



# ASSESSMENT OF MATERNAL HEALTH IN URBAN SLUMS OF KOLKATA

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**Abstract:** Slums are the face of urban poverty and illiteracy. According to the census 2011, the states with highest contribution to the slum population are Maharashtra (18%), Andhra Pradesh (15.6%) and West Bengal (9.8%). Alleviation of poverty is the most important weapon of improving general health. The income for the poor increases marginally, which makes it difficult to assure a better health condition in urban slums areas. According National Health Portal (2011), the MMR for India was 212/100,000 live births. About 830 women die from pregnancy- or childbirth-related complications around the world every day. Maternal mortality ratio in developing countries in 2015 is 239 per 100 000 live births versus 12 per 100 000 live births in developed countries. The above data given by WHO gave an insight to study the present scenario of maternal health in urban slum. This study attempts to examine the socio-economic aspects and food intake of mothers dwelling in urban slums. Thus it will help to identify anomalies and aspects related to urban setting and poverty.

A cross-sectional study was conducted on 150 women in the urban slums of Budge Budge, Kolkata. A pilot study was done and an interview schedule was prepared to seek information on socio economic status by using Kuppuswamy Scale. Data were also collected on health facilities and food intake which were analyzed and the results are presented in the form of tables. It was found that 66% percent of pregnant women had secondary education, followed by higher secondary (26%) and graduation (12%) level of education. Kuppuswamy scale shows that 50% of the subjects were from upper lower class and only 1.33% was from upper class. Among the 150 subjects, 45.33% had pucca house, 64.67% had toilet facility, 28 % had proper drainage system and 28% had appropriate source of drinking water at their home. The food intake depicts the actual nutritional status of the mothers.

**Index Terms :** Slums, maternal mortality, socioeconomic status, Kuppuswamy scale

## I. INTRODUCTION

Urbanization is not a new process and slums can be considered as the end product in the process of urbanization in a developing country like India. According to the census 2011, the states with highest contribution to the slum population are Maharashtra (18%), Andhra Pradesh (15.6%) and West Bengal (9.8%).

Slums are the face of urban poverty and illiteracy. It is common mindset that slums lack basic necessities like safe drinking water, healthcare facilities, sanitation, housing problems, education etc which both directly and indirectly affect the health of the urban slum dwellers. Since India has a rural based society thus the government conception of public healthcare is almost rural oriented. Generally, it is believed that alleviation of poverty is the most important weapon of improving general health. The income for the poor increases marginally, which makes it difficult to assure a better health condition in urban slums areas.

Maternal mortality is unacceptably high. About 830 women die from pregnancy or child birth-related complications around the world every day. According to an estimate roughly 303 000 women died during and following pregnancy and childbirth in 2015. Almost all of these deaths occurred in low-resource settings, and most could have been prevented. [1]

The high number of maternal deaths in some areas of the world reflects inequities in access to health services, and highlights the gap between rich and poor. Almost all maternal deaths (99%) occur in developing countries. More than half of these deaths occur in sub-Saharan Africa and almost one third occur in South Asia.

The maternal mortality ratio in developing countries in 2015 is 239 per 100 000 live births versus 12 per 100 000 live births in developed countries. There are large disparities between countries, but also within countries, and between women with high and low income and those women living in rural versus urban areas.

The risk of maternal mortality is highest for adolescent girls under 15 years old and complications in pregnancy and childbirth is a leading cause of death among adolescent girls in developing countries. [2,3]

A woman's lifetime risk of maternal death (the probability that a 15 year old woman will eventually die from a maternal cause) is 1 in 4900 in developed countries, versus 1 in 180 in developing countries.

The above data given by WHO gave an insight to study the present scenario of maternal health in urban slum

## II. Objectives

This study attempts to examine the socio-economic aspects of mothers dwelling in urban slums in terms of income, education, sanitation and health services. Thus it will help to identify anomalies and aspects related to urban setting and poverty.

## III. Methodology

A cross-sectional study was conducted on women in the urban slums of Budge Budge, South 24 Parganas, Kolkata, West Bengal. The survey was done with the sample size of 150 women who have enjoyed motherhood at least once. A pilot study was done and an interview schedule was prepared to seek information on socio economic status by using Kuppuswamy Scale and background profile. The Kuppuswamy scale was devised by Kuppuswamy and is based on a composite score considering the education and occupation of the head of the family along with monthly income of the family. This scale classifies the study populations into high, middle, and low socio-economic status. Data collected was statistically analyzed and the results are presented in the form of tables.

## IV. Result and Discussion

### 4.1: Education of The Mother

Education Level	Subjects (n=150)	
	Frequency	Percentage (%)
Primary & Secondary	99	66
Higher secondary	33	22
Graduation	18	12

Sixty six percent of pregnant women had below higher school level of education, followed by higher secondary (26%) and graduation (12%) level of education.

Research shows that there is a strong linkage between maternal education and children's health. Children born to educated women suffer less from malnutrition which manifests as underweight, wasting and stunting in children. Maternal education has been associated with nutrition outcomes among children in various studies in various settings [4-6]. However, the mechanisms that link mother's education and child health in general are still not well understood. Glewwe (1999) highlights three links through which education may affect child health [7]. First, formal education of mothers directly transfers health knowledge to future mothers. Second, the literacy and numeracy skills that women acquire in school enhance their ability to recognize illness and seek treatment for their children. Additionally, they are better able to read medical instructions for treatment of childhood illness and apply the treatment. Third, increased number of years in school makes women more receptive to modern medicine. Other studies have found a strong link between maternal education, social economic status and child nutritional status. This is because educated women are more likely to get steadier, higher paying jobs; to get married to men with higher education and higher income; and to live in better neighbor hoods, which have influence on child health and survival [4,8,9]. Studies have also found an association between maternal education and maternal depression [10], while maternal depression has been associated with poor child health outcomes, including poor nutritional outcomes [11]

#### 4.2 : Husband's Education Using Kuppuswamy Scale

Education Level	Score	Subjects (n=150)	
		Frequency	Percentage (%)
Professional or honours	7		0
Graduate or postgraduate	6	2	1.33
Intermediate or post-high school diploma	5	3	2
High School Certificate	4	34	22.67
Middle School certificate	3	23	15.33
Primary School certificate	2	57	38
Illiterate	1	31	20.67

Among the 150 subjects, 38% husbands were illiterate followed by 22.67% had high school certificate, 20.67 % had primary school certificate, 15.33% had middle school certificate, 2 % had intermediate or post high school diploma certificate and only 1.33 % were graduate.

#### 4.3: Occupation of Father Using Kuppuswamy Scale

Occupation	Score	Subjects (n=150)	
		Frequency	Percentage (%)
Profession	10	2	1.33
Semi profession	6	-	-
Clerical, shop owner	5	60	40
Skilled worker	4	10	6.66
Semi skilled worker	3	18	12
Unskilled worker	2	47	31.33
Unemployed	1	13	8.66

40% of subjects were working as clerk or have owned a shop whereas 1.33% of subjects were engaged in profession of teaching.

#### 4.4: Income of the Family Using Kuppuswamy Scale

Income(in Rs/month)	Score	Subjects (n=150)	
		Frequency	Percentage (%)
≥ 42,876	12	-	-
21,438-42,875	10	2	1.33
16,078-21,437	6	60	40
10719-16,077	4	47	31.33
6,431-10,718	3	10	6.66
2,165-6,430	2	31	20.66
≤2164	1	-	-

Majority (40%) of the family had income between Rs. 16,078-21,437 per month only 1.33% family had income between Rs. 21,438-42,875 per month

#### 4.5: Socio Economic Status Using Kuppuswamy Scale

Socioeconomic class	Score	Subjects (n=150)	
		Frequency	Percentage (%)
Upper class	26-29	2	1.33
Upper middle class	16-25	3	2
Lower middle class	11-15	57	38
Upper lower class	5-10	75	50
Lower class	<5	13	8.66

Kuppuswamy scale has been used to determine the socioeconomic status of the family. Three parameters- husband's education, occupation and income were considered for the assessment. It is clear from the above four tables (Table 2-5) that 50% of the subjects were from upper lower class only 1.33% were from upper class. The most commonly used scale for measuring socioeconomic status is Kuppuswamy scale used for urban areas.

#### 4.6: Basic Amenities

Basic amenities		Subjects (n=150)	
		Frequency	Percentage (%)
Pucca house	Yes	68	45.33
	No	82	54.67
Toilet facility	Yes	53	35.33
	No	97	64.67
Proper drainage system	Yes	42	28
	No	108	72
Appropriate source of drinking water	Yes	42	28
	No	108	72

Among the 150 subjects, 45.33% had pucca house and rest 54.67% had kaccha house. 35.33% had toilet facility, 28 % had proper drainage system and 28% had appropriate source of drinking water at their home. Factors relating to the care of women, environmental hygiene.

#### 4.7: Mid Upper Arm Circumference (MUAC)

MUAC(cm)	Subjects (n=150)	
	Frequency	Percentage (%)
11 (severe acute malnutrition)	27	18
11-12.5(moderate acute malnutrition)	14	9.33
12.5-13.5 (acute malnutrition)	88	58.67
Over 13.5(normal)	21	14

It was observed that majority (58.67%) subjects had mid upper arm circumference between 12.5 -13.5 cm which indicates that they were suffering from acute mal-nutrition.

Maternal nutritional status has an influential role on fetal growth and infant birth weight. In case of the pregnant women, weight measurement alone cannot indicate maternal muscle and fat stores[12].A very simple and inexpensive anthropometric parameter that is Mid upper arm circumference measurement is used as an indicator of protein energy malnutrition as the arm contains both subcutaneous fat and muscle. So any changes in MUAC can reflect a change in muscle mass or a change in muscle mass or both [13].

## 4.8: Haemoglobin

Haemoglobin (gm/dl)	Subjects (n=150)	
	Frequency	Percentage (%)
Less than 10	72	48
11	56	37.33
Above 11	22	14.67

48% subjects had hemoglobin level less than 10 gm/dl followed by 37.33% subjects with hemoglobin level 11 gm/dl and 14.67% subjects with more than 11 gm/dl hemoglobin level.

The current study found mother's level of haemoglobin to be associated with LBW. Lower concentration of maternal haemoglobin is one of the risk factors for LBW among children [14, 15]. Maternal anaemia further limits maternal oxygen uptake, decrease oxygen delivery to fetus [16] and consequently leads to fetal growth restriction [17, 18]. Various studies have previously depicted that anemic mothers with haemoglobin level less than 10 is associated with maternal mortality.

## 4.9: Food Intake of the Mothers

		Sedentary			Moderate			Heavy	
Food Groups	Amount (gm)	Subjects (n=78)		Amount (gm)	Subjects (n=43)		Amount (gm)	Subjects (n=29)	
		Frequency	Percentage (%)		Frequency	Percentage (%)		Frequency	Percentage (%)
Cereal	<270	21	26.92	<330	12	27.91	<480	9	31.03
	270	38	48.72	330	23	53.49	480	11	37.93
	>270	19	24.36	>330	8	18.60	>480	9	31.03
Pulses	<60	25	32.06	<75	13	30.23	<90	8	27.59
	60	29	37.17	75	19	44.19	90	17	58.62
	>60	24	30.77	>75	11	25.59	>90	4	13.79
Meat fish egg	<60	39	50	<75	7	16.28	<90	7	24.14
	60	15	19.23	75	22	51.16	90	12	41.38
	>60	24	30.77	>75	14	32.56	>90	10	34.48
milk	<300ml	20	25.64	<300ml	11	25.59	<300ml	9	31.03
	300ml	43	55.13	300ml	22	51.16	300ml	15	51.72
	>300ml	10	12.82	>300ml	10	23.26	>300ml	5	17.24
Roots & Tubers	<200	15	19.23	<200	13	30.23	<200	6	20.69
	200	39	50	200	18	41.86	200	14	48.28
	>200	24	30.77	>200	12	27.91	>200	9	31.03
Green Leafy Vegetables	<100	15	19.23	<100	14	32.56	<100	8	27.59
	100	29	37.17	100	19	44.19	100	16	55.17
	>100	34	43.59	>100	10	23.26	>100	5	17.24
Other Vegetables	<200	26	33.33	<200	11	25.59	<200	10	34.48
	200	38	48.71	200	21	48.84	200	11	37.93
	>200	14	17.95	>200	11	25.59	>200	8	27.59
Fruits	<100	29	37.17	<100	14	32.56	<100	7	24.14
	100	33	42.31	100	20	46.51	100	14	48.28
	>100	16	20.51	>100	9	20.93	>100	8	27.59
Sugar	<20	19	24.36	<30	15	34.88	<45	9	31.03
	20	37	47.43	30	17	39.53	45	15	51.72
	>20	22	28.21	>30	11	25.59	>45	5	17.24
Fats & Oils	<20	23	29.49	<25	12	27.91	<30	6	20.69
	20	31	39.74	25	23	53.49	30	13	44.88
	>20	24	30.77	>25	8	18.60	>30	10	34.48

This table reveals the actual food intakes of the mother. They have been categorized into three main groups based on their activity level and reference intake is compared with the actual intake. In case of cereals and cereals products, only 48.72% mothers (sedentary activity), 53.49% mothers (moderate activity) and 37.93% mothers (heavy activity), take the recommended amount of cereals while rest of the mothers either take less or more amount of cereals as recommended. In this way the actual intake is taken and calculated for all the food groups. This table helps to identify the actual intake, excess and deficiency among the mothers which directly or indirectly leads to low birth weight of the fetus and also leads to other complications.

## V. Conclusion

It was found that 66% percent of pregnant women had secondary education, followed by higher secondary (26%) and graduation (12%) level of education. Kuppuswamy scale shows that 50% of the subjects were from upper lower class and only 1.33% was from upper class. Among the 150 subjects, 45.33% had pucca house, 64.67% had toilet facility, 28 % had proper drainage system and 28% had appropriate source of drinking water at their home. It was observed that majority (58.67%) subjects had mid upper arm circumference between 12.5 -13.5 cm which indicates that they were suffering from acute mal-nutrition. 48% subjects had hemoglobin level less than 10 gm/dl followed by 37.33% subjects with hemoglobin level 11 gm/dl and 14.67% subjects with more than 11 gm/dl hemoglobin level. The food intake depicts the actual nutritional status of the mothers.

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