

Factors Contributing to Maternal Health Challenges in Kolkata's Slums

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Abstract: The Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) is a government initiative in India aimed at improving maternal health by providing free, comprehensive antenatal care, especially in underserved areas. This study examines the program's implementation and impact in urban slums, where overcrowding, inadequate healthcare infrastructure, and socioeconomic barriers create significant challenges for accessing quality maternal care. By evaluating PMSMA's reach and effectiveness in these areas, the study seeks to identify ways to enhance maternal health interventions and reduce maternal and infant mortality rates in high-need urban slum populations.

Keywords: PMSMA, maternal health, antenatal care, urban slums, healthcare disparities, maternal and infant mortality, India, public health.

Introduction

Pregnancy at high risk (Nola Holness, C.N.M., 2018) highlights the significant public health concerns posed by high-risk pregnancies, especially in densely populated and underserved metropolitan slum areas. In regions such as the slums of Kolkata, these challenges are often exacerbated by inadequate healthcare infrastructure, poverty, and limited access to essential maternal care. High-risk pregnancies refer to cases where the health of the mother, fetus, or both is at a greater risk of complications, leading to heightened concerns for adverse pregnancy outcomes.

This study aims to assess the prevalence of high-risk pregnancies, identify associated risk factors, and analyse the outcomes within ten selected wards of Kolkata. A cross-sectional study design will be employed, utilising both cluster and stratified sampling techniques to ensure a representative understanding of the maternal health conditions in these communities. The study will draw upon earlier foundational research on pregnancy risks (Alfirevic, Z., & Neilson, J.P., 1995), aiming to fill gaps in the understanding of how urban slum conditions affect pregnancy outcomes.

The focus on these specific wards in Kolkata allows for an in-depth analysis of the unique set of circumstances faced by pregnant women in these localities. The study

will consider a wide range of determinants, including socioeconomic status, availability and accessibility of healthcare services, environmental conditions, and personal health factors, all of which can contribute to increased pregnancy risks.

Data collection will rely on a comprehensive questionnaire (Eslami, M, 2013) designed to capture diverse information regarding maternal health, economic conditions, healthcare access, lifestyle, and pregnancy outcomes. The involvement of the Child In Need Institute (CINI)(Li, C., & Wong, F, 2020), a renowned non-governmental organization with extensive experience in maternal and child healthcare, will be integral to the success of the study. CINI's long-standing work in these communities ensures a deep understanding of the local context, helping to facilitate smooth data collection and providing essential support throughout the research process.

By leveraging CINI's expertise and local knowledge, this study seeks to identify actionable insights into the social, economic, and health-related determinants of high-risk pregnancies. This research could provide valuable guidance for future public health interventions aimed at reducing maternal and infant mortality in urban slum areas, where vulnerable populations face disproportionate healthcare challenges.

Objectives

- To investigate major maternal, lifestyle, medical and socioeconomic determinants of high-risk pregnancy in different sections of the population of India.
- To study the difference in the prevalence of HRP in the various wards of Kolkata and its implications for improving targeted health care where the need is greatest.
- To assess the relationships between the risks of high-risk pregnancies and socio-economic factors like level of education, wealth quintile and health care accessibility.
- Particular attention will be paid to at-risk segments of the population: poorly educated women and women living in the lowest income quintiles to help understand the specific HRP-associated risks.

Literature Review

The study "Socio-demographic and Infrastructural Variables Influencing Maternal Risk Concentration among Ever-Married Women of Reproductive Age in Rural West Bengal, India" was conducted by Alokanda Ghosh on May 27, 2024. This study examined maternal risks among ever-married women aged 15-49 in Birbhum district, West Bengal, using a retrospective cross-sectional design and an ordinal logistic regression (OLR) analysis. Illiterates had an increased maternal risk (OR = 2.81). Risk is higher with lower living standards (OR = 1.14). Women who get married between the

ages of 15 and 18 (OR = 24.51) and before the age of 15 (OR = 21.96) are considered to be at a higher risk. Early intervention reduces risks.

Sourav Manna has studied, September 1, 2020; "The Risk of Low Birth Weight and Associated Factors in West Bengal, India: A Community-Based Cross-Sectional Study" Using multi-stage stratified cluster sampling, this study examines the prevalence of low birth weight (LBW) and associated risk factors among 2611 birth episodes in West Bengal, India. Prevalence of Low birth weight (LBW) was seen in 21.49% of neonates. Maternal Age and BMI Lactational breakage was more common in women under 20 years old whose BMI was less than 18.5 kg/m². Women who weighed less than 45 kg and were shorter than 150 cm were more likely to become LBW. Health Conditions of Women with hypertension had a 1.69-fold greater chance of having LBW kids, while anaemic women had a 3.33-fold higher chance. Preterm and Chronic Illness of Women with chronic illnesses, particularly those who give birth before term, had 1.93 times greater odds of living with a baby.

Nivedita Roy choudhury has studied, October 1, 2019; "Assessment of Nutritional Anaemia and its Predisposing Factors among Women of Reproductive Age Group in a Slum of Kolkata, West Bengal, India." This study looks into the prevalence of nutritional anaemia and the contributing factors in a Kolkata slum among women aged 15 to 49. Of the women, 91.8% had anaemia; of them, 67.2% had moderate anaemia and 24.6% had substantial anaemia. Age, education, parity, diet, menorrhagia, abortion history, BMI, diet, and short time intervals between pregnancies. Lower levels increased the incidence of anaemia. The frequency of anaemia was enhanced by high parity, narrow spacing between pregnancies, and abortions. There was a notable consumption deficit of iron-rich foods. To sum up improving dietary habits, socioeconomic conditions, education, and reproductive health practices.

Reviewing the publication of Bandyopadhyay, Sayanti, September 2020; "Status of Maternal Health Care Services: An Assessment Study in Slums of Kolkata". This research examines the utilisation of maternal health care services by women with small children living in the slums of Kolkata. Antenatal Care: Seventy-seven percent of moms registered in the first trimester, out of the four prenatal checkups that all mothers received. Of the subjects, only 78% took 100 or more IFA tablets and 23.3% took 360 or more calcium pills. Eighty-three percent of mothers did not make the most use of maternal health care services. Poor utilisation is associated with teenage marriages, fewer pregnancies, and younger moms. It is necessary for mothers to adopt new behaviours and increase their awareness of their rights in order to improve the use of maternal health care services in Kolkata's slums.

"Contraceptive Practice Determinants Among Eligible Urban Slum Couples in Bankura District, West Bengal" Roy Gupta and Avisek. First, this study, which emphasises on the pair protection rate (CPR) and affecting variables, examines 200 eligible couples' contraceptive methods in the Bakultala urban slum in the Bankura region. A three-month cross-sectional observational research was conducted to investigate the factors influencing the use of contraceptives. CPR: 67.50%, with 49% utilising continuous methods. The majority were young individuals (20–29 years old), from nuclear homes (65%), and married before turning 18. Having three or more children, being married between the ages of 18 and 24, living in a nuclear family, having literacy levels up to class 10, and having a higher socioeconomic status are all linked to greater CPR. The majority of women (92.50%) had tubectomy as their most prevalent medical procedure.

A critical analysis of the paper "Using Community Health Workers to Refer Pregnant Women and Young Children to Health Care Facilities in Rural West Bengal, India" (Bhramar Mukherjee, June 21, 2018). To put it briefly: This study evaluates the methods used by community health workers (CHWs) in rural West Bengal to send infants and pregnant patients to hospitals. The study found that every pregnant woman and mother of a young kid sought out additional treatment on the advice of a CHW. Women who are expecting: 90% gave birth in hospitals, 100% asked for extra attention, and all altered their health practices. Moms of small children: 100% of them asked for more care, and 67% of them saw noticeable changes in their health-related habits. In summary, CHWs in rural regions successfully enhance healthcare access and health habits. This idea could benefit other developing fields.

Sulagna Das, 30 June 2014, "Women in a Reproductive Age Group in a Kolkata Slum Perceiving Family Planning" Women in a Kolkata slum participate in this study by sharing details on their family planning practices and the sociodemographic variables that affect them. Knowledge vs Practice: Although 95.8% of women were aware of family planning methods, only 73.3% of them used contraceptives. Modern methods were mostly used, with female sterilisation being the most common (46.7%). Higher rates of contraceptive usage were associated with higher per capita income, higher child count, and older age. In summary, family planning techniques are actually utilised and accepted at lower rates than expected, phenomena influenced by sociodemographic factors, even if contraceptives are well known. The study highlights the need for more effective and tailored family planning programs. Bandhapadhy L has studied on 17 April, 2022; "Nutritional Status and Intra-household Food Distribution Among Reproductive-Age-Group Women in a Slum Area of Hooghly District, West Bengal: A Mixed-Methods Approach" Examining the food distribution and nutritional status of reproductive-age women living in a Hooghly

District slum is the aim of this study. Insufficient nutrition affects 50% of females. In 46% of homes, there was an uneven distribution of food. Improved nutrition has been linked to more equitable food distribution. Notable barriers included physiologic issues, financial limitations, and cultural norms. The need for policies that address gender-based differences in food distribution and increase women's economic potential is emphasised in the study's conclusion.

Sinha, Tirthankar has studied on March 2021; "A Study on Anaemia and Its Risk Factors Among Pregnant Women Attending a Rural Medical College of West Bengal's Antenatal Clinic" This study assesses the incidence of anaemia and associated risk factors among pregnant women visiting a West Bengal rural prenatal clinic. Of the women surveyed who were expecting, 90% had anaemia, of which 60.5% had moderate anaemia. It was discovered that there were notable correlations between the date of the first prenatal visit, gravida, and socioeconomic status. P-values below 0.05 suggested that these factors were important in determining the prevalence of anaemia. The research findings underscore the pressing necessity of heightened consciousness and instructional campaigns to address anaemia, specifically focussing on improving socioeconomic conditions, advocating for early antenatal care, and providing multigravida-specific therapies.

Ghosh-Jerath et al. has studied on 2015, "Antenatal Care Utilization, Dietary Practices, and Nutritional Outcomes Among Pregnant Women in Urban Slums of Delhi" Investigated the use of antenatal care (ANC), dietary habits, and nutritional results among pregnant women living in urban slums in Delhi. 80% of patients received some ANC, but not enough dietary counselling was provided. Access to care was hampered by concerns with residency, poverty, and illiteracy. A significant nutritional deficiency was evident in the prevalent anaemia (85% in pregnant women and 97% in new moms) and insufficient dietary intake of protein and essential micronutrients. Boost ANC by providing improved dietary counselling and assistance from community health workers. Improving dietary choices by addressing poverty and illiteracy. Launching specialised nutrition initiatives. In order to improve maternal health, the study concludes that ANC services should be improved, socioeconomic issues should be addressed, and nutritional interventions should be put in place.

Methodology

Research Plan

This study is cross-sectional and includes pregnant women from ten different Kolkata wards. In order to guarantee representative data collection across various demographic and socioeconomic categories, the study will employ stratified and cluster sampling.

The Quantitative Aspect

1. Selection: Multiple Phase Sampling

Cluster Sampling: Ten wards will be divided into clusters for the study. Every ward will be handled as a group.

Stratified Sampling: The population in each ward will be divided into groups according to factors such as age, family income, marital status, religion, level of education, gravidity, and parity.

Calculating the Sample Size

Using the following formula for finite population correction, you can determine the sample size for a cross-sectional study with a prevalence value of 7% and a total population of 2000:

Where: The necessary sample size is n.

Analysis

Anccheckup & Ancvisit Crosstabulation

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.013 ^a	3	.000
Likelihood Ratio	17.241	3	.001
Linear-by-Linear Association	13.033	1	.000
N of Valid Cases	100		
75.0% have an expected count of less than 5. The minimum expected count is .07.			

Where, Likelihood Ratio (17.241, df = 3, p = .001):

- The Likelihood Ratio test yielded a value of 17.241 with 3 degrees of freedom.
- The corresponding p-value is .001, which indicates a statistically significant result.

The Likelihood Ratio is accepted.

Given the substantial likelihood ratio, we can infer that ANC checkup status and frequency of ANC visits are significantly associated. This may mean that there is a relationship between how frequently ANC checkups are made, and if they were made at all. Further analysis could help clarify this relationship's direction and nature.

Family Support * Depression

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	101.000 ^a	2	.000
Likelihood Ratio	11.220	2	.004
Linear-by-Linear Association	10.425	1	.001
N of Valid Cases	101		

a. 5 cells (83.3%) have an expected count of less than 5. The minimum expected count is .01.

Linear-by-Linear Association (10.425, df = 1, p = .001):

- The Linear-by-Linear Association value is 10.425 with 1 degree of freedom.
- The p-value is .001, which is highly significant.

The Likelihood Ratio & Linear by Linear Association is accepted.

Based on the Significant Likelihood Ratio, supports the hypothesis that there exists a connection between the family backup offered to individuals suffering from depression and the level of depression. This suggests that it is possible that when an individual has a depression issue, the severity and level of it may depend on how supportive the family is. Therefore this can be used to study more or for providing specific forms of assistance.

T-Test

House:

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
HOUSE	Equal variances assumed	75.715	.000	5.373	99	.000	.4949	.0921	.3121	.6776
	Equal variances not assumed			5.670	82.472	.000	.4949	.0873	.3213	.6685
TOILET	Equal variances assumed	17.015	.000	18.645	99	.000	.8731	.0468	.7802	.9660
	Equal variances not assumed			17.520	58.727	.000	.8731	.0498	.7734	.9729
RELIGION	Equal variances assumed	24.449	.000	-3.219	98	.002	-.3011	.0936	-.4868	-.1155
	Equal variances not assumed			-3.268	97.923	.001	-.3011	.0921	-.4840	-.1183

- Levene's Test: The variances are significantly different (p = .000).
- t-test (Equal variances not assumed):
 - t(82.472) = 5.670, p = .000 – There is a significant difference in means.

- Mean Difference = .4949.
- 95% CI = [.3213, .6685].

Toilet:

- Levene's Test: The variances are significantly different ($p = .000$).
- t-test (Equal variances not assumed):
 - $t(58.727) = 17.520$, $p = .000$ – There is a highly significant difference in means.
 - Mean Difference = .8731.
 - 95% CI = [.7734, .9729].

Religion:

- Levene's Test: The variances are significantly different ($p = .000$).
- t-test (Equal variances not assumed):
 - $t(97.923) = -3.268$, $p = .001$ – There is a significant difference in means.
 - Mean Difference = -.3011.
 - 95% CI = [-.4840, -.1183].

All the significance is accepted.

The important p-values registered for HOUSE, TOILET, and RELIGION variables signify that the differences in these variables across the groups are significant, and therefore, such attributes are likely to be group-dependent. The observed variances can help in assessing and analyzing the possible effects each variable has concerning the general context of the analysis.

Levene's Test for Equality of Variances:

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
ANCVISIT	Equal variances assumed	10.961	.001	1.917	98	.058	.6598	.3441	-.0231	1.3427
	Equal variances not assumed			10.956	96.000	.000	.6598	.0602	.5403	.7793

- $F = 10.961$, $p = .001$: The variances between the two groups are significantly different, so we should use the t-test result that does not assume equal variances.

t-test for Equality of Means (Equal variances not assumed):

- $T(96.000) = 10.956$, $p = .000$: There is a highly significant difference in means between the two groups.

- Mean Difference = .6598: The average difference between the two groups is .6598.
 - 95% Confidence Interval: The true mean difference lies between .5403 and .7793.
- All the significance is accepted.

The p-value which is statistically approved aids in confirming the presence of a notable difference in the two group means. The confidence interval illustrates additionally that the difference between the means is greater than zero and falls within a range of 0.5403 and 0.7793. This means that on average, one group in the study is about 0.6598 units larger than the other group. This finding is potentially useful in differentiating between the groups in question and may therefore be necessary to investigate why this mean difference exists.

Anova

Caste With Toilet & House

Descriptives									
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
TOILET	MUSLIM	62	.532	.5030	.0639	.405	.660	.0	1.0
	HINDU	38	.237	.4309	.0699	.095	.378	.0	1.0
	Total	100	.420	.4960	.0496	.322	.518	.0	1.0
HOUSE	MUSLIM	62	2.758	.4318	.0548	2.648	2.868	2.0	3.0
	HINDU	38	2.474	.6035	.0979	2.275	2.672	1.0	3.0
	Total	100	2.650	.5198	.0520	2.547	2.753	1.0	3.0

Anova

		Sum of Squares	df	Mean Square	F	Sig.
TOILET	Between Groups	2.056	1	2.056	9.034	.003
	Within Groups	22.304	98	.228		
	Total	24.360	99			
HOUSE	Between Groups	1.905	1	1.905	7.516	.007
	Within Groups	24.845	98	.254		
	Total	26.750	99			

Toilet

- **Between Groups:** This refers to the variance between different groups for the "TOILET" variable.
 - **Sum of Squares:** 2.056. This measures the variance between group means.
 - **df (Degrees of Freedom):** 1, This indicates that there is one independent variable or category being compared.
 - **Mean Square:** 2.056. This is the average variance between groups (calculated as Sum of Squares / df).
 - **F-value:** 9.034. This is the ratio of the variance between groups to the variance within groups.
 - **Sig. (p-value):** .003. This is the probability that the observed results occurred by chance. Since the p-value is less than .05, the difference between groups for "TOILET" is statistically significant.
- **Within Groups:** This refers to the variance within each group.
 - **Sum of Squares:** 22.304. This measures the variability within groups.
 - **df:** 98. The degrees of freedom for within-group variability.
 - **Mean Square:** 0.228. This is the average variance within groups.
- **Total:** The total variance (2.056 + 22.304 = 24.360).

House

- **Between Groups:** This refers to the variance between different groups for the "HOUSE" variable.
 - **Sum of Squares:** 1.905.
 - **df:** 1.
 - **Mean Square:** 1.905.
 - **F-value:** 7.516.
 - **Sig. (p-value):** .007. Since the p-value is less than .05, the difference between groups for "HOUSE" is statistically significant.

- **Within Groups:**
 - **Sum of Squares:** 24.845.
 - **df:** 98.
 - **Mean Square:** 0.254.
- **Total:** The total variance (1.905 + 24.845 = 26.750).

Summary:

- **TOILET:** There is a significant difference between groups (p = .003), meaning the factor being compared has a statistically significant effect on "TOILET."
- **HOUSE:** There is also a significant difference between groups (p = .007), indicating the factor has a statistically significant effect on "HOUSE."

Age With Gravida Parity & Riskcategory

Descriptives									
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
GRAVIDA	BELOW 18	8	1.125	.3536	.1250	.829	1.421	1.0	2.0
	18-25	36	1.889	1.0359	.1726	1.538	2.239	.0	4.0
	25-30	40	2.450	1.1972	.1893	2.067	2.833	.0	5.0
	20-25	15	3.333	1.3973	.3608	2.560	4.107	1.0	6.0
	35 & ABOVE	2	4.500	2.1213	1.5000	-14.559	23.559	3.0	6.0
	Total	101	2.317	1.3033	.1297	2.060	2.574	.0	6.0
PARITY	BELOW 18	8	.000	.0000	.0000	.000	.000	.0	.0
	18-25	36	.500	.8106	.1351	.226	.774	.0	3.0
	25-30	40	.950	.7828	.1238	.700	1.200	.0	3.0
	20-25	15	1.400	.8281	.2138	.941	1.859	.0	3.0
	35 & ABOVE	2	2.500	.7071	.5000	-3.853	8.853	2.0	3.0
	Total	101	.812	.8799	.0876	.638	.986	.0	3.0
RISKCATEGORY	BELOW 18	8	2.125	1.5526	.5489	.827	3.423	1.0	4.0
	18-25	36	3.917	1.9475	.3246	3.258	4.576	1.0	11.0
	25-30	40	4.925	2.8946	.4577	3.999	5.851	1.0	11.0
	20-25	15	3.933	2.3745	.6131	2.618	5.248	1.0	10.0

	35 & ABOVE	2	2.000	1.4142	1.000	-10.706	14.706	1.0	3.0
	Total	101	4.139	2.5021	.2490	3.645	4.633	1.0	11.0
Table13. Descriptive of Age with Parity, Gravida & Riskcategory									
			Sum of Squares	Df	Mean Square	F	Sig.		
GRAVIDA	Between Groups		43.697	4	10.924	8.313	.000		
	Within Groups		126.164	96	1.314				
	Total		169.861	100					
PARITY	Between Groups		20.426	4	5.106	8.600	.000		
	Within Groups		57.000	96	.594				
	Total		77.426	100					
RISKCATEGORY	Between Groups		68.726	4	17.182	2.959	.024		
	Within Groups		557.333	96	5.806				
	Total		626.059	100					

Annova

1. GRAVIDA (Number of pregnancies):

- **Between Groups:**
 - **Sum of Squares:** 43.697. This indicates the variance between the groups for the "GRAVIDA" variable.
 - **df (Degrees of Freedom):** 4, This represents the number of groups being compared.
 - **Mean Square:** 10.924. This is the average variance between groups, calculated as the Sum of Squares divided by df ($43.697 \div 4 = 10.924$).
 - **F-value:** 8.313. The F-value is a measure of how much the group means differs compared to the variability within groups.
 - **Sig. (p-value):** .000. A p-value of less than .05 indicates a statistically significant difference between the groups. In this case, the p-value (.000) shows a highly significant difference in the number of pregnancies (GRAVIDA) between the groups.
- **Within Groups:**
 - **Sum of Squares:** 126.164. This represents the variance within the groups.

- **df:** 96. This is the degrees of freedom for within-group variance.
- **Mean Square:** 1.314. This is the average variance within groups ($126.164 \div 96 = 1.314$).
- **Total:**
 - **Sum of Squares:** 169.861. The total variance between and within groups combined.

Interpretation for GRAVIDA: The p-value (.000) indicates that there is a statistically significant difference in the number of pregnancies across the groups being compared.

2. PARITY (Number of births):

- **Between Groups:**
 - **Sum of Squares:** 20.426. This indicates the variance between the groups for the "PARITY" variable.
 - **df:** 4.
 - **Mean Square:** 5.106. This is calculated as the sum of squares divided by the degrees of freedom ($20.426 \div 4 = 5.106$).
 - **F-value:** 8.600. The F-statistic shows the extent to which the group means differ compared to the variance within groups.
 - **Sig. (p-value):** .000. A p-value less than .05 indicates a significant difference between groups. In this case, the p-value (.000) shows a highly significant difference in the number of births (PARITY) across the groups.
- **Within Groups:**
 - **Sum of Squares:** 57.000.
 - **df:** 96.
 - **Mean Square:** .594. This is the average variance within the groups.
- **Total:**
 - **Sum of Squares:** 77.426.

Interpretation for PARITY: The p-value (.000) indicates a highly significant difference in the number of births (PARITY) across the groups.

Conclusion

In India, the Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) has become an important program for enhancing maternal health care, especially in impoverished areas where access to high-quality healthcare is frequently restricted. This study highlights the program's advantages and disadvantages in these particular, high-need settings by concentrating on the implementation and effects of PMSMA in urban slum neighbourhoods.

Dense populations, a lacklustre healthcare system, and substantial socioeconomic hurdles are characteristics of urban slums that lead to discrepancies in health outcomes. The PMSMA's endeavours to offer complimentary, all-inclusive prenatal care services are vital in these regions, where impoverished living circumstances, insufficient education, and restricted access to healthcare facilities put expectant mothers at an increased risk of difficulties. PMSMA is essential in the early identification and treatment of any pregnancy-related issues since it provides routine health examinations, screens for high-risk pregnancies, and offers dietary guidance and supplements. The prevention of mother and newborn mortality—which is still a major problem in urban slum areas—requires a proactive strategy.

In order to improve PMSMA's effectiveness in urban slum regions, a number of techniques has to be examined. First and foremost, it is imperative to improve the infrastructure for healthcare and expand the pool of qualified healthcare workers in these regions. In order to increase outreach and support services, this may include forming alliances with community-based organisations and non-governmental organisations (NGOs). Second, raising community knowledge and educating people about the value of prenatal care and PMSMA services can aid in boosting participation rates. In this sense, specialised communication techniques that take into account the language and cultural variety of urban slum communities may be very useful.

In summary, the Pradhan Mantri Surakshit Matritva Abhiyan is an important step towards enhancing the health of mothers and infants in India, especially in difficult settings like urban slums. Although the program has made great progress towards offering prenatal care, addressing the particular challenges found in urban slums will be critical to its sustained sustainability. PMSMA has the potential to significantly lower the rates of maternal and infant mortality in urban slums by improving the program's implementation tactics and emphasising community participation, healthcare facilities, and education. These measures will also help PMSMA better serve these vulnerable groups.

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Appendix

Scale Used for Calculating Stress, Anxiety & Depression

Stress:

(Cohen, 1983)

The scale you have described is an adaptation of the Perceived Stress Scale (PSS), tailored specifically for use during pregnancy. The PSS is a widely used psychological instrument for measuring the perception of stress. It was originally developed by Sheldon Cohen and colleagues in 1983.

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Name _____ Date _____

Age _____ Gender (Circle): M F Other _____

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4
2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4
3. In the last month, how often have you felt nervous and "stressed"? 0 1 2 3 4
4. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4
5. In the last month, how often have you felt that things were going your way? 0 1 2 3 4
6. In the last month, how often have you found that you could not cope with all the things that you had to do? 0 1 2 3 4
7. In the last month, how often have you been able to control irritations in your life? 0 1 2 3 4
8. In the last month, how often have you felt that you were on top of things?.. 0 1 2 3 4
9. In the last month, how often have you been angered because of things that were outside of your control? 0 1 2 3 4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4

Anxiety: (Robles de Medina, 2004)

The expanded scale you have outlined is an adaptation of the Pregnancy-Related Anxiety Questionnaire (PRAQ), which is designed to capture anxiety specifically related to pregnancy. This version also incorporates elements from general anxiety scales, such as the Generalized Anxiety Disorder 7-item (GAD-7) scale.o

Scale/item loading factor	1	2	3	4
Factor 1 Anxiety and worry				
1. Repetitive thoughts that are difficult to stop or control	0.784			
2. Feeling agitated	0.764			
3. Feeling overwhelmed	0.740			
4. Feeling panicky	0.710			
5. Concerns about repeated thoughts	0.700			
6. Racing thoughts making it hard to concentrate	0.697			
7. Anxiety getting in the way of being able to do things	0.696			
8. Upset about repeated memories, dreams or nightmares	0.680			
9. Fear of losing control	0.669			
10. Feeling detached like you're watching yourself in a movie	0.612			
11. Difficulty adjusting to recent changes	0.612			
12. Worry about the future	0.594			
13. Worry about many things	0.590			
14. Feeling jumpy or easily startled	0.579			
15. Sudden rushes of extreme fear or discomfort	0.375			
Factor 2 Social Anxiety				
16. Feeling really uneasy in crowds		0.783		
17. Fear that others will judge me negatively		0.726		
18. Avoiding social activities because I might be nervous		0.701		
19. Worry that I will embarrass myself in front of others		0.684		
20. Avoiding things which concern me		0.418		
21. Losing track of time and can't remember what happened		0.303		
Factor 3 Perfectionism and Control				
22. Wanting things to be perfect			0.815	
23. Needing to be in control of things			0.814	
24. Having to do things in a certain way or order			0.806	
25. Difficulty stopping checking or doing things over and over			0.553	
26. Being "on guard" or needing to watch out for things			0.433	
27. Difficulty sleeping even when I have the chance to sleep			0.334	
Factor 4 Fears				
28. Fear that harm will come to the baby				0.856
29. Worry about the baby/pregnancy				0.844
30. A sense of dread that something bad is going to happen				0.641
31. Really strong fears about things, e.g., needles, blood, birth, pain, etc.				0.519
Cronbach's alpha	0.926	0.721	0.816	0.781
% of variance explained	34.68	6.58	6.40	4.89

Depression: (Holden, J. M., & Sagovsky, R.,1987)

The scale you've described is an adaptation of the Edinburgh Postnatal Depression Scale (EPDS), which is widely used to screen for depressive symptoms specifically related to pregnancy and the postnatal period.

Edinburgh Postnatal Depression Scale¹ (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:

Yes, all the time

Yes, most of the time This would mean: "I have felt happy most of the time" during the past week.

No, not very often Please complete the other questions in the same way.

No, not at all

In the past 7 days:

<p>1. I have been able to laugh and see the funny side of things</p> <p><input type="checkbox"/> As much as I always could</p> <p><input type="checkbox"/> Not quite so much now</p> <p><input type="checkbox"/> Definitely not so much now</p> <p><input type="checkbox"/> Not at all</p> <p>2. I have looked forward with enjoyment to things</p> <p><input type="checkbox"/> As much as I ever did</p> <p><input type="checkbox"/> Rather less than I used to</p> <p><input type="checkbox"/> Definitely less than I used to</p> <p><input type="checkbox"/> Hardly at all</p> <p>*3. I have blamed myself unnecessarily when things went wrong</p> <p><input type="checkbox"/> Yes, most of the time</p> <p><input type="checkbox"/> Yes, some of the time</p> <p><input type="checkbox"/> Not very often</p> <p><input type="checkbox"/> No, never</p> <p>4. I have been anxious or worried for no good reason</p> <p><input type="checkbox"/> No, not at all</p> <p><input type="checkbox"/> Hardly ever</p> <p><input type="checkbox"/> Yes, sometimes</p> <p><input type="checkbox"/> Yes, very often</p> <p>*5. I have felt scared or panicky for no very good reason</p> <p><input type="checkbox"/> Yes, quite a bit</p> <p><input type="checkbox"/> Yes, sometimes</p> <p><input type="checkbox"/> No, not much</p> <p><input type="checkbox"/> No, not at all</p>	<p>*6. Things have been getting on top of me</p> <p><input type="checkbox"/> Yes, most of the time I haven't been able to cope at all</p> <p><input type="checkbox"/> Yes, sometimes I haven't been coping as well as usual</p> <p><input type="checkbox"/> No, most of the time I have coped quite well</p> <p><input type="checkbox"/> No, I have been coping as well as ever</p> <p>*7. I have been so unhappy that I have had difficulty sleeping</p> <p><input type="checkbox"/> Yes, most of the time</p> <p><input type="checkbox"/> Yes, sometimes</p> <p><input type="checkbox"/> Not very often</p> <p><input type="checkbox"/> No, not at all</p> <p>*8. I have felt sad or miserable</p> <p><input type="checkbox"/> Yes, most of the time</p> <p><input type="checkbox"/> Yes, quite often</p> <p><input type="checkbox"/> Not very often</p> <p><input type="checkbox"/> No, not at all</p> <p>*9. I have been so unhappy that I have been crying</p> <p><input type="checkbox"/> Yes, most of the time</p> <p><input type="checkbox"/> Yes, quite often</p> <p><input type="checkbox"/> Only occasionally</p> <p><input type="checkbox"/> No, never</p> <p>*10. The thought of harming myself has occurred to me</p> <p><input type="checkbox"/> Yes, quite often</p> <p><input type="checkbox"/> Sometimes</p> <p><input type="checkbox"/> Hardly ever</p> <p><input type="checkbox"/> Never</p>
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Administered/Revised by: _____ Date: _____

¹Source: Cox JL, Holden JM, and Sagovsky B. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786.

²Source: K. L. Wisner, B. L. Parry, C. M. Plontek, Postpartum Depression *N Engl J Med* vol. 347, No 3, July 18, 2002, 194-199

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Questionnaire

Link: docs.google.com.

"Factors Contributing to Maternal Health Challenges in Kolkata's Slums"

You are invited to participate in a research study conducted by Emeli Ghosh from Future Institute of Engineering & Management.

Purpose: The purpose of this questionnaire is to assess the physical, mental, and social aspects, as well as high-risk pregnancy factors, among pregnant women in urban slum areas of Kolkata. The information collected will be used to improve the quality and coverage of antenatal care services under the PMSMA program.

Procedures: You are invited to participate in this survey by answering a series of questions related to your pregnancy, health, and living conditions. The survey should take approximately 20-30 minutes to complete.

Voluntary Participation: Your participation in this survey is entirely voluntary. You may choose to skip any question that you do not wish to answer or stop participating at any time without any penalty.

Confidentiality: All information collected in this survey will be kept confidential. Your responses will be anonymized, and the data will be used only for research purposes to improve healthcare services.