Final SLP Report

Title of the study: Prevalence & mother-child psycho-social factors associated with stunting under five years children at dholpur and korail slum areas in Dhaka, Bangladesh.

To whom the report is submitted: "Final Report of Summative Learning Project (SLP) presented to the BRAC James P Grant School of Public Health, BRAC University."

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Abbreviations

JPGSPH	**:**	James P grant School of Public Health
CI	**:**	Confidence Interval
et al	**:**	and Others
SLP	**:**	Summative Learning Project
IRB	**:**	Institutional Review Board
WHO	**:**	World Health Organization
MPH	**:**	Master's of Public Health
SD	**:**	Standard Deviation
COR	**:**	Crude Odds Ratio
AOR	**:**	Adjusted Odds Ratio
HAZ	**:**	Z score for Height for Age
NFHS	**:**	National Family Health Survey
BDHS	**:**	Bangladesh Demographic Household Survey
MICS	**:**	Multiple Indicators Cluster Survey
WHO	**:**	World Health Organization

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Abstract

Background: Stunting, an indicator of regional linear growth, has become a key biomarker of childhood undernutrition due to its continuing elevated incidence worldwide and significance for overall development and well-being. Most analyses have largely ignored psychological problems influencing care and nurturing in the home in favor of social and biological aspects. This study to document the prevalence of stunting as well as mothers-child psycho-social contributing variables

Methods: A quantitative approach and community-based cross-sectional study were made among 390 children between the age of six months and under five years old in the dholpur and korail slum areas in Dhaka, Bangladesh. Anthropometric measurements of the child were done using standard methods [version 3.2.2 (Z-score)]. STATA SE 17 version was used to analyze the data. A chi-square test was performed to compare the differences and significance between the outcome and independent variables. For the chi test, the significant value was calculated as p-value <0.05. This study performed univariate and multivariate logistic regression analysis to evaluate the association between independent factors (mothers-child psycho-social factors) and the outcome variable (stunting).

Findings: The overall prevalence of stunting under five years of children was 36.15%. This study had a statistically significant association between socio-demographic factors (husband's educational level, husband's occupational level, child sex, and child age) and stunting. It was revealed that those who felt loneliness during pregnancy had 1.3 higher odds of stunting than those who never thought it. This study also explored those who had anxiety during pregnancy had 1.6 higher odds of stunting than those with no anxiety. The study also reported that in the case of child interaction problems with a neighbor child, who had interaction problems with another child had 2.0 times higher odds of stunting than those with no interaction problems with another child.

Conclusion: Though there was no statistically significant association between the mother -child psycho-social problems and stunting, the study's prevalence was high. It would be helpful to undertake more studies to evaluate mother -child psycho-social factors in two urban slums and compare them to other slums in the country.

Keywords: Stunted, Psycho-social problem, Univariate & Multivariate logistic regression.

1. INTRODUCTION:

Malnutrition is one of the most severe health and welfare issues in developing countries, including Bangladesh, Kenya, and Pakistan (S. M. J. Rahman et al., 2021). Childhood malnourishment can influence a child's ability to grow and the likelihood of morbidity and death in later life (Yunitasari et al., 2020). Malnutrition is a significant problem in many African and Asian nations (Kalu & Etim, 2018). Malnutrition status uses three anthropometric parameters where height for age is one of them (T. R. Chowdhury et al., 2018).

Height for age is an important indicator. Height for age is the WHO-recommended long-term indicator used to identify stunting, representing a child's linear growth failure (T. R. Chowdhury et al., 2018). Stunting is a condition where undernutrition prevents children from developing to their full potential (Ricci et al., 2019). In low- and middle-income countries, where stunting estimated to afflict nearly 160 million children under 59 months, child malnutrition is a significant public health issue (Ricci et al., 2019). Stunting is thought to be responsible for 14–7% of deaths, respectively. Around 56 million African infants and young children suffer from stunting (Ricci et al., 2019).

It is essential that policymakers and program actors now see stunting as a fundamental indicator of childhood malnutrition due to the growing relevance of human resource development (R. Chowdhury et al., 2013). According to National Family Health Survey (NFHS) 3 data, half of the nation's kids are suffering from malnutrition, as evidenced by the fact that 48% of children under five were stunted (R. Chowdhury et al., 2013). Scientific proof research has revealed that of the 162 million stunted children below the age of five, 36% lived in Africa and 56% in Asia (Kalu & Etim, 2018). According to a survey, out of the estimated 60 million stunted kids below five, 11 million comprised Nigerian kids (Kalu & Etim, 2018).

A Bangladesh Demographic Household Survey and Multiple Indicators Cluster Survey report shows that the prevalence of stunting of children below five years is 31% in Bangladesh (BDHS, 2017-18; *Bangladesh Mics 2019 Report: Key Findings - Unicef Mics*, n.d.). Early-life stunting is linked to detrimental functional outcomes, such as poor cognition and academic performance, low adult wages, lost productivity, and, when combined with excessive weight growth later in childhood, lousy adult wages (De Onis et al., 2012).

Few studies have examined how the home's socio-emotional risk factors strengthen and develop limitations. Parental psychological discomfort, for example, could reduce the effectiveness of caring behaviors and increase the kid's mental anguish, which may impact growth through the hypothalamic-pituitary-adrenal (HPA) axis and other routes (Susiloretni et al., 2021). Early childhood stunting has been linked to maternal depression. Inconsistent findings have been found in recent research on the connection between mother depressive symptoms and child stunting (Surkan et al., 2011). Mothers' physical or emotional health may impact their offspring's physical and mental health, nutrition, and well-being (A. Rahman et al., 2002). Further reducing fetal and kid growth and negatively influencing well-being, anxiety in pregnant women and children may alter immunological or nutritional metabolism (Susiloretni et al., 2021). The hypothalamic-pituitary-adrenal (HPA) axis can be disturbed by maternal stress and depression, which can have physiological implications on intrauterine growth (Field et al., 2006).

Many factors (socio-economic, biological, and psycho-social) are associated with child stunting. Poverty is closely linked to malnutrition, poor sanitation and hygiene, low maternal literacy, high maternal anxiety and depression, and insufficient activity at home, kids living in absolute poverty lack appropriate treatment and suffer serious health hazards (Worku et al., 2018). For poor moms in developing nations, depressive disorders are a significant cause of disability. Poor linear growth may be experienced by children of mothers in Bangladesh who are depressed, as well as in developing countries with substantial levels of malnutrition (Black et al., 2009).

In Indonesia, higher maternal formal education reduced the risk of child stunting by between 4.4% and 5% (odds ratio per year: 0.950; 95% confidence interval: 0.946-0.954 in rural settings; 0.956; 0.950-0.961 in urban environments); higher paternal formal education reduced the risk of child stunting by 3%. (0.970, 0.967-0.974). In Bangladesh, higher levels of formal maternal education reduced the risk of child stunting by 4.6% (0.954, 0.951-0.957), while higher levels of formal father education reduced the risk of child stunting by 2.9% to 5.4%. (0.971, 0.969-0.974 in rural settings; 0.946, 0.941-0.951 in urban environments). Stunting in children is strongly influenced by both maternal and paternal education in Bangladeshi and Indonesian families (Semba et al., 2008). Significant risk concerns for malnutrition than access to healthcare and attitudes toward accessing care were the child's gender and socio-economic circumstances.

Compared to home income, the father's profession served as a more reliable measure of malnutrition (Saito et al., 1997).

However, children in severe poverty frequently do not exercise their entitlement to play, negatively impacting their upbringing (Worku et al., 2018). Accurate figures on parental psychological distress, kid length, and other dietary, cognitive, and lifestyle influences linked to stunting are accessible (Susiloretni et al., 2021). Maternal depression is a common depressive condition that can arise during pregnancy and after delivery in industrialized and developing nations. When the mother is carrying out duties crucial to the growth and development of her child, it may result in functional deterioration (Stewart, 2007). According to an American investigation, merely 3.9% of people had significant psychological anguish in 2018 amounted to 13.6% in 2020 (Susiloretni et al., 2021). Such a rise might probably worsen current advancement and growth weaknesses in children. A gloomy mother might not always relish their time together or take pleasure in their accomplishments. She might be worn out, unable to focus, and troubled by thoughts of shame, worthlessness, and hopelessness. Therefore, it makes sense to speculate that maternal depression may harm the child's nutritional status (Stewart, 2007).

Because of the epidemic, according to the United Nations Educational, Scientific, and Cultural Organization, 1.38 billion children are not in school or preschool and cannot participate in group activities outdoors, sporting activities, or in parks. Given the severe economic instability that many families are currently experiencing, parents frequently provide for their children in demanding circumstances with few budgets. Loneliness, sadness, and other psychological health effects are among the most frequent consequences of quarantining and other physical distancing measures, according to an extensive evaluation of studies on the subject (Chung et al., 2022).

To address these challenges and mitigate problems associated with the stunting exploration of underlying psycho-social issues like poor self-esteem, home issues, childhood trauma, harassment, anxiety, sibling rivalry, lovers, and neglected children (Erfanti et al., 2016), lack of playthings, playtime, a field, relationships between kids and their friends, and mom time (Worku et al., 2018) is crucially important.

A malnutritional study was conducted using the weight for age z score indicator at korail slum area in 2015. A plurality, 51.1%, are highly malnourished, whereas only about 20.7% are relatively malnourished (Fakir & Khan, 2015). This study uses only one indicator (weight for age Z score) that cannot express the stunting condition of children and its factors. But currently, it is a significant issue in child health.

In the Ilam region of eastern Nepal, a cross-sectional survey of the community was conducted on underweight kids under the age of five. This study suggested promoting mother and child nourishment to decrease underweight in children below five (Adhikari et al., 2017). Again, they talked only about being skinny, but they did not show any relation with stunting.

Recently another study conducted in the kamrangirchor slum area in Dhaka city were shown the association between maternal common mood disorder and child illness. Interventions addressing maternal mental health in child nutrition programs might improve the child's nutritional status (Mahmud Khan & Sabrina Flora, 2020). This study did not show the maternal psycho-social problem with child illness or malnutrition. Additionally, it's done only one slum area that cannot show the whole slum condition of Dhaka city.

Stunting is the long-term indicator and leading cause of global disease burden. A linear development disorder (stunting) or inadequate length for age is thought to indicate a relatively longer-lasting deficiency (R. Chowdhury et al., 2013). While stunting has emerged as one of the most significant health concerns in developing nations, the government still pays little attention (Erfanti et al., 2016).

Many studies had conducted in the slum area in Dhaka city regarding different factors except mothers & child psycho-social factors associated with stunting among under five years Child. For this reason, we had interested to see which psycho-social factors of mothers and children were associated with stunting among under five years children in slum areas (dholpur and korail) in Dhaka city. This study finding is optimistic; it will raise public awareness of stunted children under five years old. Consequently, standards that would make it simpler to inform residents of slum regions about stunting children under the age of five in the slum sector of Dhaka city may one day be established. This study also would help to prevent its consequences, mortality, and morbidity among slum areas of Bangladesh's general children live a healthier life.

1.1 Research Question: What are the prevalence & mother-child psycho-social factors associated with stunting under five years children at dholpur and korail slum areas in Dhaka city?

1.2 Research Objectives

1.2.1 General objective: To investigate the prevalence & of mother-child psycho-social factors associated with stunting under five years children at dholpur and korail slum areas in Dhaka city.

1.2.2 Specific Objectives:

I. To examine the current prevalence of stunting across children below five years in dholpur and korail slum areas of Dhaka city.
II. To find out the mother,s psycho-social factors that contribute to stunting in children under the age of five in dholpur and korail slum areas of Dhaka city.
III. To analyze the child psycho-social factors that contribute to stunting in children under the age of five in dholpur and korail slum areas of Dhaka city.

1.3 Conceptual framework: This study focused on stunting among children under five years old in a selected slum area of Dhaka. Based on the UNICEF framework, there are three main determinants of childhood malnutrition: the immediate causes, the underlying causes, and the basic causes. A growing body of literature confirms that household factors such as family wealth, sanitation, and household size are among the underlying causes of malnutrition. Poverty and lack of capital are among the basic causes of malnutrition (Rakotomanana et al., 2017). This study focused on the underlying causes, under poor maternal & child care practices, indigent maternal and Child psycho-social care related to stunting under five years children at dholpur and korail slum areas of Dhaka city.

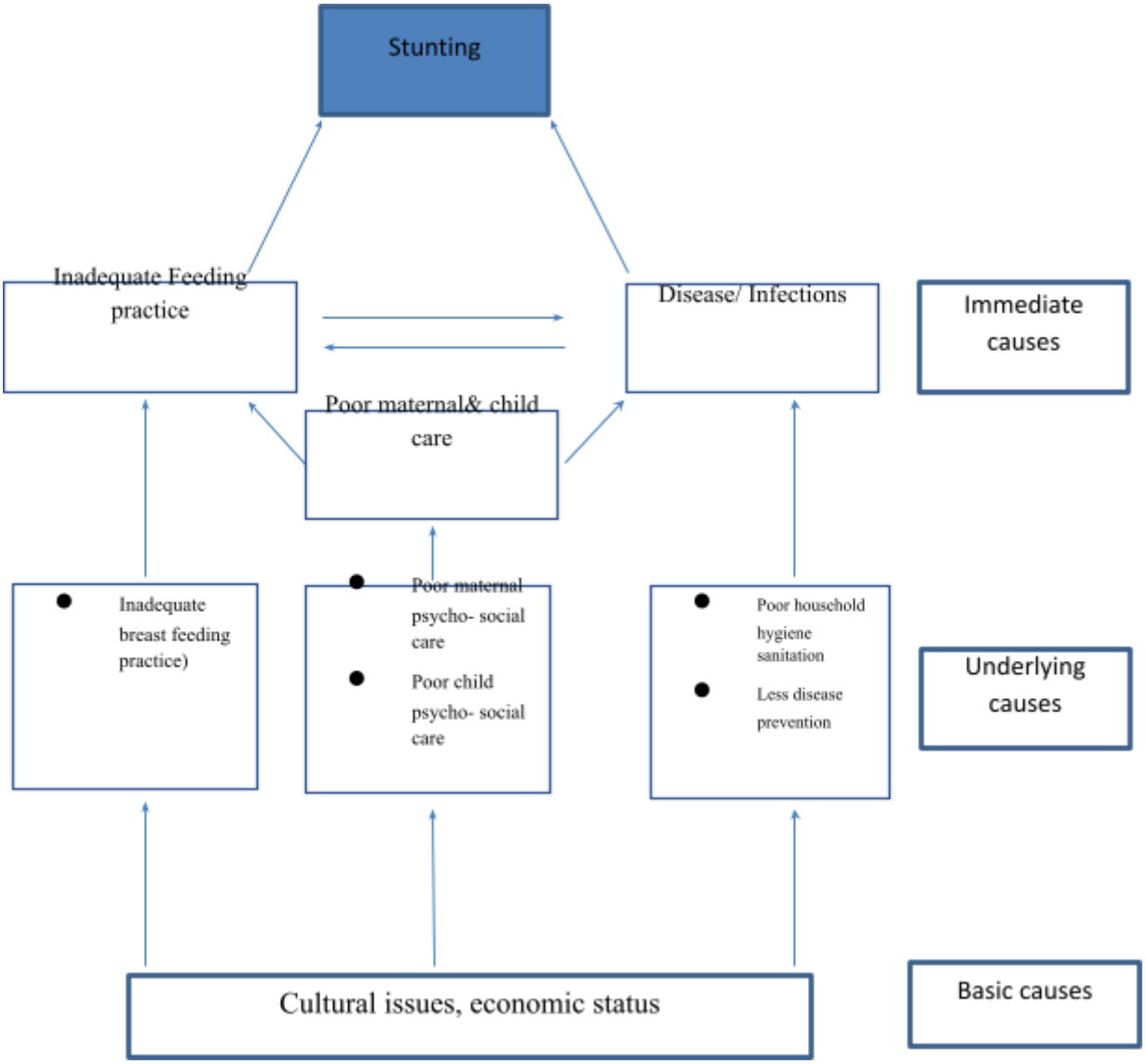

Figure: Conceptual framework adopted from UNICEF (Ravindranath et al., 2019; UNICEF, 2021).

2. METHODOLOGY:

2.1 Study approach & Study design: We used a quantitative approach and cross-sectional design to conduct this study.

2.2 Study settings: In this study, two enormous slums (korail slum from Gulshan and the dholpur slum from Jatrabari) from different geographical areas were selected from Dhaka city. Relatively enormous slums were chosen for the study site as big slums were convenient for finding our study participants. These slums were choosed because they are representative of Dhaka city slums in terms of household composition, neighborhood characteristics, religious affiliation, and cultural practices; the slums' populations hail from a diverse group of ethnic and geographical backgrounds, and the area was selected for enough to found a sufficient sample size.

2.3 Study period: The study was conducted over four months, from 15th October 2022 to 8th January 2023.

2.4 Study population: The study population was mothers who had children six months and under the age of five years and lived in the slum areas (korail slum & dholpur slum) of Dhaka city for more than six months.

2.5 Selection criteria:

Inclusion criteria: Mothers and children (six months and less than five years) lived within the selected slum (korail, Dholpur) area of Dhaka city for more than six months.

Exclusion criteria: Followed respondents were excluded from the study: Mothers who had a child older than five years and less than six months, mothers who were pregnant and terminally ill, and finally, who were less than six months stay in slum areas.

2.6 Sample size: To estimate the sample size, the prevalence of stunting in children (31%) from the BDHS 2017-18 and MICS 2019 report. The sample size was 329, considering a 5% margin error and a 95% confidence level with a design effect of 1. Then the sample size was 365, considering the 10% of non-response rate. Due to our study purpose, we collected 440 samples combinedly from both slum areas. This study excluded some respondents (less than six months

Child =32, pregnant mother =14, chickenpox and dengue fever patient =2, withdrawal=1 and missing information=1, in total 50.) based on exclusion criteria. So, the final sample size was (440-50) =390.

2.7 Sampling technique: This study followed systematic random sampling to select the respondents. After went to the slums, picked a landmark and from that landmark, looked for five mothers from five households according to the inclusion criteria from each slum. Then randomly selected one household, and from there interviewed, every third household. The same procedure was applied in korail area for founding the respondent's household. One Child was chosen randomly by lottery from a household with more than one 0-59-month-old Child.

2.8 Tool Development: Data was gathered using a well-structured, bilingual questionnaire in Bengali and English. Four categories of information were included in the survey: socio-demographic, maternal psycho-social, child psycho-social, and physical measurement: consent forms, paper, pens, files, and height measuring board were used as study materials.

2.9 Operational definition:

The outcome variable (Stunting): Stunting was this study's outcome or dependent variable. According to WHO anthropometric measurement, the child having a z score of height for age less than ($HAZ < -2$ SD) was considered stunting, and the z score of height for age ($HAZ \geq -2$ SD) was normal or no stunting.

Mother: Mothers who had children between the age of (6-59) months and had been living in the slum areas (Korail slum & Dholpur Slum) of Dhaka city for more than six months.

Children: Children between the age of (6-59) months and have been living in the slum areas (Korail slum & Dholpur Slum) of Dhaka city for more than six months.

Mothers' psycho-social problem: Mothers who felt loneliness, anxiety, and fear during pregnancy were regarded as mother's psycho-social problems in our study.

Child Psycho-social problem: The Child felt anxiety and afraid and had interaction problems with neighbor's child was regarded as having a child with psycho-social trouble in this study.

2.10 Data collection: A pre-test questionnaire was performed on 25 November 2022 in a sat tola slum area at Mohakhali in Dhaka. Eleven data collectors collected the data from dholpur from 27 November 2022 to 2 December 2022 and korail from 3 December 2022 to 8 December 2022. Face-to-face interviews were used to collect data, and physical measurements were obtained following SOPs created using the anthropometric indicators assessment guide. Tablet computers

were used for data collection. Permission was taken from the mother for physical measurement (weight and height/length of the child), ensuring adequate privacy. In the case of children below two years and those unable to stand properly, measured their weight by using a baby weighing scale with no shoes and minimum cloth. And children above two years who could stand used a digital weighing scale to measure their weight. Before considering each child, the scale was calibrated by being set to zero. Measuring the body length of children aged up to 23 months without shoes using a portable horizontal length measuring board scale with the child in the supine position. Children between the ages of 24 months and 59 months measured their height by placing them on a vertical wooden board, with the child standing straight in the center. The child had touched the board with their head, shoulders, buttocks, knees, and heels.

A lottery system was followed for selecting the child. Each child's height and weight were measured twice, with a third measurement done if there was a difference of more than 0.5 cm between the first and second measurements. To determine height and weight, the two nearest values were averaged. The age of the child was determined using respondents' self-reported dates of birth, which were verified by official records such as childbirth certificates. These were entered into the WHO Anthro version 3.2 program to determine the height-for-age z-score (HAZ). A systematic random sampling technique was used to reduce any selection bias during the design process. To prevent information bias, skilled and highly trained data collectors conducted interview questions and physical assessments. Before beginning fieldwork, the appropriate instruments (height scale) were calibrated every morning.

2.11 Data analysis: After collecting data through google Forms, the data were directly entered into Microsoft Excel. By using excel, the Bangla part of the questions was deleted. Then the Microsoft Excel data was imported into STATA SE17 software for other cleaning and analysis. The data was cleaned (shortening the variable name, labeling, coding, categorized, de-string the string variables). Then drop the missing value if found it. Recoding data and categorizing variables were required to enable in -depth analysis. This study categorized the explanatory variables of child age as (0-11) (12-23) (24-35) (36-47) (48-59). For the mother and husband education category, use 'Never went to school,' 'Pre-primary,' 'Primary completed,' 'Secondary completed,' 'Higher secondary and above,' and for the husband's occupation, use 'service' 'skilled worker' 'unskilled worker' 'small trade' 'other.' For the monthly income of the family, used 'less

than10000' 'less than 15000 or equal to 10000' 'less than 20000 or equal to 15000' 'less than 20000 or equal to 25000' 'More than or equal to 25000'.

The results of a descriptive analysis were reported as frequency and percentage. By doing a chi-square test, compared the differences with significance between the outcome variable and the independent variables. For the chi test, the significant value was calculated as p-value <0.05. This study performed univariate and multivariate logistic regression analysis to evaluate the association between independent factors (mothers-child psycho-social factors) and the outcome variable (stunting). The outcome variable stunting was categorized by 'Normal' and 'Stunted' followed by WHO anthropometric measurement. Results of univariate and multivariate logistic regression analysis were presented by unadjusted (COR) and adjusted odds ratio (AOR) at a 95% confidence interval (CI). The statistically significant value was set at a P- value <0.05.

2.12 Ethical considerations: The BRAC JPGSPH Institutional Ethical Review Committee was consulted for clearance prior to data collection. Additionally, support was needed to guarantee a smooth data collection process. After describing the purpose of the study, the voluntary nature of their involvement, and their right to withdraw at any moment during the interview, informed written consent was obtained from every respondent for the questionnaire and physical measurements. Privacy was protected. To protect the respondents' privacy, each completed questionnaire received a special ID. Participants also had the freedom to leave the research at any moment without consequence or harm. In addition, there was no monetary reward or payment made to participants for taking part in the study.

3. FINDINGS:

Table 3. 1: Socio-demographic characteristics of respondents stratified by dholpur and korail areas:

Variables	Dholpur (N=187) n (%)	Korail (N=203) n (%)	Total (N=390) n (%)
Mothers' education level			
Never went to school	29 (15.5)	24 (11.8)	53 (13.6)
Pre-primary	39 (20.9)	40 (19.7)	79 (20.3)
Primary completed	96 (51.3)	98 (48.3)	194 (49.7)
Secondary completed	15 (8.0)	20 (9.8)	35 (9.0)
Higher secondary & above	8 (4.3)	21 (10.3)	29 (7.4)
Husband's education level			
Never went to school	52 (27.8)	44 (21.7)	96 (24.6)
Pre-primary	31 (16.6)	25 (12.3)	56 (14.4)
Primary completed	83 (44.4)	98 (48.3)	181 (46.4)
Secondary completed	11 (5.9)	15 (7.4)	26 (6.7)
Higher secondary & above	10 (5.3)	21 (10.3)	31 (7.9)
Husband's occupation			
Service	72 (38.5)	67 (33.0)	139 (35.6)
Skilled worker	36 (19.2)	57 (28.1)	93 (23.8)
Unskilled worker	62 (33.2)	40 (19.7)	102 (26.1)
Small trade	10 (5.3)	30 (14.8)	40 (10.3)
Others	7 (3.7)	9 (4.4)	16 (4.1)
Child sex			
Female	95 (50.8)	100 (49.3)	195 (50.0)
Male	92 (49.2)	103 (50.7)	195 (50.0)
Child age (months)			
0-11	24 (12.8)	26 (12.8)	50 (12.8)
12-23	48 (25.7)	59 (29.1)	107 (27.4)
24-35	51 (27.3)	57 (28.1)	108 (27.7)
36-47	27 (14.4)	35 (17.3)	62 (15.9)
48-59	37 (19.79)	26 (12.81)	63 (16.1)
Household monthly income (taka)			
Less than 10000	32 (17.1)	24 (11.8)	56 (14.4)
Less than15000 or equal to 10000	53 (28.3)	51 (25.1)	104 (26.7)
Less than 20000 or equal to 15000	59 (31.5)	60 (29.6)	119 (30.7)
Less than 25000 or equal to 20000	25 (13.4)	29 (14.3)	54 (13.8)
More than or equal to 25000	18 (9.6)	39 (19.2)	57 (14.6)

Table 3.1 shows the difference in frequency and percentage of all socio-demographic characteristics of respondents in both two slum areas. A total of 390 respondents were included in the final analysis, of whom 187 were from dholpur, and 203 were from korail areas.

Table 3. 2: Prevalence of stunting across all socio-demographic, mothers and child psycho-social factors:

Variables	Stuntedn (%)	Normaln (%)	P-value
Mothers' education level			
Never went to school	25 (47.2)	28 (52.8)	
Pre-primary	34 (43.0)	45 (56.9)	
Primary completed	67 (34.5)	127 (65.5)	0.050
Secondary completed	7 (20.0)	28 (80.0)	
Higher secondary & above	8 (27.6)	21 (72.4)	
Husband's education level			
Never went to school	46 (47.9)	50 (52.1)	
Pre-primary	25 (44.6)	31 (55.4)	
Primary completed	55 (30.4)	126 (69.6)	0.000
Secondary completed	12 (46.1)	14 (53.8)	
Higher secondary & above	3 (9.7)	28 (90.3)	
Husband's occupation			
Service	47 (33.8)	92 (66.2)	
Skilled worker	27 (29.0)	66 (70.9)	
Unskilled worker	53 (52.0)	49 (48.4)	0.002
Small trade	11 (27.5)	29 (72.5)	
Others	3 (18.7)	13 (81.2)	
Child sex			
Female	93 (47.7)	102 (52.3)	0.000
Male	48 (24.6)	147 (75.4)	
Child age (months)			
0-11	11 (22.0)	39 (78.0)	
12-23	42 (39.2)	65 (60.7)	
24-35	46 (42.6)	62 (57.4)	0.110
36-47	19 (30.6)	43 (69.3)	
48-59	23 (36.5)	40 (63.5)	
Household monthly income (taka)			
Less than 10000	25 (44.6)	31 (55.4)	
Less than15000 or equal to 10000	44 (42.3)	60 (57.7)	
Less than 20000 or equal to 15000	45 (37.8)	74 (62.2)	0.028
Less than 25000 or equal to 20000	15 (27.8)	39 (72.2)	
More than or equal to 25000	12. (21.0)	45 (78.9)	
****Mother felt loneliness during pregnancy**			
No	30 (33.3)	60 (66.7)	0.357
Yes	44 (39.6)	67 (60.4)	
****Mother's anxiety during pregnancy**			
No	8 (28.6)	20 (71.4)	0.330
Yes	66 (38.1)	107 (61.8)	
****Mother felt fear during pregnancy**			
No	16 (40.0)	24 (60.0)	0.641
Yes	58 (36.0)	103 (64.0)	
Child interaction problem with neighbor's child last four weeks			
No	115 (37.8)	189 (62.2)	0.195
Yes	26 (30.2)	60 (69.8)	
***Child sleep trouble in last four weeks**			
No	19 (36.5)	33 (63.5)	
Yes	16 (44.4)	20 (55.6)	0.456
***Causes of afraid last four weeks**			
For travelling in motorized vehicles	5 (50.0)	5 (50.0)	
Seeing a stranger	9 (40.9)	13 (59.1)	0.935
To travel new place	2 (40.0)	3 (60.0)	
Other	4 (36.4)	7 (63.6)	

Variables: **Mother felt loneliness during pregnancy, mother's anxiety during pregnancy and mother's fear during pregnancies respondents (201) were the same because all were contingency or filtering questionnaires.

Variables: * Child sleep trouble in last four weeks (respondents-88) and causes of afraid in previous four weeks (respondents-48) because all were contingency or filtering questionnaires.

Table 2 demonstrates the prevalence of stunting across all socio-demographic, mother and child psycho-social factors in both slum areas.

Table 3.3: Associated risk factors of Stunting with crude OR (COR) and adjusted OR (AOR)

Variables	Crude odds ratio [95% CI]	P- value	Adjusted odds ratio [95% CI]	P-value
Mothers' education level				
Never went to school	Reference		Reference	
Pre-primary	.8 (.4, 1.7)	0.640	.8 (.3, 1.7)	0.529
Primary completed	.5 (.3, 1.1)	0.094	.7 (.3, 1.5)	0.385
Secondary completed	.3 (.1, .7)	0.012	.5 (.2, 1.6)	0.267
Higher secondary & above	.4 (.2, 1.1)	0.087	1.3 (.4, 5.0)	0.655
***** Husband's education level**				
Never went to school	Reference		Reference	
Pre-primary	.9 (.4, 1.7)	0.696	.8 (.4, 1.7)	0.606
Primary completed***	.5 (.3, .8)	0.004	.5 (.3, 1.0)	0.041
Secondary completed	.9 (.4, 2.2)	0.873	1.2 (.4, 3.6)	0.682
Higher secondary & above***	.1, (.0, .4)	0.001	.1 (.0, .6)	0.010
***** Husband's occupation**				
Skilled worker	Reference		Reference	
Service	1.2 (.7, 2.2)	0.444	1.6 (.9, 3.0)	0.123
Unskilled worker***	2.6 (1.5, 4.8)	0.001	2.0 (1.0, 4.0)	0.043
Small trade	.9 (.4, 2.1)	0.858	1.1 (.5, 2.9)	0.749
Others	.5 (.1, 2.1)	0.400	.6 (.1, 2.7)	0.523
*****Child sex**				
Female	Reference		Reference	
Male***	.3 (.2, .5)	0.000	.3 (.2, .6)	0.000
*****Child age (months)**				
0-11	Reference		Reference	
12-23***	2.3 (1.0, 5)	0.036	2.7 (1.1, 6.6)	0.024
24-35***	2.6 (1.2, 5.7)	0.014	3.4 (1.4, 8.1)	0.007
36-47	1.6 (.7, 3.7)	0.306	2.2 (.8, 5.9)	0.109
48-59	2.0 (.8, 4.7)	0.098	3 (1.1, 7.9)	0.026
Household monthly income (taka)				
More than or equal to 25000	Reference		Reference	
Less than15000 or equal to 10000	3.0 (1.3, 6.9)	0.009	2.0 (.8, 5.2)	0.126
Less than 20000 or equal to 15000	2.7 (1.3, 5.8)	0.008	2.0(.8, 4.5)	0.119
Less than 25000 or equal to 20000	2.3 (1.1, 4.8)	0.028	1.5 (.7, 3.5)	0.297
Less than 10000	1.4 (.6, 3.4)	0.410	1.0 (.4, 2.8)	0.883
Mother's loneliness during pregnancy				
No	Reference		Reference	
Yes	1.3 (.7, 2.3)	0.357	1.3 (.7, 2.4)	0.354
Mother's anxiety during pregnancy				
No	Reference		Reference	
Yes	1.5 (.6, 3.7)	0.332	1.6 (.6, 3.9)	0.320
Mother felt fear during pregnancy				
No	Reference		Reference	
Yes	.8 (.4, 1.7)	0.641	.7, (.3, 1.5)	0.412
Child interaction problems with neighbors last four weeks				
No	Reference		Reference	
Yes	.7 (.4, 1.2)	0.197	2 (.1, 4.1)	0.346
Child's sleep trouble in the last four weeks				
No	Reference		Reference	
Yes	1.3 (.6, 3.3)	0.457	2.7 (.7, 10.3)	0.145
Causes of Child afraid last four weeks				
For traveling in motorized vehicles	Reference		Reference	
Seeing a stranger	.6 (.1, 3.1)	0.530	1.0 (.1, 10.3)	0.992
To travel new place	.6 (.1, 5.9)	0.632	.6 (.1, 3.3)	0.645
Other	.6 (.1, 3.1)	0.715	.7 (.1, 4.1)	0.660

******* These variables and categories were significantly associated with stunting [AOR; p-value were less than (<0.05)]
Table 3.3 describes the associated factors associated with stunting along with crude/unadjusted odds and adjusted odds ratios.

Mother's educational level of Dholpur and Korail slum.

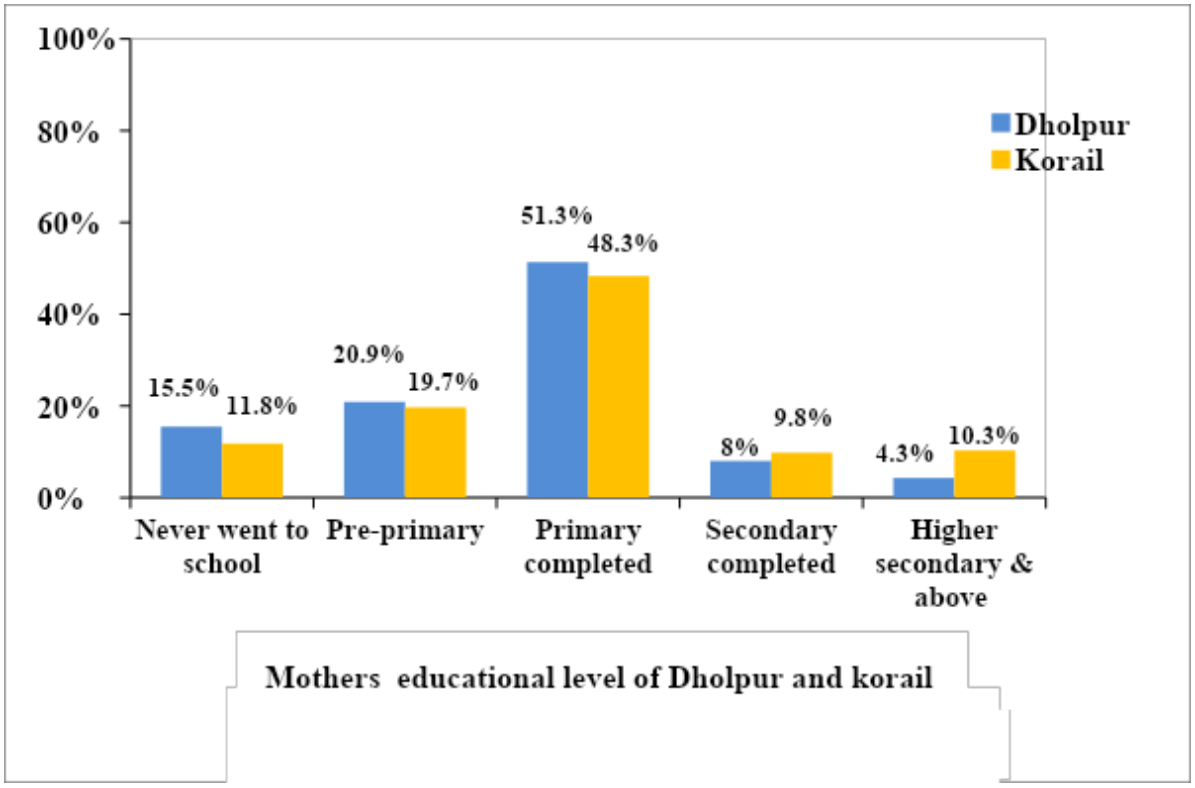

Figure 4.1 shows Mother's educational level distribution in Dholpur and Korail slums.

Figure 1 shows the mother's educational level distribution in dholpur & korail slum. [Dholpur: korail; (never went to school; 15.5%: 11.8%) (pre-primary; 20.9%: 19.7%) (primary completed; 51.3%: 48.3%) (secondary completed; 8%: 9.8%) (Higher secondary & above; 4.3%:10.3%).

Stunting prevalence in female child

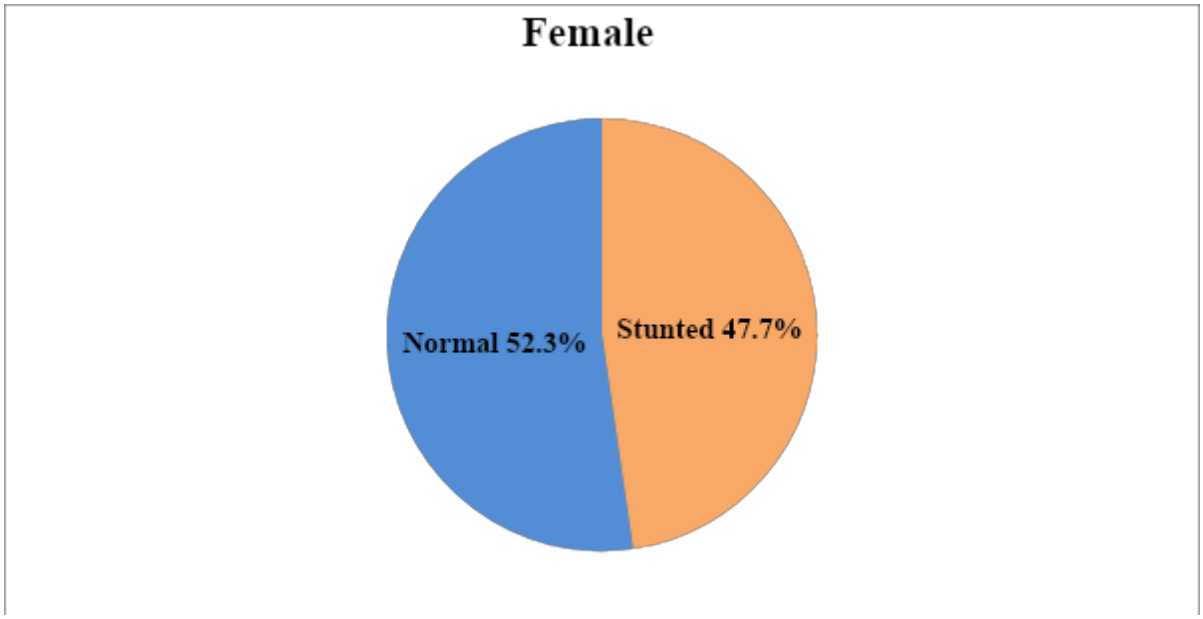

Figure 4.2: Distribution of stunting prevalence in female Child

Figure 2 shows that among 195 female children, 93 were stunted (47.7%) and normal 102 (52.3%).

Stunting prevalence in male child

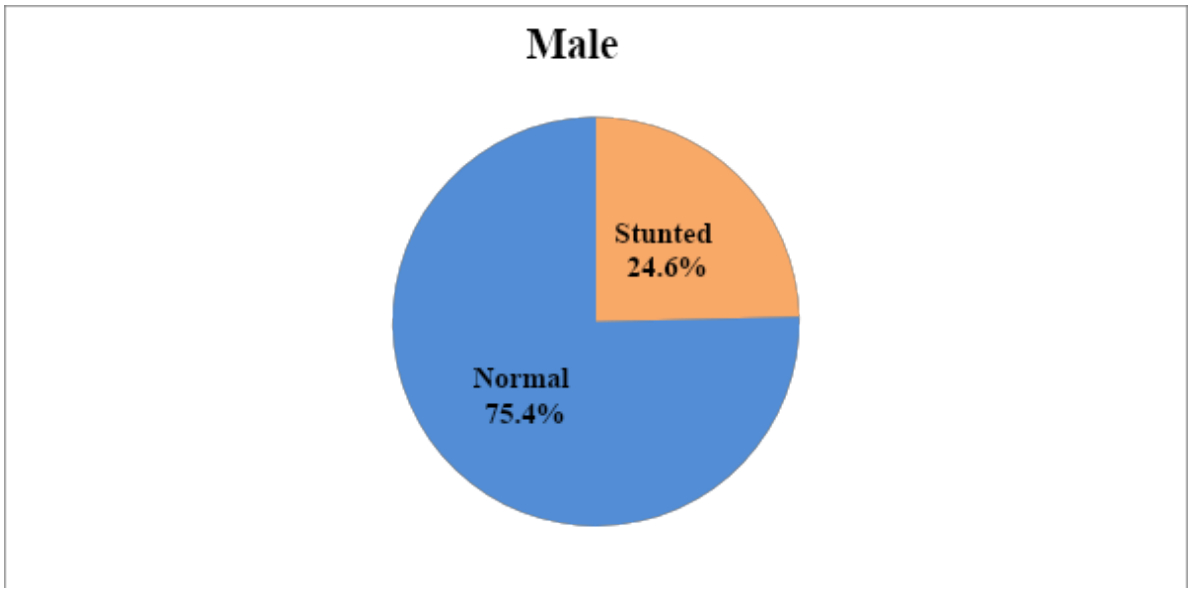

Figure 4.3: Distribution of stunting prevalence in male Child

Figure 4.3 shows that 195 male children were stunted 48 (24.6%) and 147 normal (75.4%).

4. DISCUSSION:

The main objective of this study was to determine the relationship between a mother's child psycho-social factors with stunting. We compared this study with another study. This study explored the overall prevalence of stunting under five years children was 36.15%, which was higher than (the prevalence of stunting under five years children was 31%) reported in the Bangladesh Demographic Household Survey, 2017-18 and Multiple Indicators Cluster Survey, 2019. Another study was conducted in an urban slum in Kolkata, where the prevalence rate of stunting under five years child was 26.2% (R. Chowdhury et al., 2013).

This study explored the mother's loneliness, anxiety, and fear problems during pregnancy were not significant with stunting. It was revealed from the study that who (mothers) felt loneliness during pregnancy had 1.3 higher odds of stunting compared with those who never felt loneliness. This study also explained that those who had anxiety during pregnancy had 1.6 higher odds of stunting than those who had no anxiety. A study done in Brazil discovered that children's BMI-for-age z-scores were adversely correlated with a maternal mental condition (Susiloretni et al., 2021).

Mothers who felt lonely during pregnancy had (39.6%) of stunted Children than those who never felt lonely during pregnancy. A simple study described the hypothalamic-pituitary-adrenal (HPA) axis could be disturbed by maternal stress and depression, which can have physiological implications on intrauterine growth (Field et al., 2006).

A study explored Stunted adolescents do not always have psycho-social problems (Erfanti et al., 2016). This study noticed no significance association between the child's psycho-social problems (child interaction problems with neighbor’s child, child sleep trouble, causes of a child afraid in last for weeks) and stunting. This study reported that the child who had interaction problems with another child in the previous four weeks had 2.0 higher odds of stunting than those with no interaction problems. A study showed that child-to-child interaction or peer relation was significantly related to gross motor development (Worku et al., 2018).

Additionally, those who had sleep trouble during the previous four weeks had 2.7 higher odds of stunting than those with no felt sleep trouble. A study discovered that child psycho-social characteristics (such as a lack of playthings, playground, playtime, relationships between kids and their classmates, and mother-child interaction) had a detrimental impact on child development (Worku et al., 2018).

Stunting was shown to be affected much more by socio-demographic factors. In order to be able to give appropriate and timely intervention, these results also point to the necessity of monitoring several indicators of a child's nutritional condition as part of the health monitoring programs. Additionally, we noted that the mother and husband's education level, child sex, and child age were all important risk factors for inadequate physical development as well as stunting. These findings highlight the importance of starting early intervention to lower the number of kids who experience growth restriction. The study described that the odds of stunting were significantly associated with the child's age group, especially at (24-35) months. In the child age group, those who were (24-35) months had more 3.4 odds of stunting than those who were (0-11) months. A study found that, similar to our report, According to NFHS data, several socio-demographic factors, including age, sex, socio-economic status, and educational level, were significantly associated with stunting (R. Chowdhury et al., 2013).

From the total sample, only 7.4% of mothers and 7.9% of husbands had a higher secondary and above level of education. Mothers who never went to school might relate their child with stunting (47.2%) than those who completed secondary and above education. A husband who never went to school might associate her child with stunting (47.2%) more than those who completed secondary and above education. Gradually decreasing both mother's and husband's education levels were given a signal of increasing stunted Child in the family. A similar study found that stunting in children is strongly influenced by maternal and paternal education in Bangladeshi and Indonesian families (Semba et al., 2008).

Additionally, the study indicated husbands who were unskilled workers, like day laborers, might relate more to their children with stunting (52.0%) than other occupations. A similar study found stunting and paternal jobs were highly correlated. Children whose fathers worked as entrepreneurs, farmers, low-wage employees, or were jobless were at higher risk for mild, moderate, and severe stunting than those whose fathers were office workers (Susiloretni et al., 2021).

The study also revealed that those households with monthly incomes of less than ten thousand takas were more stunted. Children lived in that family more than in other households. A similar study found in Ethiopia children under five residing in extreme poverty had high odds of being stunted. Stunting was common in low-resource settings, particularly in Sub-Saharan Africa. One of the possible explanations could be that stunting, especially in the context of extreme poverty,

is helical and is highly related to economic capacity (Worku et al., 2018). The husband's education level could affect the family income. Families with low income often feel anxious and depressed, which leads to unresponsive parenting and a lack of care for their children, which might promote malnutrition. Some studies also found that poverty is one of the risk factors for psycho-social dysfunction in children (Costello et al., 2001)**.**

This study explored male Children were more statistically significant than female Children. Another study described a similar result; boy kid sex as a physiological component was linked to stunting. In general, boys were 7% more likely than girls to have severe stunting (RR 1.07; 95%CI 1.01 to 1.14; p = 0.033) (Susiloretni et al., 2021).

We noticed a significance between household monthly income and stunting in crude or unadjusted OR. A similar paper found that poverty is one of the risk factors for psycho-social dysfunction in children (Erfanti et al., 2016). Another finding indicated that increased monthly family income was negatively correlated with stunting in North-West Ethiopian children aged 6 to 59 months (Worku et al., 2018).

It would be feasible to create future regulations that would make it simpler to inform residents of Dhaka's slum regions about stunting children under five. This study will aid in preventing its effects, mortality, and morbidity among youngsters living in Bangladesh's slum neighborhoods.

This research had several restrictions. First, causality could not be properly inferred because this was a cross-sectional study. Secondly, the sample size was also small. Thirdly, a significant factor that could have predicted linear growth—child weight or length at birth—was not taken into account in this study. Fourthly, we took only two slums that could not reflect the whole scenario of the slum in Dhaka city. Fifthly, we got a short time for data collection and other procedures. We could not find field supervisors and quality control officers during data collection. And finally, the data were collected based on mothers' recall of their psycho-social problems during pregnancy. It always never gives an accurate result.

5. CONCLUSION:

In conclusion, we observed the high stunting rates among children under five years in dholpur and korail areas of Dhaka city. Stunting was significantly related to the child's age, sex, husband's educational level, and husband's occupation. However, the most consistent risk factors are child sex and the husband's occupation. Additionally, we observed a negative association between the mother's psycho-social problem (mother felt loneliness, anxiety, and fear) during pregnancy with stunting. But it was revealed that those who felt loneliness during pregnancy had 1.3 more times odds of stunting than those who never thought it. We also noticed no significant association between the child's psycho-social problem (child interaction problem with neighbor's child, child sleep trouble, causes of a child's afraid) in last for weeks with stunting.

According to this study, it may be required to promote child care at the family level in order to enhance child development. However, by caring for the kid at the family level, the majority of changeable factors impacting malnutrition and stunting might be addressed. This study emphasizes the need to implement relevant interventions to combat malnutrition and stunting in our society. The current research further suggests that crucial attention is needed to the socio-demographic factors to prevent the nutritional problem, especially stunting. The policy should primarily concentrate on improving the sub-optimal coverage of appropriate ongoing interventions and ensuring equitable access for society's poorer and unreached segments. We offer a complete plan to promote child development and growth, raise parenting skills and professional lives, raise living standards, lessen gender inequality, end family abuse, and connect with improving the environment.

Bangladesh government should think about launching stunting prevention programs emphasizing the slum children of the Dhaka division because the prevalence of stunting was significant in the dholpur and korail slum regions. Moreover, for children with stunting in both slum areas, early identification initiatives and care for stunting must be enhanced.

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ANNEXURES:

Questionnaire

Part-1: General information

অংশ-১: সাধারন তথ্য

Serial no. ক্রমিক নং	**Questions** প্রশ্নাবলী	**Option** অপশন	**Answer code** উত্তর কোড
1	Interviewer's name: সাক্ষাৎকার গ্রহনকারীর নাম		
2	Interviewer's Id: সাক্ষাৎকার গ্রহনকারীর আইডি		
3	Date of the interview সাক্ষাৎকার গ্রহনের তারিখ	|___|___|/|___|___|/20 DD(দিন) MM (মাস) YR(বছর)	
4	Interview start time (in 24-hours format) সাক্ষাৎকার শুরুর সময় (২৪ ঘন্টা ফরম্যাটে)	|____|____|: |____|____| Hour(ঘন্টা) Minute(মিনিট)	
5	Household ID খানার আইডি		
6	Who is the head of your household?	1=Herself (নিজেই) 2=Husband (স্বামী)	

	আপনার খানার প্রধান কে?	3=Both husband and wife (স্বামী ও স্ত্রী উভয়ই) 4=Father in law (শ্বশুর) 5=Mother in law (শ্বাশুরি) 99=Others (Please specify) অন্যান্য (দয়া করে নির্দিষ্ট করুন)	
7	What is the name of the head of the household? আপনার খানা প্রধানের নাম কি?		
8	What is your (mother's) name? আপনার নাম (মা) কি?		
9	Mother's Id মায়ের আইডি		
10	What is your (mother's) date of birth? আপনার জন্মসাল কি?	|____|____|/ |____|____|/ |____|____| DD(দিন) MM (মাস) YR(বছর)	
11	Age of mother মায়ের বয়স	|____|____| : |____|____| Years(বছর) Months(মাস)	

12	How many children do you have under five years of age? পাঁচ বছরের নীচে আপনার কয়টি বাচ্চা আছে?		
13	Name of the children under five years of age: পাঁচ বছরের নীচের বয়সি বাচ্চার নাম		
14	Id of the child under five years of age: পাঁচ বছরের নীচের বয়সি বাচ্চার আইডি		
15	Date of birth of your child under five years of age: পাঁচ বছরের নীচের বয়সি বাচ্চার জন্মতারিখ	|___|___|/|___|___|/20 DD (দিন) MM (মাস) Year (বছর)	
16	Age of under 5 child পাঁচ বছরের নীচের বয়সি বাচ্চার বয়স	|____|____| : |____|____| Years (বছর) Months (মাস)	
17	What is the sex of your child? আপনার সন্তানের লিঙ্গ কি?	1=Male (ছেলে) 2=Female (মেয়ে)	

18	For how many years have you been living in this slum? কত বছর যাবৎ আপনি এই বস্তিতে বাস করছেন?	---------- year (বছর) ---------- month (মাস)	
19	Address and contact number of the participant: অংশগ্রহনকারীর যোগাযোগের ঠিকানা ও ফোন নম্বর		
20	Slum name: বস্তির নাম		

Part-2: Socio-demographic and economic

অংশ-২: সামাজিক-জনসংখ্যাগত এবং অর্থনৈতিক

Serial no. ক্রমিক নং.	**Questions** প্রশ্নাবলী	**Option** অপশন	**Answer code** উত্তর কোড
1	How many members live in your household? আপনার খানার সদস্য সংখ্যা কত?	1=≤5 (৫ জন বা তার কম) 2=>5 (৫ জনের বেশি)	
2	What is your marital status? আপনার বৈবাহিক অবস্থা কী?	1=Married (বিবাহিত) 2=Widowed (বিধবা) 3=Separated (পৃথক) 4= Divorced (তালাকপ্রাপ্ত) 5=Refused to answer (উত্তর দিতে অসম্মতি)	
3	What is your religion? আপনার ধর্ম কি?	1=Muslim (মুসলিম) 2=Hindu (হিন্দু) 3=Christian (খৃস্টান) 4=Buddhist (বৌদ্ধ) 99=Others (specify) অন্যান্য (দয়া করে নির্দিষ্ট করুন)	
4	What is your completed level of education? আপনি সর্বোচ্চ কতদূর পর্যন্ত লেখাপড়া করেছেন?	1 = Class 1 (প্রথম শ্রেনী) 2 = Class 2 (দ্বিতীয় শ্রেনী) 3 = Class 3 (তৃতীয় শ্রেনী) 4 = Class 4 (চতুর্থ শ্রেনী) 5 = Class 5 (পঞ্চম শ্রেনী) 6 = Class 6 (ষষ্ঠ শ্রেনী) 7 = Class 7 (সপ্তম শ্রেনী)	

		8 = Class 8 (অষ্টম শ্রেনী) 9 = Class 9 (নবম শ্রেনী) 10 = Class 10 (দশম শ্রেনী) 11 = SSC/Dakhil (এস.এস.সি/দাখিল) 12 = HSC/Alim (এইচ.এস.সি/আলিম) 13 = Diploma/ vocational (ডিপ্লোমা/ভোকেশনাল) 14 = BA/ BSc/BCom/Fazil/graduate/ BA (honours) (বি.এ/বি.এসসি/বি.কম/স্নাতক/ বি.এ স্নাতক) 15 = MA/Phd/Kamil (এম.এ/পিএইচডি/কামিল) 16 = Hafezi/Qawmi/Kharizi 1. (হাফেজি/কওমি/খারিজি) 77 = N/A, becasue never went to school (প্রযোজ্য নয়, কারন কখনও স্কুলে যাওয়া হয়নি) 97 = Don't know জানিনা)	

5	What is your husband's completed level of education? আপনার স্বামী সর্বোচ্চ কতদূর পর্যন্ত লেখাপড়া করেছেন?	1 = Class 1 (প্রথম শ্রেনী) 2 = Class 2 (দ্বিতীয় শ্রেনী) 3 = Class 3 (তৃতীয় শ্রেনী) 4 = Class 4 (চতুর্থ শ্রেনী) 5 = Class 5 (পঞ্চম শ্রেনী) 6 = Class 6 (ষষ্ঠ শ্রেনী) 7 = Class 7 (সপ্তম শ্রেনী) 8 = Class 8 (অষ্টম শ্রেনী) 9 = Class 9 (নবম শ্রেনী) 10 = Class 10 (দশম শ্রেনী) 11 = SSC/Dakhil (এস.এস.সি/দাখিল) 12 = HSC/Alim (এইচ.এস.সি/আলিম) 13 = Diploma/ vocational (ডিপ্লোমা/ভোকেশনাল) 14 = BA/ BSc/BCom/Fazil/graduate/ BA (honours) (বি.এ/বি.এসসি/বি.কম/স্নাতক/ বি.এ স্নাতক) 15 = MA/Phd/Kamil (এম.এ/পিএইচডি/কামিল) 16 = Hafezi/Qawmi/Kharizi 1. (হাফেজি/কওমি/খারিজি) 77 = N/A, becasue never went to school (প্রযোজ্য নয়, কারন কখনও স্কুলে যাওয়া হয়নি) 97 = Don't know জানিনা)	

6	What is your main occupation for the last six months? বিগত ছয় মাস যাবত আপনার প্রধান পেশা কি ছিল? (If the respondent involved more than one profession since last 6 months, then consider the main occupation which he spent most of the time and write down the answer code.) নির্দেশনাঃ যদি তথ্য প্রদানকারী গত ৬ মাসে একাধিক পেশায় নিযুক্ত থাকেন তাহলে তিনি যে পেশাটিতে বেশী সময় ব্যয় করেছেন সেটিকে প্রধান পেশা হিসাবে বিবেচনা করুন এবং তা লিপিবদ্ধ করুন।	1=Unskilled (Day laborer) অদক্ষ কর্মী (দিনমজুর) 2=Skilled (Sewing, embroidery, cook) দক্ষ কর্মী (সেলাই, নকশার কাজ, বাবুর্চি) 3=Garments worker (গার্মেন্টস কর্মী) 4=Employee (চাকুরীজীবি) 5= Professionals (পেশাজীবি) (Doctor, Engineer, Nurse, Advocate) (ডাক্তার, ইঞ্জিনিয়ার, নার্স, উকিল) 6=Businessman (ব্যবসায়ী) 7=Petty businessman (ক্ষুদ্র ব্যবসায়ী) 8=Housemaid (গৃহকর্মী) 9=Beggar (ভিক্ষুক) 10= Housewife (গৃহিনী) 11=Student (ছাত্র) 99=Others (specify below) অন্যান্য (দয়া করে নির্দিষ্ট করুন)___	
7	What is your husband's main occupation for the last six months? বিগত ছয় মাস যাবত আপনার স্বামীর প্রধান পেশা কি ছিল?	1=Unskilled (day laborer) অদক্ষ কর্মী (দিনমজুর) 2=Skilled (Plumber, mechanic, electrician, hairdresser, blacksmith, goldsmith, cook)	

		দক্ষ কর্মী (প্লাম্বার, মেকানিক, ইলেক্ট্রিসিয়ান, নাপিত, কামার, স্বর্ণকর্মী, বাবুর্চি) 3=Rickshaw puller/ van/Wheelbarrow/Baby taxi/ Boatman (রিক্সা, ভ্যান, বেবীটেক্সী, ঠেলাগাড়ী চালক, মাঝি 4= Driver (গাড়ি চালক) 5=Security guard (নিরাপত্তা কর্মী) 6=Garments worker (গার্মেন্টস কর্মী) 7= Employee (চাকুরীজীবি) 8=Professionals (Doctor, Engineer, Nurse, Advocate) পেশাজীবি (ডাক্তার, ইঞ্জিনিয়ার, নার্স, উকিল) 9=Businessman (ব্যবসায়ী) 10=Petty businessman (ক্ষুদ্র ব্যবসায়ী) 11=Housemaid (গৃহকর্মী) 12=Beggar (ভিক্ষুক) 13=Hawker (ফেরিওয়ালা) 14=Student (ছাত্র) 99=Others (specify below) অন্যান্য (দয়া করে নির্দিষ্ট করুন)___	

8	What is the household monthly income? মাসিক আয় কত?	---------- Taka (টাকা)	

Section-C: Psycho-social related condition of Mother

অংশঃ**3** মায়ের মনো- সামাজিক অবস্থার তথ্যাবলীঃ

Now I would like to take a few minutes of your time to ask you about your **psycho-social** condition. I am going to ask you to think during pregnancy and try to remember how often and in what ways your mental experience. I am requesting you, if you have any questions at any time, please feel free to stop me and ask.

এখন আমি আপনার মনো- সামাজিক অবস্থা সম্পর্কে জিজ্ঞাসা করার জন্য আপনার কয়েক মিনিট সময় নিতে চাই। আমি আপনার গর্ভকালীন সময়ের কথা চিন্তা করতে বলব এবং আপনার মনো- সামাজিক অবস্থার অভিজ্ঞতা কত ঘন ঘন এবং কী উপায়ে হয়েছে তা মনে করার চেষ্টা করুন। যে কোনো সময়ে আপনার কোনো প্রশ্ন থাকলে, আমাকে থামাতে এবং জিজ্ঞাসা করতে আপনাকে অনুরোধ করছি।

Serial No. (ক্রমিক নং)	**Questions** (প্রশ্নাবলী)	**Response** (উত্তর)	**Code** (কোড)	**Instruction** (নির্দেশনা)
1	Did you suffer any Psycho-Social (Loneliness, Anxiety Fear, Frustration, Neglect, Depression, Lack of Self-care, Loss of confidence) problem during your pregnancy? (when the selected baby is in the womb) গর্ভকালীন সময়ে আপনার কি কোন মনোসামাজিক (একাকিত্ব, দুঃচিন্তা, ভয়, হতাশা, অবহেলিত হওয়া, বিষন্নতা, সেবা -যত্ন না নেয়া, আত্মবিশ্বাস হারানো,) সমস্যা ছিল? (যে বাচ্চার তথ্য নিচ্ছি, সেই বাচ্চা গর্ভে থাকার সময়)	1=Yes(হ্যাঁ) 2=No(না)		If 'No' go to the next part ('না' হলে পরবর্তী অংশে যাবেন)
2	Did you feel loneliness during pregnancy?	1=Yes(হ্যাঁ) 2=No(না)		If the answer is 'No', go to question 3 (উত্তর 'না' হলে ৩ নং প্রশ্নে যান)

	(গর্ভকালীন সময়ে আপনি কি একাকীত্ব অনুভব করতেন?			
2(a)	Why did you feel loneliness during pregnancy? (গর্ভকালীন সময়ে আপনি কেন একাকীত্ব অনুভব করতেন?)	1= Husband would spend outside longtime due to work. (স্বামী কাজের জন্য বেশি সময় বাইরে থাকে।) 2= To feel lacking enough care. (যথেষ্ট যত্নের অভাব অনুভব করার জন্য) 3= To feel the lack of an empathetic partner (সমানুভূতির সাথীর অভাব অনুভব করার জন্য) 4=Others--- (অন্যান্য)		Please give one answer (অনুগ্রহ করে একটি উত্তর দিন)
3	Did you feel anxiety during pregnancy? (গর্ভকালীন সময়ে আপনি কি চিন্তিত থাকতেন?)	1=Yes(হ্যাঁ) 2=No(না)		If the answer is 'No', go to question 4 (উত্তর ‘না’ হলে ৪ নং প্রশ্নে যান)
3(a)	Why did you feel anxiety during pregnancy? (গর্ভকালীন সময়ে আপনি কেন চিন্তিত থাকতেন?)	1= Fear of losing the baby (বাচ্চা নষ্ট হওয়ার ভয়ে) 2= To arrange money for child delivery (বাচ্চার প্রসবের টাকা যোগাড়ের জন্য) 3= Babies delivery will be good or not(বাচ্চার প্রসব ঠিক মত হবে কিনা।) 4=Others---(অন্যান্য)		Please give one answer (অনুগ্রহ করে একটি উত্তর দিন)

4	Did you feel fear during pregnancy? গর্ভকালীন সময়ে আপনি কি ভয় পেয়েছিলেন?	1=Yes(হ্যাঁ) 2=No(না)		If the answer is 'No', go to question 5 (উত্তর 'না' হলে ৫ নং প্রশ্নে যান)
4(a)	What kind of fear did you have during pregnancy? (গর্ভকালীন সময়ে আপনি কি ধরনের ভয় পেয়েছিলেন?)	1= Fear of health problems of the baby inside the womb (পেটের ভিতরে বাচ্চার স্বাস্থ্য সমস্যার ভয়) 2= Fear of childbirth complications (সন্তান প্রসবের জটিলতার ভয়) 3= Fear of miscarriage of baby ((সন্তান গর্ভপাতের ভয়) 4=Others---(অন্যান্য)		Please give one answer (অনুগ্রহ করে একটি উত্তর দিন)

Section-D: Psycho-social related condition of Child

অংশঃ **4** শিশুর মনো-সামাজিক অবস্থার তথ্যাবলীঃ

Now I would like to take a few minutes of your time to ask you about your **child's psycho-social** condition**.** I will ask you to think back over the past four weeks and try to remember how often and in what ways your mental experience is. I am requesting you, If you have any questions at any time, please feel free to stop me and ask.

এখন আমি আপনার শিশুর মনো- সামাজিক অবস্থা সম্পর্কে জিজ্ঞাসা করার জন্য আপনার কয়েক মিনিট সময় নিতে চাই। আমি আপনার শিশুর গত চার সপ্তাহের মনো-সামাজিক অবস্থার কথা চিন্তা করতে বলব এবং আপনার শিশুর মনো-সামাজিক অবস্থার অভিজ্ঞতা কত ঘন ঘন এবং কী উপায়ে হয়েছে তা মনে করার চেষ্টা করুন। যে কোনো সময়ে আপনার কোনো প্রশ্ন থাকলে, আমাকে থামাতে এবং জিজ্ঞাসা করতে আপনাকে অনুরোধ করছি।

Serial No. (ক্রমিক নং)	**Questions** (প্রশ্নাবলী)	**Response** (উত্তর)	**Code(** কোড)	**Instruction** (নির্দেশনা)
1	In the past four weeks, have you noticed any problems with your child interacting with the neighbor's children? (গত চার সপ্তাহে আপনার বাচ্চার সাথে প্রতিবেশীর বাচ্চাদের ভাবের আদান-প্রদানে কি কোন সমস্যা লক্ষ্য করেছেন?)	1=Yes(হ্যাঁ) 2=No(না)		
2	Has your child had any psycho-social (loneliness, fear, quietness, sleep problems, confrontational) problems in the past four weeks?	1=Yes(হ্যাঁ) 2=No(না)		If 'No' go to the next part ('না' হলে পরবর্তী অংশে যাবেন)

	গত চার সপ্তাহে আপনার বাচ্চার কি কোন মনো- সামাজিক (একাকিত্ব, ভয়, চুপচাপ থাকা, ঘুমের সমস্যা, দ্বন্দ্বে জড়ানো) সমস্যা ছিল?			
3	What do you think your child was afraid of in the last four weeks? (আপনি কি মনে করেন গত চার সপ্তাহে আপনার বাচ্চা কোন কারণে ভয় পেয়েছিলো?)	1=Yes(হ্যাঁ) 2=No(না)		If the answer is 'No', go to question 4 (উত্তর 'না' হলে 4 নং প্রশ্নে যান)
3a	Why has your child been afraid in the last four weeks? (গত চার সপ্তাহে আপনার বাচ্চা কেন ভয় পেয়েছিলো?)	1= Seeing a stranger (অপরিচিত কাউকে দেখে 2= To travel to new places (নতুন জায়গায় ঘুরতে নেওয়ার জন্য) 3= For traveling in motorized vehicles with children (বাচ্চাকে নিয়ে ইন্জিনচালিত যানবাহনে চলাচলের জন্য) 4=Others(অন্যান্য)		Please give one answer (অনুগ্রহ করে একটি উত্তর দিন)
4	Has your child had any sleep problems in the past four weeks? (গত চার সপ্তাহে আপনার বাচ্চার কি ঘুমের কোন সমস্যা হয়েছিল?)	1=Yes(হ্যাঁ) 2=No(না)		

Measurement:

পরিমাপ

Serial No. (ক্রমিক নং)	Indicators	**Measurement (পরিমাপ)**	**Code(কোড)**	**Instruction (নির্দেশনা)**
1	Current weight of the child (Kgs) বাচ্চার বর্তমান ওজন(কেজি)			
2	Current Length/height of the child (cm) বাচ্চার বর্তমান উচ্চতা (সেন্টিমিটার)			

Informed Consent Form

Title of the study:

Mother and children psycho-social factors associated with stunting under five years children at slum areas in Dhaka city: A cross-sectional study in Bangladesh

Investigator's Name:

Liton Baroi,

Organization:

BRAC James P Grant School of Public Health.

Purpose of the Research:

I am a student of Batch 18 of the MPH program at James P. Grant School of Public Health, BRAC University. As a part of my MPH academic curriculum, I am conducting research known as a "Summative Learning Project," and I am working on the nutrition aspect.

This study aims to determine the reason behind the retardation of growth and development of your child. I will assess feeding and disease-related condition for your child. I will also explore the mother and child's psycho-social problem (fear of loneliness).

Why are you asked to participate?

I am requesting all the mothers who have children under five years old living in the slum (korail and dholpur) to participate in the study.

What will I ask to do our participants for this study?

If you agree, we would like to take your permission before proceeding. I will ask you some questions and take measurements of you and your under-five child (e.g., height, weight). The interview will take approximately 40 minutes.

Risk:

As this is an exploratory study, there will be no potential risks to the study participants. I will strictly maintain all the Covid 19 related protective measures. I will wear masks and will also provide covers to our participants. I will sanitize our hands and measuring devices with hexisol before and after the procedure and maintain a safe distance from our participants.

Benefits:

From this study, your valuable information will be essential for us to get an overview of the current nutritional status in this slum. I will keep it as evidence and use it in the future for the further benefit of the people of this area.

Compensation:

There is no financial binding for your participation in the study.

Privacy, anonymity, and confidentiality:

Your responses will remain confidential and anonymous and will only be used for the study. The information collected from the study will be kept covert by the research group. All documents will be stored carefully and will not be shared with people beyond those, who are closely involved with this research. The information gained from this research will be used in summarized form without your name and identity

Right not to participate and withdraw:

Your participation will be completely voluntary. You can withdraw from the interview/discussion at any moment if you want to, even after signing the consent or beginning the interview. Moreover, you are not obliged to answer any question that makes you uncomfortable. There are no restrictions or risks to answering our questions. I will abide by your decision and appreciate your concern.

For general queries about this study:

To know about your further safety and rights, you can contact on the following address

BRAC James P Grant School of Public Health, BRAC University, 7th-floor Medona Tower, 28 Mohakhali Industrial Area, Bir Uttam A K Khandokar Road, Dhaka-1213, Bangladesh, Mobile: +8801993379512

For your further queries and necessary clarifications about our study, you can reach us anytime at the following designated contact numbers:

Liton Baroi, BRAC James P Grant School of Public Health, BRAC University, 7th-floor Medona Tower, 28 Mohakhali Industrial Area, Bir Uttam A K Khandokar Road, Dhaka-1213, Bangladesh, Mobile: +8801710147594

If you choose to participate in our study and agree to all the points above, please put your signature or your left thumbprint in the specified space below:

I have read the preceding information, or it has been read to me. I have had the opportunity to ask questions about it and any questions. I have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Participant	Interviewer
Name: **Signature/Thumbprint:** **Date:**	**Name:** **Signature:** **Date:**

<u>সম্মতি পত্র</u>

গবেষণার শিরোনাম:

মা এবং শিশুদের মনো সামাজিক অবস্থার সাথে পাঁচ বছরের কম বয়সী শিশুদের শারিরীক বৃদ্ধি বাধা সৃষ্টি অন্তরায় অবস্থা মূল্যায়ন সম্পর্কে মায়েদের উপলব্ধি।

গবেষকদের নাম:

লিটন বাড়ৈ,

সংগঠন:

ব্র্যাক জেমস পি গ্রান্ট স্কুল অফ পাবলিক হেলথ।

গবেষণার উদ্দেশ্য:

আমি জেমস পি গ্রান্ট স্কুল অফ পাবলিক হেলথ, ব্র্যাক ইউনিভার্সিটির এম.পি.এইচ প্রোগ্রামের ১৮ তম ব্যাচ এর ছাত্র। এমপিএইচ একাডেমিক পাঠ্যক্রমের একটি অংশ হিসাবে, আমি একটি গবেষণা পরিচালনা করছি যা "সমষ্টিগত শিক্ষা প্রকল্প" নামে পরিচিত এবং আমি পুষ্টিগত বিষয় নিয়ে গবেষণা করব।

এই গবেষণার উদ্দেশ্য হল আপনার সন্তানের পুষ্টির অবস্থা সম্পর্কে আপনার ধারনা এবং আপনার শিশুর বৃদ্ধি এবং বিকাশে বাধার পিছনের কারণ অনুসন্ধান। এছাড়াও আমি মা এবং শিশুদের মনো সামাজিক অবস্থার সাথে পাঁচ বছরের কম বয়সী শিশুদের শারিরীক বৃদ্ধি বাধা সৃষ্টি এবং এদের কারন সম্মন্ধেও জানতে চাই।

কেন আপনাকে অংশগ্রহণ করতে বলা হয়েছে?

আমি বস্তিতে (কড়াইল, ধলপুর) বসবাসরত সকল শূন্য থেকে পাঁচ বছর বয়সি বাচ্চার মায়েদের এই গবেষণায় অংশগ্রহনের জন্য অনুরোধ করছি।

এই গবেষণায় আপনাকে কি করতে বলা হবে?

আপনি সম্মত হলে আমরা এগিয়ে যাওয়ার আগে আপনার অনুমতি নিতে চাই। আমরা আপনাকে কিছু প্রশ্ন জিজ্ঞাসা করব এবং আপনার এবং আপনার পাঁচ বছরের কম বয়সী শিশুর শারীরিক পরিমাপ নিব (যেমন : উচ্চতা, ওজন)। সাক্ষাত্কারটি প্রায় ৪০ মিনিট সময় নেবে।

ঝুঁকি:

যেহেতু এটি একটি অনুসন্ধানমূলক গবেষণা, তাই এই গবেষণায় অংশগ্রহণকারীদের জন্য কোন সম্ভাব্য ঝুঁকি থাকবে না। আমি কোভিড-১৯ সম্পর্কিত সমস্ত সুরক্ষামূলক ব্যবস্থা কঠোরভাবে বজায় রাখব। আমি নিজেরা মাস্ক পরব এবং আমাদের গবেষণায় অংশগ্রহনকারীদের কেও পরিধানের জন্য মাস্ক দিব। প্রতিটি পরিমাপ নেয়ার আগে ও পরে আমরা আমাদের হাত ও পরিমাপের যন্ত্রগুলোকে হেক্সিসল দিয়ে ভালভাবে জীবানুমুক্ত করে নিব এবং নিরাপদ দূরত্ব বজায় রাখব।

সুবিধা:

এই গবেষণা থেকে প্রাপ্ত আপনার মূল্যবান তথ্য এই বস্তিতে বর্তমান পুষ্টির অবস্থা সম্পর্কে একটি সংক্ষিপ্ত বিবরণ পেতে আমাদের জন্য অত্যন্ত গুরুত্বপূর্ণ হবে। আমরা এটি প্রমাণ হিসাবে রাখব এবং ভবিষ্যতে এই এলাকার মানুষের আরও সুবিধার জন্য প্রয়োজন হলে এটি ব্যবহার করব।

ক্ষতিপূরণ:

এই গবেষণায় আপনার অংশগ্রহণের জন্য কোন আর্থিক বাধ্যবাধকতা নেই।

গোপনীয়তা, নাম প্রকাশ না করা এবং গোপনীয়তা:

আপনার প্রতিক্রিয়াগুলি গোপনীয় এবং বেনামী থাকবে এবং শুধুমাত্র গবেষণার উদ্দেশ্যে ব্যবহার করা হবে। গবেষণা থেকে সংগৃহীত তথ্য গবেষক দল সম্পূর্ন গোপন রাখবে। সমস্ত নথি সাবধানে সংরক্ষণ করা হবে এবং যারা এই গবেষণার সাথে ঘনিষ্ঠভাবে জড়িত তাদের বাইরের লোকেদের সাথে ভাগ করা হবে না। এই গবেষণা থেকে প্রাপ্ত তথ্য আপনার নাম এবং পরিচয় ছাড়াই সংক্ষিপ্ত আকারে ব্যবহার করা হতে পারে।

অংশগ্রহণ ও প্রত্যাহার না করার অধিকার:

আপনার অংশগ্রহণ সম্পূর্ণ স্বেচ্ছায় হবে। আপনি চাইলে যেকোন মুহূর্তে ইন্টারভিউ/আলোচনা থেকে নিজেকে প্রত্যাহার করতে পারেন, এমনকি সম্মতিতে স্বাক্ষর করার পরেও বা ইন্টারভিউ শুরু করার পরেও। তাছাড়া, আপনি এমন কোনো প্রশ্নের উত্তর দিতে বাধ্য নন যা আপনাকে অস্বস্তি বোধ করাবে। আমাদের প্রশ্নের উত্তর দেওয়ার কোন সীমাবদ্ধতা এবং ঝুঁকি নেই। আমি আপনার সিদ্ধান্ত মেনে চলব এবং আপনার উদ্বেগের প্রশংসা করব।

এই গবেষণা সম্পর্কে সাধারণ প্রশ্নের জন্য:

আপনার অধিকার ও সুরক্ষার জন্য আরও তথ্য পেতে নিম্নোক্ত ঠিকানায় যোগাযোগ করুনঃ

ব্র্যাক জেমস পি গ্র্যান্ট স্কুল অফ পাবলিক হেলথ, ব্র্যাক বিশ্ববিদ্যালয়, ৭ম তলা, মেডোনা টাওয়ার, ২৮ মহাখালি বানিজ্যিক এলাকা, বীর উত্তম এ কে খন্দকার রোড, ঢাকা-১২১৩, বাংলাদেশ, মোবাইলঃ +৮৮ ০১৯৯৩৩৭৯৫১২

আমাদের অধ্যয়ন সম্পর্কে আপনার আরও প্রশ্ন এবং প্রয়োজনীয় ব্যাখ্যার জন্য আপনি নিম্নলিখিত মনোনীত যোগাযোগ নম্বরে আমাদের সাথে যোগাযোগ করতে পারেন:,

লিটন বাড়ৈ, ব্র্যাক জেমস পি গ্র্যান্ট স্কুল অফ পাবলিক হেলথ, ব্র্যাক বিশ্ববিদ্যালয়, ৭ম তলা, মেডোনা টাওয়ার, ২৮ মহাখালি বানিজ্যিক এলাকা, বীর উত্তম এ কে খন্দকার রোড, ঢাকা-১২১৩, বাংলাদেশ, মোবাইলঃ +৮৮ ০১৭১০১৪৭৫৯৪ ।

আপনি যদি আমার গবেষণায় অংশগ্রহণ করতে চান এবং উপরের সমস্ত পয়েন্টে সম্মত হন, তাহলে অনুগ্রহ করে নীচের নির্দিষ্ট জায়গায় আপনার স্বাক্ষর বা আপনার বাম থাম্বপ্রিন্ট রাখুন:

আমি পূর্বোক্ত তথ্য পড়েছি, বা এটি আমাকে পড়ে শোনানো হয়েছে। আমাকে গবেষণার বিষবস্তু সম্পর্কে প্রশ্ন করার সুযোগ দেয়া হয়েছিল এবং প্রশ্নের জবাবে আমি সন্তুষ্ট। আমি এই গবেষণায় অংশগ্রহণকারী হতে স্বেচ্ছায় সম্মতি দিচ্ছি।

অংশগ্রহণকারী	ইন্টারভিউয়ার
নাম:	নাম:
স্বাক্ষর/থাম্বপ্রিন্ট:	স্বাক্ষর:
তারিখ:	তারিখ:

Codebook

import excel "E:\Docs\SLP Full\22.12.2022 file (table+do file+excel)\21.12.22 edited 391 with code.xlsx", sheet("Sheet1") firstrow

la var Intv_name "Interviewer's name"

la var Intv_ID "Interview id"

la var Intv_date "Interview date"

```
la var Intv_time "Interview time"
la var hhid "Household id"
la var mage "Mothers age in years"
la var hhmem "Household member"
la var tchild "Total child"
la var tchild_5 "total child under 5 years age"
la var cage "Child age in months"
la var yofliving "Slum living duration (years)"
la var area_name "Slum name"
la var m_edu "Mother's educational level"
la var hus_edu "Husband's completed level of education"
la var m_occ "Mother's occupation"
la var hus_occ "Husband's occupation"
la var hh_income "Monthly household income (taka)"
la var c_sex "sex of child"
la var mlonel_yn "Mother loneliness "
la var manxiety_yn "Mother anxiety"
la var mfear_yn "Mother fear"
la var ccomproneigh_yn "Child communication problem with Neighbor"
la var clonel_yn "child loneliness"
la var ccause_afraid "Cause of afraid"
la var csleepp_yn "Child sleep trouble"
la var c_wt "Child weight in kg"
la var c_ht "Child height in cm"

****Mother's education level****
encode m_edu, gen(medu)
recode medu (13 16=1 "Never went to school") (2 4 5 6=2 "Pre-primary") (7 8 9 10 11 3=3 "Primary completed") (17=4 "Secondary completed") (14 15 1 12 =5 "Higher secondary and above") , gen(medu1)
******Total monthly household income******
```

recode hh_income (3000/9999=1 "less than 10000") (10000/14999=2 "less than 15000 or equal to 10000") (15000/19999=3 "less than 20000 or equal to 15000") (20000/24999=4 "less than 25000 or equal to 20000") (25000/75000=5 "more than or equal to 25000"), gen(hh_income1)

***** Husband's completed level of education******

encode hus_edu, gen(hus_edu1)

recode hus_edu1 (14 17=1 "Never went to school") (3 5 6 7=2 "Pre-primary") (8 9 10 11 12 4=3 "Primary completed") (18=4 "Secondary completed") (1 2 13 15 16 19 =5 "Higher secondary and above"), gen(hus_edu2)

******* Husband's occupation *******

encode hus_occ, gen(hus_occ1)

recode hus_occ1 (11 4 5 8=1 "Service") (3 12=2 "Skilled worker") (9 14=3 "Unskilled worker") (1 7 10=4 "Small trade") (2 6 13=5 "Others"), gen(hus_occ2)

******Child sex ******

encode c_sex, gen(c_sex1)

****** Child age(months)******

recode cage (0/11=1 "0-11") (12/23=2 "12-23") (24/35=3 "24-35") (36/47=4 "36-47") (48/59=5 "48-59"), gen(cage1)

******* (Table 1) Socio dempgraphic Table Code*******

tab mage1 area_name,col

tab mstat2 area_name,col

tab rel2 area_name,col

tab medu1 area_name,col

tab m_occ2 area_name,col

tab hh_income1 area_name,col

tab m_income1 area_name,col

tab hus_edu2 area_name,col

tab hus_occ2 area_name,col

tab c_sex1 area_name,col

tab cage1 area_name,col

tab fn2_demak area_name,col

tab total_hhmem area_name,col

***** Mother psycho_social problem*****

** Mother loneliness during pregnancy

*encode mlonel_yn, gen(mlonel_yn1)

**mother anxiety during pregnancy

*encode manxiety_yn, gen(manxiety_yn1)

**mother fear during pregnancy

*encode mfear_yn, gen(mfear_yn1)

**child psycho-social problem

***** Child psycho_social problem*****

**child communication problem with neighbors child last four week

encode ccomproneigh_yn, gen(ccomproneigh_yn1)

**child sleep trouble last 4 week

encode csleepp_yn, gen(csleepp_yn1

**cause of Child afraid

encode ccause_afraid, gen(ccause_afraid1)

*****zscore calculation*****

findit zscore

zscore06, a(cage) s(c_sex1) h(c_ht) w(c_wt)

*****Stunting*****

gen stunting= haz06<=-2 if haz06<.

la de stunting 1"Stunting" 0"Normal", replace

la val stunting stunting

******* (Table 2) Chi2 socio-demo, mother and child psycho-social factors ********

tab medu1 stunting, row chi2

tab hus_edu2 stunting, row chi2

tab hus_occ2 stunting, row chi2

tab c_sex1 stunting, row chi2

tab cage1 stunting, row chi2

tab hh_income1 stunting, row chi2

tab mlonel_yn1 stunting, row chi2

tab manxiety_yn1 stunting, row chi2

tab mfear_yn1 stunting, row chi2

tab ccomproneigh_yn1 stunting, row chi2

tab ccause_afraid1 stunting, row chi2

tab csleepp_yn1 stunting, row chi2

******** (Table 3) Logistic regression *********

***Crude/Unadjusted Odd Ratio Table ***

**socio-demographic, mothers and child psycho-social problem

logistic stunting i.medu1

logistic stunting i.hus_edu2

logistic stunting ib2.hus_occ2

logistic stunting i.c_sex1

logistic stunting i.cage1

logistic stunting ib5.hh_income1

logistic stunting i.mlonel_yn1

logistic stunting i.manxiety_yn1

logistic stunting i.mfear_yn1

logistic stunting i.ccomproneigh_yn1

logistic stunting i.ccause_afraid1

logistic stunting i.csleepp_yn1

Adjusted Odd Ratio Table *

**socio-demographic, mothers and child psycho-social problem

logistic stunting i.medu1 i.hus_edu2 ib2.hus_occ2 i.c_sex1 i.cage1 ib5.hh_income1

logistic stunting i.mlonel_yn1 i.manxiety_yn1 i.mfear_yn1

logistic stunting i.ccomproneigh_yn1 i.csleepp_yn1 i.ccause_afraid1

SLP Time frame

Content	Oct 15, 2022	Nov 6, 2022	Nov 12, 2022	Nov 14, 2022	Nov 17, 2022	Nov 21-22, 2022	Nov 23, 2022	Nov24 -Dec,10, 2022	Dec 10-17, 2022	Jan 4, 2023	Jan 11, 2023	Jan 16, 2023
SLP Student Orientation												
Draft individual Concept notes submission												
Final Submission of Concept note												
Draft tools and Consent form Submission												
Review of Ethical compliance by ERC												
Submission of Final tools and Consent form												
Tools pre-test and Finalization												
Data collection												
Data analysis												
Final Draft SLP Final Submission												
Individual resubmission												
Poster Submission												