Editorial

The Role of Vitamins and Antioxidants in the Prevention and/or Treatment of COVID-19

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COVID-19 infection leads to upregulation of systemic inflammation as evidenced by elevated concentrations of pro-inflammatory cytokines interleukin 1 (IL-1), IL-6, and tumor necrosis factor (TNF) alpha, as well as higher concentrations of the anti-inflammatory cytokine IL-10. Additionally, patients with COVID-19 likely have evidence of oxidative stress, which is characterized by production of reactive oxygen species and reactive nitrogen species, and a concomitant deficiency of antioxidants. Reactive oxygen species and reactive nitrogen species are known to damage cellular biochemical pathways by causing DNA strand breaks, lipid peroxidation, and antioxidant and antiprotease degradation[1]. There are multiple defense mechanisms against reactive oxygen species and nitrogen species, including enzymatic scavengers (superoxide dismutase, catalase, and glutathione peroxidase) and nonenzymatic molecules (glutathione and vitamins A, C, and E). It is the imbalance between production of reactive oxygen and nitrogen species and the antioxidant pool in the body that perpetuates further damage and, with a hyperinflammatory response, may contribute to severe manifestations of COVID-19. Because of their potential to influence immune response and reactive oxygen and nitrogen species, and because of their availability as over-the-counter medications, ascorbic acid (vitamin C), zinc, vitamin D, and N-acetylcysteine have been hypothesized to be useful for prevention or treatment of COVID-19. As of yet, there is no high-quality evidence to support medication therapy for the prevention or treatment of patients with coronavirus disease 2019 (COVID-19). However, several agents intended to supplement dietary intake or endogenous molecules may have a theoretical role in preventing or treating the disease.

Several agents intended to supplement dietary intake or endogenous molecules may have a theoretical role in preventing or treating COVID-19. Because of their potential to influence immune response, ascorbic acid (vitamin C), zinc, vitamin D, and N-acetylcysteine have been hypothesized to be useful for prevention or treatment of COVID-19.

ASCORBIC ACID:

Ascorbic acid is known to function as an antioxidant by savaging ROS, and a number of studies have suggested that vitamin C supplementation can impact the immune system. Moreover, in vitro and in vivo studies in avians have shown that vitamin C could be protective against avian coronavirus infection, and human trials have found that vitamin C may decrease susceptibility to viral respiratory infections and pneumonia[2]. High doses of ascorbic acid reduce the severity and duration of symptoms from the common cold, which is caused by rhinovirus[3]. Studies of vitamin C for the treatment of hospitalized and critically ill patients have shown mixed results on mortality, length of stay in the intensive care unit, and duration of mechanical ventilation[4]. However, high doses of intravenous vitamin C were generally safe.

ZINC:

Zinc is known to be important for immune function and has a role in antibody and white blood cell production. Deficiency of zinc increases pro-inflammatory cytokine (IL-1, IL-6, and TNF alpha) concentrations and decreases the production of antibodies, while zinc supplementation has been shown to increase the ability of polymorphonuclear cells to fight infection[2]. Zinc has also been implicated in coronavirus biology, with increasing intracellular concentrations of zinc demonstrated to inhibit virus RNA polymerase activity and viral replication in an in vitro and cell culture model of severe acute respiratory syndrome coronavirus 1 (SARS-CoV-1)[5]. In a meta-analysis evaluating studies comparing zinc supplementation and placebo, high-dose zinc reduced the duration but not the severity of symptoms of the common cold[6].

VITAMIN D:

Vitamin D is found in foods such as dairy products, cereals, and oily fish, and is converted to its biologically active form 25-hydroxyvitamin D in the skin through the effect of ultraviolet B radiation on 7-dehydrocholesterol. In vitro, vitamin D has immunomodulatory effects (including inhibition of antigen-presenting cells), antiproliferative effects on T cells, modulating expression and secretion of type 1 interferon, and inhibition of proinflammatory cytokine expression (IL-6 and TNF alpha)[7].

A number of randomized trials have evaluated the effect of vitamin D supplementation for the prevention of acute respiratory infections. In a meta-analysis, vitamin D supplementation decreased the incidence of acute respiratory infection[8]. In subgroup analyses, the protective effect of vitamin D was greater in patients with baseline serum 25-hydroxyvitamin D concentrations <25 nmol/L (vs ≥ 25 nmol/L) and isolated to those receiving daily dosing (vs bolus dosing)[8]. In light of these data, a recent article

recommended that patients at risk for COVID-19 consider starting daily vitamin D supplementation to raise serum 25-hydroxyvitamin D concentrations in order to reduce the risk for infection[7]. While this strategy is unlikely to cause harm, it has not been specifically evaluated for prevention of COVID-19 infection.

N-ACETYLCYSTEINE:

Glutathione is an endogenous antioxidant that is frequently depleted in patients with oxidative stress or systemic inflammation, including those with chronic obstructive pulmonary disease and acute respiratory distress syndrome. After systemic administration, N-acetylcysteine is rapidly converted to cysteine, which is a precursor to glutathione, leading to significant increases in plasma and alveolar glutathione concentrations. Furthermore, N-acetylcysteine itself is a direct scavenger of ROS, leading to antioxidant effects. Administration in vitro and in vivo leads to anti-inflammatory effects (eg, decreased IL-6 and TNF alpha concentrations) and antioxidant effects in a number of pulmonary diseases, including viral pneumonia and acute respiratory distress syndrome[9].

N-acetylcysteine also has activity as a mucolytic due to its ability to disrupt disulfide cross-bridges in the glycoprotein matrix of respiratory mucus. However, these effects have not consistently translated to clinical outcome benefits in patients with hyper-inflammatory diseases,[10] and N-acetylcysteine is not routinely used as an anti-inflammatory or antioxidant in clinical practice. Because patients with COVID-19 have evidence of systemic inflammation (including possible cytokine release syndrome), often have their course complicated by acute respiratory distress syndrome, and may have respiratory mucus buildup limiting adequate airflow (such as endotracheal tube obstruction due to mucus), systemic or aerosolized N-acetylcysteine (or both) may be beneficial in this specific patient population.

There does not seem to be a role for N-acetylcysteine supplementation to prevent COVID-19. However, through the varied mechanisms described, N-acetylcysteine administration may improve outcomes in patients with established COVID-19.

With the rapidity of hypothetical treatments' data being generated for COVID-19, clinical investigations up until this point have not provided efficacious treatments in eradicating the virus. While it is important to investigate treatments with the potential to reduce the severity and consequences of COVID-19, vitamins and supplements should be continued to be evaluated to provide the much-needed evidence for possible treatment modalities. These are particularly pertinent in the vulnerable elderly population, who represent a disproportionate burden of morbidity and mortality in these times. Roles of vitamins as important micronutrients in the immune system and their probable roles in the prevention/treatment of viral infections, including COVID-19 may be more effective on the immune system and emphasizes the importance of vitamins in the prevention of viral infections, including COVID-19, and sufficient vitamin intake is highly recommended to prevent viral infections like COVID-19. However, clinical trials based on the associations of diet and COVID-19 are lacking.

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Original Article

Morphometric Assessment of the Weight, Length, Width and Coxal Index of the Adult Human Dry Hip Bones

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Abstract:

Background: Skeletal remains provide probably the most dependable information for identifying an unknown individual because of their relative durability with which they can be preserved and studied. In this respect, metrical studies of the hip bones are more useful than mere physical examination. **Objectives:** The objective of this study was morphometricassessment of the adult human dry hip bones to evaluate weight, length, width and coxal index of hip bones. **Method**: This study was a cross sectional study done in Anatomy department of Rangpur Medical College between January' 2017 and December' 2017. Two hundred adult human dry hip bones (101 right and 99 left hip bones) of unknown sex were collected randomly from 1st and 2nd year MBBS student, Department of Anatomy, Rangpur Medical College and Armed Forces Medical College, Rangpur. The weight, length and width of the hip bone were measured and coxal index was calculated for each hip bone. From the raw data, range, mean, standard deviation of mean was determined for each parameter by SPSS version 16. The difference between hip bone of right and left side were compared by unpaired "t" test. **Result:** Length, width and coxal index of hip bone were similar between right and left sides. However, bones of right side were heavier than left side but values did not vary significantly.**Conclusion**: The hip bone usually displays differences in morphology independent in size due to different sexual and reproductive functions which are influenced by sex hormones. Therefore study of hip bone regarding measurements of different morphological parameters is not only valuable for anatomists but also for all anthropologist, and forensic experts.

Indexing words: Hip bone, Length, Width, Weight, Coxal index

Introduction:

Humans are the only mammals who are unique among the primates, to assume an upright posture and a bipedal mode of locomotion. The two hip bones articulate posteriorly with sacrum and form bony pelvis, which transmit the body weight through the acetabulum to the lower limb and at same time mediate the propulsive thrust from the lower limb to the body[1]. The hip bone is one of the most informative bones in the skeleton because it is formed by three independent elements during the sub adult life and is directly involved with childbirth[2]. The four main features of biological identity are sex, age, stature and ethnic background. Though many bones of the skeleton present sex, age and race related differences, the distinctive morphology of the human hip bone makes it of interest from anatomical, anthropological and forensic point of view[3]. The hip bone is the most reliable indicator for the sex determination because of the pattern of sexual dimorphism is common to whole human race[4]. As it forms pelvis which adapted for child bearing in female, resulting in a number of gender related anatomical differences. For this reason, some special criteria of female hip bone provide the highest accuracy levels for sex determination. Morphometry of the hip bone is important for the anatomist as well as for the anthropologist for population studies. Moreover, specimen identification and sex determination

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from skeletal remains has great importance in forensic medicine. Therefore, awareness of the average dimensions of the hip bone in both sexes would also help in early detection of disputed sex by forensic experts[5,6,7]. The different morphology of human hip bone and its sexual dimorphism is of great importance in various fields of research and judgment. The metric and non-metric differences in skeletal component among populations are evident and that are related to genetic and environmental factors[8]. Morphometric measurements done on right and left side indicate that there was bilateral asymmetry of hip bone[9,10,11]. Dhinsha et al[12] stated that right hip bone is robust. Racial differences in Thais, Chinese, Nigerians and other populations have been compared[13,14]. It has long been customary among anatomists, anthropologists and forensic experts to judge the sex of skeletal material by non-metric observations. Lately, sexual divergence has been based on actual measurements in different bones; such as, hipbone, sacrum, femur, humerus, clavicle, sternum, mandible, skull, etc. But among all, current opinion regards only the hipbone as providing the highest accuracy level for sex determination[15]**.**

Singh & Potturi[16] identified the sex of hip bone from several measurement e.g. width, lengths & breadth of hip bone, in 200 adult hip bones from Varanasi zone. Coxal index was calculated. Others studies[3,17] considered Coxal index (CI) of hip bones very valuable parameters in determining sex, in North-Western India.

The introduction of precise measurement methods not only provides simplicity and accuracy but allows no individual variation and is therefore entirely an objective assessment. In spite of this not much work has been done in the Bangladeshi population, therefore, the need for the present study to be carried out was felt. The present study would provide valuable information about the parameters and indices of human dry hip bone in Bangladeshi population which would help to differentiate the sex of human hip bone. It would be useful in anatomical, anthropological, archaeological and forensic studies.

Objectives:

To measure the weight, length and width of hip bone and to calculate the coxal index; to differentiate between bones of right and left side.

Methods:

This was a cross sectional analytical study, conducted from January 2017 to December 2017in the Department of Anatomy, Rangpur Medical College, Rangpur. This study was performed on 200 human dry hip bone of unknown sex collected from 1stand 2nd year MBBS students of Rangpur Medical College and Armed Forces Medical College, Rangpur, after proper declaration of present author and consent of the students. Completely ossified, grossly normal adult human dry hip bones were included. Deformed, malunited, incomplete bones and bones with congenital anomalies were excluded. Among the 200 hip bones of unknown sex, 101 were right and 99 were left hip bones. Weight of hip bone (in grams) was measured by electrical weighing machine (Fig. 1); Length and width of hip bone was measured by osteometric board (Fig. 2 and 3). The osteometric board was prepared from carpenter for the present study according to Singh et al[3]. Coxal index was calculated by formula: width of hip bone/length of hip bonex100.All the measurements were taken three times for each parameter at different times and the average of these three measurements was recorded as the measurement of the parameter. Photographs of all hip bones were taken during measurement of the samples.



Fig.1 Measurement of weight of hip bone by electric weigh machine

Measurement of Length of Hip Bone: It is the maximum distance from the most superior point on the iliac crest to a plane drawn along the inferior end of the ischial tuberosity. It was measured with the help of an osteometric board and the measurements were recorded in centimeters. The most superior point of the iliac

crest was placed in contact with the fixed end of the board and the inferior end of the ischial tuberosity was placed against the movable arm (Fig.2). Length was measured on the scale by adjusting the moveable arm[3,17].



Fig.2: Measurement of length of hip bone by osteometric board



Fig.3:Measurement of width of hip bone by osteometric board

Measurement Width of Hip Bone: It is the maximum distance between the anterior superior iliac spine and the posterior superior iliac spine. It was measured with the help of an osteometric board and the measurements were recorded in centimeters. The posterior superior spine was placed in contact with the fixed end of the board and the anterior superior spine was placed against the movable arm (Fig.3). Width of hip bone was measured on the scale by adjusting the moveable arm[3,18]**.**

The data collected from the morphological studies were processed according to their distributions, central tendencies and dispersions. Results were the prepared from these data as ranges, mean values, standard deviations (SD) etc. as applicable. Mathematical relationship between measurements of right and left sides was compred by Student's unpaired't' test. In all statistical analyses, the level of significance was set at p ≤0.05 at 95% confidence intervals. All the statistical analysis was done by using the SPSS software package for windows version 16.0.

Results:

Table I shows the weight of hip bones of both sides. The mean ±SD of weight of right hip bones was 117.42±33.12 gm and that of left hip bones were 115.05±28.28 gm. Though right hip bones were heavier than the left but these but no significant differences was found between the bones of both sides.

The ranges and mean ± SD of length, width of hip bone and coxal index of both sides are shown in Table II.

The mean ± SD of length of right and left hip bones were 18.88±1.26 and 18.88±1.21 cm respectively.

Regarding the mean ± SD of width of hip bones, it was 13.49±.89 and 13.54±.82 cm respectively in right and left hip bone.

The mean ± SD of coxal index were 71.54±3.59 and 71.79±3.70 in right and left side of bone respectively (Table II). However, no difference was found between these variables of right and left sides were found.

Table I: Weight (gram), Length, width and coxal index of 200 hip bones (right 101 and left 99)

Variables and site of hip bone			Range	Mean ± SD	p-value
Measurements	Weight of hip bone	Right	73 – 158.26	117.42±33.12	.130
		Left	79.75 – 149.97	115.05±28.28	
	Length	Right	17.28 – 20.33	18.88± 1.26	.721
		Left	17.23 – 20.43	18.88 ±1.21	
	Width	Right	12.53 – 14.40	13.49 ± .89	
		Left	12.62 – 14.40	13.54 ± .82	.462
Coxal index		Right	66.68 – 76.16	72.54 ± 3.59	.852
		Left	66.70 – 76.90	71.79 ± 3.70	

Results are shown as Range and Mean ± SD.
p- value reached from unpaired independent t' test.

Discussions:

The present work was undertaken to study various morphometric variables of hip ones to establish a data bank for our own and to verify these data to reference values of other parts of the world to identify population-specific characteristics. Another aim of this study was to find out variations between right and left sided hip bone.

In present study the mean ±SD of weight of right hip bones was 117.42±33.12 gm and that of left hip bones were 115.05±28.28 gm. Though the bones of right sides were heavier than the bones of left sides, the value did not vary significantly.

The mean weight of hip bone was 134.94gm observed by Singh and Raju[5] and 130.77 gm by Singh et al[3] but both authors found that weight was higher on right side than on left side like the present study. Khushale et al[18] studied 160 hip bones and were found the weight of male right hip bone varied from 120 to 198 gm with an average of 147.22±28.11 gm, while female bones weighed from 70 to 112 gm only had mean value 91.34±18.18. In male left hip bone mean weight is 133.91±15.32 gm, while female bone weight from 83-128 gm with means value 99.15±18.11 ($p< 0.001$).

So, the findings of the present study were more consistent with two study findings[3,5] than Khushale et al[18] in whose study the values of males were more than the present study but values of females were less than the present study.

In a study of lower limb that bones were heavier in right side, suggesting of right dominance. He suggested that right dominance was considered to be a genetic phenomenon guided by contralateral dominant left cerebral hemisphere[19].

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A comparative discussion of the length, width and coxal index with that of different authors and researchers of abroad is mentioned in Table II.

It was found that findings of the present study were similar to some study findings[18,20,21]. All these workers were Indian origin. But two study findings[22,23] for white males of South Africa were higher than all the previous workers as stated above may be due to they were from European country.

It was found that the length of hip bones was higher in males than females in all the studies. Regarding width of hip bone, it was similar or slightly higher in males. Regarding the Coxal index, it was significantly higher in females found in all studies.

Authors	Length of hip bone (cm)		Width of hip bone (cm)		Coxal index	
	Male	Female	Male	Female	Male	Female
Davivongs[24] (Australian Aborigins)	19.77	18.20	14.80	14.22	74.77	78.04
	-	-	14.40	14.16	-	-
Kimura[25] (Japanese/American	-	-	14.40	14.16	-	-
White/ American Black)	-	-	15.98	15.47	-	-
	-	-	15.30	15.07	-	-
Patriquin et al[23] (South Africa)	22.04	20.71	16.31	16.10	-	-
White vs Black	20.39	19.09	15.01	14.54	-	-
Arsuanga & Carrtero[22] (Spain)	21.19	19.59	15.56	15.29	-	-
Gomez-Valdes et al[26] (R/L)	20.06	19.03	15.14	14.68	-	-
(Mexico)	20.69	19.04	15.16	14.73	-	-
Gupta and Arora[21] (India)	19.38	17.94	13.73	13.32	70	74
Siddapur& Siddapur[20] (India)	-	-	-	-	67.7	70.8
Khushale et al[17] (India)	18.60	18.13	13.62	13.61	70.52	76.81
In present study (Bangladesh)	19.30	18.36	13.51	13.58	70.05	74.06

Conclusions:

The hip bone usually displays differences in morphology independent in size due to different sexual and reproductive functions which are influenced by sex hormones. Therefore, study of hip bone regarding measurements of different morphological parameters is not only valuable for anatomists but also for all anthropologist, and forensic experts. There is no study of human hip bones in the northern zone of Bangladesh. So, this study would help us to gather a sound knowledge of various parameters of the hip bone, which would be helpful for the anatomists, forensic experts.

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Original Article

Comparison of Nasal Parameters between Bangladeshi and Indian Manipuri Medical Students

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Abstract:
Background: Anthropometry is the study of human morphology. Physical variation between the people of different ethnic groups can be recorded by anthropometry. Measurements of craniofacial parameters have anatomical, clinical, forensic and anthropologic significance. In the present study comparisons of the nasal parameters between adult Bangladeshi and Indian Manipuri medical students of both sexes was done to determine the extent of racial and sexual dimorphism. **Objective:** To evaluate nasal parameters between Bangladeshi and Indian Manipuri medical students. **Methods:** This cross-sectional, analytical study was conducted at the Department of Anatomy of Rangpur Medical College from July 2018 to June 2019. 100 Bangladeshi and 100 Indian Manipuri medical students was the subject of the study from the date of approval. The Indian Manipuri students were collected from Prime Medical College, Rangpur and Rangpur Community Medical College, Rangpur. Nasal height and width and protrusion of nose was measured manually by using digital slide calipers. **Result:** Among the measurements, both nasal height and width was where in Manipuri than Bangladeshi in both sexes but reached a significant level for nasal height in male and nasal width in female. But protrusion of nasal tip was significantly higher in both sexes in Bangladeshi than Manipuri. **Conclusion:** From this study it could be concluded that there was significant difference on nasal variables studied among Bangladeshi and Indian Manipuri medical students of both sexes especially ethnic variation was more prominent in males than females.

Indexing words: Nasal length, Nasal width, Protrusion of nasal tip, Nasal index

Introduction:
Studying variations between and within populations in different morphological characters have been interest of anthropologists[1]. Craniofacial anthropometry includes measurements of head, face, nose, ear, orbital and orolabial regions. Craniofacial morphometry is the hallmark to study these variations and provides considerable information about physical conditions and development during growth. Facial characters are mostly influenced by factors such as race, ethnicity, age, sex, and culture, and their variation has been the subject of an investigation from ancient times[2,3].
Morphometric difference in facial characters are always present among various races in world geographic clusters[4]. Nasal anthropometry is the study concerned with the measurements of the proportion, size, and shape of the human nose. It has become an important tool used in genetic counseling, reconstructive surgery and forensic investigation[5,6,7]. The nose occupies the center of the face, and it is one of the most important factors characterizing the face[8]. The nose can be divided into two parts—the external and the internal parts, and the external part is the most studied part[9]. The shape of external nose varies from one to other considerably. It is pyramidal in structure located in the midline of the face and its skeletal framework is made up of bones and cartilages that maintain its shape. The shape of the external nose varies from one to another considerably. The external nose serves the cosmetic function by enhancing an individual's personality and beauty[10].
The knowledge of nasal anthropometry can provide important information to the rhinoplastic

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surgeon and help to take accurate preoperative planning. The normative data are also indispensable for precise determination of degree of congenital or posttraumatic facial deviations from normal[11].

Manipuri (Meitei) people are the majority ethnic group of Manipur, a northeastern state of India. They primarily settle in the central plain region of Manipur. A significant population of the Manipuri is also settled in domestic neighboring states such as Assam, Meghalaya, and Tripura. They also settled in Bangladesh and Myanmar. The Meitei people are made up of seven clans. The general feature of a Meitei looks like a mongoloid but ethnologist have observed that Meitei have great diversity and among them are found traces of Aryan race[12].

The aim of the present study was to measure the various dimensions of nose (length, width, and protrusion of nasal tip) of Bangladeshi and Manipuri medical students of both sexes and to compare these variables to find out any differences between these two races.

Methods:

The study was done in the Department of Anatomy, Rangpur Medical College, Rangpur from July 2018 to June 2019. 100 adult male and female Bangladeshi medical students of Rangpur Medical College, Rangpur and 100 adult male and female Indian Manipuri medical students of Rangpur Community Medical College and Prime Medical College, Rangpur who came from India as foreigner students in these medical colleges were the subjects of the study. Again among the Bangladeshi and Manipuri students, 50 were males and 50 were females in each group. Apparently healthy adult male and female medical students (19-25) years of age with no visible features of asymmetrical skull were selected for the study.

At first, for each subjects, soft tissue and bony landmarks was located through inspection and palpation and was marked on the cutaneous surface to increase accuracy using a black eye pencil. During landmark marking, the subject was asked to sit in a relaxed position suitable for correct identification of facial features. In the second step, all the measurement was taken with the subject sitting in the same relaxed position. The nasal measurements were taken at a fixed time between 8am to 2.30pm to eliminate the discrepancies due to diurnal variations[13]. All the physical measurements were taken by digital sliding caliper or spreading caliper and recorded in millimeter (mm).

Nose height: It is the linear vertical distance from the midpoint of the nasofrontal suture (nasion) to the junction between the lower border of the nasal septum and the cutaneous portion of the upper lip (subnasale) (Fig. 1).

Nose width: It is the linear transverse distance between the most lateral points (alares) on the nasal ala (Fig. 2).

Protrusion of nasal tip: It is the linear vertical distance from the junction between the lower border of the nasal septum and the cutaneous portion of the upper lip (subnasale) to the most protruded point of nasal tip (pronasale) (Fig. 3).



Figure 1: Procedure of measuring nasal height of Bangladeshi



Figure 2: Procedure of measuring nasal width of Bangladeshi



Figure 3: Procedure of measuring protrusion of nasal tip of Bangladeshi

Results:

Table I shows the mean ± SD of nasal height, width and protrusion of the nasal tip between Bangladeshi and Manipuri male and females. It was observed that nasal height was higher in Indian Manipuri male and female than Bangladeshi but reached a significantly higher level in male ($p<0.05$) only. Again mean ± SD of nasal width Indian Manipuri of both sexes was higher than Bangladeshi but reached a significant level in females only ($p>0.05$).

But protrusion of nasal tip was significantly higher in Bangladeshi than Indian Manipuri in both sexes. When comparison was done between male and female of Bangladeshi and Indian Manipuri groups for these three variables, it was observed that males had a significantly higher value than females in both these groups except for nasal height in Bangldeshi, where value was higher but did not vary significantly (Table II).

Table I: Comparison of height, width of nose and protrusion of nasal tip Between Bangladeshi and Indian Manipuri (n=50 in each group)

Variables	Sex	Bangladeshi	Indian Manipuri	p value
Nasal height(mm)	Male	47.72±3.45 (40.82-58.89)	49.83±3.75 (39.74-58.50)	0.004
	Female	47.10±3.05 (41.50-53.98)	47.90±3.40 (39.34-54.84)	0.219
Nasal width(mm)	Male	37.99 ±1.98 (34.30-44.72)	38.47±2.62 (30.08-45.22)	0.302
	Female	33.45±2.33 (29.29-38.95)	34.90±2.71 (28.62-44.00)	0.005
Protrusion of nasal tip (mm)	Male	16.35±2.22 (10.02-21.46)	14.79±1.93 (9.49-19.32)	0.000
	Female	14.90±1.81 (9.62-19.52)	13.98±1.97 (10.32-18.85)	0.018

Results are shown as range and mean±SDs

Comparison between Bangladeshi and Indian Manipuri was done by unpaired student's "t" test $p<0.05$ was considered as significant.

Table II: Comparison of height, width of nose and protrusion of nasal tip between male and female subjects of both group (n=50 in each group)

Variables	Name of subject	Male	Female	p value
Nasal height(mm)	Bangladeshi	47.72±3.45 (40.82-58.89)	47.10±3.05 (41.50-53.98)	0.346
	Indian Manipuri	49.83±3.75 (39.74-58.50)	47.90±3.40 (39.34-54.84)	0.009
Nasal width(mm)	Bangladeshi	37.99±1.98 (34.30-44.72)	33.45±2.33 (29.29-38.95)	0.000
	Indian Manipuri	38.47±2.62 (30.08-45.22)	34.90±2.71 (28.62-44.00)	0.000
Protrusion of nasal tip (mm)	Bangladeshi	16.35±2.22 (10.02-21.46)	14.90±1.81 (9.62-19.52)	0.001
	Indian Manipuri	14.79±1.93 (9.49-19.32)	13.98±1.97 (10.32-18.85)	0.040

Results are shown as range and mean ± SDs

Comparison between male and female of both groups was done by unpaired student's "t" test $p<0.05$ was considered as significant.

Discussion:

Anthropometric studies play an important role in distinguishing a pure race from the local mingling of races. The nose is widely acceptable as one of the best clue to racial origin. Difference in nose types is significant in categorization between races. Regional and environmental climatic conditions are useful in determining the dimensions of the nose which may vary across different races and environments.

The use of morphological facial features in personal identification still remained inconclusive. Facial identification with nasal morphometry is becoming more significant with the increase in crime rates, terrorist attacks.

Dimensions obtained in the present study about nasal parameters have a great potential to guide clinical decision, relevant in esthetic and reconstructive surgery, forensic investigation as well studying variation in humans.

Nasal height:

In present study, mean nasal height among Indian Manipuri male was significantly higher than Bangladeshi male and it was 49.83 and 47.72 mm respectively. On the other hand, mean nasal height of Indian Manipuri female was higher than Bangladeshi female and that was 47.90 and 47.10 mm respectively but these values did not vary significantly.

When comparison was done between Bangladeshi and Indian Manipuri of both sexes, mean value of nasal height of males was higher than females in both ethnic groups and reached in significant level in case of Manipuri only. Among all groups of present study, highest value of mean nasal height was found among Indian Manipuri male than others.

Nasal height of some different groups of people around the world was found during review of literature during present study by different authors are listed in Table III. It was observed that in case of male, highest value of nasal height among Iranian (62.6 mm) studied by Farkas et al[14] and lowest value among students (37.8 mm) of Uttar Pradesh, India studied by Ray et al[15]. In case of female, this value was highest among Iranian (58.5 mm) studied by Farkas et al[14] and lowest value among students (34.7 mm) of Uttar Pradesh, India studied by Ray et al[15].

Nasal width:

In present study, mean nasal width among Indian Manipuri male was higher than Bangladeshi male and it was 38.47 and 37.99 mm respectively. On the other hand, mean nasal width of Indian Manipuri female was higher than Bangladeshi female and that was 34.90 and 33.45 mm respectively.

When comparison was done between Bangladeshi and Indian Manipuri of both sexes, mean value of nasal width of males was significantly higher than females in both ethnic groups. Among all groups of present study, highest value of mean nasal width was found among Indian Manipuri male than others.

Nasal width of some different groups of people around the world was found during review of literature during present study by different authors are listed in Table III. It was observed that in case of male, highest value of nasal width among Angolan (46.3 mm) studied by Farkas et al[14] and lowest value among students (28.7 mm) of Uttar Pradesh, India studied by Ray et al[15]. In case of female, this value was highest among Angolan (40.8 mm) studied by Farkas et al[14] and lowest value among students (24.9 mm) of Uttar Pradesh, India studied by Ray et al[15].

Table III: Discussion on nasal height and width in different group of population of different part of the world

Author	Study population	No. of population	Nasal height (mm)		Nasal width (mm)	
			Male	Female	Male	Female
Farkas et al[14]	Iranian	60	62.6	58.5	35.3	32.1
Farkas et al[14]	Portuguese	60	59.5	57.8	36.6	31.9
Farkas et al[14]	Turkish	60	58.1	55.2	36.8	32.9
Farkas et al[14]	Japanese	60	56.9	53.3	38.2	37.1
Shinde et al[16]	Adult Indian	150	56.5	54.8	38.3	34.9

Author	Study population	No. of population	Nasal height (mm)		Nasal width (mm)	
			Male	Female	Male	Female
Choudhary and Chowdhary[17]	Jat, Rajasthan, India	100	56.42	-	38.42	-
Farkas et al[14]	Italian	60	56.2	52.1	32.1	29.5
Farkas et al[14]	Slovenian	60	56.2	52	35.9	33.1
Farkas et al[14]	Azerbaijan	60	55.9	52.3	35.7	33.8
Choudhary and Chowdhary[17]	Sindhi, Rajasthan, India	100	55.84	-	39.24	-
Farkas et al[14]	Greek	60	55.5	52.8	35.7	32.4
Staka et al [18]	Kosovo Albanian	204	55.26	52.01	36.90	33.12
Farkas et al[14]	Hungarian	60	55	52.5	37.3	33.5
Farkas et al[14]	Egyptian	60	54.6	47.4	32.4	29.3
Farkas et al[14]	Bulgarian	60	54	52.1	36	33
Farkas et al[14]	Czech	60	54	52.1	36.2	33.8
Shah et al[19]	Bangali, Bangladesh	100	54	-	35	-
Farkas et al[14]	Croatian	60	53.8	50	36.5	32.9
Farkas et al[14]	Singaporean Chinese	60	53.8	51.7	39.2	37.2
Farkas et al[14]	Polish	60	53.7	51.2	35.2	32.6
Farkas et al[14]	Slovak	60	53.5	49.4	33.6	30.6
Farkas et al[14]	North American White	60	53	48.9	34.7	31.4
Farkas et al[14]	Vietnamese	60	52.1	50.4	40.2	39.8
Farkas et al[14]	German	60	52	51.4	34	31
Farkas et al[14]	Afro-American	60	51.9	48.8	44.1	40.1
Farkas et al[14]	Russian	60	51.7	50.4	35.8	33.2
Ngeow and Aljunid[20]	Malay, Malaysia	100	51.6	54.1	41	37.5
Farkas et al[14]	Thai	60	51.5	49.5	40.8	40.2
Farkas et al[14]	Zulu	60	50.2	49.5	42	38
Farkas et al[14]	Angolan	60	49.8	46.6	46.3	40.8
Farkas et al[124]	Tonga	30	49.2	-	44	-
Jain et al[21]	Adult craia,India	300	48.7	46.1	26.2	24.7
Devi et al[22]	Meitei, Manipur,India	100	48.5	-	38.9	-
Chakraboty et al[23]	Bangali, Bangladesh	50	48.46	48.68	33.81	31.79
Shah et al[19]	Santhal, Bangladesh	100	48	-	38	-
Farkas et al[14]	Indian	60	47.2	43.7	37.9	33.8
Ukoha et al[24]	Students, Uli, Nigeria.	500	46.1	43	41.2	36.8
Singh and Purkait[25]	Dangi, India	200	45	43	35	33
Oladipo et al[26]	Yorubas, Nigeria	1000	42.6	44.7	38.3	37.4
Chakraboty et al[23]	Chakma, Bangladesh	50	41.34	40.57	34.70	33.15
Singh and Purkait[25]	Ahirwar, India	177	38	36	32	33
Ray et al[15]	Students, Uttar Pradesh, India	300	37.8	34.7	28.7	24.9
Mostafa et al[27]	Bangladeshi Buddhist Chakma female	100	-	43.2	-	34.8
Present study	Bangladeshi	100	47.72	47.10	37.99	33.45
	Indian Manipuri	100	49.83	47.90	38.47	34.90

Protrusion of nasal tip:

In present study, mean value of protrusion of nasal tip among Bangladeshi male was significantly higher than Indian Manipuri male and it was 16.35 and 14.79 mm respectively. On the other hand, mean value was significantly higher than Indian Manipuri female and that was 14.90 and 13.98 mm respectively.

When comparison was done between Bangladeshi and Indian Manipuri of both sexes, mean value of protrusion of nasal tip of males was significantly higher than females in both ethnic groups. Among all groups of present study, highest value of mean protrusion of nasal tip was found among Bangladeshi male than others.

Protrusion of nasal tip of some different groups of people around the world was found during review of literature during present study by different authors are listed in Table IV. It was observed that in case of male, highest value of protrusion of nasal tip among adult Indian (18.7 mm) studied by Shinde et al[16] and lowest value among Chakma of Bangladesh (14.48 mm) studied by Chakraboty et al[23]. In case of female, this value was highest among adult Indian (18.5 mm) studied by Shinde et al[16] and lowest value among Indian Manipuri (13.98 mm) in present study.

Table IV: Discussion on protrusion of nasal tip in different group of population of different part of the world

Author	Study population	No. of population	Protrusion of nasal tip (mm)	
			Male	Female
Shinde et al[16]	Adult Indian	150	18.7	18.5
Ukoha et al[24]	students, Uli, Nigeria	500	18.6	17.2
Ngeow and Aljunid[20]	Malay, Malaysia	100	18.1	17.5
Chakraboty et al[23]	Bangali, Bangladesh	50	16.77	16.58
Chakraboty et al[23]	Chakma, Bangladesh	50	14.48	14.38
Present study	Bangladeshi	100	16.35	14.90
	Indian Manipuri	100	14.79	13.98

The table is arranged according to the mean value of protrusion of nasal tip of male from different authors are arranged from higher to lower

Conclusion:

Among the nasal measurements, nasal height was significantly higher in Indian Manipuri males and nasal width was significantly higher in Indian Manipuri females. But protrusion of nasal tip was significantly higher in Bangladeshi than Indian Manipuri in both sexes. Again male values were significantly higher than females in both ethnic groups except nasal height in Bangladeshi did not vary significantly.

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Original Article

Gastric Carcinoma: A Comparative Clinico-pathological Study of the Elderly versus the Non-elderly

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Abstract:

Background: To compare the clinico-pathological features, treatments and outcomes of gastric carcinoma (GC) in the elderly (≥65 years) and the non-elderly (<65 years) Bangladeshi patients. **Methods:** This retrospective cohort study included 84 patients with histologically confirmed GC treated at Rangpur Medical College Hospital, Bangladesh between 2015 and 2018. **Results:** Compared to the non-elderly, elderly patients had significantly higher proportion of tumors involving the cardia (p=0.034) and of adenocarcinoma NOS (Not Otherwise Specified) histology (p=0.032) and of low grade histology only in the non metastatic setting (p=0.041). Treatments were largely comparable in the two groups. Response to palliative chemotherapy was achieved in 55.6% of the elderly and 47.3% of the non-elderly patients (p=0.530). Among curative surgery 77.8% in non elderly and 22.2% in elderly respectively was done. **Conclusions:** Compared to the non-elderly, GC in the elderly has similar clinico-pathological characteristics and exhibits comparable outcomes with the same treatment options. Treatments should be tailored to each patient.

Indexing words: Elderly, Gastric carcinoma, Treatment, Curative

Introduction:

Gastric cancer (GC) remains an important burden for public health, particularly in less developed countries[1]. More than 70% of GCs occur in developing countries particularly in Eastern Asia[2]. GC is the 5th most common cancer worldwide and the 3rd leading cause of cancer mortality after lung cancer and liver cancer[2,3]. The incidence rate of gastric cancer rises progressively with age. Approximately 1% of cases occurred between the ages of 20 years and 34 years, whereas 29% occurred between 75 years and 84 years[4]. GC in elderly represents a distinct entity with specific clinical and pathological characteristics and the majority of affected patients belong to this age group[5].

Compared with females, males have a higher risk of both cardia (5-fold) and noncardia gastric cancer (2-fold)[6]. The reasons for such differences are not clear. Environmental or occupational exposures may play a role. Gastric cancer is a multifactorial disease and both environmental and genetic factors have a role in its etiology[7]. The best established risk factors are Helicobacter pylori infection, male sex, a family history of GC and smoking[8,9]. Dietary risk factors are related to diet type and food preservation, such as high intake of salt-preserved foods and smoked food or low intake of fruit and vegetables[10]. The highest rate of stomach cancer was in Magnolia, at 28 cases per 100,000 people[11]. There are 56% of new cases from Eastern Asia, 41% from China and 11% from Japan[12].

Early symptoms include heartburn, upper abdominal pain, nausea and loss of appetite, difficulty in swallowing and blood in the stool[13]. Diagnosis by usually by biopsy done during endoscopy, followed by medical imaging[13]. Treatments may include some combination of surgery, chemotherapy and targeted therapy[13]. Outcomes are often poor with less than 10% 5-year survival rate globally[14]. There is tentative evidence that treating H .pylori decreases the future risk[9].

When treating patients with GCs, factors related to the patient (comorbidities and age), to the tumor (location, histology and stage) and to the treatment (surgical experience, adjuvant treatment), should be considered[15]. Whenever possible, complete resection of the tumor is the standard treatment. Extent of resection (partial or total gastrectomy) is based on tumor location, stage, histology and surgical margins. The extent of regional lymphadenectomy required has

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been a matter of considerable debate. Randomized controlled trials show that extended (D2) lymphadenectomy is safe and able to cure 20% of patients with N2-disease compared with 0% treated with limited D1 dissection[15].

Postoperative decisions about adjuvant chemotherapy can reduce recurrence and mortality and the decision is based on pathologic staging, the extent of surgery[15]. Adjuvant therapies differ in various regions of the world[16].

In metastatic GC, chemotherapy is the mainstay treatment with capecitabine and oxaliplatin being as effective as fluorouracil and cisplatin[17]. Added to chemotherapy in HER-2 positive metastatic GC, trastuzumab significantly prolonged survival[18]. It is not clearly known whether treatments of GCs in elderly Bangladeshi patients (aged 65 years or more) are as tolerable and effective as that in the non-elderly patients.

The aim of this study was to compare whether gastric cancer in elderly Bangladeshi patients has different characteristics from those in non-elderly and to investigate if standard surgical treatment strategy is suitable for this group of patients.

Methods:

This is a retrospective study. Patients with histologically proven gastric cancer presenting to Rangpur Medical College Hospital (RpMCH), Rangpur between the years 2015 and 2018 were included. Data on age, sex, clinical presentation, comorbidities, tumor location, histology, grade and stage, treatment modalities and surgery were extracted from the medical records. All subjects were classified into the following two groups; non-elderly group (<65 yr) and elderly age group (≥65 yr). We mentioned here TNM staging which denotes T1=Involves upto submucosa, T2= Invades muscularis propria T=3 Involves sub-serosa T4= Perforates serosa and invades adjacent organ, N0=No lymph nodes, N1=1-2 regional nodes, N2=3-6 regional nodes, N3=7-15 and more than 15 regional nodes, MO= No distant metastasis, M1=Distant metastasis. To evaluate differences among the two groups performed the chi-square test for categorical variables and ANOVA for continuous variables. Pvalues <0.05 were considered significant. All analyses were done using Statistical Package for the Social Science (SPSS) software program version 16 for Windows (SPPS, Chicago, IL, USA).

Results:

Among 84 cases of GCs, all were histologically confirmed and subtypes. Elderly constituted 22.6% of the cases. The mean age was 54 years (range 21–82 years) with male predominance (Table I). All cases had symptoms related to their disease. Abdominal pain was the commonest presentation followed by vomiting, hematemesis/ melena, dysphagia and abdominal mass/ distension. Comorbidities were infrequently encountered with hypertension and diabetes mellitus being the commonest. The cardia, pylorus and overlapping sites were the most common tumor locations within the stomach.

Table I: Clinical characteristics of 84 patients with gastric carcinoma according to age at diagnosis

	Total N (%)	<65 years N (%)	≥ 65 years N (%)	p
Age	84 (100.0)	65 (77.4)	19 (22.6)	–
Mean ± SD	54.1 ± 12.3	49.3 ± 9.6	70.2 ± 4.6	
Sex				
Male	48 (57.1)	36 (55.4)	12 (63.1)	0.574
Female	36 (42.9)	29 (44.6)	7 (36.9)	
Clinical presentation				
Abdominal pains	38 (45.2)	30 (46.2)	8 (42.1)	
Vomiting	32 (38.1)	27 (41.5)	5 (26.3)	
Hematemesis/melaena	13 (15.5)	7 (10.8)	6 (31.6)	
Dysphagia	10 (11.9)	7 (10.8)	3 (15.8)	–
Mass/distension	8 (9.5)	7 (10.8)	1 (5.2)	
Fatigue/weight loss	5 (5.9)	4 (6.1)	1 (5.2)	
Intestinal obstruction	3 (3.5)	2 (3.1)	1 (5.2)	
Comorbidities				
Yes	12(14.3)	9(13.8)	3(15.8)	0.794
No	72(85.7)	56(86.2)	16(84.2)	
Site				
Cardia	16(19.1)	10(15.4)	6(31.5)	
Fundus, body, curves	18(21.4)	16(24.6)	2(10.5)	0.034
Antrum and pylorus	23(27.3)	19(29.2)	4(21.2)	
Overlap/unspecified	27(32.2)	20(30.8)	7(36.8)	

SD: standard deviation

Adenocarcinoma not otherwise specified (NOS) was the commonest histological subtype (Table II). 52.6% elderly having well differentiated tumors compared with non-elderly having 38%.

Most patients presented at an advanced stage i.e. TNM stage III or IV in 42.9% of cases.

Peritoneal and liver metastases were the commonest sites of metastases, among them liver metastasis were (62%) common via the portal vein rather than the direct peritoneum invasion.

Compared to the non-elderly, elderly patients had significantly higher proportion of tumors involving the cardia (p=0.034), of adenocarcinoma NOS histology (p=0.032) and of low-grade histology only in the non-metastatic setting (p=0.041). Otherwise, there were no significant differences in the clinical/pathological characteristics between the two groups (Tables I and II).

Table II: Pathological characteristics of 84 patients with gastric carcinoma according to age at diagnosis

	Total N (%)	<65 years N (%)	≥65 years N (%)	p
Histologic subtype				
Adenocarcinoma (AC) NOS	40(47.6)	28(43.1)	12(63.2)	
Signet ring AC	26(31.0)	22(33.8)	4(21.1)	
\Mucinous AC	3(3.5)	3(4.6)	1(5.2)	-
Anaplastic carcinoma	12(14.2)	8(12.3)	2(10.5)	
Other carcinomas	3(3.6)	3(4.6)	1(5.2)	
Histology grouping	81	63	19	
Adenocarcinoma (AC) NOS	40(49.4)	28 (44.4)	12(63.1)	0.032
Signet-ring, mucinous, anaplastic	41(50.6)	35 (55.6)	7(36.9)	
Grade	84	64	19	
G1–2	35(41.6)	25 (38.0)	10(52.6)	-
G3–4	49(58.4)	40 (62.0)	9(47.4)	
TNM stage	81	63	18	
I	6(7.4)	5 (7.9)	1(5.6)	
II	18(22.2)	14 (22.2)	4(22.2)	0.041
III	28(34.5)	21 (33.3)	7(38.9)	
IV	29(35.9)	23 (36.5)	6(33.3)	
Site of metastases	29	23	6	
Liver	18(62.1)	15 (65.2)	3(50.0)	
Omental/peritoneal	15(51.7)	12 (52.2)	3(50.0)	
Para-aortic lymp node	7(24.1)	5 (21.7)	2(33.3)	
Lung/mediastinal LN/effusion	4(13.7)	2 (8.7)	1(16.6)	0.876
Bone/bone marrow	2(6.9)	2 (8.7)	0(0)	
Skin	1(3.4)	1 (4.4)	0(0)	
Supraclavicular LN	1(3.4)	1 (4.4)	1(16.6)	
Pelvic LN	1(3.4)	1 (4.4)	1(16.6)	

Surgery and chemotherapy were used in 71.4% and 54.8% patients, respectively, 3.5% patient not received any treatment (Table III). Surgery was of curative with no significant differences between elderly and non-elderly patients.

Curative resection almost same in non elderly 43.1% and elderly 42.1% among them total gastrectomy in case of non elderly 85.7% and elderly 87.5% partial gastrectomy 14.3% & 12.5% respectively. Total gastrectomy was the commonest procedur Chemotherapy was used in 55.8% of patients with almost equal distribution between the adjuvant and palliative settings. There were no significant differences regarding chemotherapy use or response between the elderly and the non-elderly patients (Table III). Chemotherapy took 46(54.8%) patients, 56.9% non elderly and 47.3% elderly. Among 46 patients 24 patients took as adjuvant and 22 patients as palliative. In adjuvant therapy 54.1% were non elderly and 44.4% elderly and in palliative 45.9% were non elderly 55.6% elderly respectively.

Table III: Treatments used in 84 gastric carcinoma patients according to age at diagnosis

	All Years N (%)	Age <65 years N (%)	Age ≥65 years N (%)	p
Treatments	84	65	19	
None	3 (3.5)	2 (2.3)	1 (5.3)	0.316
Surgery	60 (71.4)	46 (70.8)	14 (73.7)	
Chemotherapy	46 (54.8)	37(56.9)	9 (47.4)	
Surgery	84	65	19	
No	24 (28.5)	19 (29.2)	5 (26.3)	0.730
Exploration/palliative	24 (28.5)	18 (27.7)	6 (31.6)	
Curative	36 (42.9)	28 (43.1)	8 (42.1)	
Curative surgical procedure	36	28(77.8%)	8 (22.2%)	
Total gastrectomy	31 (86.3)	24 (86.0)	7 (87.5)	0.100
Partial gastrectomy	5 (13.7)	4 (14.0)	1 (12.5)	
Chemotherapy	84	65	19	
Yes	46 (54.8)	37 (56.9)	9 (47.3)	0.249
No	38 (45.2)	28 (43.1)	10 (52.7)	
Chemotherapy mode	46	37	9	
Adjuvant	24 (51.1)	20 (52.7)	4 (44.4)	0.530
Palliative	22 (48.9)	9 (47.3)	3 (55.6)	

Discussion:

Most GCs affect the elderly patients[5]. Life expectancy of the Bangladeshi is 72.3 years being according to report by the Bangladesh Bureau of Statistics (BBS)-2019.The age at which a person is called elderly is somewhat arbitrary. It is usually set as the age at which one can begin to receive pension benefits. Thus, the age of 65 years is often used. The chronological age of 65 years is used by many developed countries as an acceptable cut-off[19]. Bangladesh, the general retirement age is 59 years. The definition of elderly in clinical trials is more variable and is again arbitrary[19]. In this study, the age of 65 years as a cut-off being 6 years after the current retirement age and also as a modest figure to allow comparisons with other reports and to serve as a baseline for future comparisons.

GC in the elderly has peculiar clinico-pathological characteristics[5,20]. Male predominance is more pronounced in the elderly[5]. This is confirmed in this study where the M: F ratio was 1.71:1 in the elderly compared to 1.24:1 in the non-elderly. This may reflect a more frequent and prolonged exposure of male elderly patients to environmental carcinogens[5].

Lower or distal third tumors were reported to be more common in the elderly (42–63%) than in the non-elderly (31–44%)[5,21]. This may be related to differential impact of risk factors particularly H. pylori in distal tumors and smoking in the proximal ones[22,23]. This is not shown in this study where distal third tumors were lower in the elderly patients (21.2%) than in the non-elderly (29.2%) while the cardia was higher. Similar to this study finding, Hamzaki et al. reported predominance of proximal tumors in the elderly[24]. Difference in definition of the elderly in trials (65+ vs. 70+ s. 75+ years), different patient populations with different risk factors and difference in sample size might explain for the difference. Moreover, almost 32% of tumor locations in this study were either unspecified or overlapping.

Gastric carcinomas in the elderly may principally develop as well-differentiated lesions which may later progress to poorly differentiated carcinomas. In contrast, GCs in the younger age groups mostly emerge as poorly-differentiated tumors from a very early phase[6]. Several studies

have indicated that GCs in elderly patients, irrespectively of tumor stage, are mainly well differentiated[5]. This is confirmed in this study where 52.6% of elderly had G1–2 tumors compared to 38% in the non-elderly.

In elderly GC patients, the predominant well-differentiated adenocarcinoma generally tends to invade blood vessels and generate hematogenous metastases, predominantly to the liver via the portal vein rather than the direct peritoneum invasion[5,21]. This is confirmed in our study wherein liver metastases were more frequently encountered than the peritoneal ones. However, due to small numbers the difference in metastatic sites between elderly and non elderly patients was not statistically significant.

Surgical resection accompanied by dissection of an optimum number of lymph nodes is the only modality that is potentially curative in GCs[25]. Kitamura et al. reported similar resection rates in all three age groups studied: >80 years, 60–79 years and 40–59 years (88% vs. 94% vs. 98%, respectively)[26]. In this study, curative resections were similar in the elderly and non-elderly (42.1% vs. 43.1%). The generally lower resection in our study is related to the inclusion of more patients with IV stage disease that are not candidates for curative resection. Contradicting with us, Hamzaki et al. reported lower resections in the elderly than the non-elderly (52% vs. 75%)[24]. However, the cut-off age used was 60 years and not 65 years as in our study. Similar to Saidi et al. this study reported that the type of curative resection was not statistically different between the elderly and non-elderly[27]. However, the rates of total gastrectomy in this study exceed the partial one and this is almost the reverse of the Saidi et al. Different patient population, tumor location and extent within the stomach as well as the surgical expertise could explain for this variance. Owing to the retrospective nature of this study, we could not adequately assess the extent of lymphadenectomy (D1 vs. D2). In this study, comorbidities were expectedly higher in the elderly patients than in the non-elderly ones.

This study has strengths and limitations. Due to its retrospective nature, it suffered some missing information and we could not adequately address some important points. These included information on risk factors (e.g. H. pylori, diet and smoking, family history and Her-2 testing) and treatments (e.g. the extent of lymphadenectomy and the use of trastuzumab).

In conclusion, GC in Bangladesh is not a common cancer among the Bangladeshi. The mean age is 54 years and 22.6% of the cases are 65 years or more i.e. elderly. Compared to the non-elderly, elderly patients had significantly higher proportion of tumors involving the cardia, of adenocarcinoma NOS histology and of low-grade histology only in the non-metastatic setting. Otherwise, there were no significant differences in the clinical/pathological characteristics between the two groups. Thus, advancing age should not be the sole determinant of a treatment modality. Nevertheless, treatments should be tailored to each patient.

Conflict of interest: None

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Original Article

A Clinical Study on Non-Engaged Head in Primigravid Women at Term Pregnancy

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Abstract:

Background: In the process of labor, engagement of fetal head is a vital event. Engagement has been defined as the stage at which the widest part of the fetal head has passed through the pelvic inlet. The aim of this study was to find out the incidence of non-engagement of fetal head in primigravida at term pregnancy, to find out the different causes of non-engagement of head at the various stages of labor and to see the outcome of labor process. **Methods:** This is a crosssectional observational study undertaken in Department of Obstetrics and Gynecology, Rangpur Medical College Hospital, Rangpur, Bangladesh from July 2006 to December 2006 to see the incidence, different causes of non-engagement of head and outcome of labor in primigravidas who had non-engaged head at the onset of labor. Total 83 primigravid women at labor during the study period were included in the study. Patients with any medical or obstetrical complications were excluded from the study. **Results:** Of the 83 patients in the study group head was engaged in 20 (48%) cases and unengaged in 79.65% cases (X^2=28.928, p=<0.001). Caesarean section was needed in 17.65% of head engaged group and 57.57% of head non-engaged group than head non-engaged group (X^2=24.878, p=0.001). Caesarean section was significantly higher in head non-engaged group. Among the head non-engaged group, in 33.33% cases head was in the occipito-posterior position. Vaginal delivery occurred 82.35% of head engaged group and 42.42% of head non-engaged group. **Conclusion:** Compared with the engaged head, there was increased incidence of caesarean delivery in non-engaged head and occipito-posterior position was an important cause of non-engaged head.

Indexing words: Primigravid, Term pregnancy, Engagement

Introduction:

Human labor is surprisingly hazardous. Evolution ought to favour those mothers who deliver without problems and yet, for those without access to good medical care, the lifetime risk of dying from labor may be 10% or more. Delivery of a healthy baby to a healthy mother – is the simple objective of every pregnancy. Desired outcome of a pregnancy is spontaneous vaginal delviery. The fullest possible understanding of the different aspects of labor is the central to that objective.

In the process of labor, engagement of fetal head is a vital event. Engagement has been defined as the stage at which the widest part of the fetal head has passed through the pelvic inlet. It refers to the descent of the biparital plane of the fetal head to a level below that of the pelvic inlet[1]. The distance between the pelvic inlet and ischial spines is about 5cm and the distance between the biparital plane of unmoulded head to the lowest point of the vertex is 3cm[2]. So when the biparital diameter crosses the pelvic inlet the station, the location of the leading edge of the presenting part within the birth canal, is at or just above or just below the ischial spines. It has been said that in majority of primiparous women engagement occur two weeks before the expected date of delivery[3-4]. Friedman and Sachtleben demonstrated that higher station of the head at the onset of labor were associated with more incidence of prolonged and dysfunctional labor[3]. The incidence of a prolonged latent phase, primary dysfuctional labor and secondary arrest of dilatation all decreased with a lower station at the time of admission to labor and delivery[3]. In an average baby, if the lowest part of the head is at the ischeal spines-o-station, then the widest part of the head must pass through the pelvic inlet[5]. If the head fails to engage in primigravida even at 38 weeks, probable causes are deflexed head placing the larger diameter to engage,

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cephalopelvic disproportion due to contracted pelvis, big head or combination of both, poly hydramnios, poor formation of the lower uterine segment, hydrocephalus, placenta previa, pelvic tumors, high pelvic inclination.[2]

Labor progression also related to station of the fetal presenting part at the time of arrest of descent. The higher the station, the slower and more protracted a course of labor[6]. In USA, number of studies showed that – an unengaged vertex is a significant risk factor for caesarian delivery[7,8,9]. But in a comparative study between Nigerian primiparae and caucasians at the Queen Charlotte's Maternity Hospital showed that an unengaged fetal head in early labor should not by itself be an indication for early delivery by caesarean section[10]. O 'Driscoll reported that engagement of the fetal head after 38 weeks of pregnancy were suspected for cephalo-pelvic disproportion, but when trail of labor was given most of the patient delivered without injury to the mother and fetus. So un-engagement does not always mean cephalo-pelvic disproportion[11]. In Bangladesh, a study showed that non-engaged head nulliparous parturient is a significant risk factor for caesarean delivery secondary to arrest disorder due to occipito-posterior- position[12].

In Bangladesh, the incidence of non-engagement of fetal head at term in primigravid women with cephalic presentation is not known. So the main aim of this study were to find out the incidence of non-engagement of fetal head in primigravida at term pregnancy, to find out the different causes of non-engagement of head at the various stages of labor and to see the outcome of labor process.

Methods:

This crossectional observational study was carried out in the Department of Obstetrics and Gynecology, Rangpur Medical College Hospital, Rangpur during the period from July 2006 to December 2006. This study included 83 primigravid women at term pregnancy in labor admitted at Rangpur Medical College Hospital, Rangpur during this study period. After admission diagnosis was made mostly on the basis of history and clinical examination with minimum laboratory aid. Primigravid women with single fetus and cephalic presentation were included in the study.

Parturient with pre-eclampsia, eclampsia, malpresentation, antipartum hemorrhage, intra uterine growth retardation, severe anemia diabetes mellitus, hypertension or any other obstetrical and medical complications were excluded in this study.

Eligible women were informed about the study and informed consent was taken from all the study subjects. Engagement of the fetal head was assessed by the rule of 5th[6], when 2/5th or less became palpable abdominally, it was labeled as engaged. Labor was managed actively and monitored by close and careful observation. Fetal distress was declared when fetal heart rate was <100 or >180 beats per minute and presence of muconium stained liquor after rupture of membranes either spontaneously or artificially. Labor was augmented with artificial rupture of membrane or oxytocin drip whenever necessary, cesarean section was done when it was indicated.

Maternal outcome was measured in terms of vaginal delivery with or without aid, cesarean section, incidence of post-partum hemorrhage, injury to the birth canal.

Fetal outcome was measured in terms of – Apgar score at 5 minutes, incidence of resuscitation, incidence of admission in neonatal unit and perinatal mortality. Birth weights were recorded immediately after delivery.

All information was recorded in the pre-designed questionnaire and analyzed using computer based software, the Statistical Package for Social Science (SPSS) version 20.0.

Results:

Of 83 patients, 66 (79.52%) patients were unengaged head in labor while in the rest 17 (20.48%) head was found engaged (Table I). Incidence of non-engagement of fetal head was highly significant (p<0.001).

Table I: Incidence of engagement of fetal head (n=83)

Status of engagement	Number	Percentage	X^2	p value
Non-engaged	66	79.52	28.928	<0.001
Engaged	17	20.48		

Table II shows the age distribution of the subjects. It was found that maximum number of patients (55.42%) belong to the age group 21-25 years.

Table II: Age distribution of the patient (n=83)

Age group (in years)	Mean ±SD	No. of patients	Percentage (%)	X^2	p value
16-20	-	31	37.35		
21-25	22.47±4.48	46	55.42	29.518	<0.001
26-30	-	6	7.23		

Table III shows the height distribution of the subjects. It was found that maximum number of patients both in engaged and non-engaged group, height was within 146-155cm.

Table III: Height of the patients in engaged and non-engaged group (n=83)

	Height					
	135-145	146-155	156-165	Mean ±SD	X^2	p value
	No.(%)	No.(%)	No.(%)			
Engaged (n=17)	1(5.88)	14(82.85)	2(11.76)	151.53 ±12.69	1.620	0.445
Non-engaged (n=66)	18(27.27)	42(63.65)	6(9.09)			

Of non-engaged group, vaginal delivery occurred in 42.43% and lower segment caesarean section in 57.58% of cases, vaginal delivery of engaged group occurs in 82.35% and lower segment caesarean section in 17.65% of cases.

Table IV: The mode of delivery in both engaged and non-engaged group (n=83)

Mode of delivery	Engaged (n=17)		Non-engaged (n=66)		X^2	p value
	No.	%	No.	%		
Vaginal delivery	14	83.35	28	42.43	4.667	0.031
With aid	1	-	11	-	8.333	0.008
Without aid	13	-	17	-	0.533	0.465
LUCS	3	17.65	38	57.57	24.878	0.001

Among unengaged group major indication of cesarean section was due to fetal distress (Fig. 1).

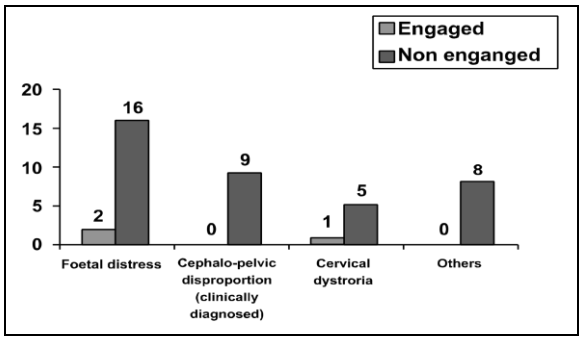


Fig 1: Indication of cesarean section in engaged and non-engaged group

Most common etiological factor was deflexed head, the most important of which was occipitoposterior position. Then next common cephalopelvic disproportion. No etiology was found in 33.33% of cases (Fig. 2). The apparent etiology of non-engagement had statistically highly significant difference (p<0.001).

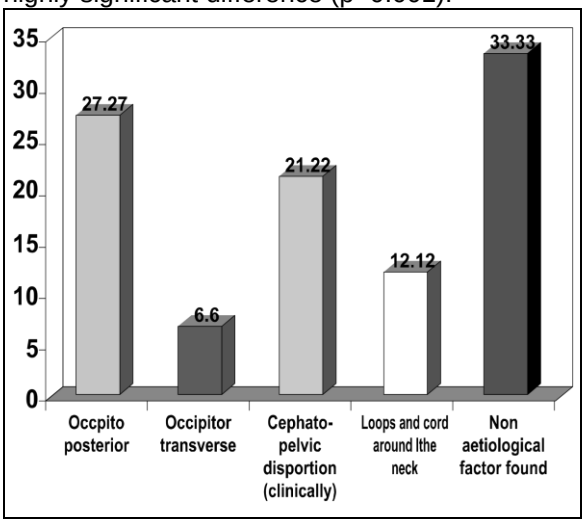


Fig 2: **Apparent etiology of non-engagement**

Among 66 non-engage cases, LUCS was done 38 cases mainly due to deflex head and CPD (clinically diagnosed). Vaginal delivery occurred in 28 cases of which without aid 17 and aid (ventouse) 11 cases. There was no statistically significant variation in mode of delivery regarding apparent etiology (p>0.05) (Table V).

Table V: Outcome of cases according to the apparent etiology of the non-engaged head at onset of labor (n=66).

Apparent Aetiology	No. of Cases	LUCS	Vaginal delivery without aid	Vaginal delivery with aid	X^2	p value
CPD (Clinically diagnosed)	14	12	00	2		
Deflex head						
(i) Occipito posterior position	18	8	6	4	1.333	0.513
(ii) Occipito transverse	4	4	00	00		
Loops of cord around the neck	8	5	2	1	3.250	0.197
Unknown	22	9	9	4	2.273	0.321

Table VI shows that there was a significant relationship between non-engagements and prolong duration of labor.

Table VI: Duration of labor between unengaged and engaged groups who were delivered vaginally.

Patient	Total no. of patient delivery	More than 12 hours		Less than 12 hours		X^2	p value
		No.	%	No.	%		
Engaged	14	6	42.86	8	57.14	2.27	0.120
Non-engaged	28	19	67.86	9	32.14	12.37	0.001

There was no major maternal complication and no maternal death occurred in the present study (Table VII).

Table VII: Maternal outcome (n=83)

Outcome	Engaged	Non-engaged	X^2	P value
PPH	00	00		
Cervical tear	00	02		
Extension of episiotory wound	01	02	3.000	0.223
Vaginal tear	01	00		

In the present study APGAR SCORE of the maximum babies were good except nine. Admission in neonatal unit was needed among two and rest seven babies' APGAR SCORE returned to normal after resuscitation (Table VIII).

Table VIII: Fetal outcome (n=83)

APGAR score at 5 minutes	Engaged	Unegaged
7-10	16	58
4-6	01	08
0-3	00	00

Discussion:

Majority of nulliparous with cephalic presentation the fetal head is engaged 1-2 weeks prior to onset of labor[13]. But our clinical experience contradicts this traditional view. The incidence of non-engagement of fetal head at onset of labor in this series was 79.52%. This is definitely a very high rate. Roshanfekr observed an incidence of non-engagement was (71%)[8]. The rate observed by Murphy et al[9] was 78%. While the rate observed by Khanam and Begum[12] was 58% in Bangladeshi nulliparous women and Ara[14] was 83.48%.

Diegmann et al[15] in USA in their study showed incidence of non-engagement of head was 69%.

Most of the studies of the world, incidence was estimated based on hospital admission rather than on total populations. Therefore, it is not possible to estimate the true incidence.

The difference in incidence is most probably because of the difference in pelvic inclination, racial and ethnic variation. But Briggs[10] in a study of Nigerian primigravida did not find any co-relation between non-engagement and pelvic brim inclination.

In addition, retrospective studies, on pelvic brim inclination between Nigerian primiparae and matched caucasians at the Queen Charlotte's Maternity Hospital showed no statistically significant differences[10].

There was no significant difference in maternal age, height and weight between engaged and non-engaged group of women in this study. This indicates that there were no other factors which could have influenced the rate of engagement in these women.

In present study significant etiological factor like occipito-posterior postion, cephalopelvic disproportion, loops of cord around the neck was found in 66.67% cases and no apparent cause was found in 33.33% cases. In a study of Ambwani[16] showed most common etiological factor was deflexed head, the most important of which was occipito-posterior position. The next common was cephalo-pelvic disproportion.

In Ambwani[16], cases were 30% occipito-posterior position and 20% cephalopelvic disproportion. In the present study 33.33% non-engagement due to occipito-posterior position and cephalo-pelvic disproportion was 21.22% patients with gross degree of disproportion was taken up for caesarean section without a trial of labor but such cases were few. Patients with borderline disproportion were given a trial of labor with continuous intrapartum monitoring. Patient who failed to show progress in labor in spite of good contractions and those who developed fetal distress during labor were subjected to caesarean section. Disproportion was diagnosed clinically either due to contracted pelvis with a normal size baby or a big baby without pelvic contraction.

But the diagnosis of disproportion, except the gross ones, cannot be made unless uterine action is adequate[17].

In this study 42.43% of women with non-engaged fetal head delivered vaginally of them 25.75% delivered without interference by ventouse or forceps and 16.67% delivered aided by ventouse.

Number of studies showed that an unengaged vertex is a significant risk factor for caesarian delivery[7,9] and prolonged duration of labor. In present study rate of caesarian delivery among non-engaged group is 57.57%.

Duration of labor who delivered vaginally, were significantly higher with non-engaged head, Friedman and Sachtleben[3] stated that in primigravidas with floating head latent phase is increased and mean duration of labor was 14.4 hrs. In the present study 67.86% of patient's labor lasted more than 12 hrs. So, there was a significant relationship between non-engagement and prolonged duration of labor. In the present study there was no maternal death and no serious complications except perineal tear and cervical tear. There was no neonatal death. APGAR score of most of the babies was good except nine. Admission in neonatal until were needed among two and rest of the seven babies' APGAR score returned resuscitation.

Conclusion:

In conclusion it can be said that the incidence of active medical and surgical intervention in the cases of primigravidas with floating head at the onset of labor is quite high. A high total duration of labor can also be expected in these cases. If the attitude of watchful expectancy and timely intervention is used in these cases, specially in those cases in which no significant etiological factor is found, a good number of cases can be delivered vaginally.

So, obstetricians should be more optimistic regarding vaginal delivery of primigravidas who present an unengaged head at the onset of labor and aboid hasty decisions towards caesarean delivery

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Original Article

Evaluation of the Management of Extraarticular 2-Part, Displaced Surgical Neck in Humerus Fracture (AO 11A3) by PHILOS Plate

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Abstract:

Background: Philosplates are pre-shaped and pre-contoured locking compression plates, with an aiming device for insertion of the locking screws and positioning of the plate to prevent impingement in displaced surgical neck humerus fracture. The aim of the study was to evaluate treatment outcome of extraarticular 2-part, displaced surgical neck humerus fractures (AO 11A3) in patients by philos plate.

Method: This study was carried out to evaluate the treatment outcome of PHILOS plate fixation for extraarticular 2-part, displaced surgical neck humerus fractures (AO 11A3) in 19 consecutive patients.15 men and 4 women aged 22 to 59 (mean, 39) years underwent PHILOS plate fixation for extraarticular 2-part, displaced surgical neck humerus fractures (AO 11A3). All fractures were closed with no associated injuries. Patients were assessed radiologically and functionally using the Constant shoulder score. Patients were followed up for 5 to 24 (mean, 11) months. **Results:** 18 fractures united. In one case there was infected nonunion with implant failure. The mean Constant shoulder score was 72 (range, 30–89).10 patients had a score exceeding 75, 8 were scored between 50 and 75, and 1 was below 50. **Conclusion:** PHILOS plate fixation provided stable fixation, minimal metal work problems and enabled early range-of-motion exercises to achieve acceptable functional results.

Indexing words: Extraarticular 2-part, Displaced surgical neck humerus fractures, PHILOS (Proximal Humeral Internal locking System).

Introduction:

Proximal humeral fractures account for 4 to 5% of all fractures[1]. Most are stable and minimally displaced and can be treated non-operatively with good results[2]. Displaced and unstable fractures are difficult to manage and have a high morbidity. The treatment goal is to achieve a painless shoulder with full function. Various methods have been used, including Kirschner wire fixation, suture fixation, external fixation, tension band fixation, Rush pin fixation, nailing, and prosthetic replacement with plating[3–6]. Locking plate fixation provides angular and axial stability and minimizes the risk of screw toggle and pullout as well as reduction loss. Divergent or convergent locked screws improve the pull out resistance of the whole construct[7]. Locking plates fail at a greater load than non-locking plates[8]. Philos plates are pre-shaped and pre-contoured locking compression plates, with an aiming device for insertion of the locking screws and positioning of the plate to prevent impingement. In this study evaluation of outcome treatment of extraarticular 2-part, displaced surgical neck humerus fractures (AO 11A3) in 19 consecutive patients was done.

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Methods:

Between January, 2017 and June, 2019, 15 men and 4 women aged 22 to 59 (mean, 39) years underwent Philos plate fixation for extraarticular 2-part, displaced surgical neck humerus fractures (AO 11A3). 16 patients were aged ≤60 years and 3>60 years. The causes of injury were falls (n=10) and road traffic accidents (n=9). All

the fractures were closed with no associated injuries. Patients were placed in a beach-chair position under general anesthesia. A delto-pectoral incision was made. The fractures were reduced and temporarily held with Kirschner wires and sutures. Reduction was confirmed using an image intensifier. A philos plate was applied. Negative suction drainage was applied and wound closed in layers. Postoperatively the arm was placed in a sling. Passive assisted movements were started on day 1, followed by active-assisted exercises after 3 weeks. Patients were assessed radiologically and functionally using the constant shoulder score[9].

Results:

Patients were followed up for 5 to 24 (mean, 11) months. 18 fractures united properly. In one case there was infected nonunion with implant failure. In one case there was superficial wound infection which healed with dressing and antibiotics. In 3 cases shoulder stiffness developed, which were managed by exercise and physiotherapy. The mean Constant shoulder score was 72 (range, 30–89). 10 patients had a score exceeding 75, 8 were scored between 50 and 75, and 1 was below 50.

Discussion:

Non-operative treatment for displaced proximal humeral fractures is still advocated; patient satisfaction is high, especially in those with 2-part fractures[10] or the elderly with low functional demand despite poor reduction on radiographs and low Constant scores[11]. Surgical treatment with minimal soft tissue stripping enables satisfactory reduction, stable fixation, and early mobilization, but the technical difficulties include poor bone stock, minimum subchondral bone in the humeral head, and excessive soft tissue damage. The most common risks include screws cutout and backed out, penetration of the humeral head, loss of reduction, avascular necrosis, and subacromial impingement. Fixation using 2 one-third tubular plates resulted in a complication rate of 12%, including implant loosening, avascular necrosis, subacromial impingement, frozen shoulder, and fracture redisplacement[6]. Tension band wiring and non-operative treatment had similar functional outcomes[12,13]. The former was superior in 4-part fractures and the latter in 3-part fractures[12]. AOT plate fixation also had a high complication rate, including deep infection (4/32), impingement needing plate removal (5/32), and avascular necrosis (4/32)[3]. Clover leaf plate fixation achieved good results, but a hemiarthroplasty was recommended in elderly patients with poor bone stock[14]. Although hemiarthroplasty achieved good pain relief, its functional results were unpredictable and its strength poor[15]. Reverse shoulder prosthesis fixation achieved better functional outcomes[16]. Polarus nail fixation yielded good results and was useful in combined neck and shaft fractures[17], but the complication rate was high (proximal screw loosening [3/20], revision surgery [2/20], and lateral metaphyseal communition predisposing to implant failure)[18]. Revision surgery was required in 17% of patients due to non-union, avascular necrosis, screw migration, or inadequate position of the implant[19]. Locking proximal humeral plate fixation achieved acceptable functional results even in osteoporotic bones, but non-union, implant failure, avascular necrosis of the humeral head, and revision surgery have also been reported[20–23]. Angle stabilising plates were not necessarily associated with good functional outcomes[22]. Caution is needed in cases of medial communition during locking plate fixation[24].

In the present study, Philos plate fixation provided stable fixation with minimal metal work problems and enabled early range-of-motion exercises to achieve acceptable functional results. Nonetheless, the choice of treatment should be based on patient age, functional requirements, bone quality, fracture pattern, and the surgeon's preference.

Conclusion:

PHILOS plate fixation though provided acceptable functional results but in the present study, sample size was small. So, prospective randomised trialsare needed to compare different methods of fixation.

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Original Article

Reasons for Dropout of EPI Vaccination according to Respondents Knowledge in a Selected Urban Community in Rangpur District

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Abstract:

Background: Immunization is an essential component of primary health care & child survival activities throughout the world. For preventing communicable diseases it is one of the most effective ways. Though EPI program is available with free supply of vaccination at hospital health centers & community level, the utilization of these facilities by parents is unsatisfactory may be due to lack of proper knowledge on immunization. **Objective:** To find out the reasons for dropout of EPI Vaccination in a selected urban area on the basis of knowledge about vaccination. **Methods:** It was a cluster survey. The sample size was 210 and estimated by the EPI cluster sampling technique. From each cluster 7 mothers were included. **Results:** It was observed that 100% percent of the respondent with dropout of vaccination had no knowledge on need for vaccination where as it was32.2%had correct knowledge with dropout of vaccination. Regarding the age at completion of vaccination, mother with drop out of vaccine had no (89.9%) or partial knowledge (31.4%) compared with correct knowledge (4.8%).Without drop out of vaccination which had 95.2% had full knowledge about need for vaccination. Regarding the frequency of taken to the vaccination center, the drop out mother had poor knowledge (88.9%) compared with correct knowledge (6.5%).Regarding the number of BCG vaccine, it was evident that cent percent of drop out mother had no knowledge about the number of BCG vaccine whereas 30.8% drop out had correct knowledge about number of BCG vaccine. Regarding the number of DPT vaccine, 92.6% drop out had no knowledge on number of DPT vaccine, only 7.0% drop out occur in mother had correct knowledge on number of DPT vaccine. Regarding the number of OPV vaccine, mother with no knowledge on number of OPV vaccine, the drop out was cent percent, whereas the mother with full knowledge about number of OPV vaccine completely vaccinates their infants. Regarding the age at vaccination of BCG and measles, mother with no knowledge, cent percent dropped out from vaccine. Regarding the knowledge of number of immunizable disease, no statistically significant difference was found between mother with drop out of vaccine and completely vaccinate their infants ($p>0.05$) although the mother with completed vaccine had better knowledge than the dropout mother. Mother with dropout of immunization had poor knowledge about immunization than the mother with who completed immunization and the difference was statistically significant ($p<0.01$) indicating lack of awareness on immunization among the dropout mother. **Conclusions:** The study findings suggested that Mothers motivation with proper knowledge on EPI vaccination will improve coverage & reduce future dropout. Effective supervision & further strengthening of the health workers should ensure.

Indexing wards: Dropout, EPI, Respondents knowledge, Selected Urban Community

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Introduction:

Universal child immunization is the cornerstone of the primary health care strategy adopted by UNICE[1]. It is essential component for child survival activities in the world. Bangladesh started its EPI in the country 7th April 1979 with the objectives to reduce the morbidity, mortality and disability. The expanded program on immunization (EPI) is an important strategy in

achieving the international goal of health for all. For the developing countries these six diseases are most common killer diseases and the major public health problem in Bangladesh[2].

The world continues to under use the most cost-effective public health intervention of all immunization. It is unacceptable that at least 2million children still die each year from diseases for which vaccines are available at low cost. Immunization has been responsible for most dramatic changes in last few decades[3]. Vaccine has prevented death, diseases and disablement among hundreds of millions of children. Despite the success children are still slipping the safety net. These are frequently pockets of low coverage as well as high dropout, especially among the urban poor, where frequent contact with each other and easily transmit the disease. During national immunization in 1997, supplemental OPV was provided to almost two-thirds of the world's children under five that is to more than 400million children. So we have to careful about high dropout. To monitor progress towards eradication, establishing and improving surveillance for acute flaccid paralysis has now urgent prioriry[4].

Children fully immunized before their first days, which is one of the targets of immunization program, were 64%,49%,and 47% in Mymenshing, Madaripur and Jamalpur districts respectively. In Mymenshing and Madaripur information gaps were found as the main causes of immunization failure, of which unaware of need for vaccination or need to return for further doses and fear for side effect reaction dominated. At Jamalpur the picture was different where obstacles were the main causes for failure as well as poor knowledge of the parents[5].

There can be no doubt that EPI diseases are commonly occurring in Bangladesh and at rates much greater than currently reported. Although the routine EPI program has had extraordinary success in reaching 95% of all Bangladeshi children with one dose of vaccine, the coverage among children by their first birth day remains low as determined from annual coverage evaluation survey: the year2002 coverage evaluation survey found that only 70% have received 3 valid doses of OPV or DPT, only 65% have received a valid dose of measles vaccine and only 56% are fully immunized against all 6 EPI diseases. Given a birth cohort of 3-4 million children annually, these coverage data suggest that very large numbers of young children remain susceptible and are attacked by any or all of the 6 EPI diseases every year[6].

In Bangladesh socio political support has been a critical success factor in EPI achievement. Such support will be absolutely necessary in the years ahead so that Bangladesh can achieve the goals of elimination of neonatal tetanus, reduction of measles as well as eradication of poliomyelitis.

Methods:

This study was a cluster survey. This study was carried conducted at different wards in Rangpur municipality and population was the mothers having children of ages ranging from 12-23 months with history of EPI vaccination within one year age. The sample size estimated by the EPI cluster sampling technique and total simple size were 210.This study was carried out during the period of months from March2003 to June 2003.

A structural questionnaire and observational checklist were used for data collection through face to face interview and observation. The Percentage and other statistical calculations and analysis were done by using software SPSS version 11.

Results:

It was observed that respondents were reportedly very good response in case of need for vaccination (96.2%), no of BCG vaccine (94.3%), Age at BCG vaccine (80.0%). On the contrary, the respondents had average knowledge in terms of frequency of taken vaccination center (65.7%),No of DPT Vaccine (67.6%), No of OPV Vaccine (62.9%),Age at measles (66.2%). In this study an attempt was made to assess the knowledge on different type of immunization. To quantify the knowledge an arbitrarily score was given for each option such as no knowledge scored 0, partial knowledge scored 1 and full knowledge scored 2 and in case two level for each question correct knowledge 1 and no knowledge scored 0 the full level of knowledge was scored from 0-14 Afterwards it was weighted into 1.i.e. on other way, it could be said, those who scored 14 will

be weighted as 1 and those who had no response or incorrect response will get 0 score. So, final full level of knowledge was ranging from 0-1. The mean weighted knowledge was 0.74±0.2 ranging from 0.14 to 1.0. Arbitrarily, up to 0.5 score categorized as poor and above 0.5 score categorized as good knowledge.

It was observed that 100% percent of the respondent with dropout of vaccination had no knowledge on need for vaccination where as it was(32.2%)had correct knowledge with dropout of vaccination and the difference was statistically significant (p<0.01)indicating mother with dropout of vaccination were not aware about need for vaccination (Table I).

Table I: Distribution of respondents by drop out of immunization and knowledge on need for vaccination

Need for vaccination	Drop out		Total
	Yes	No	
No knowledge	8(100.0)	0(0.0)	8(100.0)
Correct knowledge	65(32.2)	137(67.8)	202(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 15.608, df = 1, p value = 0.001

Regarding the age at completion of vaccination, mother with drop out of vaccine had no (89.9%) or partial knowledge (31.4%) compared with correct knowledge (4.8%).Without drop out of vaccination which had 95.2% had full knowledge about need for vaccination and the difference was statistically significant (p<0.01) indicating mother without drop out of vaccination were fully aware about the need for vaccination (Table II).

Table II: Distribution of respondents by drop out of immunization and knowledge on age at completion of vaccination

Age at completion of vaccination	Drop out		Total
	Yes	No	
No	53(89.8)	6(10.2)	59(100.0)
Partial	15(31.9)	32(68.1)	47(100.0)
Full	5(4.8)	99(95.2)	104(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 120.212, df = 2, p value = 0.001

Regarding the frequency of taken to the vaccination center, the drop out mother had poor knowledge (88.9%) compared with correct knowledge (6.5%) and the difference was statistically significant (p<0.01) indicating drop out mother had poor knowledge on how many times their infants to be taken to vaccination centre (Table III).

Table III: Distribution of respondents by drop out of immunization and knowledge on frequency of taken vaccination center

Frequency of taken vaccination	Drop out		Total
	Yes	No	
No knowledge	64(88.9)	8(11.1)	72(100.0)
Correct knowledge	9(6.5)	129(93.5)	138(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 141.545, df = 1, p value = 0.001

Regarding the number of BCG vaccine, it was evident that 100% percent of drop out mother had no knowledge about the number of BCG vaccine whereas 30.8% had correct knowledge about number of BCG vaccine and the difference was statistically significant (p<0.01) (Table IV).

Table IV: Distribution of respondents by drop out of immunization and knowledge on number of BCG vaccine

No. of BCG vaccine	Drop out		Total
	Yes	No	
No knowledge	12(100.0)	0(0.0)	12(100.0)
Correct knowledge	61(30.8)	137(69.2)	198(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 23.885,df = 1, p value = 0.001

It was revealed that among the mother with drop out of vaccination, 92.6% had no knowledge on number of DPT vaccine, only 7.0% mother had correct knowledge on number of DPT vaccine whereas among the mother without drop out only 7.4% had on knowledge but 93.0% had correct knowledge on number of DPT vaccine and the difference was statistically significant (p<0.01) (Table V).

Table V: Distribution of respondents by drop out of immunization and knowledge on number of DPT vaccine

No. of DPT	Drop out		Total
	Yes	No	
No knowledge	63(92.6)	5(7.4)	68(100.0)
Correct knowledge	10(7.0)	132(93.0)	142(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

X^2 = 148.583, df = 1, p value = 0.001

Regarding the number of OPV vaccine, mother with no knowledge on number of OPV vaccine, the drop out was cent percent, i.e, no mother of drop out of vaccine had full knowledge about number of OPV vaccine, whereas the mother with full knowledge about number of OPV vaccine completely vaccinate their infants and the difference was statistically significant (p<0.01) indicating mother with drop out of vaccine had poor knowledge about number of OPV vaccine (Table VI).

Table VI: Distribution of respondents by drop out of immunization and knowledge on number of OPV vaccine

No. of OPV	Drop out		Total
	Yes	No	
No	43(100.0)	0(0.0)	43(100.0)
Partial	30(85.7)	5(14.3)	35(100.0)
Full	0(0.0)	132(100.0)	132(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 191.102, df = 2, p value = 0.001

Regarding the age at vaccination of BCG, mother with no knowledge, cent percent dropped out from vaccine and less likely dropped from with partial and full knowledge on age at immunization, whereas the mother with completion of vaccine 74.4% had full knowledge about the age at BCG vaccine and the difference was statistically significant (p<0.01) (Table VII).

Table VII: Distribution of respondents by drop out of immunization and knowledge on age at BCG vaccine

Age at BCG	Drop out		Total
	Yes	No	
No	10(100.0)	0(0.0)	10(100.0)
Partial	20(62.5)	12(37.5)	32(100.0)
Full	43(25.6)	125(74.4)	168(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 35.849, df = 2, p value = 0.001

A statistically significant difference was found in terms of age measles vaccine and drop out of vaccination (p<0.01) indicating mother with drop out of vaccination had poor or no knowledge about the age at measles vaccine than the mother with completion of vaccine who had full knowledge about age at measles vaccine (Table VIII).

Table VIII: Distribution of respondents by drop out of immunization and knowledge on age at measles vaccine

Age atmeaslesvaccine	Drop out		Total
	Yes	No	
No	15(100.0)	0(0.0)	15(100.0)
Partial	48(85.7)	8(14.3)	56(100.0)
Full	10(7.2)	129(92.8)	139(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2= 138.840, df = 2, p value = 0.001

Regarding the number of immunizable disease, no statistically significant difference was found between mother with drop out of vaccine and completely vaccinate their infants (p>0.05) although the mother with completed vaccine had better knowledge than the drop out mother (Table IX).

Table IX: Distribution of respondents by drop out of immunization and knowledge on number of immunizable disease

No of immunizable disease	Drop out		Total
	Yes	No	
Partial	63(34.8)	118(65.2)	181(100.0)
Full	10(34.5)	19(65.5)	29(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 0.001, df = 1, p value = 0.973

Revealed that mother with drop out of immunization had poor knowledge about immunization than the mother with who completed immunization and the difference was statistically significant (p<0.01) indicating lack of awareness on immunization among the drop out mother (Table X).

Table X: Distribution of respondents by level of knowledge on immunization and dropout

Drop out of immunization	Level of knowledge		Total
	Poor	Good	
Yes	63(86.3)	10(13.7)	73(100.0)
No	0(0.0)	137(100.0)	137(100.0)
Total	63(30.0)	147(70.0)	210(100.0)

χ^2= 168.904,df = 1, p value = 0.001

Regarding the reasons for drop of vaccination, highest percentage of respondents reportedly mention 'Lack of awareness of next dose' 41(56.2%) followed by 'Worried about side effects' 15(20.5%), 'Illness of child' 13(17.8%), 'No knowledge of place and time of vaccination' 6(8.2%)etc.

Discussion:

In this study, the mothers with poor knowledge were a bit young than the mothers with good knowledge. Working mothers had good knowledge on immunization than the housewife. Illiterate mothers had poor knowledge on immunization compared with literate mothers. Mothers, who had illiterate husband, had poor level of knowledge on immunization in comparison with mother, who had literate husband. Mothers of low-income family had poor level of knowledge on immunization. Mothers of large family size had good level of knowledge on immunization than the mothers of small family size. Mothers with poor level of knowledge on immunization had dropout of immunization than the mothers with good knowledge on immunization.

With regard to the presence of BCG scar among dropout, 97.26% of the children had BCG scar over the left upper arm and 2.74% had no scar, though it was found in the card and history that the children were vaccinated with BCG. From this finding there is doubt about successful vaccination against tuberculosis among the children having no scar. This finding could not be evaluated with other findings due to non-available of information.

In this study, regarding dropout of vaccination, maximum dropout was observed in DPTI-measles was 24.8% and DPT_1-DPT_3 was 19.5%. Dropout of DPT_2 and OPV_2 were 10%. Regarding high dropout of measles and OPV_4 it may be revealed that this was due to lack of communication, long interval from the DPT_3/OPV_3 dose and reduced motivation stimuli.

National coverage evaluation survey, Bangladesh done by DGHS in 1997: Dropout rate of DPT_1-DPT_3 were 30% and DPT_1-measles 30% in Dhaka Division. DPT_1-DPT_3 9% and DPT_1- measles 15% in Khulna Division; DPT_1-DPT_3 12% and DPT_1- measles 18% in urban area; DPT_1-DPT_3 12% and DPT_1- measles 14% in Dhaka City Corporation. Reasons for failure of vaccination were lack of information (mothers too busy), child illness, lack of knowledge that further doses were needed, place and time of immunization unknown, vaccinator absent, vaccine was not available[7].

National level of dropout rates in the year 2000 survey was higher compared to the 1998 and 1999 surveys. The DPT_1-DPT_3 was 14.6% in 2000 compared to 12.5% in 1999, and the DPTI-measles dropout rate was 24.9% vs 21.2%[8].

In this study, regarding reasons for dropout, the major reasons for dropout were lack of awareness for further (next dose) immunization schedule (56.2%), worried about side effects (20.5%), illness of child (17.8%), no knowledge of place and time of vaccination (8.2%), sickness history at the time of vaccination of mother (4.1%), mothers were too busy at the time of vaccination (4.1%). Other reasons for dropout were place of immunization too far (2.7%), long waiting time (2.7%), inconvenient time (2.7%), absent of vaccinator at time of vaccination (1.4%).

In this study conducted by Khanom[9] main reasons identified for dropout was lack of knowledge about importance of vaccination and it was 27.08%. The other major reasons for dropout were due to fear of side effect 25%, personal business 20.83%, and ignorance about vaccine 16.66%. In the study conducted by Hossain[10], the major reasons for dropout was unawareness for need further immunization schedule (25%), next major cause was due to illness of child (21.9%). So the reasons for dropout of vaccination in this study found to be similar to the present study. In another study, barriers to immunization were difficulties in traveling away from home, opposition from family member, long waiting time, inconvenient hours of clinic operation, lack of information and earlier experiences with side-effects following immunization[11].

In this study statistically significant difference was also observed between dropout of immunization and level of knowledge in terms of need of vaccination, age at completion of vaccination, frequency of taking the child to vaccination center, no of BCG, OPV and DPT vaccine, age at BCG, measles vaccine. Statistically highly significant difference was also observed between level of knowledge and dropout of immunization.

Conclusion:

In this study, regarding reasons for dropout, the major for dropout were poor knowledge on immunization schedule, worried about side effects, illness of child and no knowledge of place and time of vaccination. The other reasons were sickness history at the time of vaccination of mothers; mothers were too busy at the time of vaccination, place of immunization too far, long waiting time, inconvenient time and absence of vaccinator at time of vaccination. Lastly it was concluded that improvement of knowledge on immunization of the people should be strengthened to increase EPI coverage as well as to reduce dropout. Awareness & motivation of mothers about immunization should be improved. Further in depth studies are needed to determine the actual reasons for dropout cases.

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Original Article

Socio-Demographic Status of Chronic Kidney Disease in Adult Rural Population

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Abstract:

Background: Chronic kidney disease (CKD) is a common disorder requiring a public health surveillance strategy to identify those at a risk of progression to End Stage Renal Disease (ESRD). To find out the association of various demographic and socioeconomic factors with CKD in rural area this study was done on the background that CKD is a major public health problem worldwide and a significant cause of morbidity and mortality. **Methods:** This cross-sectional study was carried out in Nephrology department, Bangabandhu Seikh Mujib Medical University and Kidney Foundation. The samples were collected from rural areas of Savar, Dhaka. A multistage sampling following simple random sampling procedure was done to choose the study area and a total 1265 adult population ranging from 15-65 years of both sexes were studied. **Results:** The study revealed 60.1% participants were young and middle aged (15-40 years). The mean age was 35.57 $\pm$ 12.98 years. The majority of the participants were female (63%) and married (85%). Regarding occupation housewives were 57.7%, farmer 14.8%, small businessman 5.5%, serviceholders 6.9%, day-labor 4.9%, student 8.1%, and rest 2.1% were unemployed. Multisticks test for urine demonstrated a total 76(6.0%) participants were proteinuric and among this 2.5% had isolated proteinuria. Proteinuria and MDRD equation depicted 238 (18.8%) were having CKD, on the other hand C-G equation revealed 226 (17.9%) having CKD. Results from both equations are not significantly different. Increased age (>40 years), females and housewives were more prone to develop CKD. **Conclusion:** The survey data revealed that CKD is not less common (18%) in the rural population. A similar survey conducted recently in the urban disadvantageous population also demonstrated a significant percentage of CKD. So to prevent or slow the progression of CKD, early detection and therapeutic intervention is the best way. So, a nationwide screening programme is necessary to develop awareness of entire population, to find exact prevalence of CKD and its associated risk factors. As a result a cost effective preventive strategy could be adopted.

Indexing words: CKD, Rural population, Sociodemographic status

Introduction:

The prevalence of chronic kidney disease (CKD) has increased significantly over the past decade, emerging as an epidemic proportion specially in the disadvantageous group of population throughout the world resulting in the greater utilization of related health care services. By 2001, more than 1 million patients were reported worldwide to receive dialysis treatment alone, with the numbers growing at an annual global average rate of 7%[1,2]. CKD and the development of end stage renal disease (ESRD) are particularly common in the minority population in the USA, that is, African American, Hispanic, Asian American and native[3,4] who are socioeconomically disadvantageous and have limited access to health care[5]. Renal disease is also increasing, with an age-adjusted incidence of treated ESRD in Australian aboriginals approximately 20 times that of non aboriginal people and doubling every 3 to 4 years[6]. In Sweden, low socioeconomic status related to occupational and educational level is associated with increased risk of chronic renal failure[7]. The prevalence of CKD in Asia is equivalent to or higher than in Western countries causing the alarming socioeconomic burden. A survey in the community level has shown that about the majority of the CKD

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patients are younger in age which is the most productive age of life. Disadvantageous populations are socioeconomically unprivileged having limited access to health care and low socioeconomic status related to occupational and educational level. But this unexpected presentation with end stage kidney disease-very little can be offered except dialysis which also beyond the ability due to poverty. As a result these patients are becoming burden for themselves and for the whole family. In most of the cases the affected family bears the financial burden years after years even after the death of the patient. Numerous studies have suggested that socioeconomic disparities exist in the prevention and management of disease in general[8,9,10]. So, proper intervention in early stage of CKD would slow the progression and reduce the rate of ESRD.As there is no previous exact data among Bangladeshi rural population focusing on sociodemographic profile of patients with CKD, this study was aimed at to find out the socio-demographic status of Chronic Kidney Disease (CKD) in adult rural population.

Methods:

This was a cross sectional study carried out in Nephrology department, Bangabandhu Seikh Mujib Medical University and Kidney Foundation from July 2003 to June 2005. The study area was selected named Bongaon Union, a rural area of Savar thana 30 k.m. away from centre of Dhaka city. A total fifteen thousand population of both sex, age between 15 and 65 years were screened for this study. Persons having fever at the time of screening, recent history of fluid loss such as diarrhea, vomiting, trauma, and pregnant women were excluded from the study. A total of twelve hundred sixty five populations were included bya multistaged clustered sampling design by following simple random sampling procedure who met the inclusion criteria. Age, sex, occupation and marital status were noted. Kidney function was stratified according to current national kidney foundation (NKF) guidelines on the evaluation, classification and stratification of chronic kidney disease[11].

Staging of CKD as based on estimation of renal function by GFR. GFR was calculated from serum creatinine by Cockcroft-Gault and MDRD equation[12].

Data were analyzed through SPSS program. Continuous data were presented as mean and standard deviation from the mean. Chi-square, Fishers exact test, Students t- test and Spearman correlation test was used for statistical analysis. Results were presented in tabulated form, charts and diagrams along with statistical interpretation**.**

Results:

The findings derived from analysis of the collected data are furnished below:

Distribution of CKD:

Comparison was made of the distribution of CKD between Cockcroft-Gault and MDRD equations for detecting CKD. The proportion of CKD detected by Cockcroft and MDRD equations were 17.9% and 18.8% respectively and no significant difference was observed between two equations in terms of CKD detection ($p > 0.05$)[13].

Age distribution:

Out of 1265 participants, most was between 20 – 40 years of age (50%). The mean age was (35.57 ± 12.98) years and the lowest and highest ages were 15 and 65 years respectively.

Sex distribution:

Sex distribution shows that 63% of the participants were female and 37% male having a male female ratio of roughly 1:2.

Sociodemographic characteristics:

The cardinal sociodemographic features of the participants are depicted in Fig 1. More than 60% of the participants were below 40 years of age, 63% were female, 85% married and 57.7% housewives.

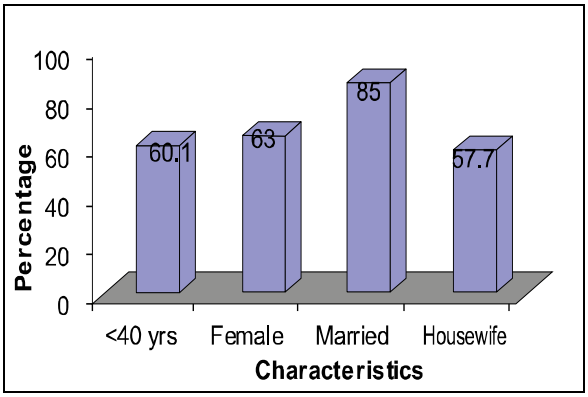


Fig. 1: Dominant sociodemographic characteristics (n=1265)

Occupation:
Housewives formed the main bulk (57.7%) of the participants followed by farmer 14.9% students 8.1%, service-holder 6.9%, business 5.5%, day labor 4.9% and unemployed 2.1% (Table I).

Table I: Distribution of participants by their occupation (n = 1265)

Occupation	No	%
Housewife	730	57.7
Farming	188	14.9
Service	87	6.9
Business	69	5.5
Day-labor	61	4.9
Student	103	8.1
Unemployed	27	2.1

Marital status:
Distribution of participants shows that 85% of the participants were married and the rest (15%) unmarried (Fig. 2).

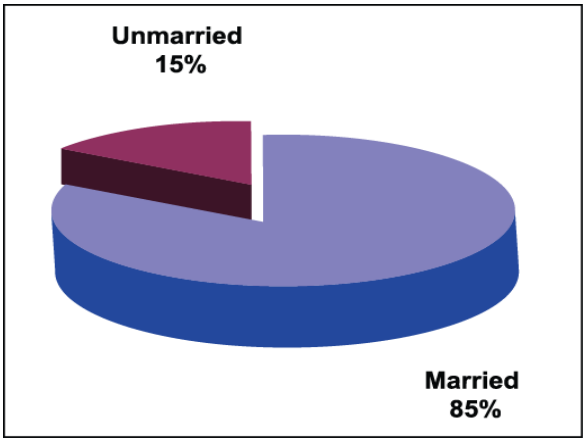


Fig. 2: Distribution of participants by marital status (n = 1265)

Correlation between age and corrected Ccr:
The result of the study shows that as age increases corrected Ccr gradually decreases although the decrease does not follow a steady pattern. Line graph depicts that at the age 15 years corrected Ccr was 86.7 mg/dl which ultimately dropped to 48.5 mg/dl at the age of 65 years suggesting that an inverse relationship exists between the two variables (r = -0.60, p < 0.001) (Fig. 3).

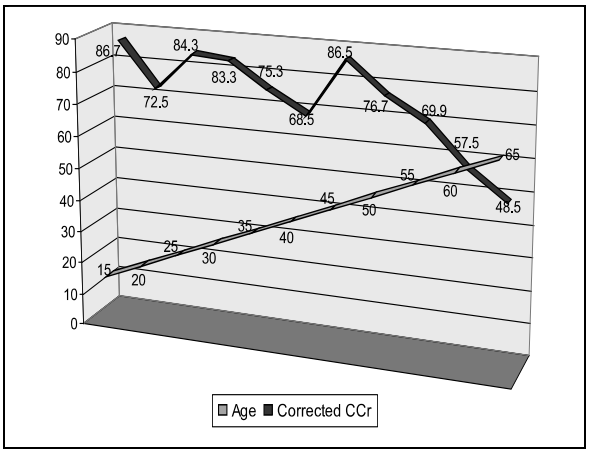
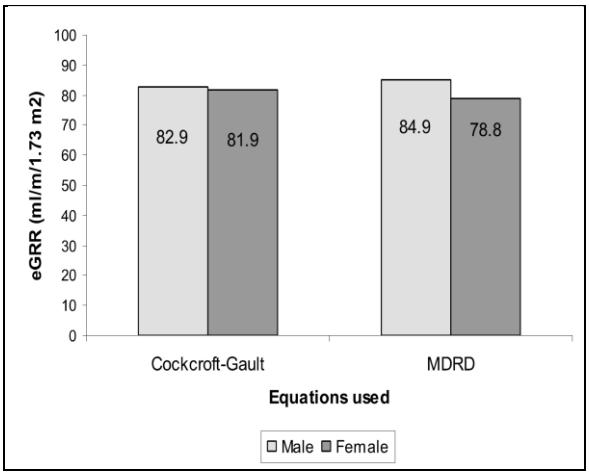


Fig. 3: Correlation between age and corrected Ccr Corrected Ccr (eGFR) between equations.

The mean corrected Ccr and mean eGFR by Cockcroft-Gault and MDRD equation respectively relative to sex. The corrected CCr does not vary widely between two equations (Fig. 4).

Fig. 4: Comparison of corrected Ccr between equations



Sex-wise level of serum creatinine:
Table II compares the level of serumcreatinine with respect to sex. The mean serum creatinine in male group was found to be siginificantly higher (1.13±0.58 mg/dl) compared to that of their female counterpart (0.94 ± 0.21 mg/dl) (p< 0.001).

Table II: Comparison of serum creatinine between male and female

Sex*	N	Serum creatinine (mg/dl) (Mean ± SD)	p-value
Male	467	1.13 ± 0.58	< 0.001
Female	798	0.94 ± 0.21	

***** Data were analysed using **Student's t-Test.**

Raised serum creatinine:
Fig. 5 demonstrates that 9.9% of the males had serum creatinine >1.4 mg/dl while 6.3% of females had serum creatinine >1.3 mg/dl.

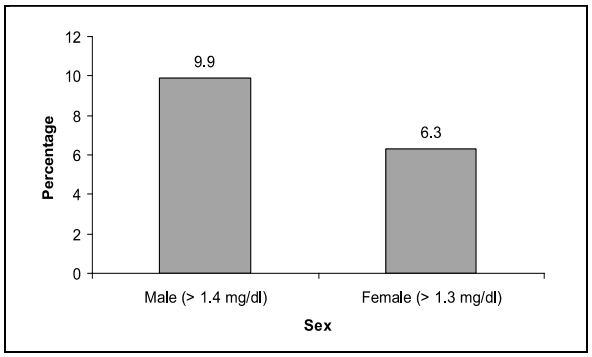


Fig. 5: Raised serum creatinine in male and female

CKD among participants with normal serum creatinine:
Out of 421 males and 748 females with normal serum creatinine, 51(12.1%) and 94(12.6%) respectively were detected as having CKD by prediction equation (Fig. 6 & 7).

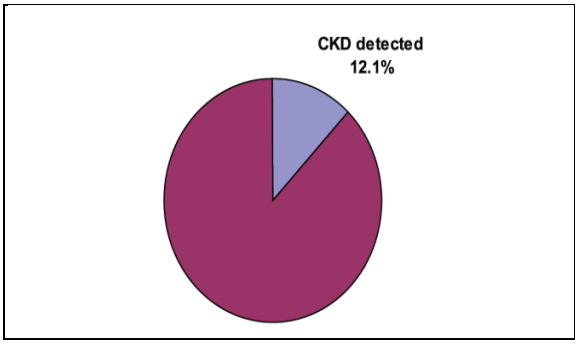


Fig. 6: Normal serum creatinine with CKD in male (n = 421)

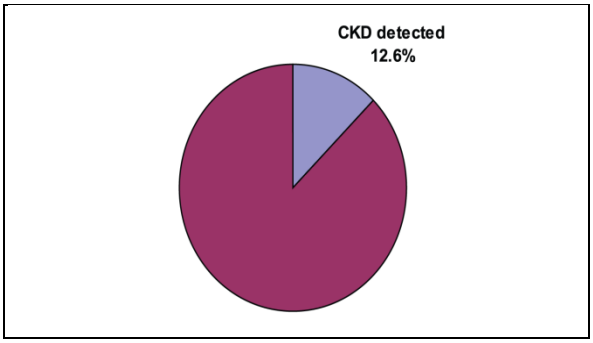


Fig. 7: Normal serum creatinine with CKD in female (n = 748)

Association of CKD (C-G) with sociodemographic characteristics:
Table III compares the sociodemogrphic features between CKD and normal population. The middle aged and elderly (age ≥ 40 yrs) were found to be significantly prone to develop CKD than the young and early middle aged group (< 40 yrs) (p < 0.001). However, The CKD population was not found to be associated with sex and occupation (p > 0.05).

Table III: Association of CKD (C-G) with sociodemographic characteristics

Sociodemographic characteristics	Group		χ^2	*p-values
	CKD (n = 226)	Normal (n = 1039)		
Age (yrs)				
≤40 (young & early middle aged)	75(33.2)*	806(77.6)	173	<0.001
>40 (middle aged & elderly)	151(66.8)	233(22.4)		
Sex				
Male	85(37.6)	382(36.8)		
Female	141(62.4)	657(63.2)	0.057	0.812
Occupation				
House-wives	134(59.3)	596(57.4)		
Farmers & others	92(40.7)	443(42.6)	0.283	0.595

* Data were analysed using **Chi-squared (χ^2) Test** and **df = 1** in each case**.**

Association of CKD (MDRD) with sociodemographic features:
Table IV presents association of CKD (MDRD) with sociodemographic variables. Middle aged and elderly, females and housewives were found to be more prone to be associated with CKD (p < 0.001, p < 0.05 and and p < 0.05 respectively).

Table IV: Association of CKD (MDRD) with sociodemographic features

Sociodemographic characteristics	Group		χ^2	*p-values
	CKD (n = 238)	Normal (n = 1027)		
Age (yrs)				
≤ 40 (young & early middle aged)	113(47.5)*	768(74.8)	68.12	<0.001
> 40 (middle aged & elderly)	125(52.5)	259(25.2)		
Sex				
Male	74(31.1)	393(38.3)	**4.27**	0.039
Female	164(68.9)	634(61.7)		
Occupation				
House-wives	155(65.1)	575(56.0)	6.61	0.010
Farmers & others	83(34.9)	452(44.0)		

* Data were analysed using **Chi-squared (χ^2) Test** and **df = 1** in each case**.**

Sociodemographic factors between CKD (C-G) and CKD (MDRD)

The prevalence of risk factors of CKD are almost identical whether CKD (C-G) or CKD (MDRD) equations are used for staging of CKD (p > 0.05) (Table V).

Table V: Sociodemographic factors between CKD (C-G) & CKD (MDRD)

Sociodemographic variables	Group		χ^2	*p-values
	CKD(C-G) (n = 226)	CKD(MDRD) (n = 238)		
Middle aged & elderly	66.8%	52.5%	3.49	0.061
Sex (female)	62.4%	68.9%	0.80	0.372
Occupation (house-wives)	59.3%	65.1%	0.53	0.466

*Data were analysed using **Chi-squared (χ^2) Test** and **df = 1** in each case**.**

Discussions:

The present study was conducted among adults in rural population of Bangladesh to find out the association of CKD with sociodemographic factors. The rural population differs from other common people of Bangladesh in terms of income, educational level and receiving health care facilities. Chronic illness in a family member invariably affects all the members within the family. Physical changes in the patients' financial strain of sustaining treatment and the fear of the future of the patient and the disruption of the family structure are the major causes of psychological stress[14].

In Iceland adults, the crude prevalence of stage 3 to 5 calculated by MDRD equation was 3.7% for males and 10.9% for females and prevalence of CKD was about 7% for males and 12.5% for females[15].

In AusDiab kidney study the prevalence of GFR < 60ml/min/1.73m^2 in case of male was 9.3% and in female 13.0% with the use of Cockcroft-Gault formula. Both the study revealed female preponderance of CKD when criteria 2 of NKF-K/DOQI definition are considered. But in the present study we did not find significant difference of CKD prevalence in male or female when C-G was used (p=0.812) but female prepondarence was found when MDRD formula used (p=0.039)[15].

Age is an important demographic factor. Both the equation use age as a factor which predict the GFR as well as CKD. Several population based study showed the correlation of age with CKD stage irrespective of sex. In AusDiab kidney study showed stages of CKD for 3 to 5 increases with age in both man and women (P<0.001)[16].

In Iceland study, prevalence of CKD significantly increased with increasing age in both sexes eg. in male age group 60-64 versus 65-69 was 5.2% versus 13.46% and in female was 11.7% versus 36%. In the present study the prevalence of CKD is significantly higher among the participants aged >40 years in either MDRD or Cockcroft-Gault formula was used (p< 0.001)[15].

The graphical presentation of corrected Ccr against the age showed in our study a gradual decrease of Ccr when corresponding age increases. Study showed at the age 15 years correct Ccr was 86.7 ml/min which ultimately dropped to 48.5 ml/min al the age of 65 years

suggesting that an inverse relationship exists between the two variables (r=-0.60, P<0.001). NHANES III US prevalence study revealed 11% of individual > 65 years without hypertension and diabetes had stage 3 or more CKD[17].

Previously only serum creatinine measurement was used largely for assessment of renal function. 9.9 % (46) of male in this study had serum creatinine >1.4 mg/dl and 6.3 %(50) female had serum creatinine >1.3 mg/dl. A total 7.6% of our study population had raised serum creatinine. Other study also showed similar type of result.

Conclusion:

Among individuals with CKD, being male or less educated corresponded to a lower likelihood of following the guidelines for preventing and managing CKD. Since a variety of demographic and socioeconomic factors are related to the prevention and management of CKD, individually tailored prevention activities must be developed and implemented.

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Original Article

Distribution of Cancer Patients at Rangpur Medical College Hospital, Rangpur

Jahan Afroza Lucky[1], Prof. Sawpon Kumar Nath[2], Nazmun Nahar[3]

Abstract:

Background: Distribution of malignant tumors affecting the different organ systems of the body were studied on 2410 new cancer patients attending the Radiotherapy Department of Rangpur Medical College Hospital during the period of 2006 to 2010. **Methods:** This hospital based retrospective study was conducted among all the new cancer cases (i.e. 2410 patients) attending radiotherapy, out-patient department (ROPD) of Rangpur Medical College Hospital from 2006 to 2010. Almost all of them were referred from different ward of this hospital, different health complex, other hospital of different specialties, specialists in different disciplines and general practitioners of this zone. Special care had been taken to exclude double entry of a patient. Majority of the patients were previously diagnosed histological as malignant neoplasm before attending ROPD. **Results:** Out of 2410 new cancer patients, 1304 cases were male and 1106 were female (1.17:1). The High incidence of 2410 cancer patients both in male and female simultaneously is observed in the age group of 49-65 years 40.66%. The highest incidence of cancer in male is larynx (14.42%) followed by lung (13.04%), oral cavity (9.89%), unknown primary (7.52%), stomach (6.13%), oro-pharynx (5.44%) and colo-rectal (5.06%). In female most commonest cancer is cervix (29.39%), breast (27.85%), oral cavity (7.59%), unknown primary (4.43%), lung (2.98%) and gall bladder (2.62%). **Conclusion:** Rangpur is the zone of tobacco and socioeconomic condition most of the peoples are low. The predisposing factors which supposed to have some relationship with the above mentioned frequently occurring malignancies of both male and female are smoking (biri, cigarette) or ingestion of potential carcinogenic substances(like betel nut, zorda, khoir, gul, tobacco etc), increased consumption of dry fish which are poorly & unhygenically preserved and contain impurities like sand, unknown chemicals, contaminated with fungus and consumption of alcohol, nutritional deficiencies and environmental factors.

Indexing words: Distribution pattern, Cancer patients, Rangpur Medical College Hospital

Introduction:

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body[1,2].

The most common types of cancer in males are lung cancer, prostate cancer, colorectal cancer and stomach cancer[3]. In females, the most common types are breast cancer, colorectal cancer, lung cancer and cervical cancer[4].

The rate of lung cancer is higher in male than female. The American Cancer Society's estimates for lung cancer in the United States for 2019 were about 228,150 new cases of lung cancer (116,440 in men and 111,710 in women). It has been found that about 142,670 deaths from lung cancer (76,650 in men and 66,020 in women)[5].

In female, cervix and breast were higher in rate than other cancer[6]. About 70% of cervical cancers occur in developing countries and comprised 90% of the cancer deaths[7,8].

Worldwide, breast cancer is the leading type of cancer in women, accounting for 25% of all cases[9]. In 2012 it resulted in 1.68 million new cases and 522,000 deaths of breast cancer patients[9].

The total population of Bangladesh was estimated at 163 million in 2016[10]. There were 13

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to 15 lakh cancer patients in Bangladesh, with about 2 lakh patients newly diagnosed with cancer each year[11].

The NICRH and BSMMU cancer registry data revealed that >66% of the cancers occur in the age group of 30–65 years. 20–25% of the cancers were diagnosed in a localized stage. The majority of the cases were diagnosed when the disease was regional (two-third of all cases). Disease with distant metastasis at the time of diagnosis was <15%[12].

The NICRH and BSMMU cancer registry data revealed that 60% of the cancers in the male and 5% of the cancers in female were tobacco related and hence entirely avoidable[13].

According to the latest WHO data published in 2017, Lung Cancers Deaths in Bangladesh reached 12,075 or 1.53% of total deaths. The age adjusted Death Rate was 11.33 per 100,000 of population ranks Bangladesh 99 in the world[6].

Tobacco use was the cause of about 22% of cancer deaths[14]. Another 10% were due to obesity, poor diet, lack of physical activity or excessive drinking of alcohol[14-17]. Other factors include certain infections, exposure to ionizing radiation and environmental pollutants[15].

In the developing world, 15% of cancers were due to infections such as Helicobacter pylori, hepatitis B, hepatitis C, human papilloma virus infection, Epstein–Barr virus and human immunodeficiency virus (HIV)[14].

Method:

This is a hospital based retrospective study. In this study, all the new cancer cases (2410) attending radiotherapy, out-patient department (ROPD) of Rangpur Medical College Hospital from 2006 to 2010 were included. Almost all of them were referred from different ward of this hospital, different health complex, other hospital of different specialties, specialists in different disciplines and general practitioners of this zone. Each and every patient was interviewed and examined thoroughly before data collection and the clinical data were recorded properly. Special care had been taken to exclude double entry of a patient. Majority of the patients were previously diagnosed histological as malignant neoplasm before attending ROPD.

In cases of suspicious patients necessary arrangement were made for confirmation of the diagnosis. Therefore these cases mostly reflect the actual distribution pattern of new all cancer cases of this zone.

Result:

Total 2410 patients, attended in ROPD of Rangpur Medical Collage and Hospital from 2006 to 2010 were included in the study. Among them 1304 were male and 1106 were female with a male and female ratio of 1.17:1. Percentage of cancer according to age group are shown in the Table I. Table II represent the total number and ratio of male and female. Table III reflex the origin, sex & percentage distribution of 2410 cancer patients. Figure 1 and 2 shows the list of top 7 ranking malignancies in both male & female in order of frequency.

Table I: Percentage of Cancer patients according to Age

Range of age	No. of patients	Percentage
15-32	318	13.19%
33-48	864	35.85%
49-65	980	40.66%
66-82	203	8.42%
83-100	45	1.86%
Total	2410	100%

Table II: Total number and male versus female ratio of patients during studied years (2006-2010)

Year	Total Number of Male patients(M)	Total Number of Female patients(F)	Ratio M:F	Total Number of Patients (both sex)
2006	193	157	1.22:1	350
2007	206	164	1.25:1	370
2008	201	169	1.18:1	370
2009	545	495	1.10:1	1040
2010	159	121	1.31:1	280
Total	1304	1106	1.17:1	2410

Table III: List of site, sex and percentage (in parenthesis) distribution of 2410 cancer patients.

Sites	Male (% of 1304 cases)	Female (% of 1106 cases)	Total (% of 2410 cases)
Oral cavity	129(9.89%)	84(7.59%)	213(8.84%)
Nasopharynx	30 (2.30%)	8(0.72%)	38(1.58%)
Oro-pharynx	71(5.44%)	11(0.99%)	82(3.40%)
Larynx	188(14.42%)	22(1.99%)	210(8.71%)
Thyroid	9(0.69%)	20(1.81%)	29(1.20%)
Salivary gland	24(1.84%)	8(0.72%)	32(1.33%)
Nose	7(0.54%)	4(0.36%)	11(0.46%)
Esophagus	56(4.29%)	13(1.18%)	69(2.86%)
Stomach	80(6.13%)	18(1.63%)	98(4.07%)
Colo-rectal	66(5.06%)	27(2.44%)	93(3.86%)
Liver	12(0.92%)	7(0.63%)	19(0.79%)
Gall bladder	22(1.69%)	29(2.62%)	51(2.12%)
Lung	170(13.04%)	33(2.98%)	203(8.42%)
Eye	13(1.00%)	4(0.36%)	17(0.71%)
Skin	31(2.38%)	8(0.72%)	39(1.62%)
Bone	27(2.07%)	9(0.81%)	36(1.49%)
Breast	12(0.92%)	308(27.85%)	320(13.28%)
Cervix	0(0.00%)	325(29.39%)	325(13.49%)
Ovary	0(0.00%)	45(4.07%)	45(1.87%)
Vagina	0 (0.00%)	14(1.27%)	14(0.58%)
Kidney	4(0.31%)	5(0.45%)	9(0.37%)
Urinary bladder	12(0.92%)	2(0.18%)	14(0.58%)
Prostate	18(1.38%)	0(0.00%)	18(0.75%)
Testis	12(0.92%)	0(0.00%)	12(0.50%)
Brain	74(5.67%)	14(1.27%)	88(3.65%)
Lymphoma	72(5.52%)	22(1.99%)	94(3.90%)
Soft tissue	15(1.15%)	8(0.72%)	23(0.95%)
Unknown primary	98(7.52%)	49(4.43%)	147(6.10%)
Others	52(3.99%)	9(0.81%)	61(2.53%)
Total	1304(100%)	1106(100%)	2410(100%)

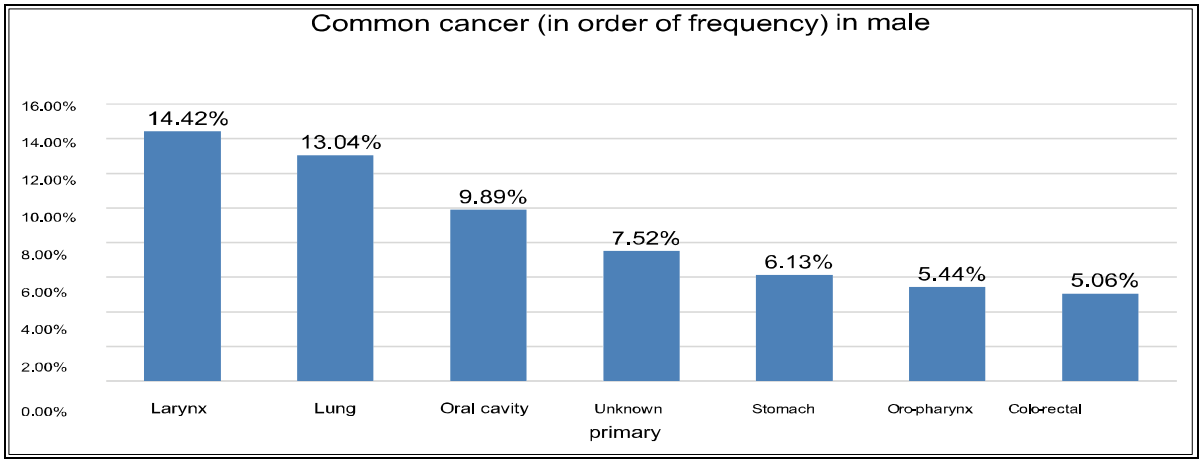


Fig 1: List of common cancer (in order of frequency) in male

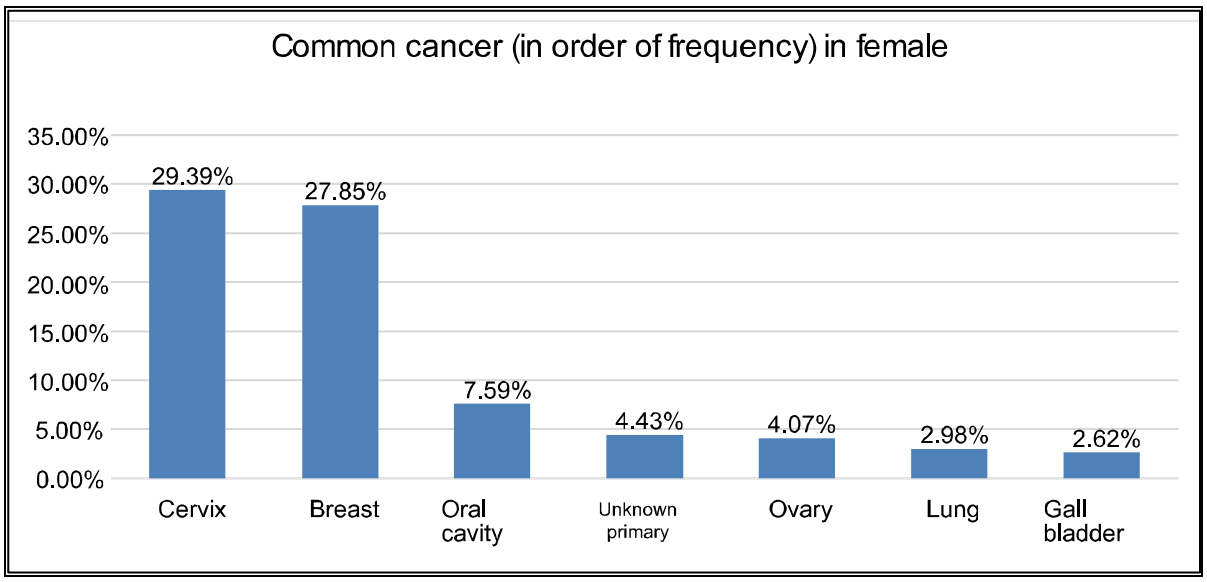


Fig 2: List of common cancer (in order of frequency) in female

Discussion:

The present study represents the increased incidence of cancer in male than in the female with a male to female ratio of 1.17:1 which corresponds to other previous studies of our country[18,19] and in abroad[20].

In male, larynx ranked top of the list (14.42%) like other previous studies of Bangladesh and western world. The other cancers in order of frequency were as follows lung (13.04%), oral cavity (9.89%), unknown primary (7.52%), stomach (6.13%), oro-pharynx (5.44%) and colo-rectal (5.06%).These findings were a bit different from those of previous other studies of our country[18,19]as show in the Table IV and V.

In female cancer of cervix was the most common (29.39%). The second in frequency was breast (27.85%). These findings were also corresponding to previous studies of our country[18,19].

The other two ranking malignancies (In order of frequency) was oral cavity (7.59%), unknown primary (4.43%), lung (2.98%) and gall bladder (2.62%). These findings were also bit different

from that of previous studies of our country[18,19] as shown in the Table V.

Table V show comparative study of 7 top malignancies in male between study of Alam et al,[18] Sharma et al[19], NMJ[21]and present study.

Table V show comparative study of 7 top malignancies in female between study of Alam et al[18], Sharma et al[19], NMJ[21] and present study.

Rangpur is the zone of tobacco and socioeconomic condition most of the peoples are low.

In this study the predisposing factors which were supposed to have some relationship with the above mentioned frequently occurring malignancies of both male and female are smoking (biri, cigarette) or ingestion of potential carcinogenic substances (like betel nut, zorda, khoir, gul, tobacco etc), increased consumption of dry fish which are poorly & unhygenically preserved and contain impurities like sand, unknown chemicals, contaminated with fungus and consumption of alcohol, nutritional deficiencies and environmental factors.

Table IV: Comparative Studies of 7 top ranking malignancies in males between the studies of Alam et al[18], Sharma et al[19], NMJ[21]and present study.

	Study of Alam et al 1990-1997 Total no. of cases-5613	Study of Sharma et al 1990 Total no. of cases-2172	NMJ 2001-2005 Total no. ofcases-1920	Present study 2006-2010 Total no. of cases-746
1)	Bronchogenic/Lung-21.98%	Bronchogenic/Lung-20.58%	Bronchogenic/Lung-13.88%	Larynx-14.42%
2)	Oropharynx-10.78%	Larynx-13.08%	Larynx-9.38%	Lung-13.04%
3)	Esophagus-9.73%	Oral cavity-8.01%	Lymphoma-8.69%	Oral cavity-9.89%
4)	Larynx-9.48%	Lymphoma-7.04%	Oropharynx-7.97%	Unknown primary -7.52%
5)	Oral cavity-6.41%	Unknown primary-6.30%	Hypo pharynx-7.24%	Stomach-6.13%
6)	Stomach-6.20%	Esophagus-5.32%	Colorectal- Carcinoma-5.73%	Oro-pharynx-5.44%
7)	Hypo pharynx-5.22%		Unknown primary-4.79%	Colo-rectal-5.06%

Table V: Comparative Studies of 7 top ranking malignancies in females between the studies of Alam[18], Sharmaet al[19], NMJ[21]and present study.

	Study of Alam et al. 1990-1997 Total no. of cases-3798	Study Sharma et al. 1990 Total no. of cases-1227	NMJ 2001-2005 Total no. ofcases-1034	Present study 2006-2010 Total no. of cases-664
1)	Cervix uteri-21.83%	Cervix uteri-24.37%	Cervix -26.50%	Cervix-29.39%
2)	Breast-15.85%	Breast-16.87%	Breast-17.70%	Breast-27.85%
3)	Oesophagus-8.27%	Oral cavity-16.87%	Oral cavity-6.87%	Oral cavity-7.59%
4)	Bronchus-7.53%	Ovary-6.36%	Ovary-6.87%	Unknown primary -4.43%
5)	Oropharynx-6.24%	Oesophagus-4.24%	Oropharynx-5.61%	Ovary-4.07%
6)	Ovary-5.40%	Oropharynx-4.17%	Lymphoma-5.75%	Lung-2.98%
7)	Larynx-5.00%	Colo-rectal-3.98%	Colo-rectal-4.26%	Gall bladder-2.62%

Conclusion:

The present study showed the distribution pattern of different type of malignancies of both male and female in the Rangpur zone. It was observed that laryngeal cancer was commonest in male and in female cancer of cervix and breast remains in the top of the list.

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Original Article

Management of Sacrococcygeal Pilonidal Sinus Disease- by Limberg Flap Procedure - Personal Experience

Syeda Shahnaz Nasrullah[1], Nazmun Nahar[2], Narayan Chandra Sarker[3], Sohel Rana[4], Goutam Kumar Biswas[5]

Abstract:

Background: In this retrospective study clinical experience with a local flap procedure (Limberg flap reconstruction) for Sacrococcygeal Pilonidal Sinus Disease was represented. **Methods:** In this study 11 patients were treated with an age range of 21-35 yrs in the form of excision of Pilonidal Sinus followed by Limberg flap procedure in the same setting. The study consists of 6 recurrent disease and 5 primary disease in a time spam of March 2017 to January 2019. Cases were selected from Rangpur Medical College Hospital indoor patients and also from author's private patients. **Result:** All of the patients was successfully underwent surgery with minimum post operative pain, average hospital stay 2-3 days, stiches off done within 8th to 10th POD with an early return to work within 12-14 days. Among all the patients, 1 patient developed seroma and 1 patient developed wound infection, both of them managed conservatively. All of the patients followed up 6 months post operatively revealed both cosmetically and functionally acceptable results without any evidence of recurrence. **Conclusion:** Rhomboid flap closure technique is an effective and reliable technique for Sacrococcygeal Pilonidal Sinus Disease which could be easily performed with high patient's satisfaction, a low incidence of post operative complications associated with complete cure of the disease, less hospital stay with favorable results regarding the time before returning to work.

Indexing words: Pilonidal sinus disease, Limberg flap, Sacrococcygeal region

Introduction:

Pilonidal Disease is described as early as 1833 by Mayo. Hodge used the term "Pilonidal" (Latin term means nest of hairs) in 1880. Today it is describe as a wide variety of clinical condition ranging from asymptomatic hair containing cyst and sinuses to large symptomatic abscess usually of the sacrococcygeal region with a tendency for recurrence[1,2]. According to International Pilonidal Society 2013, some occupation related pilonidal sinus disease, occurs in webs of fingers eg. hair dresser, sheep shearer, dog groomer, slaughter man or milk man. Other locations include: shaft of the penis, axilla, intermammary area, groin, nose, neck, clitoris, suprapubic area, occiput, prepuce, chin, periungual region, face, breast and umbilicus.

Onset of this condition is rare before puberty and after the age of 40 for both sexes[3]. This disease usually present in the midline of the sacrococcygeal region of young hirsute men with at incidence of 20 per 100000 population[4,5]. There are 2 theories in relation to etiology, one is congenital and another is acquired. However it's mainly considered as an acquired condition characterized by an infection starts at natal cleft hair follicle which becomes distended with keratin leading to folliculitis, abscess formation which extends down into the subcutaneous tissue then hair can enter through tiny pit and lodge in abscess cavity due to suction effect created by movement of gluteal region[6].

Karydakis proposed three main factors for the occurrence of the disease, as follows, high quantity of hair, extreme force and vulnerability

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to infection[7]. But the presence of hair in the gluteal cleft seems to play a significant role in the pathogenesis. Other factors including a deep natal cleft which acts as a suitable environment for sweating, maceration, bacterial contamination. Hair penetration, obesity, sedentary lifestyle, local trauma, positive family history, lack of hygiene and hirsutism also play roles[3].

Pilonidal disease is a medical condition that is liable for almost 15% of all anal suppurations[8]. Actually the diagnosis is mainly clinical. The treatment methods include both conservative and surgical. Recurrence rate is high, which requires appropriate reconstructive procedure[9,10].

Many methods of treatment have been described for the management of this disease including incision and drainage of acute pilonidal abscess, excision and healing by secondary intention, excision and partial closure or primary closure, Z-plasty, clipping of hairs with good hygiene of the area, marsupialization and flap techniques like Limberg flap, modified Limberg transposition flap, elliptical rotation flap and rotation advancement fasciocutaneous flap, Karydakis flap procedure, Bascom's flap[6,11].

Among different surgical techniques, flap reconstruction methods eradicate the etiology of the disease by flattening the intergluteal sulcus[12]. Among all of them, the most commonly applied technique is the Rhomboid excision with reconstruction by Limberg flap by which a tension free repair is made by using a wide well vascularized flap[13].

Methods:

In this retrospective study patients were operated on for sacrococcygeal pilonidal disease selected from Rangpur Medical College Hospital indoor patients and also from author's private practice. Eleven consecutive patients in between March 2017 and January 2019 among which 7 were male and 4 were female. Patients with primary and recurrent sacrococcygeal pilonidal sinus disease who were mentally oriented and consented for joining this research study were included in this study. Patients with incomplete data and patients who were lost to follow up were excluded from the study.

In this study, the average duration for symptoms was 1.5 years among them 6 patients (54%) had previous history of abscess drainage due to Pilonidal sinus disease. Detailed history taking, thorough clinical and local examination, laboratory, investigation was done to exclude other disease conditions that mimic pilonidal sinus. Written consent was taken from all the patients after informing them about the operative procedure and expected result of the flap in this area. All the patients were treated surgically by excision of sinus and primary repair by Rhomboid transposition flap.

Surgical Procedure:

All the patients were operated under spinal anesthesia placing them in prone position. The surgical area was exposed by lateral traction of the buttocks with adhesive tapes and cleaned with 10% povidone iodine. Using a sterile skin-marking pen a Rhomboid area of skin was marked over pilonidal sinus. The flap design was mapped on the skin. The vertical diagonal of the Rhomboid in midline was marked as A-C, The length of vertical diagonal was 10 cm. which may be extended to 11-12 cm. if there is any paramedian extension. Point C indicates the lower point of vertical diagonal adjacent to perianal skin. Point A is placed in such a way so that all diseased tissue can be included in the excision. Another line B-B′ transected the midpoint of A-C at right angles which was 60% of its length. The line B′-A′ was a direct continuation of the line B-B′ which was of equal length to the line A-B therefore B′-A′ =AB (to which it was sutured after rotation) =6.2cm. A′-D and A-B′ are of equal length. A-B′ was sutured to A-B′ after rotation (AB′=A′D= 6.1cm) as shown in Fig 1.

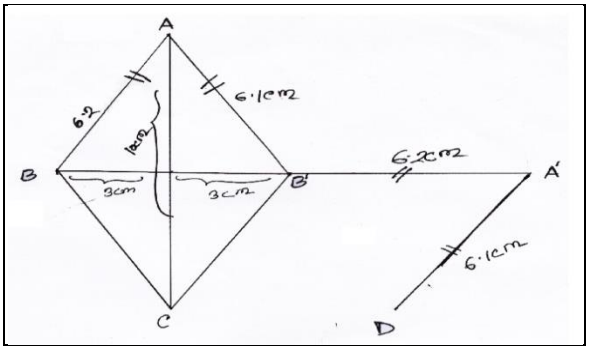


Fig. 1: Outline of rhomboid area of skin drawn during operation of pilonidal sinus disease

A rhombic shaped excision of the sinus bearing skin and subcutaneous tissue was made by electrocautery upto the presacral fascia. Then the perforator based Limberg flap was elevated in the same manner. The level of dissection was pre muscular fascia of Gluteus maximus muscle. After that the adhesive tapes of the buttocks were remove for well suturing of the flap without tension. Then finally a right or left sided fasciocutaneous Limberg transposition flap that incorporate the gluteal fascia was fully mobilized on its inferior edges and transposed medially. Thus the Limberg defect was made fulfill. Mean duration of operation was 45 minutes (35-75 minutes). A suction drain was usually required and removed after 3 days usually. Patient was advised not to give pressure on affected side for 3 weeks. All patients were advised to maintain their posture by lying left or right and used high commode.

Hospital Stay & Follow up

The patients were discharged at 2nd to 3rd POD after check dressing and stitch off done at 8th to 10th POD. They were followed up initially at 1 week then at 1 month, 3 months & 6 months which depends on both patient's requirement and according to surgeon's preference.

Results:

In relation to the gender the majority of the patients were male (7) and remaining were female (4) with an age range of 21 years to 35 years. The median ages of the patients were 20 years,

Table I: Patient criteria

		Number
Gender	M	7
	F	4
Age Range	20-30 yrs	6
	30-40 yrs	5

All the patients were followed up in a sequence of initially at 1 week, then at 1 month, 3 months and lastly at 6 months usually. Only 1 patient seroma and another 1 patient developed wound infection (Table II). The approximate time to resolve the seroma was 7-8 days and the surgical site infection was cured within 2 weeks.

Table II: Postoperative complications

Complications	Number	Percentage (%)
Seroma	1	9%
Wound Infection	1	9%
Flap necrosis	0	0%

The pain score range was in between 2-5 within mean score of 3.5 (Table III). The rest of the patients without complications underwent wound healing with minimal scar formation and less post operative pain without any recurrence.

Table III: Pain Score (According to NRS) (0-10 Numerical Rating Scale)

No. of Patients	Pain Score
1	3
2	5
3	2
4	4
5	3
6	2
7	4
8	3
9	5
10	4
11	3

Discussions:

Pilonidal sinus is a disease which is reported to occur in various regions of the body including umbilical region, inter digital and axillary region. But most commonly seen in the sacrococcygeal region in midline[14,15].

Pilonidal sinus disease is well known for its prolonged morbidity and recurrence with an important predisposing factor for sacrococcygeal disease recurrence is deep natal cleft and presence of hair within the cleft. Pilonidal sinus disease has been treated by different methods of surgical treatment, where the basic principal of treatment are tension free closure of the resultant defect with well vascularized tissue, obliteration of the natal cleft, prevention of

recurrence, maintaining short hospital stay and early return to work[16,17].

Methods of leaving the wound opened until formation of granulation tissue, covering the open wound with skin graft has disadvantage of longer healing time (3-8 weeks) and are not cost effective[14,15].

Wide local excision with primary closure of the wound resulting in midline scar which is associated with high incidence of recurrence[18]. In order to avoid the problem of midline scar formation, Karydakis technique, Bascom technique ivolved[1,7].

Although both of these techniques shift the scar from its midline to lateral position but often failed to obliterate the natal cleft completely leading to high recurrence rate[19-22]. Limberg flap reconstruction described by Azab and colleagues in 1984, achieves and off-midline closure and ensures flattening of the natal cleft[20]. There still debate regarding the best surgical technique for treatment of pilonidal sinus disease. Because an ideal operation should be simple, associated with less hospital stay with low recurrence rate. The Limberg flap is one of the transposition flap used after the excision of pilonidal sinus has proven to be effective for the management of primary and recurrence disease with quick healing time, less hospital stay, early recovery, low complication and recurrence rate.
An early development of seroma and hematoma formation is a recognized problem for flap reconstruction which leads to wound infection and flap necrosis. To prevent this, insertion of suction drainage has been used by many centers[23]. There are many previous studies based on this, where Katsoulis had 25 patients, with 16 of them associated with complications without recurrence and Aslam had 110 patients and 5 of them having complication and 1 with recurrence[24,25].

Limitation of the study: Small sample size.

Conclusion:
Sacrococcygeal Pilonidal sinus disease is a morbid disease associated with high recurrence rate. Different form of surgical approaches used to cure the condition but results are disappointing due to high recurrence rate and prolong hospital stay so it's a challenging situation for surgeons. In this context Rhomboid flap technique (Limberg flap transposition) has become widely accepted for it's advantage of early healing, very low recurrence rate, less hospital stay, easy operative procedure with high patient's satisfaction and low incidence of postoperative complications.

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Original Article

Clinical Profile of Perinatal Asphyxia in Term Neonates

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Abstract:

Background: Perinatal asphyxia is one of the major causes of neonatal death and disability worldwide. Inspite of breakthrough advances in the field of perinatal medicine, perinatal asphyxia continues to be a top killer disease. Adequate knowledge about the key features of perinatal asphyxia is an essential ingredient to achieve meaningful reduction in neonatal mortality. **Objective:** The objective of the study was to determine clinical presentations of perinatal asphyxia in term neonates. **Methods:** This cross sectional observational study was conducted in Special care neonatal unit, Rangpur Medical College Hospital between May 2017 and October 2017. After ethical clearance, 200 term neonates fulfilling the selection criteria were enrolled into the study. History taking and physical examination were done meticulously for every patient. Data were analyzed through SPSS software (version 16.0). Minimum level of significance was predetermined as $p<0.05$. **Results:** Among 200 neonates, 130(65%) patients were in hypoxic ischemic encephalopathy stage-ll followed by 50(25%) and 20(10%) patients in stage-lll and stage-l respectively. Analysis revealed that among asphyxiated neonates, the clinical features were seizure (70/200, 35%) followed by lethargy (69/200, 34.5%), weak moro reflex (65/200, 32.5%) and hypotonia (60/200, 30%). **Conclusion:** This study concluded that seizure followed by lethargy, weak moro reflex and hypotonia were the predominant clinical features in perinatal asphyxia in term neonates.

Indexing words: Neonates**,** Perinatal asphyxia, Clinical features

Introduction:

Globally, infant mortality has declined significantly but neonatal mortality is staggeringly high as compared to other countries[1]. Perinatal asphyxia is a common neonatal problem contributing significantly to neonatal morbidity and mortality[1]. Approximately, 75% of newborn deaths occur in the first week of life, due to prematurity (35%), perinatal asphyxia (23%) and sepsis (23%)[2,3].

Perinatal asphyxia (PNA) may be defined as an insult to fetus or newborn due to lack of oxygen or lack of perfusion to the vital organs of the body[4]. According to WHO perinatal asphyxia is defined as the failure to initiate and sustain breathing at birth[4]. The symptomatology of perinatal asphyxia evolves into hypoxic ischemic encephalopathy (HIE) which is classified on the basis of distinct clinical and laboratory parameters. Traditionally, hypoxic ischemic encephalopathy (HIE) is graded by Sarnat and Sarnat as stage I, stage ll and stage lll (mild, moderate and severe respectively)[5]. Common clinical manifestations of PNA encountered in clinical practice are seizure, apnoea, not able to feed, cyanosis, lethergy, irritability and coma[6]. Clinical presentations of perinatal asphyxia often mimic other clinical entities particularly fluid and electrolyte imbalance. Therefore, it becomes imperative to be conversant with symptomatology of perinatal asphyxia to optimize management for improved neonatal survival.

Methodology:

This cross sectional observational study was conducted in Special care neonatal unit, Rangpur Medical College Hospital between May 2017 and October 2017. 200 term neonates fulfilling the selection criteria were enrolled into the study. Relevant detailed history and physical

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examination were performed. Neurological status was assessed by Sarnat and Sarnat staging to classify the grading of hypoxic ischemic encephalopathy. Inclusion criteria were **:** live born term 1-5 day old neonates with any of the followings (i) delay in establishing first breath within one minute of birth. (ii) history of resuscitative measures undertaken to sustain breathing. Exclusion criteria were (i) birth weight <2500 gram, (ii) gross congenital anomalies, (iii) septicemia, (iv) shock. SPSS version 16.0 for windows was used for the analysis of data. Chi-square test was done and $p<0.05$ was set as the minimal level of significance.

Results:

Table 1 Shows majority of neonates belonged to age group 24-48 hours of birth.

Table I: Distribution of asphyxiated neonates by age (n= 200)

Age	Number (n)	Percentage (%)	p value
24 - 48 hours	110	55	0.157 (NS)
48–120 hours	90	45	

Fig. 1 demonstrates that male neonates outnumbered females

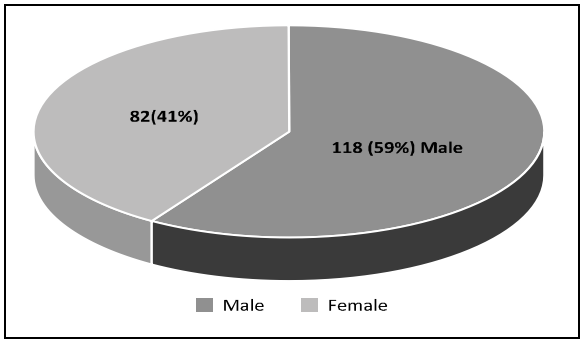


Fig. 1: Percentage of asphyxiated male and females neonates

Table II shows that weight of majority of asphyxiated neonates were between 2500gm - 3000g.

Table II: Distribution of asphyxiated neonates by weight (n=200)

Weight	Frequency (n)	Percentage (%)
2500 gm - 2999 gm	158	79.0
3000 gm - 4000 gm	42	21.0

Fig. 2 shows that majority of asphyxiated newborn were delivered by lower uterine caesarean section

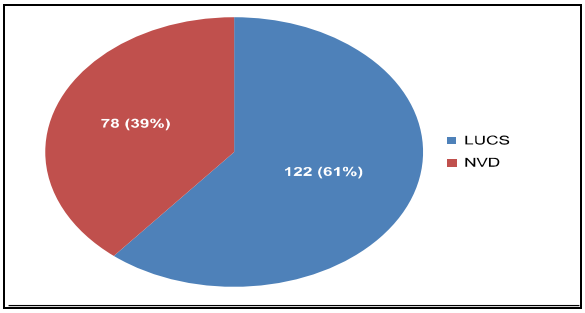


Fig. 2: Percentage of mode of delivery of asphyxiated newborn.

Fig. 3 illustrates that majority 130(65%) of asphyxiated neonates belonged to Sarnat and Sarnat HIE stage ll(moderate) followed by 50 (25%) in stage lll (severe).

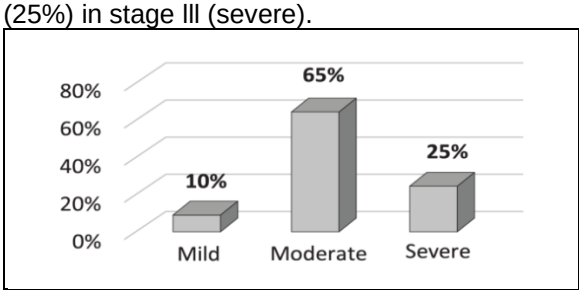


Fig. 3: Sarnat and Sarnat HIE stages of asphyxiated newborn.

Table III illustrates that among plethora of clinical manifestations the most frequent presentation was seizure followed by lethargy.

Table III: Distribution by clinical presentations of asphyxiated newborn (n=200)

Clinical feature	Frequency (n)	Percentage (%)
Hyperalert	10	05.0
Lethargy	69	34.5
Coma	12	06.0
Hypotonic	60	30.0
Flaccid	20	10.0
Flexion posture	45	22.5
Decrebrate posture	12	06.0
Myoclonus	3	1.5
Strong moro reflex	22	11.0
Weak moro reflex	65	32.5
Absent moro reflex	25	12.5
Mydriasis	12	06.0
Miosis	55	27.5
Unequal, poor light reflex	10	05.0
Seizure	70	35.0
Hyperactive tendon reflex	23	12.5
Absent tendon reflex	22	11.0

Discussion:

In this study, majority of neonates belonged to age group 24-48 hours of birth. There was no significance (p=0.157) of age between two age group (Table 1). Male preponderance was observed with a male to female ratio of 1.43:1(Fig 1). A study conducted by Prithviraj et al showed that among 80 babies 57.5% were male and 42.2% female with male to female ratio 1.35:1.24[7] Similar study conducted by Thakur et al reported that out of 88 enrolled cases 60 (68%) were male and 28 (32%) were female[8]. Study findings of these studies conform to the present study. In this study, male predominance may be explained by the male dominant neonatal admission pattern of this hospital[9].

Regarding birth weight of asphyxiated neonates, majority were between 2500-2999 grams (Table 2). Similar observation was documented by Serder et al[10]. In this study, most neonates (122/200, 61%) were delivered in hospital by caesarean section due to failed home trial or being referred by other health care facilities (Fig 2). This observation closely resembles with the study by Kiyani et al[11]. In the current study, majority of the cases were in HIE stage ll followed by HIE stage lll and HIE stage l (Fig 3). This finding is consistent with the study conducted by Shah et al who observed that out of 60 asphyxiated patients majority 27(45%) were in stage II, 20(33.3%) in stage III and 13(21.7%) in stage I[12]. Study conducted by Thakur et al found that among 88 asphyxiated newborn, 33 (37.5%) were in stage ll, 30(34.09%) in stage lll and 25(28.40%) were in stage I[8]. Findings of these previous studies are consistent with the present study.

Regarding clinical profile, most frequent presentations of asphyxiated newborns were seizure (70/200, 35%) followed by lethargy (69/200, 34.5%), weak moro reflex (65 /200, 32.5 %) and hypotonia (60/200, 30%).

Conclusion:

This study concluded that most frequent clinical presentations of perinatal asphyxia were seizure followed by lethargy, weak moro reflex and hypotonia.

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Original Article

Knowledge and Practices of Rural Barbers about Hepatitis B and C Transmission in Kurigram District

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Abstract:

Background: Blood-borne viruses such as hepatitis B and C have some common epidemiological characteristics, and have infected millions of people throughout the world. A significant proportion of those exposed to HBV and HCV become chronically infected and are at considerable risk of chronic active hepatitis, cirrhosis, liver failure and liver cancer. Shaving by barbers has been identified as the key risk factor for spread of HBV and HCV. Thus the barber has a potential role in expansion of infections. The aim of this study is to assess the knowledge and practices of barbers regarding transmission risk of HBV and HCV. **Methods:** A cross-sectional survey was conducted on 120 rural barbers who were selected by multistage sampling method in Kurigram district, in Bangladesh in 2020. Data on knowledge of barbers was collected and their practices were observed and recorded. **Results:** Observations showed that 100% used a new blade with new clients and 100% used antiseptic lotion after shave. However, knowledge about the diseases and modes of transmission were poor (0.8% to 5.8%) and only 5.8% knew that liver disease caused by hepatitis B and C. Only 2.5% knew transmission via shaving instruments. Only 2.5% barbers answered vaccination could protect against HBV. **Conclusions:** Knowledge about disease transmission was very poor. But their practices regarding the use of new blades and antiseptic lotion were very good. The majority had no idea that HBV were preventable. Strategies are needed for raising awareness and regulations of barbers' practices.

Indexing words: Hepatitis B virus (HBV), Hepatitis C virus (HCV), Barbers, Knowledge, Attitude and Practice

Introduction:

Blood-borne viruses such as hepatitis B and C have some common epidemiological characteristics, and have infected millions of people throughout the world[1]. Such diseases impose heavy burdens on national economies and individual families due to costs arising from acute and chronic morbidity and mortality. A significant proportion of those exposed to HBV and HCV become chronically infected and are at considerable risk of chronic active hepatitis, cirrhosis, liver failure and liver cancer. Globally, 2 billion people are infected with the hepatitis B virus (HBV), of which more than 350 million have chronic infections[2]. An estimated 170 million persons are chronically infected with hepatitis C virus (HCV) and 3 to 4 million persons are newly infected each year[3]. The prevalence of hepatitis B in Bangladesh from different studies shows 0.8 to 5.4%[4-6]. According to WHO records the prevalence of HCV ranges between 1%-2.5% in Bangladesh[7]. The rates of HBV and HCV infection in this country have been increasing, attributed to a lack of proper health facilities, low socioeconomic status and low public health

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awareness about the transmission of communicable diseases. Important factors contributing to HBV and HCV spread include unsafe use of therapeutic injections[8], blood transfusion[9], shaving from barbers, tattooing[10], mother to child transmission[11] and unsafe sexual practices[12,13]. Razor sharing and shave from the barbers has been identified as a key risk factor for HBV spread in Italy[14] and for HCV among psychiatric patients in Japan[15], Egypt[16] and Pakistan[17]. Barbers in third-world settings are usually unaware of the concept of transmission of infectious agents. So they are using razors and scissors repeatedly for different customers without intervening sterilization. During haircut, shave or pedicure, barbers may be accidentally exposed to their clients' blood, or transmit their own infection to the clients, or transmit the infection from one client to another.

Prevention is the best strategy against the epidemic of viral hepatitis. Moreover, international literature shows a lack of exhaustive data on behaviors and practices related to beauty activities and only few studies were available in developed countries[18] and developing countries. In some study showed, Barbers have low awareness about hepatitis and the risk of transmission of infectious agents by reuse of razors and scissors on multiple clients[19,20]. The prevalence of saloon or roadside barber shaving has been reported to be as high as 34 - 49% in Bangladesh[21]. It is important to know how barbers perceive the risks in relation to prevention of transmission between themselves and customers. In Bangladesh no such study has been carried out to find out the knowledge, attitude and practices of barbers about hepatitis B and C virus transmission. Therefore, this study has been designed to assess the knowledge, attitude and practices of barbers in Rangpur city, northern zone of Bangladesh. In essence, this study will pave the way to design and implement appropriate prevention and intervention strategies to harbor safe shaving practices among barber's community in Bangladesh perspective.

Methods:

During January – March, 2020 a cross sectional survey of barbers' shops was conducted at rural markets in Ulipur Upazila in Kurigram district. Multistage sampling method was adopted for the study. Among the 9 Upazilas, 1 Upazila was selected on the basis of convenience. Out of all rural markets where barbers' shops were located, 60 markets were selected on the basis of convenience. Then 2 barbers were selected from each village market on the basis of convenience. The selection criteria of subjects were (i) age more than 15 years and (ii) willing to participate in the study. Trained medical interviewers visited the selected barbers' shops and requested barbers to participate in the study after taking informed consent. Face-to-face interview was conducted with participating barbers about their knowledge. Information was written down in a pretested Bangla versions questionnaire. During the main interview, one of the interviewers was involved in data collection and another one observed the barber and assessed his practices regarding using instruments. The questionnaires included socio-demographic data of barbers; Barber`s knowledge section covered the different modes of transmission of hepatitis and knowledge of vaccination against HBV and HCV. The practices of barbers were observed on 2 occasions while they were attending clients and a checklist was used to record: hand-washing before servicing each client, sterilization of instruments with antiseptic, use and reuse of blades, and disposal of used blades and instruments. Statistical analysis was performed by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-20) (SPSS Inc, Chicago, IL, USA). The summarized data was interpreted accordingly and was then presented in the form of tables.

Results:

A total of 120 questionnaires were completed from barbers' interviews. Table-I shows distribution of participating barbers according to socioeconomic and demographic characteristics. Most respondents 41(34.2%) were aged 21 – 30 years. Maximum 73(60.8%) were Hindu and rests 47(39.2%) were Muslim. Around three-forth (77.5%) were married. Maximum 36(30%) were primary educated followed by 35(29.1%) were up to 8th class and another 35(29.1%) were illiterate. Maximum 40 (33.3%) barber's monthly income range was 6001-8000 Takas.

Table I: Socioeconomic and demographic characteristics of barbers participating in the study

Characteristic	Frequency	Percentage
Age		
• 15-20	26	21.7
• 21-30	41	34.2
• 31-40	29	24.1
• 41-50	19	15.8
• 51-60	3	2.5
• > 60	2	1.7
Religion		
• Muslim	47	39.2
• Hindu	73	60.8
Marital status		
• Married	93	77.5
• Unmarried	27	22.5
Education		
• Illiterate	35	29.1
• Primary	36	30
• Upto 8th class	35	29.1
• SSC	11	9.2
• HSC	3	2.5
Monthly income (Tk.)		
• 2000-4000	17	14.2
• 4001-6000	35	29.1
• 6001-8000	40	33.3
• 8001-10000	21	17.5
• >10000	7	5.8

Table II shows barbers' knowledge about hepatitis B and C virus diseases and their mode of transmission. Liver disease caused by hepatitis B & C was known by only 7(5.8%). Responses to the knowledge questions about modes of transmission were low ranging from only 1(0.8%) correct for tattooing transmission to 7 (5.8%) by blood transfusion. Only 3(2.5%) who knew that hepatitis can be transmitted through barber's shaving instruments. Only 4(3.3%) of respondents knew both hepatitis B and C have the same mode of transmission and 3(2.5%) knew that vaccine can protect the individual against hepatitis B.

Table II: Barbers' knowledge about hepatitis B and C virus diseases and their mode oftransmission.

Knowledge item	Yes	Percentage	No	Percentage
Liver disease caused by Hepatitis B & C. Do you know about this?	7	5.8	113	94.2
Mode of transmission				
Blood transfusion	7	5.8	113	94.2
Barbers' shaving instruments	3	2.5	117	97.5
Intravenous drug use	3	2.5	117	97.5
Reuse of needles	2	1.7	118	98.3
Sexual contact	7	5.8	113	94.2
Dental procedures	5	4.2	115	95.8
Scissors/surgical instruments	2	1.7	118	98.3
Tattooing	1	0.8	119	99.2
Ear/body piercing	1	0.8	119	99.2
Hepatitis B and C have the same mode of transmission	4	3.3	115	96.7
Protection				
A vaccine can protect the individual against hepatitis B infection	3	2.5	117	97.5

Table III shows barbers' shaving practices from observations of interactions with clients. Only 3(2.5%) barbers wash hands before each client. Almost all 119 (99.2%) reused towel. Only 4 (3.3%) barbers washes razor with tap water before use on new client and 3(2.5%) washes razor with antiseptic solution after use. All barbers (100%) used new blade on new client.

All (100.0%) barbers used disinfectants after shaving on client and 87(72.5%) disposed of used blades in the garbage.

Table III: Barbers' shaving practices from observations of interactions with clients

Practice item	Yes	%	No	%
Washes hands before each client	3	2.5	117	97.5
Reuse of towel	119	99.2	1	0.8
Washes razor with water before use on new client	4	3.3	116	96.6
Washes razor with antiseptic solution after use	3	2.5	117	97.5
Uses new blade on new client	120	100	0	0
Disposes of used blades in the garbage	87	72.5	33	27.5
Use disinfectants after shaving on client	120	100	0	0

Discussion:

Barbershop is a place where the general public is prone to different infectious diseases including Hepatitis B, C, HIV/AIDS and skin infections. The disease spread can be due to contaminated instruments or towels. This current study was conducted at the rural areas in Kurigram district to know the knowledge and practices of the barbers about the transmission of HBV & HCV

Out of 120 barbers majority 41(34.2%) were in age group (21–30) years followed by 29(24.1%) age group (31-40) years and 26(21.7) age group (15–20) years. Almost similar results were seen in the study of Waheed et al, where most of the barbers were in age group 15-35 years[22]. In this study, 36 (30%) had completed primary education, 35(29.1%) up to 8th class and 35(29.1%) were illiterate. Almost similar results were observed in the study of Waheed et al[22] and Jokhio et al[23].

In this study, only 7(5.8%) knew that liver diseases were caused by hepatitis B and C virus, almost similar to the result is found in a study of Janjua & Nizamy[19], which greatly differs with the studies by 38.5% in Chaudhry et al[24], 42.0% in Patel et al[25] and 80% in Shalaby et al[26]. This discrepancy is attributed to lack of awareness and poor knowledge. In this study, knowledge of thebarbers about different mode of transmission of HBV and HCV were very poor (only 0.8%–5.8%). Almost all of study participants had no conception that these diseases were transmitted by barbers shaving instruments, blood transfusion, sexual contact, ear/body piercing, reuse of needles, scissors/surgical instruments, dental procedures, or tattooing. Almost similar results were found in studies carried out in Morocco, Ethiopia and Pakistan[27,28]. But better results were found in study of Patel et al[25] and Shalaby et al[26]. Only 7 (5.8%) barbers said these viruses transmitted during blood transfusion but Patel et al[25], and Jokhio et al[22] found 25.3% and 29.0%, respectively in their study. In this study 3(2.5%) barbers said these viruses transmitted via barbers shaving instruments but different results in the study of Jokhio et al[22], and Shalaby et al[26]. Only 7(5.8%) barbers answered by sexual contact which differed from study of Shalaby et al[26] who found 65.9%. Only 3(2.5%) barbers said these viruses transmitted by intravenous drug use but Jokhio et al[22] and Shalaby et al[26], showed 22.0% and 88.0% in their respective study. Poor knowledge of study participants about mode of transmission may be due to the fact that they belong to relatively less developed geographical area. The awareness campaigns on national electronic & print media are very poor about transmission of HBV and HCV until recently.

Regarding protective knowledge, only 3(2.5%) knew that vaccine can protect the individual against hepatitis B infection. Almost similar result was found in the study of Jokhio et al[22] and Janjua and Nizamy[19] in Pakistan but higher values were seen in the study of Shalaby et al[26] and Patel et al[25] in Egypt and India. This difference might be due to the different study area and education level.

Only 3(2.5%) barbers washed their hand before each client. Like in other studies in Pakistan[29] and in Yemen[30], hand-washing was an uncommon practice and majority of the barbers did not report it as part of their routine. Hand-washing not only helps maintain self-hygiene but also reduces the risk of infection transmission to clients. Lack of hand washing is due to lack of awareness and also to save time to serve more clients. Sterilization of instruments was non-

existent and only a small proportion 3(2.5%) of the barbers used antiseptics for cleaning the instruments (e.g razor) which was similar to study of Janjua and Nizamy[19], but good practice was found in study of Shalaby et al[26] and Jokhio et al[22]. This was due to lack of awareness and knowledge. Regarding blade reuse practices, studies conducted in late Nineties in Pakistan[19] as well as in India[31], revealed that a large number of barbers were reusing the same blade on multiple clients. But studies conducted during last 15 year[23,32] as well as in this study, this practice of blade sharing was almost nonexistent. In spite of the fact that most of the barbers did not know that HBV and HCV infection can be transmitted through blade sharing, this improved practices may be due to improved life style and overall increased awareness about hygiene, health behavior and client's compelling attitude to use new blade.In this study all barbers (100%) used disinfectants after shaving. But poor practices were seen 39.2% and 76.4% in the study of Jokhio et al[22] and Shalaby et al[26] respectively. Barber used after shave antiseptic lotion for disinfection. This practice of using antiseptic lotion is probably intended to allure the client with the fragrance of antiseptic lotion. In this study 72.5% barbers disposed of used blades in the garbage but Jokhio et al[22] found 34.9%. However, this desirable practice could be due to public demand or it could be due to their alertness during data collection.

Limitations:

The limitations of this present study are:

- The sample size of this study was small and it was a sample of convenience which may result in selection bias.
- We have not covered some important factors such as circumcision, incision and drainage practices of barbers and appropriate interventions.

Recommendations:

Based on the findings of the present study and analysis following recommendations can be put forward–

- These factors are very important for planning a successful campaign to prevent the transmission of these diseases.
- A large-scale well-planned study is needed to assess the effects of the many variables that affect HBV and HCV transmission.
- Policy makers need to give immediate attention to this mode of transmission of blood borne pathogens.
- Messages about hepatitis spread by razor transmission need to be incorporated in media campaigns and interventions for health education and regulation of barbers' practices need to be planned.
- An in-depth analysis of behaviours and determinants of practices can have a more profound effect on designing specific interventions for barbers.

Conclusion:

In this study, barbers had very little knowledge of the liver disease and routes of spread of hepatitis B and C. But their practices regarding the use of new blades, antiseptic use after shave and the disposal of sharps were very good. This good practice might be due to public demand for use of new blades every time.

Conflict of interest: None

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