****

**Study on socio-demographic, anthropometric, life style behavior and trace elements of pregnant women**

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Roll No.: 0119/19

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Session: 2019-2020 (January-June)

**A thesis submitted in the partial fulfillment of the requirements for the degree of Masterof Public Health**

**One Health Institute**

**Chittagong Veterinary and Animal Sciences University**

**Chittagong-4225, Bangladesh**

**December 2020**

#

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**This is to certify that we have examined the above Master’s thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made**

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Dedicated to

Dr. Moinuddin Mahmud Illius

Assistant Professor

Neurosurgery

*and*

*my all Teachers*

#

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# List of Abbreviations

|  |  |  |
| --- | --- | --- |
| **Abbreviation** | **-** | **Elaboration** |
| % | - | Per cent |
| BMI | - | Body Mass Index |
| GDM | - | Gestational Diabetes Mellitus |
| CRP | - | C-reactive protein |
| MUAC | - | Mid upper arm circumference |
| WC | - | Waist circumference |
| IDA | - | Iron deficiency anaemia  |
| VAD | - | Vitamin A deficiency |
| SGA | - | Small for gestational age |
| HTN | - | Hypertension |
| IUGR | - | [Intrauterine Growth Restriction](https://www.whattoexpect.com/pregnancy/pregnancy-health/complications/intrauterine-growth-restriction.aspx#:~:text=IUGR%20is%20a%20term%20that's,be%20diagnosed%20with%20the%20condition.)  |
| CMOSHMC | - | Chattagram Maa-O-Shishu Hospital Medical College |
| T2DM | - | Type 2 Diabetes mellitus  |
| UTI | - | Urinary tract infection |
| TB | - | Tuberculosis |
| SAM | - | Severe acute malnutrition |
| MAM | - | Moderate acute malnutrition |
| SD | - | Standard Deviation |
| g/l  | - | gram per liter |
| mm/hr | - | Millimeter in first hour |
| cmm | - | Cubic Millimeter |
| mg/dl  | - | Milligram per deciliter |
| IL | - | Interleukin |
| TNF | - | Tumer Necrosis Factor |
| APR | - | Acute Phase Response |
| RBC | - | Red Blood Cell |
| WBC | - | White Blood Cell |
| MCV | - | Mean Corpuscular Volume |
| MCH | - | Mean Corpuscular Hemoglobin |
| MCHC | - | Mean Corpuscular Hemoglobin Concentration |
| PCV | - | Packet Cell Volume |
| ESR | - | Erythrocyte Sedimentation Rate |
| Hb | - | Hemoglobin |
| fl | - | Femtolitre |
| pg | - | Picogram |
| SBP | - | Systolic blood pressure |
| DBP | - | Diastolic blood pressure |
| PR | - | Pulse Rate |
| ST | - | Sleeping Time |
| RT | - | Resting Time |
| Ca | - | Calcium |
| Mg | - | Magnesium |
| Fe | - | Iron |
| P | - | Phosphorus |
| BW | - | Body weight |

# Abstract

Maintenance of standard nutritional status is very much critical for pregnant women. The present study was aimed to assess the socio-demographic information, lifestyle behavior, general health status and levels of micronutrients along with association of micronutrients and inflammatory biomarker C-reactive protein (C-RP) in pregnant women. A cross sectional study was carried out for a period of 14 months from November 2019 to December 2020 on 140 pregnant women, who were enrolled for antenatal checkup in two hospitals namely Chattogram Maa-O-Shishu hospital and Medical college (CMOSHMC), and Father Boudreaus Medical Center (FBMC), Chattogram. We collect the baseline information through a pre-structured questionnaire during health check up on socio-demographic information, anthropometric parameters, general health characteristic followed by collection of blood for hematological and biochemical analysis from 33 participants. The haematological analysis was performed in FBMC and biochemical analysis of particular serum calcium, magnesium, phosphorus, iron and C-reactive protein (C-RP) were performed using commercial kits with Humalyzer 3000®. Data were entered into MS Excell-2010 and descriptive statistics (mean, SD, %), t-test; correlation and multiple regression analysis were performed. P value <0.05 was considered as significant. From the descriptive statistics it was revealed that among the participants ~ 65% belong to muslim families, 50% were secondary educated, ~84% were from urban area and average family size was 4.77 range between 2-10. Furthermore, ~66% participants did not get sunlight exposure and ~ 100% of the participants did not do any exercise and average resting/day of the participants was 2.14 hour. Around 55% pregnant women were practicing breast feeding, almost 44% of them were in second parity and 7% was in 4th parity. The mean age of the pregnant women was around 27 years with range of (16-38, years). The mean Body Mass Index (BMI) was (range 17-39 kg/m2) and Mid Upper Arm Circumference (MUAC) (25.7, range 18-38 cm), Mean hemoglobin% (gm/dl) was (mean±SD, 10.25±1.16) trace elements including calcium (mean±SD, 9.85±0.64 mg/dl) magnesium (mean±SD, 2.20±0.46, mg/dl), phosphorus (mean±SD, 2.38±0.32 mg/dl), iron (mean±SD, 94.49±45.98 mg/dl) and C-RP (mean±SD, 9.4±19.25 mg/L).The sleeping time (p=0.001) and resting time (p=0.009) found higher the participants who got the sunlight exposure as compared to who did not. Both body mass index and mid upper arm circumference found higher in the participant who did not get the sun light exposure although not differ significantly. Both pulse rate (p=0.012) and CRP (p=0.012) found significantly higher while serum magnesium found lower (p<0.034) in the first trimester. The correlation analysis shows that C-RP highly positively correlated with resting time (r=0.782, p=.000) and pulse rate (r=0.358, p=.001). Multiple regressions after adjustment for significantly associated confounding factors, C-RP showed significantly positive association with resting time (β=.688, 95% CI, 6.076~12.174, p=.000) and negative association with magnesium (β=-.347, 95% CI, -23.941~-5.299, p=.003). We conclude that decreased serum magnesium and increased resting time is responsible for elevated inflammatory biomarker C-RP in pregnant women.

**Keywords:** Pregnant women, nutritional status, lifestyle behavior, trace elements, C-reactive protein.