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Editorial

Parental Separation and Child Future

Parimal Chandra Sarker[1] and Anupam Sarker[2]

Family in general is one of the fundamental units of societies that take care of the diverse needs of people[1]. Every individual is taught about the importance of a family since their childhood. There are two types of family systems – joint family and nuclear family systems. Joint family is a type of extended family which consists of parents, their children, spouses of the children and their offspring in one household. A nuclear family is composed of parents and their children only[2]. This (family) is one of the basic sources of providing care to all of its members and a fact that an elderly persons of the house occupy a respectful position in our culture. Family system encourages the life of individuals in all aspects which enables them to live happy and productive life[3]. Culture has been shown to regulate the family network by building family type, family size and form the family functioning by defining barriers, cooperation rules and connection patterns and their adequate practices[4].

Unfortunately the parental separation and divorce is an increasingly common experience for both adults and children. Rates of divorce have risen over a number of decades, and in UK estimated the separated family population in 2.6 million families[5]. The impact of family structure and family change on child wellbeing display differential patterns of outcomes across a wide range of developmental domains[6]. Children raised in lone-parent families have been found, on average, to do less well across a range of measures of wellbeing than their peers in two-parent families, while parental separation has been found to be associated with an array of adverse outcomes for children[7].

Parental separation has been associated with a wide range of adverse effects on children's wellbeing, both as a short-term consequence of the transition and in the form of more enduring effects that persist into adulthood[8]. The children of separated parents compared with children whose parents remain together are at increased risk of growing up in households with lower incomes and poorer housing, experiencing behavioral problems, performing less well in school and gaining fewer educational qualifications[9]. They needing more medical treatment, increase incidence of departing from school as well as home and when young becoming sexually active, pregnant or a parent at an early age[10]. There were more depressive symptoms and higher levels of smoking, drinking and other drug use during adolescence and adulthood[11]. Although there are differences between children from intact and non-intact families on a range of child outcomes, these differences are relatively small about 13-17 per cent of children in stepfamilies show social and emotional problems compared to 10 per cent of children in intact families[12].

This seems like a long and unworthy listing, which suggests that parental separation bears down heavily on children and spoiled their lives to a significant degree across all domains of

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functioning[13]. Another factor also plays a more complex role is inter-parental conflict[14]. Conflict between parents plays a dual role, both as part of the explanation for the link between parental separation and child outcomes and as an independent influence on child outcomes[13, 14].

Learning and socialization of children are most influenced by their family as the family is the child's primary social group[15]. The actual development of physical, emotional, social adjustment, and intellectuality during the child hood time[16]. Now a days, impact of globalization and modernization resulted into breaking of traditional system of joint family into nuclear family in our society[17]. The Joint and nuclear both type of systems of families have their own advantages and disadvantages in terms of raising of children and providing facilities to family members. However the intelligence and social adjustment of children belonging to joint and nuclear family is more than that of separated family[18].

To optimizing positive child outcomes, attention to be taken in the factors associated with family breakdown, such as parental conflict, parenting and parent-child relationships, maternal mental health, socio-economic factors. Need to organize programs on best to strengthen and support family relationships, to reduce levels of family conflict, to enhance the stability of couples, and to support the 'buffering' necessary to protect the relationship and the quality of parenting in times of stress or difficulties.
Extensive parental cooperation is ... the most important means by which to reduce the negative effects of divorce for children.

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Original Article

Neonatal Seizures and Neurodevelopmental Outcome: A Follow-up Study

Prof. M A Wahed

ABSTRACT

INTRODUCTION: *Neonatal period is the most vulnerable time for the occurrence of seizures. There are various etiological factors of neonatal seizures and increasing evidence suggests that neonatal seizures are associated with adverse neurodevelopment outcomes.* ***OBJECTIVES:*** *The objectives were determination of causes of neonatal seizures with outcome during management and long-term post-natal outcome.* ***MATERIAL & METHODS:*** *This was a prospective study conducted in Rangpur Mother and Children Hospital from 1st July to 2015 to 30th June 2019. Term newborn babies admitted in neonatal intensive care unit with convulsion were the samples. A prepared and pretested "Protocol" containing Part-A and Part-B was used - Part-A in neonatal intensive care unit and Part-B in the attached Child Development Center for periodic follow up. Standard guidelines were followed in clinical diagnosis, laboratory investigations and management of convulsion. The survivors were followed-up periodically. Simple statistical calculations were performed.* ***RESULTS:*** *A total of 234 term neonates were admitted from 1st July 2015 to 30th June 2017. After exclusion, 212 children were discharged and referred to Child Development Center for follow-up assessment. Follow-up was continued up to 30th June 2019 and 37 children were lost from regular follow-up. Finally data from 175 children were analyzed. Among these 110 (62.9%) children were male and 65 (27.1%) were female. Hypoxic-ischaemic encephalopathy was present in 133 (76.0%) samples and 20 (11.3%) had metabolic disturbances. Clonic convulsion was present in 114 (65.0%) samples and subtle convulsion in 45 (26.0%) samples. HIE was the potent predictor for developing neurodevelopmental sequelae.* ***CONCLUSIONS:*** *Neonatal seizures have different etiology. Among them Hypoxic-ischemic encephalopathy is the predominant cause of admission as well as adverse neurodevelopmental outcomes.*

Key words: Neonatal Seizures, Electroencephalogram, Neurological Dysfunction.

INTRODUCTION:

Neonatal period is the most vulnerable time for the occurrence of seizures. Health care professionals face a clinical challenge during management and to minimize the occurrence of long-term morbidities[1]. The incidence of neonatal seizure varies from 1.5 to 3.0 per 1000 live births in developed countries but in developing countries the rate is higher because the mode of delivery, ante-natal and intranatal care are different[2]. There are various etiological factors and mechanism of neonatal seizures but 80-85% is predominantly accounted by hypoxic-ischemic encephalopathy (HIE). Others are intracranial hemorrhage (IVH), severe birth injuries, metabolic disturbances: and infections etc [3,4]. Irrespective of underlying cause and mechanism, increasing evidence suggest that neonatal seizures are associated with adverse neurodevelopment outcomes such as cerebral palsy (CP), developmental delay, psychomotor deficits, epilepsy and other disabilities [5,6]. There are many studies in abroad regarding

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outcomes of neonatal seizures[7,8], but there are few studies in our country[9,10] related to long-term outcomes of neonatal seizures. So, this study was conducted with the objective of determination of causes of neonatal seizures with outcome during management and long-term outcome up to 4 years of age.

METHODOLOGY:

This was a longitudinal prospective study conducted in Rangpur Mother and Children Hospital (RMCH) from 1st July to 2015 to 30th June 2019. The sampling method was purposive in nature. All the term newborn babies having birth weight 2.5kg or more and admitted up to 30th June 2017 in neonatal intensive care unit (NICU) with convulsion or convulsion developed after admission was included as samples. A prepared and pretested "Protocol" was used to record the information for the diagnosis, management and periodic follow up of the baby[11,12].

The protocol contained two parts - part A and part B. Part-A was used in NICU and part-B in child development center (CDC) for post-natal follow up. Part A contained birth history, physical and neurological assessment of the babies, imaging studies and laboratory investigations. Part B contained the domains of Denver II Developmental Screening Test[13]. HIE was diagnosed according to modified Sarnat criteriae[14].

Abnormal movements described by volpe[15] were regarded as convulsion. Neonatal Sepsis was diagnosed following Rodwells criteriae[16]. Laboratory studies included complete blood count, blood culture, serum glucose and electrolytes, CSF studies. In case of ambiguity in diagnosis serum amonia, urine and serum organic and amino acid analysis, lactate and pyruvate levels were performed. Electroencephalogram (EEG) recording was taken by a portable EEG machine (Maximus RMS-32). Computed Tomography (CT) scan was done in every case. Convulsion was controlled by phenobarbitone, phosphenytoin, lorazepam and leviteracetam either singly or in combination along with treatment of primary cause[17].

The survivors were transferred to CDC attached in this hospital for follow-up periodically. Each child was assessed by trained development therapist every four months and results were entered into the protocol[18].

RESULTS:

A total of 730 term neonates were admitted in NICU from 1st July 2015 to 30th June 2017. Among them 234 (32%) had convulsion and received treatment. Among these 234 babies 12 (5%) expired during treatment and 10 (4.3%) babies were taken out by parents on Risk BOND due to no immediate improvement. Remaining 212 (29.0%) children were discharged from NICU and referred to CDC of the same hospital for periodic follow-up. Each child had a follow-up assessment every four months according to Denver II Developmental Screening Test and also for hearing and vision assessment. Follow-up was continued up to 30th June 2019. In this way was the maximum number of follow up was 16 (4 years) and minimum follow-up was 4 (1 year) in number. In post natal period, 37 children were lost from regular follow-up due to various reasons and data from 175 children were analyzed. Among these 110 (62.9%) children were male and 65 (27.1%) children were female (Table-I).

Among 175 samples 133 (76.0%) had HIE and 20 (11.3%) had metabolic disturbances. Infection was third cause of convulsion and among these babies 9 (5.6%) had sepsis and 4(2.8%) had encephalitis. Four (2.8%) babies had IVH. There was no detectable cause in 5 (2.9%) babies by available investigations (Table-II). Out of all samples, 114 (65.0%) developed clonic convulsion followed by subtle convulsion in 45 (26.0%) babies (Table-III). HIE was the potent predictor for developing CP (66.2%) and other neurodevelopmental sequelae in post natal life (Table-IV).

Table I: General characteristics of the samples

Parameters	No
Total term babies Admitted	730
Babies with convulsion	234
Expired during treatment	12
Risk BOND discharge	10
Discharged for follow-up	212
Average hospital stay (in day)	09
Lost from follow-up	37
Data analysis	175
Male babies	110
Female babies	65

Table II: Causes of convulsion

Causes	No	%
HIE	133	76.0
Metabolic disturbance		
Hypoglyceamia	11	6.2
Hypocalcaemia	9	5.1
Infection		
Septicaemia	9	5.1
Encephalitis	4	2.4
Intraventricular haemorrhape (IVH)	4	2.4
Undetermined	5	2.8
Total	175	100.0

Table III: Types of convulsion

Type	No	%
Clonic	114	65.1
Subtle	45	25.9
Tonic	12	7.0
Myoclonic	4	2.0
Total	175	100.0

Table IV: Neurodevelopment outcomes

Predictor	CP	Global Delay	Epilepsy	Blindness	Deafness
HIE	88	13	29	1	2
Hypoglyceamia	2	9	-	-	-
Hypocalcaemia	6	2	1	-	-
Septicaemia	6	3	-	-	-
IVH	-	2	1	-	1
Encephalitis	-	2	1	1	-
Undetermined	2	2	1	-	-

DISCUSSION:

Neonatal seizures are the most common and distinctive clinical manifestations of neurological dysfunction in the newborn infant. Despite increasingly sophisticated neonatal intensive care Pediatricians managing seizures face challenges to control convulsion in neonates. Death rate in acute stage is also high. In this study 5% newborn term babies died during acute stage. The death rate in term babies have been stated as 7-30% in neonatal convulsion in several studies[19,20,21]. The lower rate of death in this study may be due to the fact that the sample size was less in this study whereas the sample size was several thousands in those studies.

There are various causes of seizures in neonates but a few causes are frequently encountered. HIE is the most common cause of seizure in neonates[22]. Antenatal care (ANC) has long been considered a critical component of the continuum of care of women during pregnancy and survival and thriving of women and newborn. Bangladesh has made impressive gains in reducing maternal and neonatal mortality over the past several decades. But ANC of pregnant mothers lags behind standard guidelines[23,24]. WHO has recommended at least 4+ ANC from conception to child birth but till now only 37% pregnant women attend at least four ANC contacts and 47% of births occur in health care facilities[25,26]. Moreover, the content of ANC is not adequate and in depth picture of pregnant women is not complete[27,28]. These lead to unfavorable fetal outcome with HIE in most cases. A few previous studies have shown these unfavorable prenatal and perinatal determinants leading to HIE as the principal cause of convulsion[29,30,31].

Most of the neonates (65.1%) had clonic convulsion. The gold standard method of diagnosis of convulsion is EEG recording. But in neonates seizures are usually diagnosed by observation. Any unusual repetitive and stereotyped movement is regarded as seizures[32]. Clonic convulsion primarily occurs in term babies and the finding in the present study is almost like previous study where 54% term neonates had clonic type of convulsion[7]. The second common type of convulsion was subtle convulsion. Subtle convulsion equally occurs in preterm and term babies[33,34]. Tonic convulsion was only 12% in this study. This

low prevalence may be due to the fact that the samples in this study were term babies whereas tonic convulsion mainly occurs in preterm babies[35].

All the 175 samples suffering from convulsion in neonatal period developed postnatal neurological morbidity. HIE was the most potent predictor of postnatal neurodevelopmental morbidities and among the babies suffering from HIE 88 (66.2%) developed CP. The other disabilities following HIE were epilepsy (21.8%), global delay (9.9%), blindness (0.75%) and deafness (1.5%). Several studies have shown that neonatal seizures are associated with development of various neurological and cognitive impairments in postnatal life[36-39]. These studies have stated that HIE is the principal predictor of abnormal neurodevelopmental impairments. There is hypoxic injury of the brain in HIE. Seizures in hypoxic brain increases extra risk for development of CP, global developmental delay and epilepsy. One of these study has shown that among term babies suffering from seizure in neonatal period, 31% manifested cerebral palsy, 43% manifested global developmental delay and 32% manifested as epilepsys[38]. A recent literature review demonstrated that around 18% of newborn suffering from neonatal seizures developed post-neonatal epilepsy[40]. Another two previous studies have demonstrated 33% and 48% prevalence of epilepsy respectively in term babies having neonatal seizures[41,42]. The apparent differences in prevalence from this study may be due to the fact that in our situation babies are admitted in a critical stage because majority of babies were first treated by general physicians or non-qualified doctors before referral. This critical condition might damage the brain with minimum chance of regeneration.

There was association of outcomes. Like other studies, most of the CP was spastic quadriplegic[9,10,41]. Global developmental delay and epilepsy was common association with quadriplegia. In one study, 92% of children who manifested spastic quadriplegic CP had associated global delay[43].

CONCLUSION:

Many newborn babies develop seizure in neonatal period. Neonatal seizures have different aetiology; among them HIE is the predominant cause of admission in NICU. These babies are at risk of developing various adverse neurodevelopmental outcomes. There are a few limitations of this study. Therapeutic hypothermia was not applied, which would have possibility to change rate of neurological outcomes. MRI could delineate the brain structures in a better way that would be helpful to detect more definite causes

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Original Article

Effects of Maternal Diabetes on Morphology of Human Placenta.

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ABSTRACT

BACKGROUND: *The foetus, placenta and mother constitute a triad of contributors to pregnancy outcome. When pregnancy is complicated by a medical problem like diabetes mellitus which affects maternal health, architecture and functions of the placenta may even jeopardize foeto-maternal normalcy.* ***OBJECTIVES:*** *Quantitative estimation of the morphological features of placenta of diabetic mother as compared to placenta of normal mother.* ***METHODS:*** *This cross sectional, analytic type of study was carried out on 90 placentae collected from the Department of Gynaecology and Obstetrics, Rangpur Medical College and Hospital, Rangpur just after delivary from July, 2016 to June, 2017. Out of the 90 placentae, 30 were from non-diabetic mothers regarded as control group and 30 were from gestational diabetic mothers and 30 were from overt diabetic mothers.* ***RESULTS:*** *The mean (± SD) of maternal weight in the control group was 66.67 ± 5.40 kg and were 71.97 ± 10.96 kg and 70.27± 8.43 kg in GDM and overt diabetic groups respectively, birth weight was 2826.7 ± 316.15 gm in control group and were 2981.7 ± 522.34 gm and 3306.7 ± 697.75 gm in GDM and overt diabetic groups respectively, weight of placentae in control group was 429 ± 65.70 (gm) and were 507.93 ± 113.50 (gm) and 541.87 ± 136.21 (gm) GDM and overt diabetic groups respectively, diameter of placentae in control group was 16.69 ± 1.86 cm and were 18.43 ± 2.44 cm and 18.42 ± 2.05 cm in GDM and overt diabetic groups respectively, thickness of placentae in control group was 1.55 ± 0.28 cm and were 1.93 ± 0.47 cm and 2.02 ± 0.49 cm in GDM and overt diabetic groups respectively, surface area of placenta in control group was 227.64 ± 57.38 cm^2 and were 274.35 ± 73.93 cm2 and 272.78 ± 63.35 cm^2 in GDM and overt diabetic groups respectively and the mean (± SD) of number of cotyledons in control group was 30.50 ± 7.49 and were 33.20 ± 9.19 and 32.03 ± 4.30 in GDM and overt diabetic groups respectively. Placental weight, diameter, thickness, surface area, number if cotyledon was significantly higher in GDM and overt diabetic group than control group. However no significant difference was found between GDM and overt diabetic groups regarding this variables.* ***CONCLUSION:*** *From this study it could be concluded that diabetes affects the morphological variables of placenta, therefore affects the foetal outcome.*

KEY WORDS: Diabetes, Placenta, Morphology.

INTRODUCTION

Placenta is the vital link between the mother and foetus[1] and form a triangle of dynamic equilibrium[2,3], which is responsible for the respiratory, nutritional, excretory, endocrinal and the immunological function of the foetus[4]. The full term placenta is a discoid, deciduate, chorioallantoic, haemochorial and villous organ[5], with an average volume of 500ml (range 200- 950ml), a weight of 470g (range 200-800g), a diameter of 185mm (range 150-200mm), a thickness of 23mm (range 10-40mm) and a surface area of approximately 30,000mm[2,6]. Placenta supports normal growth and development of the developing foetus[2,3].

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So, any abnormalities of the mother or foetus that may affect placenta will break the equilibrium and secondarily affect the maternal and foetal wellbeing[1].

Placenta is considered as a leading cause of maternal and perinatal mortality[7]. Pregnancy complicated by diabetes mellitus is found to be reflected in the placenta in a significant way. High placental weight was associated with a poor perinatal outcome, a low Apgar score, respiratory distress and perinatal death, whereas a low placental weight was associated with medical complication in the mother[8].

Thus if pregnancies complicated by diabetes mellitus, it have been associated with alteration in placental anatomy and physiology. Thorough and minute examination of placenta after birth can reveal placental changes that occur due to complication of diabetes mellitus. So, the present study was aimed at to compare placental morphology (weight, diameter, thickness, surface area, number of cotyledon) of normal pregnancy with that complicated by maternal diabetics.

MATERIALS and METHODS

The cross-sectional analytical study was carried out in the Department of Anatomy, Rangpur Medical College, Rangpur from July, 2016 to June, 2017. For this, 90 placentae were collected from the Department of Gynaecology and Obstetrics, Rangpur Medical College and Hospital, Rangpur just after delivery, with prior protocol approval from Ethical Review Committee of Rangpur Medical College, Rangpur. Out of the 90 placenta 30 were from non-diabetic mothers (control group), 30 were from gestational diabetic mother and 30 were from overt diabetic mothers who were diabetic before the pregnancy. Morphological features of placenta in control group and diabetic groups were observed, measured and compared. These features include weight (gm), diameter (cm), thickness (mm) of placenta, surface area $(cm)^2$, and number of cotyledon.

Just after collection, the specimens were brought to the laboratory of the Department of Anatomy, Rangpur Medical College, and Rangpur for study. Each specimen was gently washed in tap water on a dissection tray; the film of blood and blood clots on the maternal surface were removed with hand gently, without disturbing any firm clot which were embedded in the substance of placenta. The umbilical cord was cut 2 cm away from disc margin. The amniotic membrane was trimmed at disc margin with a scissor. Then the placenta was mopped and dried with dry cotton pad and blotting papers very gently. Then gross morphological measurements were done in a fresh state in each group. Measurement of weight of the placenta was done by means of digital balance graduated in grams (gm). During measurement of diameter, the maximum diameter was measured with a measuring tape graduated in centimeters (cm), then a second maximum diameter was taken at right angle to the first one. The mean of two measurements was considered as the diameter of the placenta expressed in centimeter (Figure:1A). Placental thickness was measured with a long needle at five points in each placenta. After placing the placenta on fetal surface, the placenta was divided arbitrarily into three zones of equal parts by drawing two circles on the maternal surface (Figure:1B). Thickness was measured from five points, one from the central part, two from middle and two from peripheral part. The peripheral points were taken within the outer zone on a line perpendicular to the previous imaginary line. The depth pierced by the needle was measured by measuring tape (Figure:1C). Finally the mean of all five measurements was calculated

and considered as thickness of the placenta. Surface area of the placenta was calculated by using following formula- Surface area = r^2. Here, r = radius of the placenta =diameter/2

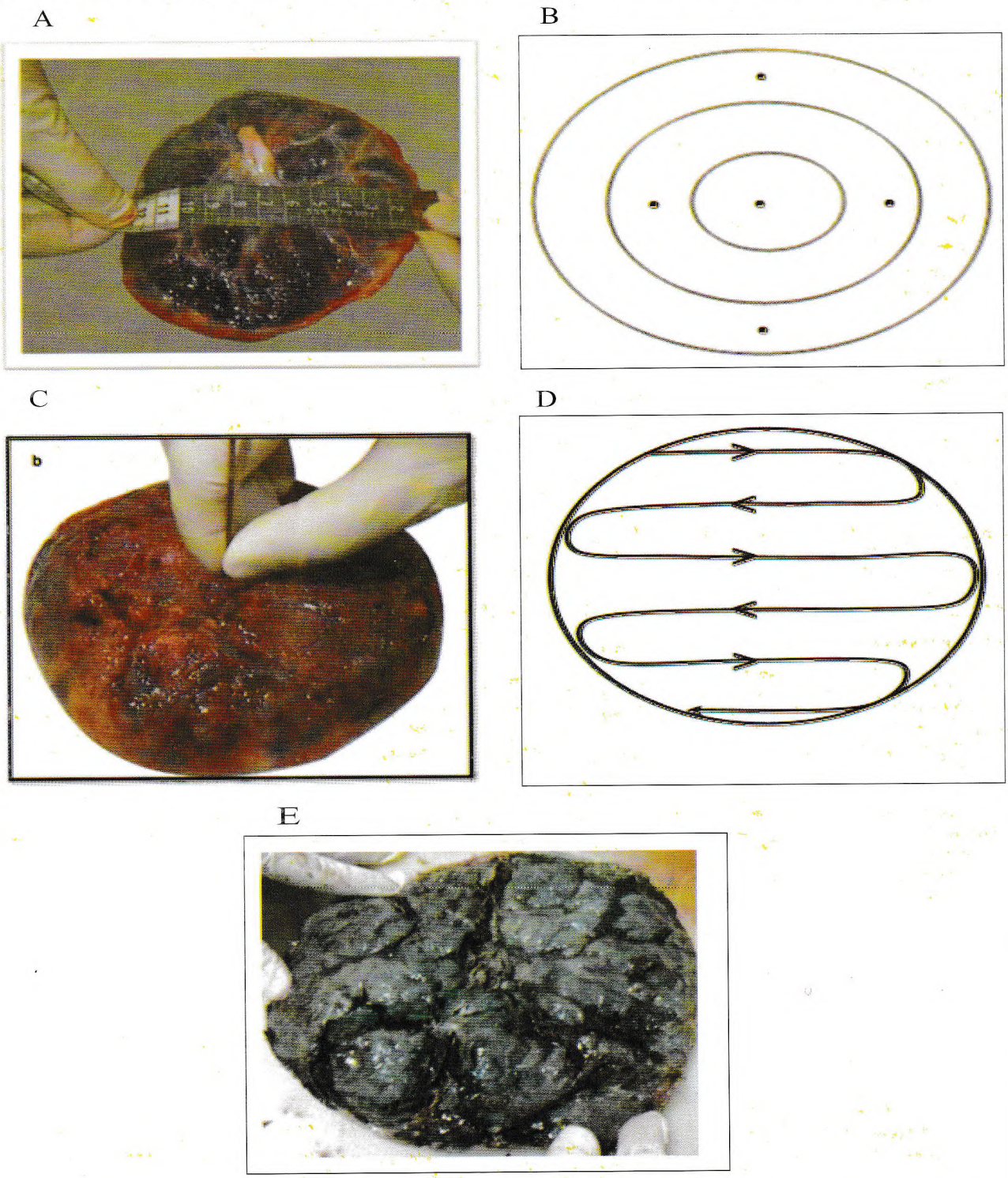


Figure 1: Diagrammatic representation of measurement of Diameter (A), Thickness (B & C) and Number of cotyledon (D & E)

During number counting of cotyledons, the maternal aspect of formalin fixed placenta were made prominent by applying gentle pressure on the central part of foetal surface with both thumbs while holding the periphery of the placenta with the other fingers which separate the placental tissue on the maternal surface at the placental septa into cotyledons (Figure: 1E). Then the placenta was placed on a flat tray with maternal side facing upward by placing a blocks of paraffin on the foetal side. As a result, the cotyledons on the maternal aspect became prominent. The counting was done starting from the left side of the one end of the placenta going rightward and again turning back to the left in a manner of loop. This counting procedure was repeated by alternate leftward and rightward loops until the other end of placenta were reached (Figure: 1D). The total number of cotyledons was recorded[9].

The statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS version 16.0) and Microsoft Office Excel 2007 for windows software. After collecting the data and the means, Standard Deviations (SD) etc were calculated for various parameters of each group. The statistical significance of the difference of variables between the diabetic and control groups was evaluated by unpaired student 't' test .

RESULTS

Table I shows, the mean (± SD) of maternal weight in the control group was 66.67 ± 5.40 kg and were 71.97 ± 10.96 kg and 70.27 ± 8.43 kg in GDM and overt diabetic groups respectively. In both diabetic groups, the maternal weight was significantly higher than control group. When two diabetic groups were compared, weight was somewhat higher in GDM but the difference did not reached a significant level.

The mean (± SD) of birth weight was 2826.7 ± 316.15 gm in control group and were 2981.7 ± 522.34 gm and 3306.7 ± 697.75 gm in GDM and overt diabetic groups respectively. It was observed that babies of both diabetic groups showed higher value of birth weight than control group, but the difference was statistically significant between control and overt diabetic group only. Regression analysis and scatter diagram shows there is significant positive correlation between maternal weight and foetal weight in control, GDM and overt diabetic groups (Figure: 2).

Table I: Comparison between control and diabetic groups regarding maternal weight and foetal weight (n=30 in each groups).

	Diabetic group			p value for
Weight (kg)	Control group (C)	GDM group (G)	Overt group (O)	significant difference between groups*
Maternal weight	66.67 ± 5.40	71.97 ± 10.96	70.27 ± 8.43	C vs G: 0.02 C vs O: 0.05
Foetal weiht	2826.7 ± 361.15	2981.7 ± 522.34	3306.7 ± 697.75	C vs O: 0.00 G vs O: 0.05

Results are shown as range and mean ± SD
p values reached from unpaired Students t test
* Only these differences were found to be significant at 5% level ($p \leq 0.05$)
No significant differences were found for any other values between two groups

Table: II shows that, The mean (± SD) of weight of placentae in control group was 429 ± 65.70 gm and were 507.93 ± 113.50 gm and 541.87 ± 136.21 gm GDM and overt diabetic groups respectively. It was observed that the both diabetic groups showed higher value of placental weight than control group and the difference was statistically significant. Though the overt diabetic group had higher placental weight than GDM group but did not reach significant level. Again regression analysis and scatter diagram between foetal weight and placental weight shows significant positive correlation in GDM and overt diabetic groups, however there was non-significant negative correlation in control group (Figure: 3). Regarding the mean foeto- placental weight ratio, it was observed that the GDM group showed lower value of foeto- placental weight ratio than control and overt diabetic group, but the difference was statistically significant between control and gestational diabetic group only.

Table II: shows that, The mean (± SD) of diameter of placentae in control group was 16.69 ± 1.86 (cm) and were 18.43 ± 2.44 (cm) and 18.42 ± 2.05 (cm) in GDM and overt diabetic groups respectively. It was observed that the both diabetic groups showed higher values of placental diameter than control group and the difference was statistically significant between control and both diabetic groups. Regression analysis and scatter diagram shows significantly positive correlation between placental weight and diameter in control GDM and overt diabetic groups (Figure: 4).

Table II: shows that, the mean (± SD) values of thickness of placentae in control group was 1.55 ± 0.28 (cm) and were 1.93 ± 0.47 (cm) and 2.02 ± 0.49 (cm) in GDM and overt diabetic groups respectively. It was observed that the both diabetic groups showed higher values of placental thickness than control group and the difference was statistically significant between control and both diabetic groups. Though the overt diabetic group showed higher value of thickness than GDM group but the difference was statistically non-significant. Regression analysis and scatter diagram shows significant positive correlation between placental weight and thickness in and overt groups, however there was a non-significant positive correlation in control group (Figure: 5).

Table II: shows that, The mean (± SD) of surface area of placenta in control group was 227.64 ± 57.38 cm^2 and were 274.35 ± 73.93 cm^2 and 272.78 ± 63.35 cm^2 in GDM and overt diabetic groups respectively. It was found that placental surface area was significantly higher in both diabetic groups than control group. Though GDM group showed somewhat higher value of surface area than overt diabetic group but the difference was not significant statistically. Regression analysis and scatter diagram shows significant positive correlation between placental weight and surface area in control, GDM and overt diabetic groups (Figure: 6).

Table II: shows that, the mean (± SD) of number of cotyledons in control group was 30.50 ± 7.49 and were 33.20 ± 9.19 and 32.03 ± 4.30 in GDM and overt diabetic groups respectively. It was found that number of cotyledons was highest in GDM group followed by overt diabetic group and control group, but no significant difference was found between and within the groups.

Regression analysis and scatter diagram shows significant positive correlation between placental weight and number of cotyledon in GDM group, whereas there was non significant positive correlation in control and overt diabetic groups (Figure: 7).

Table II: Mean (± SD) of morphological placental measurements in control and Diabetic groups.

Placental measurements	Control group (C)	Diabetic Groups		p value for significant difference between groups*
		GDM group (G)	Overt group (O)	C vs G: 0.002
Weight (gm)	429.67 ± 65.70	507.93 ± 113.50	541.87 ± 136.21	C vs O: 0.00 C vs G:
Diameter (cm)	16.69 ± 1.86	18.43 ± 2.44	18.42 ± 2.05	0.003 C vs O :0.001
Thickness (mm)	1.55 ± 0.280	1.93 ± 0.470	2.02 ± 0.489	C vs G :0.00 C vs O : 0.00
Surface area (cm^2)	227.64 ± 57.38	274.35 ± 73.93	272.78 ± 63.35	C vs G: 0.008 C vs O:0.005
No of Cotyledon	30.50 ± 7.49	33.20 ± 9.19	32.03 ± 4.30	

Results are shown as range and mean ± SDs p values reached from unpaired Students t test
* Only these differences were found to be significant at 5% level ($p \leq 0.05$)
No significant differences were found for any other values between two groups

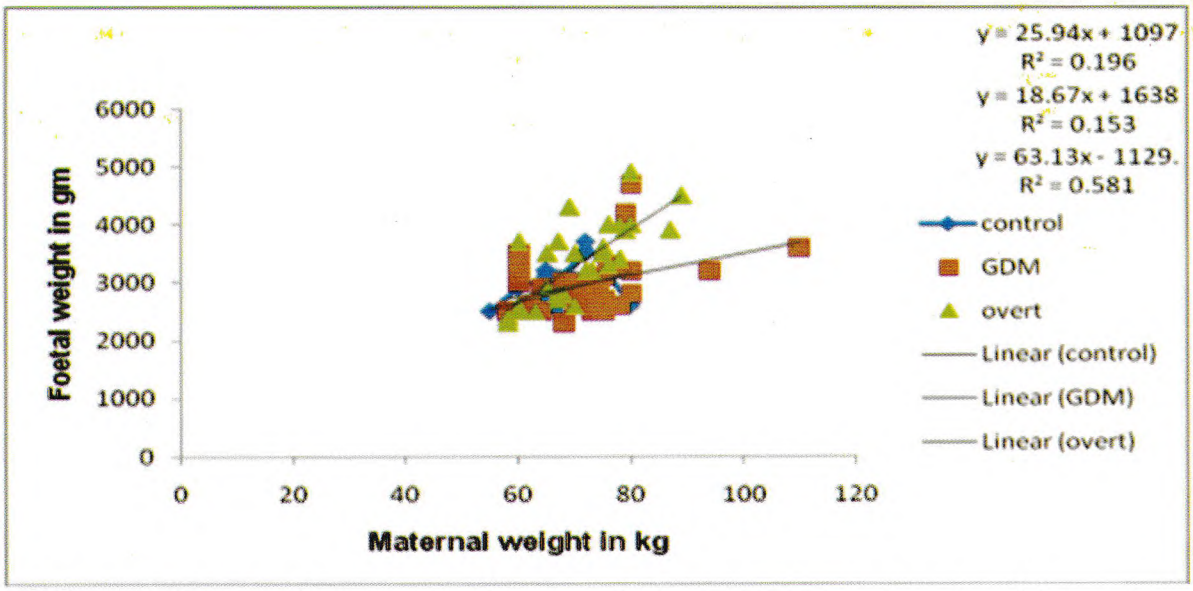


Figure 2: Scatter diagram showing correlation between maternal weight and foetal weight in three groups.

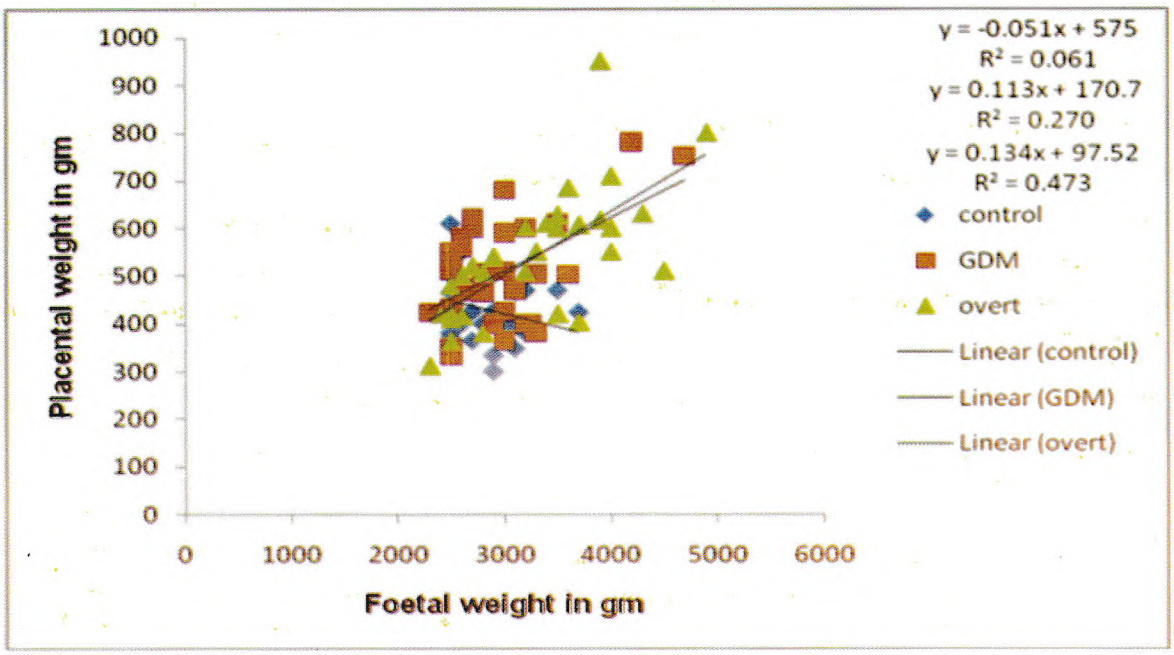


Figure 3: Scatter diagram showing correlation between foetal weight and placental weight.

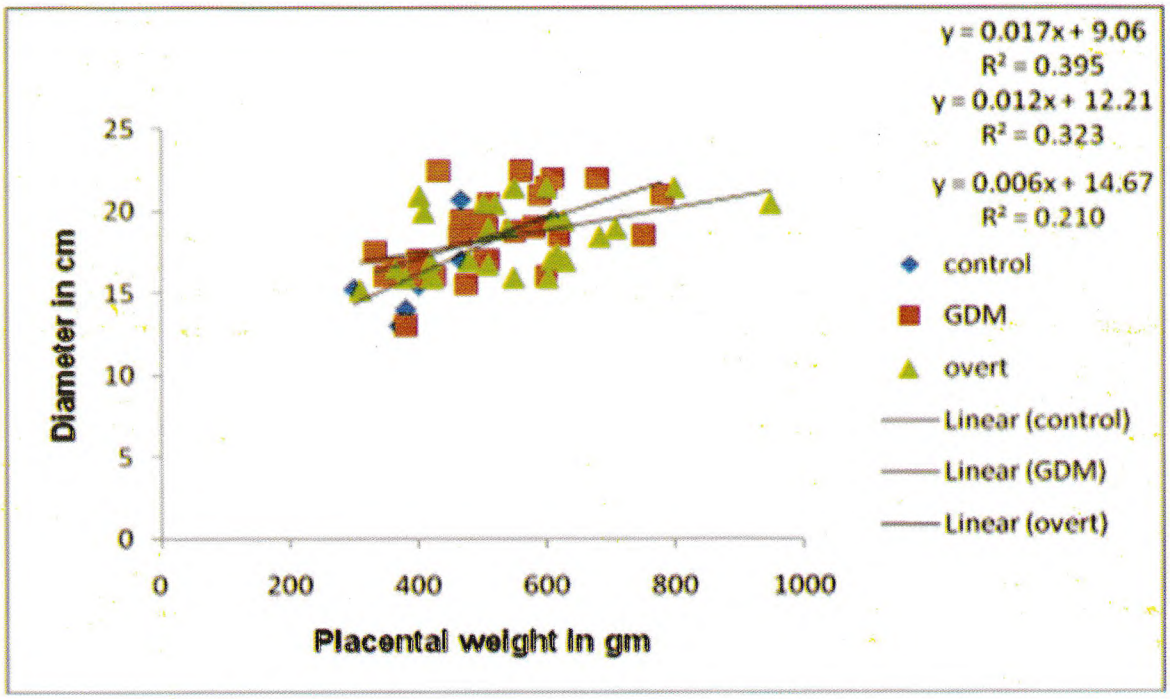


Figure 4: Scatter diagram showing correlation between placental weight and diameter in three groups.

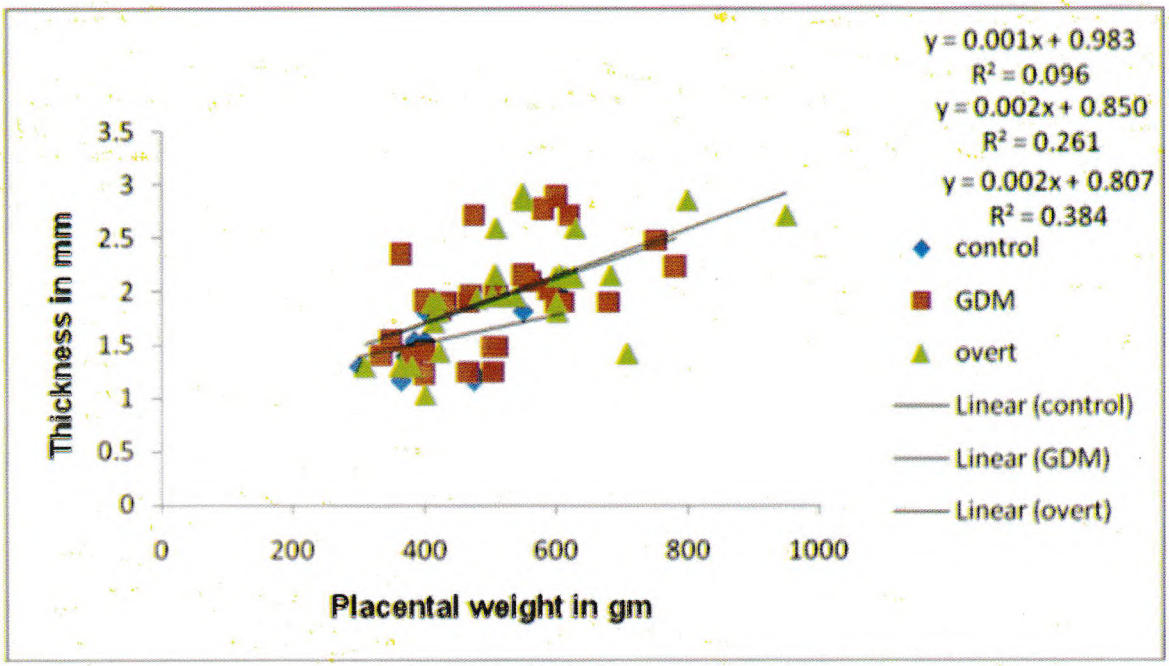


Figure 5: Scatter diagram showing correlation between placental weight and thickness in three groups.

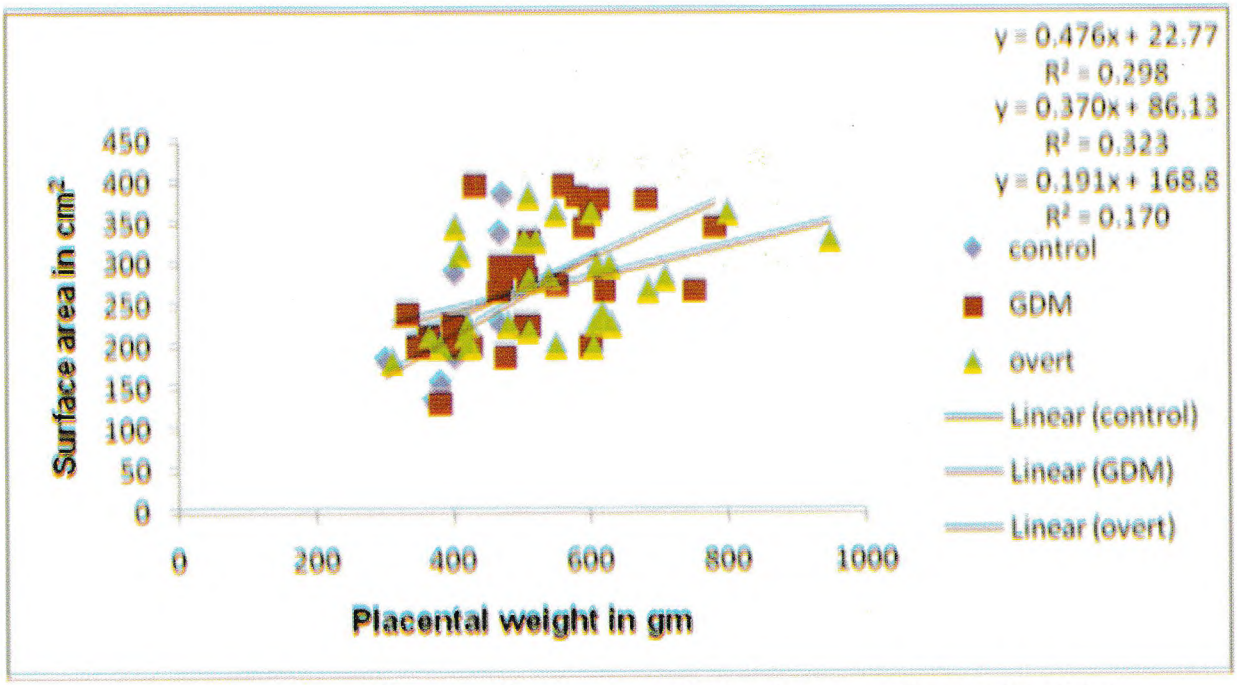


Figure 6: Scatter diagram showing correlation between placental weight and surface area in three groups

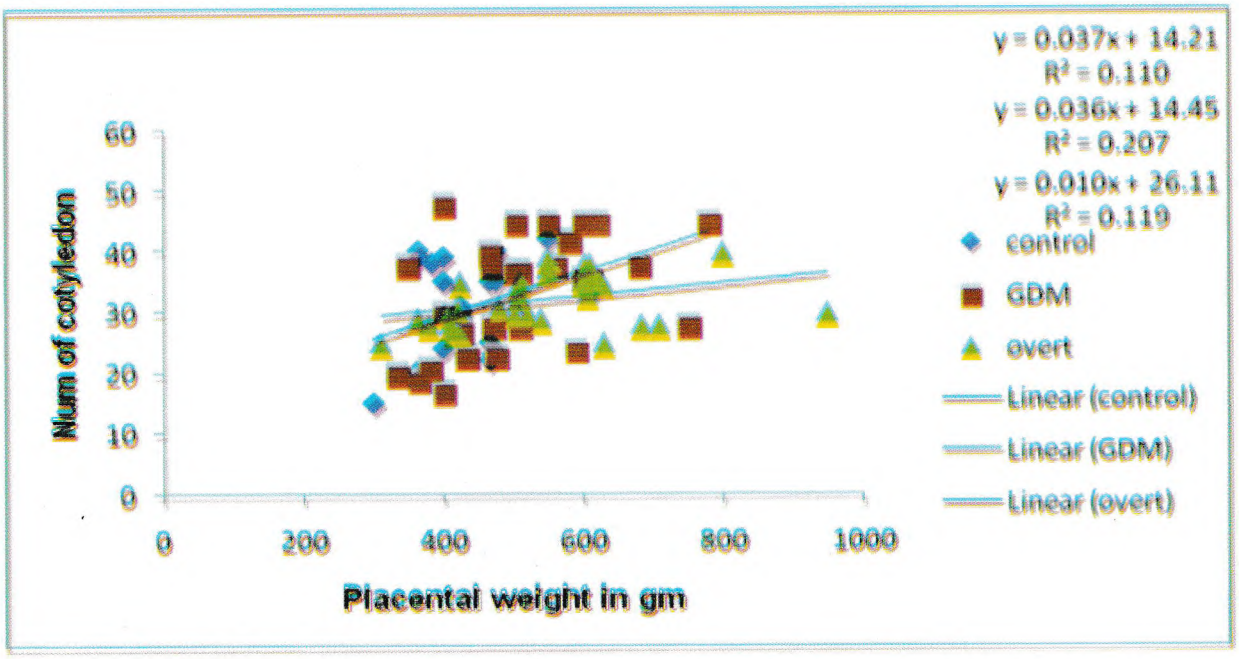


Figure 7: Scatter diagram showing correlation between placental weight and number of cotyledon in three groups.

DISCUSSION

Normal foetal outcome and postnatal survival depends on healthy placenta. The adverse effects of diabetes on pregnancy and related foetal outcomes are well stablished[10]. Growth in the placenta is reflected in its weight which is sum total of both morphological and histological growth. Morphological growth of placenta is reflected in its enlargement in thickness, diameter, number of cotyledons and thus increase in surface area. So, placental weight is the most common way to characterize placental growth and it is a summary of many dimensions of placental growth. The placental weight measurement encompasses the laterally expanding growth of chorionic disc and arborization of the villous and vascular nutrient exchange surface, which is reflected in the increasing thickness of the chorionic disk[11].

The average human placental weight varies from 438 to 680 gram[12]. In this study, it was observed that the both diabetic groups showed higher mean value of placental weight than control group and the difference was statistically significant between control and both diabetic groups. Though the overt diabetic group had higher placental weight than GDM group but did not reach in significant level.

Higher placental weight like the present study correlates with some other workers[1,13,14,15,16,17,18,19,20,21,22,23,24]. Others observed slightly higher mean weight of placenta of diabetic mother as compared to control group due to controlled glycemic status of pregnant diabetic mothers[10], but lower mean value in the insulin treated established diabetic mellitus[25].

On the other hand in well controlled diabetes, some authors had even found no difference in placental weight as compared to normal[26,27,28], but some author had found smaller placenta in diabetic mothers with intra-uterine growth retardation in diabetes[29]. Again some authers showed that there was no difference in placental weight in between different diabetes types[30,31].

In this study, there was positive correlation between maternal weight and placental weight in all groups significantly so in overt diabetic group. Some authers found that increased maternal weight was associated with increased placental weight[1,32]. The mother with this abnormal placental weight had been suffering from toxaemia of pregnancy from 6 months to term. High placental weight was found to be associated with poor perinatal outcome[33]. Again significant positive correlation was found between foetal weight and placental weight in both diabetic groups in this study. So, it could be predicted that in diabetic groups, the increase in birth weight was due to increase in placental weight.

In this study, it was observed that the both diabetic groups showed higher values of placental diameter than control group and the difference was statistically significant between control and both diabetic groups. However the values of placental diameter were similar in GDM and overt diabetic groups. This result was correlated with other workers who found in increase in diameter in GDM group[1,16,17,19,22,34,35]. Again there was significant positive correlation between placental weight and diameter in control, GDM and overt diabetic groups.

In this study, it was observed that the both diabetic groups showed higher values of placental thickness than control group and the difference was statistically significant between control and both diabetic group. Other workers

found significant increase in thickness in placenta of diabetic groups[1,15,16,17,19,22,24,34]. Also there was significant positive correlation between placental weight and thickness in both GDM and overt diabetic groups but non-significantly so in control group. However in our study we did not compare placental size with parity, maternal age, genetic factors, and socio-demographic condition.

CONCLUSION

On morphological of this study, there was increased placental weight, diameter, thickness, surface area, number of cotyledon and all variables are more in overt group except diameter, which was more in GDM group. There was also significant positive correlation among the above variables with placental weight. The foeto-placental ratio was reduced in diabetic groups indicating the placental growth was more marked than foetal growth. Increased placental diameter, thickness, surface area, number of cotyledon was reflected in increase in higher placental weight, thus increase in foetal weight.

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Orginal Article

Socio-Demographic Characteristics of Organophosphorus Compound Poisoning Deaths in Rangpur Medical College, Rangpur

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ABSTRACT:

BACKGROUND: *In Bangladesh, Organophosphorus compound poisoning (OPC) is the most common form of acute poisoning used for suicidal purpose in case of rural area in our country due to its cheapness, toxicity and availability.* ***OBJECTIVES:*** *The aim of this study was to find out the relationship of age and sex variation along with the motives that influenced different income group people to ingest organophosphorus compound for the purpose of suicide.* ***METHODS:*** *This was a cross-sectional study where the data were collected from Department of Forensic Medicine, Rangpur Medical College from January 2017 to December, 2018 at the time during the period of autopsy and viscera were preserved and sent to the Chief Chemical Examiner's Office, Mohakhali, Dhaka for toxicological analysis.* ***RESULTS:*** *Within 103 cases of organophosphorus compound, poisoning females 55 (53%) compared to males 48 (47%). The commonest age group involved in poisoning was 26-35 years 45 (43%). Housewives 35 (34%) where poverty 35% in most cases & average income of the victims are Taka 1,000/- to 5,000/- comparative than other incomes of the victims.* ***CONCLUSION:*** *OPC poisoning cases are increasing every year and poisoning is seen commonly in younger age groups. Poverty is the leading cause of death followed by violence against women and business failure, unhappiness in conjugal life, demand for dowry causes to commit suicide by OPC.*

Key words: Organophosphorus, Pesticide, Poisoning, Asphyxia, Suicide.

INTRODUCTION:

Organophosphorus compound poisoning is an important clinical and public-health problem in rural regions of the developing world. Currently pesticide self-poisoning has become a major problem in the developing countries killing around 3,00,000 people each year[1]. Bangladesh is a developing country in South Asia. Rural population of this country is mostly dependant on agricultural cultivation. With the advance of times, pesticides are, now a days routinely used for modern cultivation method[2]. These are readily available as over the counter (OTC) in rural areas and act as a common agent for suicidal purpose after trivial family problems[3]. Organophosphorus compound is the most common suicidal poison in our subcontinent[4]. Industrialized countries are also affected by it, where a significant proportion of suicidal deaths are caused by pesticide ingestion[5]. Of course, such poisoning is seldom included as a priority for health in developing country[6]. The basic mechanism of toxic effects of organophosphates results from inhibition of cholinesterase action at the nerve ending resulting in accumulation of excess

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acetylcholine[7]. So, a major role in management is played by combating the action of excess acetylcholine by rationale use of atropine and oximes[2]. However, the most suitable oxime for reactivation of cholinesterase has still not been established with certainty, although pralidoxime is widely recommended[3]. The aim of this study to find out different socio-demographic aspects of OPC poisoning in Bangladesh.

MATERIALS AND METHODS:

This is a cross-sectional study of 103 patients was carried out at Rangpur Medical College from January 2017 to December 2018 at the period of two years during autopsy. The present study analyzed the sociodemographic factors of OPC poisoning. During postmortem examination, viscera were preserved and sent to the Chief Chemical Examiner's Office, CID, Mohakhali, Dhaka for toxicological analysis.

RESULTS:

Table No. I
Sex variation in organophosphorus compound poisoning (n = 103)

Sex	Number	Percentage
Male	48	47%
Female	55	53%
Total -	**103**	**100%**

Table-I: shows that female was more vulnerable to suicidal death than male by ingestion of OPC poison which is 53% & 47% respectively.

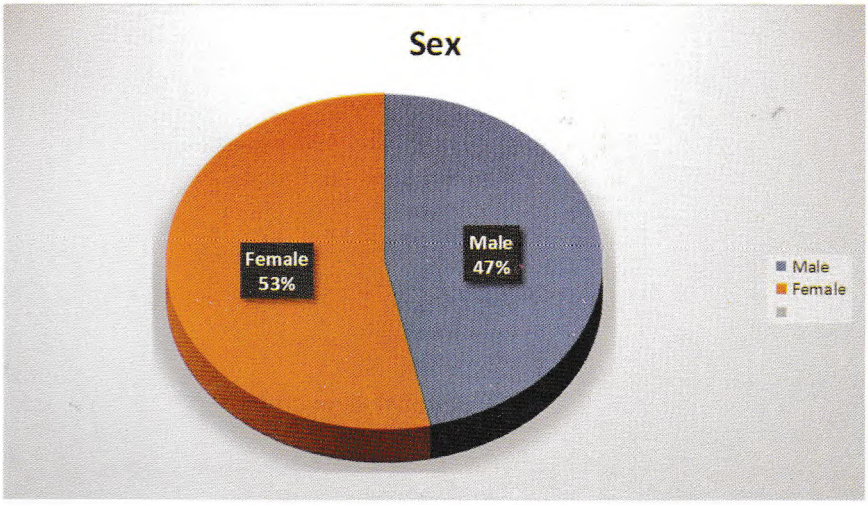


Fig-1: Shows majority of suicidal deaths due to OPC poisoning occurs in female (53%)

Table No. II
Age variation in organophosphorus compound poisoning (n = 103)

Age	Number			Percentage
	Male	Female	Total	
15 - 25 years	11	17	28	27%
26 - 35 years	20	25	45	44%
36 - 45 years	14	11	25	24%
46 - 55 years	02	02	04	4%
56 - 65 years	01	00	01	1%
Total -	**48**	**55**	**103**	**100%**

Table-II: shows that persons ranging from 26 to 35 years of age (44%) are more vulnerable to suicidal death by taking OPC poison (among them, female are more in number) in comparison with other age group such as 15 to 25 years (27%), 36 to 45 years (25%), 46 to 55 years (4%) and 56 to 65 years (1%). In 36 - 45 years of age, majority of suicidal deaths due to OPC poisoning occurs in male.

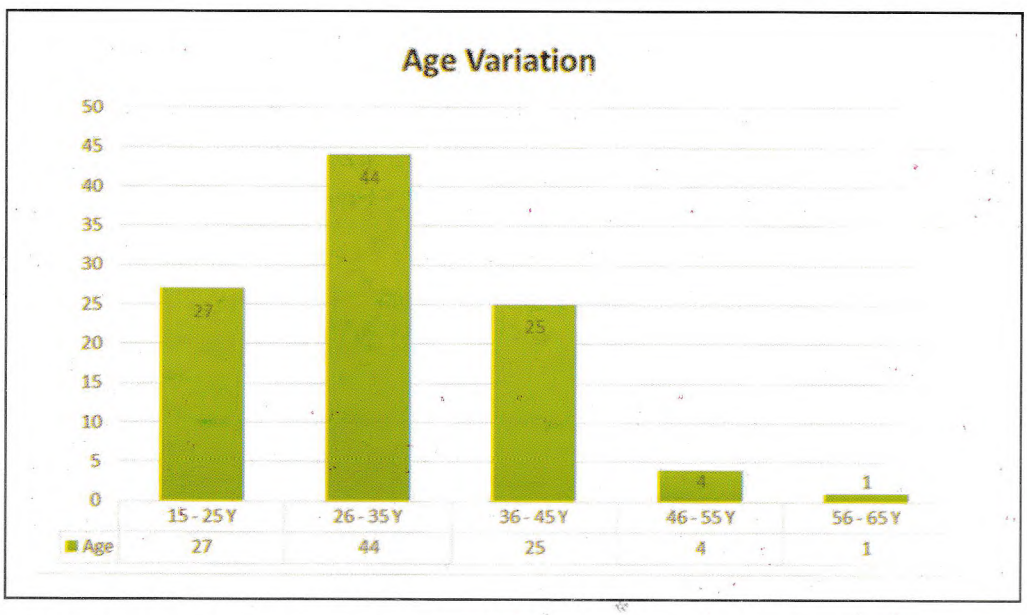


Fig-2: Shows highest percentage of suicidal deaths due to OPC poisoning occurs in 36 to 35 years of age group (53%)

Table No. III
Motives of Organophosphorus compound poisoning cases as per causes (n=103):

Causes	Number	Percentage
Poverty	35	34.5%
Love Affairs	16	15.5%
Violence against woman	19	18.5%
Dowry	9	8.5%
Business Loss	7	6.5%
Family problem	17	16.5%
Total -	**103**	**100%**

Table-III shows the distribution as per causes of organophosphorus compound where poverty was the leading cause of death that accounts for 34.5% (35) followed by Violence against woman 18.5% (19), family problem 16.5% (17), love affairs 15.5% (16), dowry 8.5% (9) and business loss 6.5% (7).

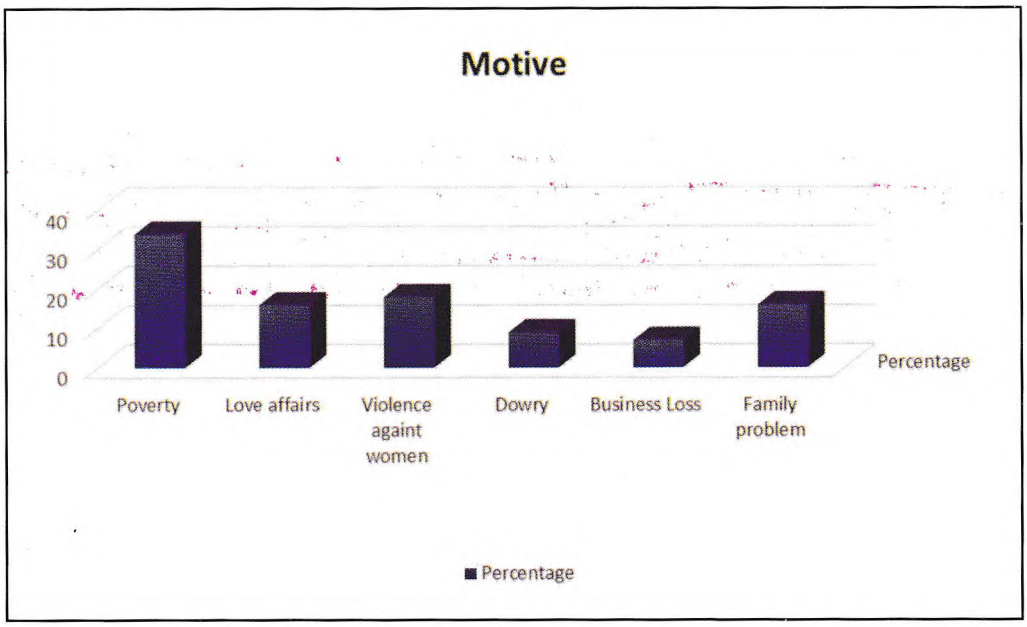


Fig-3: Shows common motive of suicidal deaths due to OPC poisoning was poverty (34%)

Table No. IV
Average income of victim/victim's family per month (n=103) leading to OPC poisoning

Income group	Number	Percentage
Taka 1000 - 5000	37	36%
Taka 5001 - 10000	29	28.5%
Taka 10001 - 15000	27	26%
Taka more than 15000	10	9.5%
Total -	**103**	**100%**

Table- IV shows that there is a relation in between average income of a victim per month and suicidal ingestion of OPC. The study shows that the lower the income the more will be the chance of committing suicide by taking OPC. Here we see that the number of lowest average income per month (1000-5000 Tk.) group was the more of suicidal death by ingestion of OPC poison which is 36% and much higher comparing to relatively high-income group of the victims in Bangladesh.

Table No. V
Marital status in organophosphorus compound poisoning (n = 103)

Marital status	Number	Percentage
Married	67	65%
Unmarried	36	35%

DISCUSSION:

OPC poisoning from occupational, accidental and intentional exposure is a major developing world public health problem[8]. Bangladesh is a developing country. The society here is agriculturally based. Pesticides are very easily available here. Organophosphorus compounds are widely used as insecticides in agricultural sector by farmers for control of insect vectors in Bangladesh.

One study performed at Rajshahi Medical College from January 1991 to December 1994 on 405 cases of poisoning, OPC poisoning was the commonest one (38.8%)[9]. A study demonstrated that 14% of all deaths amongst 10-50-year-old women in Bangladesh were due to poisoning, the majority following suicidal ingestion of pesticides[10]. Our study also coincide that the age group of 15-45 years female were more victim Another study suggested that each year worldwide there is 3 million acute poisoning with 2,20,000 deaths[11].

Much of this burden is borne by developing countries where more than 80% of cases are fatal pesticide poisoning related hospitalization[12].

In Bangladesh poisoning is an important health problem causing around 2000 deaths per year[13]. Self poisoning constitutes more than half of the total poisoning cases admitted in hospital[14]. Most of poisoning cases may have some reasons for taking poison. Our study shows that poverty is the leading cause of suicidal death by taking OPC in Bangladesh. Love affairs, adultery, dowry, family disharmony and finally all those leading to frustration are the causes of ingestion of OPC.

According to National Crime Records Bureau India, every 5 minutes a person commits suicide and 7 attempts to kill themselves, forming about 1,00,000 deaths per year[15]. Suicide rate was highest in the state of Kerala[16]. Majority of the victims belonged to the group 14-34 years[17] and OPC was the most common agent used for suicidal purpose[18]. Our study more or less support the facts as the socio-demographic characteristic are similar to our neighbor countries. In Sri Lanka, many of hospital admissions each year are for agrochemical poisoning (16,649 in 1983) with over a thousand's death annually (1521 in 1983).

Of these, about three quarter are self administered, the reminder being occupational and accidenta[14,19]. In Sri Lanka, another study showed, incidence of suicide due to poisoning was more than 80%, followed by hanging, which constituted 10.7%[20]. However changing use from the most toxic pesticides to less toxic pesticides has had a remarkable effect in Sri Lanka and the suicide rate has fallen by 50% over ten years since such legislation was passed[21-22].

CONCLUSION:

Whole over the world acute poisoning is a quite common medico-social problem. The agents vary from country to country depending on easy availability of poison, socio-economic condition, and educational background of the people. In tropical countries organophosphorus compounds are the commonly used agent[23]. Suicide by organophosphorus compounds is increasing day by day in this country. OPC poisoning is a major public health problem in Bangladesh. The incidence varies depending on easy availability of poison, socio-economic condition, and educational background of the people. In poisoning there is a specific reason behind this. Thus, reducing accessibility to pesticides will decrease poisoning and deaths, socio-economic and cultural factors must also be addressed to make a real difference. OPC poisoning in a country like Bangladesh is not only a public health problem but also related to economics and culture. There is great need to enhance stress on prevention of poisoning. A coordinated and comprehensive response is needed to make any impact. Moreover, doctors, nurses, paramedics, and other stuff should be empathized to these patients and proper counseling is necessary along with treatment to prevent further occurrence. Improved awareness, restricting availability and banning more toxic organophosphorus compounds will reduce the incidence of OPC poisoning.

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Original Article

Morphology of the Palmar Hypothenar Dermatoglyphics in Bangladeshi Down Syndrome Patient

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ABSTRACT

BACKGROUND: *Dermatoglyphics is the study of the patterns of the ridged skin of the palms, fingers, soles and toes. Dermatoglyphics pattern are formed early in the fetus which are genetically determined. They remain unchanged throughout life and are unique for individual. For this reason they are considered as the best tool of identification. Dermatoglyphics as a diagnostic aid is now well established in a number of diseases, which have a strong hereditary basis, and is employed as a method of screening abnormal anomalies. There are variations of dermatoglyphics among the patients of Down syndrome in comparison with the normal subjects. Till date no study has been conducted regarding the analysis of dermatoglyphics among the cases of Down syndrome in our country.* ***OBJECTIVES:*** *So the present study was conducted with an aim to evaluate the association of palmar dermatoglyphics among the cases of Down syndrome. Material and* ***METHODS:*** *The cross sectional observational analytical study was designed to observe the changes of dermatoglyphics among the Down syndrome patients and to compare it with the normal subjects. A total of 200 participants were evaluated where 100 Down syndrome patients were collected from different organization of Down syndrome society in Bangladesh and 100 MBBS and dental students of Chittagong Medical College both male and female was selected as normal subject. Dermatoglyphics print was taken by the Ink & Paper method described by Cummins and Midlo. Detailed dermatoglyphic pattern of hypothenar eminence analysis was done by using magnifying glass, calculator and scale. Without doing any age difference data was analyzed by qualitative method. After collection data was analyzed for statistical significance by Chi-square test wherever applicable, by using a computer based program SPSS and MS Excel. P value was considered significant if it is < 0.05 at 95% level of confidence.* ***RESULTS:*** *Almost all of the loops in either hand of the patients were of ulnar type and papillary ridge was more prominent pattern in hypothenar area of the control group.* ***CONCLUSION:*** *It was revealed that there were significant differences in hypothenar pattern between Down syndrome patient and control.*

Key Words: Dermatoglyphic, Down syndrome, Hypothenar Pattern.

INTRODUCTION

Dermatoglyphics is the study of fingerprints, palm prints and toe prints. Studies of these traits have been advocated by Cummins in the United States[1]. In the history of dermatoglyphics, there are descriptions of fingerprints and palm prints by Grew (Caplan 1990; Lambourne 1977) as early as 1684 and by Malpighi in 168614. In 1823, for the first time, Purkinje methodically classified finger prints into 9 types[2-4]. In addition, at the end of the 19th century, Galton reported on the segmentation of dermatoglyphics, comparisons among twins and ethnic groups, and, most importantly, a rule called "proof of no change." This rule states that an individual's dermatoglyphics remain unchanged throughout his/her lifetime[5]. On the basis of these original

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studies, many researchers have investigated dermatoglyphics in various fields such as forensic medicine, genetics and anthropology. Recently, recognition of irregular finger and palmar prints among patients with certain types of congenital anomalies has drawn attention to the field of medical dermatoglyphics[6-9].

The epidermal ridges begin to differentiate during 12th-16th week of fetal life and completed by 20th week[10]. The skin of the palm of the hands and the plantar surface of feet is designed and corrugated with the epidermal ridges[11]. Dermatoglyphics deals with the study of the epidermal ridges and their configurations on the fingers, palms and soles[12]. Sir Francis Galton released his work on the fingerprints in 1892 and Cummin, in 1926, for the first time added the term dermatoglyphics to the field of science[13]. After having a good grip on the basics of dermatoglyphic, the icons of this field were inspired to search and investigate its correlation with various types of diseases like -depression, schizophrenia, epilepsy, psoriasis, leprosy, Down's syndrome, Klinefilter's syndrome and many more other medical conditions e.g- diabetes, hypertension, coronary artery disease, bronchial asthma, pulmonary tuberculosis, carcinoma breast etc[14-16]. The patterns of ridges that develop in the palm are determined genetically[17]. Once established, dermatoglyphic patterns remain unchanged throughout life except in the dimension in commensurate to the growth of an individual[12]. Any disturbance by genetic factors can produce unusual or abnormal dermatoglyphics during intrauterine life[18].

Down syndrome can occur due to trisomy 21, Robertsonian translocation or mosaicism. Down Syndrome is a genetic disorder caused by the presence of all or part of a third copy of chromosome 21. It is typically associated with physical growth delays, characteristic facial features, and mild to moderate intellectual disability. The most common form of Down syndrome is known as trisomy 21, a condition where individuals have 47 chromosomes in each cell instead of 46. Trisomy 21 is caused by an error in cell division called nondisjunction. This leaves a sperm or egg cell with an extra copy of chromosome 21 before or at conception[19]. Worldwide the incidence of Down syndrome is one in 1000 live births[20].

The purpose of this study was to comparatively analyze some peculiarities of hypothenar traits in Bangladeshi Down syndrome patient and control group with a view of their possible diagnostic significance.

MATERIALS AND METHODS

This research work was a cross sectional observational analytical study. A total of the two hundred RP were recruited in this study, hundreds of them were from Down syndrome patient and hundred from control group, respectively. Confirmed Down syndrome patients were collected from different center in Bangladesh like Down syndrome society of Bangladesh, Prerona School, Ashar Alo School, Proyas School and Society for the Welfare of the Intellectually Disabled, Bangladesh (SWID Bangladesh). Control were the 1st Year MBBS and Dental students of both male and female of CMC, fulfilling the inclusion and exclusion criteria were enrolled in the study with informed consent. Basic details such as name, age, sex of the participant were recorded from birth certificate, national identity cards or students ID card. Dermatoglyphics print was taken by the Ink & Paper method described by Cummins and Midlo[21]. Convenient purposive sampling method was adopted.

The study was conducted from January 2018 to January 2019 in the department of Anatomy, CMC, Chattogram, Bangladesh.

Diagnosed Down syndrome patients of both sexes in any age group and 1st-year MBBS and Dental students of Chittagong Medical College irrespective of sex were selected as research participants. All the palm prints with clear impressions were chosen for further analysis.

Down syndrome patient and control group participants with any hand deformities due to injury, birth defect, or permanent scar on any of either hands, permanent scar on their palms, worn fingerprints, webbed, or bandaged fingers were excluded. Participants having neurological disorders, skin diseases in fingers and palms, those who had congenital diseases or acquired deformities of the fingers and palms other than Down syndrome and multifactorial diseases could not be recruited in the study.

Dermatoglyphics print was taken by the Ink & Paper method described by Cummins and Midlo[21]. Procedure start with hands of the individual was washed with liquid soap before inking to remove dirt from the hands. Then hands were wiped with paper towel. Two white papers were fixed on clip board to take palmar print of right and left hand. Then clip board was placed on a wooden table. The required amount of ink was poured into a clean and dry flat bottom container. Hand roller was moved in the ink until the ink was spread thinly and homogenously in the roller. Both hands were painted with the help of the roller. The thin film of ink was applied on the palmar region by passing the inked roller uniformly over the palm. After ensuring that palm inked properly, palmar print was taken on the white paper fixed on clip board. Palm were rolled from radial to ulnar side and palmprint take on paper. The painted papers were examined with magnifying glass (4 x & 6 x). Magnifying glass was used to zoom in the palmar prints and determination of different dermatoglyphics pattern of hypothenar eminence for observation.

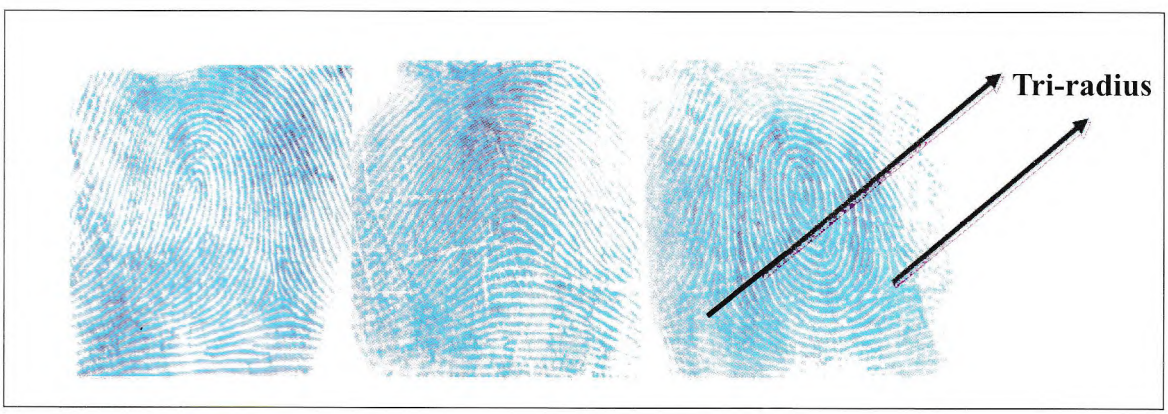


Figure 1: Studying of Different Hypothenar Pattern on palm (i) Loop pattern, (ii) papillary pattern and (iii) Whorl pattern (magnified). Arrow mark area showing Tri-radius.

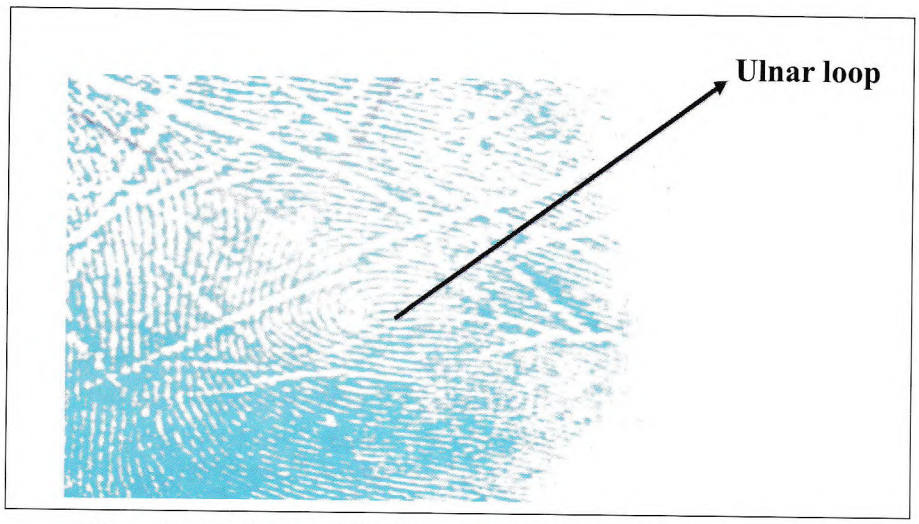


Figure-2 Hypothenar ulnar loop pattern (Arrow marked)

Analysis of the Hypothenar pattern whether it was loop pattern (ulnar loop or radial loop) papillary pattern or whorl of Down syndrome patients and control group was done.

Without doing any age difference data was analyzed by qualitative methods. After collection, data was analyzed for statistical significance by Chi-square test whereve applicable, by using a computer-based progran SPSS-23 and MS Excel. P value wa considered significant if it was < 0.05 at 95% level of confidence.This study was approved by the members of the Ethical Review Board (ERB) of Chittagong Medical College Chattogram

RESULTS:

Comparisons of hypothenar patterns:

Table-I: Comparison of hypothenar patterns of both hand between Down's syndrome and control

Hand	Hypothenar patterns	Group		P value
		Down syndrome (n=100)	control (n=100)	
Right	Ulnar loop	40 (40%)	1 (1%)	<0.001**
	Radial loop	2 (2%)	12 (12%)	0.006
	Papillary	54 (54%)	86 (86%)	<0.001**
	Whorl	4 (4%)	1 (1%)	0.174
Left	Ulnar loop	46 (46%)	2 (2%)	<0.001**
	Radial loop	6 (6%)	11 (11%)	0.205
	Papillary	44 (44%)	87 (87%)	<0.001**
	Whorl	4 (4%)	0 (0%)	0.125

** = statistically significant at p<0.001 level

Frequencies of the hypothenar zone patterns (ulnar loop, radial loop, papillary ridge and whorl) of Down's syndrome and the control group of right and left hand are shown in Table-I. Almost all of the loops in either hand of the patients were of ulnar type. In contrast papillary ridge was more prominent pattern in hypothenar area of the control group.

DISCUSSION:

In this present study, almost all of the loops in hypothenar zone of either hand of the patients were of ulnar type. In right hand 40% and left hand 46% were ulnar loop in Down syndrome people and 1% in right hand & 2% in left hand of control group In contrast papillary ridge was more prominent pattern in hypothenar area of the control group. In the study of Shiono (1969) it was found that, the percentage frequencies were 33.0% in the left hands and 31.0% in the right hands of the patients in comparison to 3% and 2.1% respectively in controls[22]. Cummins (1939) and subsequent investigators have described an excess of patterns, particularly of the ulnar type, in the hypothenar area in Down's patients[23]. Rignell (1987) observed that, frequencies of the hypothenar zone patterns differ substantially between the patient sample and the general population. In both sexes papillary ridge pattern is much less common than expected among patients[24]. Plato (1973) had described an excess of patterns, particularly of the ulnar type, in the hypothenar area in Down's syndrome. Our results agree with these findings[25]. Plato (1973) also observed higher frequencies of single loops in either hand of the Down's syndrome[26].

Limitation of the study:

1. The sample size was small with a case group of only 100. If it was larger, more accurate result would be assured.

Recommendations:

1. As the present study was conducted in a limited territory further large-scale study is recommended.
2. This study was the first such observation and record in this area and can be used as the basic data which is useful for future research, biometric analysis and multi disciplinary studies.
3. In future studies computerized automatic palmar print reading system should be used to collect dermatoglyphics.

Conclusion:

From the result of this cross sectional comparative study it was revealed that there were significant differences in hypothenar print pattern between Down syndrome people and control.

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Original Article

Prevalence of Thyroid Disorders Among the Patient Attending in a Private Medical College Hospital Situated in the Northern area of Bangladesh.

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ABSTRACTS

BACKGROUND: *Thyroid disorder represents one of the major non-communicable public health concerns worldwide. Due to lack of iodine in the soil and water in the northern area of Bangladesh, the prevalence of thyroid disorders is necessary to be identified.* ***OBJECTIVE:*** *To findout the prevalence of thyroid disorders from a private medical college hospital situated in the northern area of Bangladesh.* ***METHODS:*** *This study was conducted in Prime Medical College, Rangpur during the period of 1st December, 2017 to 31st August, 2019. A total 536 cases of more than 18 years of age study subjects were taken during the study period. Thyroid function tests were assayed by automated analyzer Immulite 2000.* ***RESULTS:*** *Among total 536 study subjects 29.9% were found thyroid disorder, where the number of female subjects was more than that of males (127 vs. 33). Thyroid disorders were found higher in older age groups than in younger age groups (32.7% vs 28.6%). In this study female than that of males had more thyroid thyroid function test abnormality like primary thyrotoxicosis, subclinical hypothyroidism and noncompliance with T4 replacement or secondary thyrotoxicosis or thyroid hormone resistance (14.2% vs.12.1%, 42.5% vs.12.1% and 4.7% vs.0%).* ***CONCLUSION:*** *This study identified the severaltypes of thyroid disorder in a tertiary care hospital situated in northern area of Bangladeshand can be used as a baseline data for future study.*

KEY WORDS: Thyroid disorder, T3, T4, TSH, Hypothyroidism, Hyperthyroidism, Subclinical thyroid disorder.

INTRODUCTION

Thyroid disorder is a spectrum of disorder of the thyroid gland, which manifests subclinical or overt hyperthyroidism and reflected in the circulating level of TSH[1].Women are more likely than men to have thyroid diseases, especially right after pregnancy and after menopause[2]. Imbalance in production of thyroid hormones arises from dysfunction of the thyroid gland itself, the pituitary gland, which produces TSH, or the hypothalamus, which regulates the pituitary gland via thyrotropin-releasing hormone[3]. The most frequently ordered tests to screen patients for thyroid disease is the TSH. This hormone is released by the pituitary gland in response to the blood levels of active thyroid hormones (free T4 and free T3)[4]. When there is elevated serum TSH with normal or low serum T3 or T4 is called hypothyroidism; and the reverse findings, that is low serum TSH with normal or elevated T3 or T4 is called hyperthyroidism.

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Subclinical thyroid disease means abnormal serum TSH with normal serum T3 or T4. In subclinical hypothyroidism, the patient suffers from elevated serum TSH with normal serum T3 or T4 and reverse findings were found in subclinical hyperthyroidism[5,6].

Thyroid disorders are widely common with variable prevalence among the different populations. The prevalence of thyroid disorders in the general population was estimated 6.6%[7]. In Colorado, thyroid disease prevalence study involving 25,862 participants attending a state health fair, 9.5% studied population were found to have and elevated serum TSH, while 2.2% had low serum TSH[8]. In the National Health and Nutrition Examination Survey (NHANES) on 17,353 subjects representing the US population, hypothyroidism was found in 4.6% and hyperthyroidism was in 1.3%[9]. In 2015 a study was done in Sirajganj in Bangladesh, where prevalence of goiter was found 28.3%[10]. About 20% of the Bangladeshi people suffer from clinically evident thyroid disorders, where hypothyroidism, Grave's disease, postpartum thyroiditis, thyroid malignancies, subclinical hypo and hyperthyroidism are common thyroid disorder in Bangladesh[11].
Iodine is an essential micronutrient which is required for the synthesis of thyroid hormone[12]. Northern area of Bangladesh has lacking of iodine in the soil and water because the turbulent river Jamuna runs along itsside[13]. The aim of the study is to find out the prevalence of thyroid disorder in a tertiary care hospital situated in northern area of Bangladesh.

MATERIALS AND METHODS

A total 536 cases of more than 18 years of age were taken as a study subject from Prime Medical College Hospital, Rangpur during the period of 1st December, 2017 to 31st August, 2019. The blood sample was collected and the test result of T3, T4 and TSH were estimated by auto-analyzer Immulite 2000, where the internal quality control was regularly done and found to be acceptably precise. Normal range of T3, T4 and TSH are 0.6 ng/ml to 1.81 ng/ml, 4.8 μg/dl to 10.4 μg/dl and 0.4 μIU/ml to 4 μ IU/ml respectively[14].

RESULTS

Frequency of normal and abnormal thyroid function among the study subjects was shown in Table-I, where thyroid function tests were found normal in 70.1% cases and thyroid dysfunctions were found in 29.9% cases.
In Table-II, prevalence of thyroid hormone disorder among male and female study subjects were shown. In this table, we observed that thyroid hormone disorders are more in male than that of female (57.7% vs 42.3%), but the number of female subjects with thyroid dysfunction were greater than male (127 vs 33).

Prevalence of thyroid disorder (determined by TSH level) with age was shown in Table-III, where Euthyroid patient were found 71.4% & thyroid disorder were found 28.6% in <40 years of age group. But in >40 years of age group euthyroid patient were found 67.3% and thyroid disorder were found 32.7%.

In Table-IV association of different types of thyroid hormone disorders among male and female thyroid disorder patient were shown. In this table we found that subclinical hypothyroidism is strongly associated in cases of female than that of male (42.5% vs 12.1%, $\chi 2 = 0.001$, $p<0.01$). Other different categories of thyroid hormone disorder are not found significant between male and female study subjects.

Table I: Frequency of normal and abnormal thyroid function among study subjects.

Thyroid function tests interpretation	Frequency (n=536)	Percentage (%)
Euthyroid	377	70.3
Thyroid hormone dysfunction	159	29.7

Table II: Prevalence of thyroid hormone disorder in male and female study subjects.

Thyroid hormone disorder	Male (n=78)	Female (n=458)
Absent	45 (57.7%)	331 (72.3%)
Present	33 (42.3%)	127 (27.7%)

Table III: Prevalence of thyroid disorder (determined by TSH level) with age.

Age	TSH Value	
	Euthyroid	Thyroid disorder
<40 years	247 (71.4%)	107 (28.6%)
>40 years	109 (67.3%)	53 (32.7%)

Table IV: Association of different types of thyroid hormone disordersamong male (n=33) and female (n=113)thyroid disorder patient.

Categories of thyroid hormone disorder	Gender	Present No. (%)	Absent No. (%)	p-value
Primary thyrotoxicosis	Male	4 (12.1%)	29 (89.7%)	0.983
	Female	18 (14.2%)	109 (85.5)	
Primary T_3 thyrotoxicosis	Male	1 (3%)	32 (97%)	0.206
	Female	0 (0%)	127 (100%)	
Subclinical thyrotoxicosis	Male	9 (27.3%)	24 (72.7%)	0.066
	Female	17 (13.4%)	110 (86.6%)	
Sick euthyroid/non-thyroidal illness	Male	7 (36.8%)	26 (63.2%)	0.074
	Female	12 (9.4%)	115 (90.6%)	
Secondary hypothyroidism or transient thyroiditis in evolution	Male	3 (9.1%)	30 (90.9%)	0.340
	Female	7 (5.5%)	120 (94.5%)	
Primary hypothyroidism	Male	5 (15.2%)	28 (84.8%)	0.211
	Female	11 (8.7%)	116 (91.3%)	
Subclinical hypothyroidism	Male	4 (12.1%)	29 (87.9%)	0.001*
	Female	54 (42.5%)	73 (57.4%)	
Non-compliance with T_4 replacement or secondary thyrotoxicosis or thyroid hormone resistance	Male	0 (0%)	33 (100%)	0.244
	Female	6 (4.7%)	121 (95.3%)	

Statistical analysis was done by Chi-square test to compare among the groups.
n= number of the subjects, * = significant ($p<0.05$)

DISCUSSION

In this present study, female had more thyroid dysfunction than that of males (127 vs. 33); but statistically male had more thyroid dysfunction than female, because the study subject of male were six times smaller thanthat of female. This result was consistent with other previous study[15-17]. Another study showed that there were equal proportion and no significance of thyroid dysfunction between male and female, which is not similar to the present study[18].

In our study thyroid disorders were found higher in older age groupsthan in younger age groups. A similar type of study was done in

2013, found that more than 40 years of age group had maximum number of hypothyroidism and hyperthyroidism compared to more than 40 years of age group[19]. A study in Makkah exhibited thatthe prevalence of thyroid disorderswas predominant in 40 ± 12 years of age[20]. It may be due to age related alteration of TSH set point or reduced bioactivity rather than occult thyroid disease[21].

In 2010, a study was done in Kathmandu University Hospital, Nepal on the prevalence of thyroid dysfunction found that subclinical hypothyroidism and subclinical hyperthyroidism both were higher in female than male[16]. In our study, we found that male with subclinical thyrotoxicosis had higher a percentage than female and female with subclinical hypothyroidism had a higher percentage than male and found to be strongly significant. But in number both subclinical hypothyroidism and subclinical thyrotoxicosis were found more in female, which was concordant with the previous study. In Punjab a study showed that primary hyperthyroidism and hypothyroidism both were more in number in case of female study subject[1]. This result was similar to our present study.

CONCLUSION

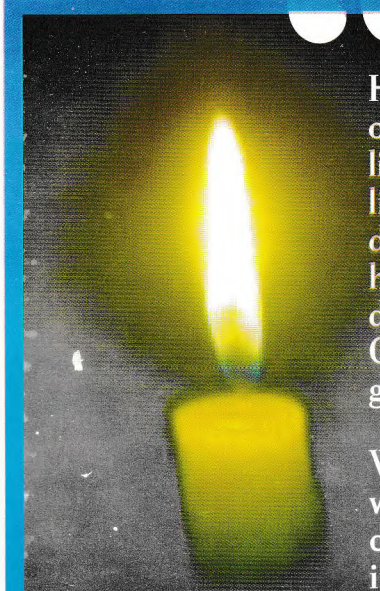
Our present study was hospital-based study and because this study population constitutes of subjects who came to the institute seeking thyroid function test, so it may not represent the whole population. But this study identified the several types of thyroid disorder in a hospital in Rangpur and can be used as a baseline data for future study. Additional studies are needed to fully understand the types, causes and management of thyroid disorder.

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CONDOLENCES



Heartfelt condolences to the members of our profession and also other first line Covid fighters who sacrifice their life unexpectedly. They relentlessly delivered their service to the suffering humanity and fought to keep the devastating pandemic of SARS 2 Corona virus infection control in the globe.

We still do not know where the end but we are to continue our effort to combat. May ALLAH SWT bless us irrespective of nation, race and religion. Ameen

OBITUARY

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৫৮। ডা. মোঃ আসাদুজ্জামান (২৭ জুন ২০২০ খ্রিঃ)

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৬০। অধ্যাপক ডা. গোলাম সারোয়ার (০১ জুলাই ২০২০ খ্রিঃ)

৬১। ডা. মোঃ রুহুল আমিন (০১ জুলাই ২০২০ খ্রিঃ)

৬২। অধ্যাপক ডা. এম এ ওয়াহাব (০১ জুলাই ২০২০ খ্রিঃ)

৬৩। অধ্যাপক ডা. কে এম মুনতাকিম চৌধুরী (০৪ জুলাই ২০২০ খ্রিঃ)

৬৪। অধ্যাপক ডা. একে এম নুরুল আনোয়ার (০৫ জুলাই ২০২০ খ্রিঃ)

৬৫। ডা. মোঃ সাজ্জাদ হোসেন (০৭ জুলাই ২০২০ খ্রিঃ)

৬৬। ডা. সুলতানা লতিফা জামান আইরিন (১৪ জুলাই ২০২০ খ্রিঃ)

৬৭। ডা. এস এম নুর উদ্দিন আবু আল বাকী রুমি (১৭ জুলাই ২০২০ খ্রিঃ)

৬৮। ডা. আবদুল হামিদ (১৭ জুলাই ২০২০ খ্রিঃ)

৬৯। ডা. কোহেল করিম (কুহু) (১৭ জুলাই ২০২০ খ্রিঃ)
৭০। অধ্যাপক ডা. আবুল হোসাইন খান চৌধুরী (১৮ জুলাই ২০২০ খ্রিঃ)
৭১। ব্রি গেঃ জেনারেল ডা. মোঃ শহীদুল্লাহ (২৫ জুলাই ২০২০ খ্রিঃ)
৭২। ডা. বদিউজ্জামান হীরা (২৬ জুলাই ২০২০ খ্রিঃ)
৭৩। অধ্যাপক ডা. টি আই এম আব্দুল্লাহ আল ফারুক (২৮ জুলাই ২০২০ খ্রিঃ)
৭৪। ডা. নারগিস মুর্শিদা বানু (২৯ জুলাই ২০২০ খ্রিঃ)
৭৫। ডা. মোঃ নজরুল ইসলাম চৌধুরী (তসলিম) (০৩ আগস্ট ২০২০ খ্রিঃ)
৭৬। ডা. এফ বি এম আব্দুল লতিফ (০৬ আগস্ট ২০২০ খ্রিঃ)
৭৭। ডা. মোঃ গোলাম মোস্তফা (০৮ আগস্ট ২০২০ খ্রিঃ)
৭৮। ডা. রেজোয়ানুল বারী শামীম (০৯ আগস্ট ২০২০ খ্রিঃ)
৭৯। অধ্যাপক ডা. মোঃ মোস্তাক হোসেন আনসারী (১০ আগস্ট ২০২০ খ্রিঃ)
৮০। অধ্যাপক ডা. মোঃ আসাদুল হক খান (১১ আগস্ট ২০২০ খিঃ)
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৮২। ডা. মোহাঃ আব্দুর রহমান (১৬ আগস্ট ২০২০ খ্রিঃ)
৮৩। ডা. সৈয়দ আখতার হোসেন (২০ আগস্ট ২০২০ খ্রিঃ)
৮৪। ডা. এ বি এম সিদ্দিকুল ইসলাম (২০ আগস্ট ২০২০ খ্রিঃ)
৮৫। ডা. আব্দুল্লাহ আল মাহমুদ (২৮ আগস্ট ২০২০ খ্রিঃ)
৮৬। বীর মুক্তিযোদ্ধা ডা. মোঃ আব্দুল মতিন পাটোয়ারী (২৮ আগস্ট ২০২০ খ্রিঃ)
৮৭। ডা. বি এম ফারুক (২ সেপ্টেম্বর ২০২০খ্রিঃ)
৮৮। ডা. শামসুন নাহার বেলা (০৩ সেপ্টেম্বর ২০২০খ্রিঃ)
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৯০। অধ্যাপক ডা. মোঃ হুমায়ুন কবীর (৭ সেপ্টেম্বর ২০২০খ্রিঃ)
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১০০। ডা. এ কে এম মাসুদুর রহমান (২৫ অক্টোবর ২০২০ খ্রিঃ)
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১০৮। ডা. নুরুল ইসলাম (১৮ নভেম্বর ২০২০খ্রিঃ)
১০৯। ডা. আ জ ম শফিউল আলম শাহ (বাবু) (১৯ নভেম্বর ২০২০খ্রিঃ)
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১১১। ডা. মজিবুর রহমান খান হীরা (২৯ নভেম্বর ২০২০খ্রিঃ)
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১১৩। ডা. আইরিন পারভীন (০৬ ডিসেম্বর ২০২০খ্রিঃ)
১১৪। ডা. সাইদুল ইসলাম (০৯ ডিসেম্বর ২০২০খ্রিঃ)
১১৫। ডা. রাশেদ সারওয়ার আলম রনি (১৩ ডিসেম্বর ২০২০খ্রিঃ)
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১১৭। ডা. গাজী শফিকুল আলম চৌধুরী (১৯ ডিসেম্বর ২০২০খ্রিঃ)
১১৮। অধ্যাপক ডা. আব্দুল মুকিত সরকার (২০ ডিসেম্বর ২০২০খ্রিঃ)
১১৯। ডা. মোহাম্মদ হাসান মুরাদ (২১ ডিসেম্বর ২০২০খ্রিঃ)
১২০। ডা. মোঃ নিজাম উদ্দিন ভূঁইয়া (২১ ডিসেম্বর ২০২০খ্রিঃ)
১২১। ডা. মোঃ আনোয়ারুল করিম বাবুল (২৫ ডিসেম্বর ২০২০খ্রিঃ)
১২২। ডা. শেখ সায়েম (২৮ ডিসেম্বর ২০২০খ্রিঃ)
১২৩। অধ্যাপক ডা. এ কে এম শামসুল হক (২৮ ডিসেম্বর ২০২০খ্রিঃ)
১২৪। অধ্যাপক ডা. লুতফর কাদের লেনিন (৩০ ডিসেম্বর ২০২০খ্রিঃ) ॥

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Journal article with organization as author:

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Scientific and Technical Reports:
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