical clearance was obtained from the Institutional Ethics Committee (IEC) prior to study (Approval no: AMCH/IEC/Proc.No. 29/2021). Antenatal mothers in and around Magudanchavadi Panchayat union were the study population.

**Inclusion criteria:** Pregnant women more than 20 weeks of pregnancy living in this area who were attending the antenatal care clinic who have given the consent to participate were included. Pregnant women who have registered with health system were included.

**Exclusion criteria:** Those who are not registered with health system and those who are not willing to participate or give their consent were excluded in this study.

**Sample size calculation:**  $n = z^2 (pq) / d^2$

$z =$  relative deviate (at 95% confidence interval) i.e., 1.96

$p =$  prevalence of high risk pregnancy = 30% [12]

$q = 100 - p = 100 - 30 = 70$

$d =$  acceptable margin of error 20% [16,17].

$n = (1.96)^2 \times 30 \times 70 / 6 \times 6 = 233 = 235$ . Convenient sampling method was adopted.

## Study Procedure

Magudanchavdi is Panchayat Union of Salem district which is having the population of 70169 as per 2011 census and having 12 villages. Birth rate of rural Tamil Nadu as per Sample Registration System (2019-20), Office of the Registrar General, India was 14.8 per 1000 population. Based on this birth rate expected pregnancies were calculated and the expected pregnancies in that area would be 1039 which fulfils the required sample size [19].

After explaining the objectives and nature of this study and its potential benefit and expected duration of study, the participants were interviewed with pretested semi-structured questionnaire [QUESTIONNAIRE] containing socio-demographic details which includes social and demographic profiles from the study participants and their husbands, information about current pregnancy which includes the Last Menstrual Period (LMP), registration of pregnancy and questionnaires related to the current symptoms if any and finally the high risk pregnancy related information were obtained from the mother and were cross verified from the maternal and child health card.

High risk pregnancy was assessed by using scoring system suggested by Dutta S and Das XS and individual risk scores were calculated. Based on total scores, mothers were divided into low risk (score 0-2), moderate (score 3-5) and high risk (score  $\geq 6$ ) groups on the basis of past obstetric history, medical condition, and events in the current pregnancy [20]. Socio-economic status of study participant was assessed with the help of BG Prasad scale [21].

## STATISTICAL ANALYSIS

Collected data was compiled, coded and analysed using Epi-info. Graphs and tables were obtained using Excel program. Descriptive and analytical statistics were calculated. Pearson's chi-square test was used to find out association between the socio-demographic variables and the high risk pregnancies. A " $p < 0.05$ " is considered statistically significant.

## RESULTS

During the study period total of 235 pregnant mothers who met the inclusion criteria were interviewed and their responses were recorded. Majority 212 (90.21%) of the antenatal mothers were in the age group of 19-29 years. Only very few 3 (1.3%) antenatal mothers were less than 18 years of age. Around 20 (8.51%) mothers were in the age group of above 30 years. Socio-demographic profile of the pregnant women in the study population showed 221 (94.05%) of them were home makers. Around 69.36% of the family belonged to class III socio-economic class. One third of study participants were primi 88 (37.45%). Only minimal numbers of participants were illiterate 10 (4.26%). Around one third of the study participants had studied primary and middle school 85 (36.17%). Majority of the mothers were living in nuclear family 197 (83.83%) [Table/Fig-1].

Majority of the study population had planned their pregnancy 205 (87.23%). Almost all the pregnancies were confirmed by urine pregnancy test 233 (99.15%). Only very few pregnancies were registered late 13 (5.53%). Only a very few mothers had experienced complications during pregnancy i.e., difficulty in vision 4 (1.70%) and convulsions 4 (1.70%) [Table/Fig-2].

The major risk factors which were prevalent in the study population were abortion/infertility 20 (8.51%), previous caesarean section 32 (13.62%), undernutrition 73 (31.06%), anaemia  $< 10$  gm 78 (33.19%) and small for dates 23 (9.79%) [Table/Fig-3].

Factors	Frequency (%)
<b>Age (years)</b>	
$\leq 18$	3 (1.28)
19-29	212 (90.21)
$\geq 30$	20 (8.51)

<b>Religion</b>	
Hindu	226 (96.17)
Muslim	5 (2.13)
Christian	4 (1.70)
<b>Education of study participant</b>	
Illiterate	10 (4.26)
Primary level	8 (3.40)
Middle school	77 (32.77)
Higher sec school	77 (32.77)
Graduation and above	63 (26.80)
<b>Education of husband</b>	
Upto middle school	130 (55.32)
Higher sec school	47 (20.00)
Graduation and above	58 (24.68)
<b>Occupation of study participant</b>	
Housewife	221 (94.05)
Others	14 (5.95)
<b>Type of family</b>	
Nuclear	197 (83.83)
Joint	36 (15.32)
3 generation	2 (0.85)
<b>Family income (modified BG Prasad):</b>	
Class- I	11 (4.68)
Class- II	26 (11.06)
Class- III	163 (69.36)
Class- IV	32 (13.62)
Class- V	3 (1.28)
<b>Age at marriage (years)</b>	
$\leq 18$	49 (20.85)
19-29	183 (77.87)
$\geq 30$	3 (1.28)
<b>Parity</b>	
Primiparous	88 (37.45)
Multiparous	147 (62.55)

[Table/Fig-1]: Socio-demographic profile of the study population.

Factors	Frequency (%)
<b>Planned pregnancy</b>	
Yes	205 (87.23)
No	30 (12.77)
<b>Confirmation done by</b>	
Urine pregnancy test	233 (99.15)
Others	2 (0.85)
<b>Registration of pregnancy</b>	
Early	222 (94.47)
Late	13 (5.53)
<b>H/O Difficulty in vision</b>	
Yes	4 (1.70)
No	221 (94.04)
Don't know	10 (4.26)
<b>H/O convulsions</b>	
Yes	4 (1.70)
No	231 (98.30)
<b>H/O oedema</b>	
Yes	119 (50.64)
No	116 (49.36)

[Table/Fig-2]: Details of current pregnancy.  
H/O: History of

S. No.	Risk factors*	Frequency (%)
1.	Age >35 years	2 (0.85)
2.	Primi	4 (1.70)
3.	Abortion/infertility	20 (8.51)
4.	PPH/manual removal	11 (4.68)
5.	Baby >4 kg (4000 gms)	7 (2.98)
6.	PIH/hypertension	12 (5.11)
7.	Previous caesarean section	32 (13.62)
8.	Still birth/neonatal death	4 (1.70)
9.	Prolonged labour	6 (2.55)
10.	Diabetes mellitus	13 (5.53)
11.	Cardiac diseases	2 (0.85)
12.	Previous gynaecology surgery	4 (1.70)
13.	Infective hepatitis	3 (1.28)
14.	Pulmonary tuberculosis	3 (1.28)
15.	Undernutrition	73 (31.06)
16.	Bleeding weeks <20	3 (1.28)
17.	Bleeding weeks >20	2 (0.85)
18.	Anaemia <10 gm	78 (33.19)
19.	Hypertension	12 (5.11)
20.	Hypertension with albuminuria	2 (0.85)
21.	Multiple pregnancy/breech	9 (3.83)
22.	Rh- isommunisation	13 (5.53)
23.	Prolonged pregnancy	6 (2.55)
24.	Oligohydramnios/polyhydramnios	4 (1.70)
25.	PROM	4 (1.70)
26.	Small for dates	23 (9.79)

**[Table/Fig-3]:** Prevalence of high risk factors of pregnancy.

\*In some cases multiple risk factors were present; PPH: Post partum haemorrhage; PIH: Pregnancy induced hypertension; PROM: Premature rupture of membrane

All study participants had registered their pregnancies. In this present study, the prevalence of high risk, moderate risk and low risk pregnancy was with no known risk factors is shown in [Table/Fig-4].

Risk category	Frequency	Percentage (%)
High risk	36	15.32
Moderate risk	63	26.81
Low risk	136	57.87

**[Table/Fig-4]:** Categorisation of risk pregnancy.

Moderate to high risk pregnancies have been identified from multiple risk factors like age >35 years, primi, undernutrition, anaemia, previous caesarean section, hypertension and diabetes in pregnancy and history of chronic medical disorders like diabetes mellitus, cardiac diseases and hypertension [Table/Fig-3].

In present study, there was no significant association of moderate to high risk with age ( $p=0.055$ ). However, high income group ( $p=0.043$ ), occupation of the mother ( $p=0.03$ ) and parity of pregnant women ( $p=0.0001$ ) were significantly associated. Whereas variables like education of the mothers ( $p=0.599$ ) and religion ( $p=0.946$ ) did not show any significant association [Table/Fig-5].

## DISCUSSION

India has implemented so many strategies to reduce the maternal deaths. In order to reduce the MMR to an acceptable level it is mandatory to identify the high risk mothers at the earliest and provide them with appropriate care to reduce the complications during pregnancy and child birth [7-9]. In this study, the aim was to study the prevalence of high risk pregnancies and their associated socio-demographic risk in the rural field practice area of our college and after following all the Coronavirus-2019 (COVID-19) protocols, the

Variables	Low risk	Moderate to high risk	$\chi^2$	Significance
<b>Age (years)</b>				
19-29	127 (93.3)	85 (85.9)	3.673	0.055
<19-≥30	9 (6.6)	14 (14.1)		
<b>Religion</b>				
Hindu	131 (96.3)	95 (96.0)	0.112	0.946
Muslim	2 (1.5)	2 (2.0)		
Christian	3 (2.2)	2 (2.0)		
<b>Education of mother</b>				
Upto middle	52 (38.2)	43 (43.4)	1.027	0.599
Higher secondary	48 (35.3)	29 (29.3)		
Graduate and above	36 (26.5)	27 (27.3)		
<b>Occupation of mother</b>				
Home maker	124 (91.2)	97 (98.0)	4.733	0.03
Working mother	12 (8.8)	2 (2.0)		
<b>Income group</b>				
Low income	27 (19.9)	10 (10.1)	4.107	0.043
High income	109 (80.1)	89 (89.9)		
<b>Parity</b>				
Primiparous	79 (58.1)	9 (9.0)	58.720	0.0001
Multiparous	57 (41.9)	90 (91.0)		

**[Table/Fig-5]:** Association between various risk factors and its significance. Chi-square test,  $p<0.05$  considered significant

study participants were interviewed. This current study has found that prevalence of moderate to high risk pregnancy was 42.13%. In this cross-sectional study, the prevalence of high risk pregnancy was 15.32%. This low prevalence on high risk pregnancy was an encouraging factor since this low prevalence indirectly indicates the effectiveness of services provided for pregnant mothers and also reflecting the general good attitude of the rural community in reporting to health system regularly [22].

Study of high risk scoring in pregnancy and perinatal outcome by Kolluru V and Reddy A in Narketpally, Telungana has found that 45% belonged to low risk, 33% to the moderate risk and 20% to the high risk category which was comparable to present study [13]. This prevalence was similar to various studies conducted in southern India at Puducherry by Majella MG et al., where prevalence of low risk pregnancy was 18.3% [14]. In some regions in India prevalence was high. Jaideep KC et al., at rural Karnataka prevalence of low risk pregnancy- 30.7% At Rajasthan-25% (Ali A et al.) and at Nagpur-33.64% (Jadhao AR et al.) [12, 15, 16]. Comparison of similar studies have been done in [Table/Fig-6] [12-16,23,24]. When compared to countries like Saudi where the prevalence was 63.3% which could be considered as high prevalence and also study conducted at Iran showed the very high prevalence i.e., 80.5% which could be due to poor primary healthcare delivery to identify the high risk pregnancies by health workers [23,25].

Regarding the age group of study population majority of pregnant mothers in this study (90.21%) were belonging to 19-29 years which was comparable to age group of study populations at rural Karnataka (88%) and rural Haryana (64.3%) were belonging to this age groups which reflects the overall awareness of avoiding pregnancies at younger age [12,17]. The another favourable findings of this study showed that only negligible percentage of pregnancy belonging to <20 years i.e., 1.28% and more than or equal to 30 years (8.51%) in present study whereas in one study conducted in Saudi, majority were in the age group of 30-35 years (44%) [23]. Literacy rate among pregnancy mothers has very big influence over the maternal outcome. Level of schooling plays an important role in reduction of high risk pregnancy and reduction

S. No.	Authors name and year	Place of study	Number of subjects	Prevalence of high risk pregnancies	Associated risk factors
1.	Samar KH et al., (2014) [23]	Saudi Arabia	316	63.3%	Old age (>30 and <20 years) anaemia (25.3%), gestational diabetes (16.2%), pregnancy induced hypertension (15.2%).
2.	Kolluru V and Reddy A (2016) [13]	Rural Telungana	200	20%	Unbooked mothers (77%).
3.	Jaideep KC et al., (2017) [12]	Rural Karnataka	600	30.7%	59.8% were having bad obstetric history, 4% were having pregnancy induced hypertension, 5.5% were elderly gravida, 3.2% were Rh negative.
4.	Jadhao AR et al., (2017) [16]	Rural Nagpur	214	33.6%	History of caesarean section (14.49%), malpresentation (7.94%), teenage pregnancy (6.54%).
5.	Majella MG et al., (2019) [14]	Rural Puducherry	569	18.3%	6.2% belonged to either younger primi (age <20 years) or elderly gravida (age >35 years). An 18 (3.1%) had hypertension disorder in pregnancy ( $\geq 140/90$ mmHg), 11 (1.9%) had gestational diabetes mellitus, 10 (1.7%) had severe anaemia.
6.	Ali A et al., (2019) [15]	Rural Rajasthan	217	25%	Severe anaemia which was in 33.9% women followed by bad obstetric history in 25% of cases.
7.	Pinar G and Pinar T (2020) [24]	Turkey	265	26%	Advanced/adolescence maternal age, low education, low-income level, smoking, chronic diseases in the family, social support disadvantage, and consanguineous marriage.
8.	Present study, 2022	Rural Tamil Nadu, India	235	15.32%	Anaemia (33.19%), undernutrition (31.06%), previous caesarean section (13.62%), abortion (8.51%).

**[Table/Fig-6]:** Comparison of results with relative studies [12-16,23,24].

of maternal and infant mortality rates [1]. In this present study, level of schooling of present study findings revealed that 26.81% had done their graduation and above, 32.8% had studied higher secondary school level. Illiterates in present study population were very low (4.26%) which was not comparable to a study conducted at rural Karnataka, where illiterate participants were 14% and also with one study conducted at rural Haryana where illiteracy rate among the pregnant mothers were 14% [12,17]. In some countries like in south eastern Nigeria illiteracy among pregnancy was very high (46.2%) [26].

Among 99 pregnant mothers belonging to moderate to high risk pregnancies found in this study, Major risk factors identified were anaemia (33.19%), undernutrition (31.06%), previous LSCS (13.62%), abortion (8.51%). Similar findings were seen in study conducted at Rajasthan, where anaemia (33.9%) was the major risk factor for high risk pregnancy follows by bad obstetric history (25%) [15]. A study done by Rupani SN and Janagam SG at rural Karnataka showed that most common risk factor associated with high risk pregnancy was previous LSCS which was accounted for 44.1% of high risk pregnancies [18]. A study conducted at western Uttar Pradesh, showed hypertension was found to be 14.56% which was higher than present study i.e., 6% and anaemia among the pregnant women also found to be very high (82%) in that study [27]. In contrast the major risk factors found in one study at rural Haryana showed the common risk factors were abortion (27.4%) followed by PIH (22%) chronic medical disorders (14.7%) and history of maternal birth (11.6%) [17].

### Limitation(s)

Outcome of the pregnancies have not been followed-up due to lack of resources. Data have been obtained from the pregnant women and from the medical records of pregnant women attending the antenatal care clinic. So there could be possibility of an error while entering the data by the health workers.

### CONCLUSION(S)

Present study identified the prevalence of high risk as 15.32% which was low prevalence. Many of the women were having multiple risk factors of pregnancy and major risk factors identified were anaemia (33.19%), undernutrition (31.06%), previous LSCS (13.62%), abortion (8.51%). Parity and high socio-economic condition were significantly associated with moderate to high risk pregnancy. National programme for maternal and Child health is aiming at reducing MMR and Infant Mortality Rate (IMR) to acceptable level as mentioned in Sustainable Development Goals (SDG). To achieve this goal, one of the strategies

to be adopted will be identification of high risk pregnancy at the plan of first contact by the health workers. A uniform scoring system to identify the high risk pregnancies may be adapted to train the health care workers at primary level can reduce the pregnancy loss and also improve the perinatal outcome.

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### REFERENCES

- [1] Park K. Parks Textbook of Preventive and Social Medicine. 25<sup>th</sup> Edition, M/S Banarsidas Bhanot Publishers, Jabalpur, 572-578.
- [2] Pradeep MK, Gnanadeep NV, Umesh RD, Pushpa SP. Prevalence of high risk pregnancy in rural Dharwad. IOSR Journal of Dental and Medical Sciences. 2015;10:29-32.
- [3] World Health Organization. Maternal Health (2019) [Internet]. [cited 2021 October 22]. Available from: <https://www.who.int/health-topics/maternal-health>.
- [4] Trends in maternal mortality: 2000 to 2017: Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organisation; 2019.
- [5] Trends in Maternal Mortality: 1990–2015. Estimates by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division.
- [6] Office of Registrar General of India. Special Bulletin on Maternal Mortality in India 2014-16, SRS, Dec. 2018 Govt. of India (2018). Special Bulletin on Maternal Mortality in India 2014-16, SRS, Dec. 2018, Office of Registrar General of India.
- [7] Eunice Kennedy Shriver. National Institute of Child Health and Human Development (2018) [Internet]. [cited 2021 October 22]. Available from: <https://www.nichd.nih.gov/health/topics/high-risk>.
- [8] Ministry of Health & Family Welfare (MoHFW), Government of India. Pradhan Mantri Surakshit Matritva Abhiyan (2016). [Internet]. [cited 2021 October 26]. Available from: <https://pmsma.nhp.gov.in/about-scheme>.
- [9] Ministry of Health & Family Welfare (MoHFW), Government of India. Surakshit Matritva Aashwasan (2021). [Internet]. [cited 2021 July 20]. Available from: <https://suman.nhp.gov.in>.
- [10] Dutta S, Das XS. Identification of high risk mothers by a scoring system and its correlation with perinatal outcome. J. Obstet Gynaecol India. 1990;40:181-90.
- [11] Malik S, Sinha S. High risk pregnancy. Biomed J Sci & Tech Res. 2017;1(5). BJSTR.MS.ID.000438.
- [12] Jaideep KC, Prashant D, Girija A. Prevalence of high risk among pregnant women attending antenatal clinic in rural field practice area of Jawaharlal Nehru Medical College, Belgavi, Karnataka, India. Int J Community Med Public Health. 2017;4:1257-59.
- [13] Kolluru V, Reddy A. Study of high risk scoring in pregnancy and perinatal outcome. Indian J Obstet Gynecol Res. 2016;3(4):407-09.
- [14] Majella MG, Sarveswaran G, Yuvaraj Krishnamoorthy KS, Arikrishnan K, Kumar SG. A longitudinal study on high risk pregnancy and its outcome among antenatal women attending rural primary health centre in Puducherry, South India. J Educ Health Promot. 2019;8:12.
- [15] Ali A, Hora S, Agarwal G. A cross-sectional study on high risk pregnancy among antenatal women at rural primary health center in eastern part of Rajasthan. Glob Acad J. 2019;1(1):01-03.

- [16] Jadhao AR, Gawade MD, Ughade SN. Outcome of pregnancy among high risk pregnancies in rural area of Nagpur, Maharashtra, Central India. *Int J Community Med Public Health*. 2017;4:628-33.
- [17] Bharti Kumar V, Kaur A, Chawla S. Prevalence and correlates of high risk pregnancy in rural Haryana A. *International Journal of Basic and Applied Medical Sciences*. 2016;3:212-17.
- [18] Rupani SN, Janagam SG. Risks a mother takes to give birth- A cross-sectional study of high-risk pregnancies and preparedness of public health facilities in rural Karnataka. *Int J Med Public Health*. 2021;11(1):53-56.
- [19] Ministry of Health & Family Welfare (MoHFW), Government of India. National Family Health Survey- 4 District Fact Sheet, Salem, Tamil Nadu (2015-16). [Internet]. [cited 2021 July 20]. Available from: [http://rchiips.org/nfhs/FCTS/TN/TN\\_FactSheet\\_608\\_Salem.pdf](http://rchiips.org/nfhs/FCTS/TN/TN_FactSheet_608_Salem.pdf).
- [20] Mufti S, Mufti S. Identification of high risk pregnancy by a scoring system and its correlation with perinatal outcome. *Indian Journal for the Practicing Doctor*. 2008;5(1).
- [21] Debnath DJ, Kakkar R. Modified BG Prasad Socio-economic Classification, Updated- 2020. *Indian J Comm Health*. 2020;32(1):124-25.
- [22] Department of Economics and Statistics. Government of Tamil Nadu. *Vital Statistics (2020)* [Internet]. [cited 2021 November 11]. Available from: <https://www.tn.gov.in/deptst/vitalstatistics.pdf>.
- [23] Samar KH, Dorgham LS, Suheir AM. Profile of high risk pregnancy among Saudi women in Taif-KSA. *World Journal of Medical Sciences*. 2014;11(1):90-97.
- [24] Pinar G, Pinar T. Identifying pregnant women at risk for perinatal factors using a modified scoring model. *Gynaecology and Perinatology*. 2020;3(2):03-16.
- [25] Torabi F, Akbari SAA, Amiri S, Soleimani F, Majd HA. Correlation between high-risk pregnancy and developmental delay in children aged 4-60 months. *Libyan J Med*. 2012;7(1).
- [26] Oyibo PG, Ebeigbe PN, Nwonwu EU. Assessment of the risk status of pregnant women presenting for antenatal care in a rural health facility in Ebonyi State, South Eastern Nigeria. *N Am J Med Sci*. 2011;3(9):424-27.
- [27] Singh R, Chauhan R, Nandan D, Singh H, Gupata SC, Bhatnagar M. Morbidity profile of women during pregnancy: A hospital record based study in Western UP. *IJCH*. 2012;24:342-46.

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#### PLAGIARISM CHECKING METHODS: [Jan H et al.]

- Plagiarism X-checker: Jan 25, 2022
- Manual Googling: Feb 19, 2022
- iThenticate Software: Feb 28, 2022 (19%)

#### ETYMOLOGY: Author Origin

#### AUTHOR DECLARATION:

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- For any images presented appropriate consent has been obtained from the subjects. NA

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## QUESTIONNAIRE

### [Section-I]

High risk pregnancy: A cross-sectional study	
CONFIDENTIAL (for research purpose only)	
S. No.:	
Section I.	
Socio-demographic details	
Age in completed years	
Marital status:	Married/Separated
Religion:	Hindu/Christian/Muslim/Others. specify
Educational status:	Not attended school/Primary/Middle/HSC/Graduation and above
Occupation:	Housewife/Others
Total family income (Rs per month):	
Type of family:	Nuclear/Joint/Three generation/Extended
Education of husband:	Not attended school/Primary/Middle/HSC/Graduation and above
Age at marriage (In completed years):	
Obstetric score:	G....P....L....A....

### [Section-II]

Current pregnancy	
1. Is it a planned pregnancy?	1. Yes 2. No
2. How did you realise you were pregnant?	1. Missed period 2. By urine test 3. Scan 4. Health provider told during consultation for a medical problem 5. Other_____
3. At which week of the pregnancy did you first register for antenatal care?	

4. During this pregnancy, did you have difficulty with your vision during daylight?	1. Yes 2. No
5. During this pregnancy, did you have convulsions?	1. Yes 2. No 3. Don't know
6. During this pregnancy, did you have swelling of the legs, body or face.	1. Yes 2. No 3. Don't know

### [Section-III]

Reproductive history factors	Score	Associated disease factors	Score
Age <16 years	1	Diabetes mellitus	3
16-35 years	0	Cardiac diseases	3
>35 years	2	Chronic disease renal	2
Parity 0	2	Previous surgery Gyn.	1
1-4	0	Infective hepatitis	1
5/>5	2	Pulmonary tuberculosis	2
<b>Past obstetric history</b>		Undernutrition	2
Abortion infertility	1	Other diseases (according to severity)	1-3
PPH/Manual removal	1	<b>Present pregnancy factors</b>	
Baby >4 kg	1	Bleeding weeks >20 weeks <20	1 and 3
PIH/HT	1	Anaemia <10 gm	1
Prev C section	2	Hypertension	2
Still birth/neonatal death	3	Hypertension with albuminuria	3
Prolonged labour	1	Multiple pregnancy/breech	3
		Rh- isomunisation	3
		Prolonged pregnancy	1
		Oligohydramnios/Polyhydramnios	2
		PROM (Premature Rupture Of Membrane)	2
		Small for dates	1