

How Does Corona Virus Spread?

Some Questions and Answers

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Can the corona virus disease spread through food?

Current evidence on other corona virus strains shows that while corona viruses appear to be stable at low and freezing temperatures for a certain period, food hygiene and good food safety practices can prevent their transmission through food.

Is there asymptomatic transmission of the corona virus disease?

There are few reports of laboratory-confirmed cases that are truly asymptomatic, and to date, there has been no documented asymptomatic transmission. This does not exclude the possibility that it may occur. Asymptomatic cases have been reported as part of contact tracing efforts in some countries. WHO regularly monitors all emerging evidence about this critical topic and will provide an update as more information becomes available.

Can you contract the corona virus disease by touching a surface?

People could catch COVID-19 by touching contaminated surfaces or objects – and then touching their eyes, nose or mouth.

Can the corona virus disease be transmitted in hot or humid climates?

From the evidence so far, the COVID-19 virus can be transmitted in ALL AREAS, including areas with hot and humid weather. Regardless of climate, adopt protective measures if you live in, or travel to an area reporting COVID-19.

Can corona virus spread through mosquito bite?

To date there has been no information or evidence to suggest that the new corona virus could be transmitted by mosquitoes.

Should corona virus disease patients be isolated in hospitals?

WHO advises that all confirmed cases, even mild cases, should be isolated in health facilities, to prevent transmission and provide adequate care. But it is recognize that many countries have already exceeded their capacity to care for mild cases in dedicated health facilities. In that situation, countries should prioritize older patients and those with underlying conditions.

Is smoking a risk-factor for COVID-19?

Smoking is already known to be a risk-factor for many other respiratory infections, including colds, influenza, pneumonia and tuberculosis.

The effects of smoking on the respiratory system makes it more likely that smokers contract these diseases, which could be more severe. Smoking is also associated with increased development of acute respiratory distress syndrome, a key complication for severe cases of COVID-19, among people with severe respiratory infections.

How can I protect myself and others when using disinfectants?

Disinfectant solutions should always be prepared in well-ventilated areas. Wash your hands after using any disinfectant, including surface wipes. Keep lids tightly closed when not in use. Spills and accidents are more likely to happen when containers are open. Do not allow children to use disinfectant wipes. Keep cleaning fluids and disinfectants out of the reach of children and pets. Throw away disposable items like gloves and masks if they are used during cleaning. Do not clean and re-use. Do not use disinfectants wipes to clean hands or as baby wipes.

Can I breastfeed my child if I am severely ill with corona virus disease?

If you are severely ill with COVID-19 or suffer from other complications that prevent you from caring for your infant or continuing direct breastfeeding, express milk to safely provide breast milk to your infant. If you are too unwell to breastfeed or express breast milk, you should explore the possibility of relactation (restarting breastfeeding after a gap), wet nursing (another woman breastfeeding or caring for your child), or using donor human milk.

Does heat kill the corona virus?

Heat at 56°C kills the SARS corona virus at around 10000 units per 15 min (quick reduction).

How can one prevent the spread of COVID-19?

The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow).

Do vaccines against pneumonia protect against the corona virus disease?

No. Vaccines against pneumonia, such as pneumococcal vaccine and Hemophilus influenza type B (Hib) vaccine, do not provide protection against the new corona virus. The virus is so new and different that it needs its own vaccine. Researchers are trying to develop a vaccine against 2019-nCoV, and WHO is supporting their efforts.

Although these vaccines are not effective against 2019-nCoV, vaccination against respiratory illnesses is highly recommended to protect your health.

Can I get the corona virus disease from swimming in a swimming pool?

Swimming in a well-maintained, properly chlorinated pool is safe. However, it is advisable to stay away from all crowded areas including crowded swimming pools. Keep 1 metre distance from people who sneeze or cough even in a swimming area.

Does drinking lots of water help flush out COVID-19?

There is no evidence that drinking lots of water flushes out the new corona virus or the stomach acid kills the virus. However, for good health in general, it is recommended that people should have adequate water every day for good health and to prevent dehydration.

Can drinking alcohol help in preventing COVID-19?

Alcohol does not protect against COVID-19; access should be restricted during lockdown.

Should I wear a mask during the corona virus disease pandemic?

In some countries masks are worn in accordance with local customs or in accordance with advice by national authorities in the context of COVID-19. In these situations, best practices should be followed about how to wear, remove, and dispose of them and for hand hygiene after removal. Advice to decision makers on the use of masks for healthy people in community settings As described above, the wide use of masks by healthy people in the community setting is not supported by current evidence and carries uncertainties and critical risks.

What are some good foods to eat during the COVID-19 pandemic?

You should eat a variety of fresh and unprocessed foods every day to get the vitamins, minerals, dietary fiber, protein and antioxidants your body needs. Drink enough water. Eat fruits, vegetables, legumes (e.g. lentils, beans), nuts and whole grains (e.g. unprocessed maize, millet, oats, wheat, brown rice or starchy tubers or roots such as potato, yam, taro or cassava), and foods from animal sources (e.g. meat, fish, eggs and milk). For snacks, choose raw

vegetables and fresh fruit rather than foods that are high in sugar, fat or salt.

Can corona virus disease spread through food?

To date, there have not been any reports of transmission of SARS-CoV-2 virus through food.

Can the corona virus disease spread through feces?

The risk of catching the COVID-19 virus from the faces of an infected person appears to be low. There is some evidence that the COVID-19 virus may lead to intestinal infection and be present in feces. Approximately 2–10% of cases of confirmed COVID-19 disease presented with diarrhea (2–4), and two studies detected COVID-19 viral RNA fragments in the fecal matter of COVID-19 patients. However, to date only one study has cultured the COVID-19 virus from a single stool specimen. There have been no reports of fecal–oral transmission of the COVID-19 virus.

Can flies transmit the corona virus disease?

COVID-19 IS NOT transmitted through houseflies. To date, there is no evidence or information to suggest that the COVID-19 virus transmitted through houseflies. The virus that cause COVID-19 spreads primarily through droplets generated when an infected person coughs sneezes or speaks.

Can the corona viruses be transmitted between animals and people?

Corona viruses are zoonotic, meaning they are transmitted between animals and people. Detailed investigations found that SARS-CoV was transmitted from civet cats to humans and MERS-CoV from dromedary camels to humans. Several known corona viruses are circulating in animals that have not yet infected humans. Common signs of infection include respiratory symptoms, fever, cough, shortness of breath and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death.

Can people be immune to the new corona virus?

Viruses that spread quickly usually come with lower mortality rates and vice versa. As the virus is an entirely new strain, it is believed that there is no existing immunity in anyone it will encounter. Some level of immunity will naturally develop over time, but this means that those with compromised immune systems, such as the elderly or sick, are most at risk of becoming severely ill or dying from the corona virus.

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Reference: <http://www.who.int>coronaviruse>

Reasons for Dropout of EPI Vaccination according to Socio-economic Status of the Respondents in a Selected Urban Community in Rangpur District

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Abstract:

Background: Immunization is one of the most cost-effective health protective measures and has given priority in the world today. Although immunization coverage is progressing rapidly but dropout is an obstacle to achieve the desired goal. The objective of this study was to find out the reasons for dropout of EPI vaccination in a selected area on the basis of socio economic status. **Methods:** It was a descriptive, cross sectional study. The sample size was estimated by the WHO 30 clusters survey methodology. From each cluster 7 mothers were included and total sample size was 210. **Results:** The main reasons for dropout of vaccination on the basis of socio economic background were: the younger mother's child had higher dropout (34.8%) form immunization; the dropout was high among female infants (38.0%); high dropout (43.4%) was observed among the respondents who were housewife than the respondent engaged in other job (15.4%). It was found that the dropout rate was 44.4% among the illiterate mother and 27.5% among the literate mother. The dropout rate was 50.9% among the illiterate father whereas it was 29.3% among the literate father. The dropout rate was high among the divorced mother (40.0%) compared with married women (34.6%). The drop out of immunization was high among the respondents having low income (53.8%) compared with upper middle or higher income group (20.0%). The drop out was high among the small family size compared with large family of 7 and above. **Conclusions:** The study findings suggested that socioeconomic status improvement and increase literacy rate for coverage of EPI vaccination are required. That would reduce future dropout rate in EPI vaccination. Effective supervision & further strengthening of the health workers should ensure.

Indexing words: Dropout, EPI, Socio economic status, Selected Urban Community

Introduction:

Immunization is one of the most important essential elements of primary health care. A limited number of surveys had been carried out both in the country and abroad on dropout of EPI vaccination. High dropout of EPI vaccination is responsible for low coverage of Immunization program. A study on child Immunization: Trends and Determinants in Bangladesh. Data from the Bangladesh Demographic and Health Survey 1996-1997 have been used in this analysis. According to the information from both vaccination records and mothers' recall, only 54% of Bengladeshi children (12-23months) can be considered fully immunize, although the level

of coverage for BCG and the first of DPT and polio exceeds 80%. Only 12% had no vaccination at all. Various factors, including mothers age, parity, sex of the child, place of residence, and region of residence, religion, mothers' education, economic status, electricity in the household, and exposure to mass media, appear to be significant in influencing the levels of child immunization in Bangladesh. It was also observed that immunization coverage is better for births to younger women and those of lower birth order. Among the socioeconomic variables, the educational levels of mother and father had the strongest positive effect on child immunization.¹

The infant mortality rate has been reduced by 30% and the under five-mortality rate by 25% since 1990 may be due to immunization coverage. However, immunization coverage has declined primarily due to high dropout rates (30-40%).²

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In USA it is observed that vaccination-promotion strategies in the supplemental Nutrition Program for Women, Infants, and Children (WIC) have been shown to produce dramatic improvements in coverage and other health outcomes.³

A study was conducted under the guidance and supervision of the department of population dynamics, National institute of preventive and social medicine (NIPSOM), Dhaka, in 1997 showed that in bi-variate analysis, it was found that no formal parental education, low income, no household possession, no access to piped water and low socioeconomic index was significantly associated with non-compliance of immunization ($p < 0.001$). Others were husbands occupation as laborer, non sanitary latrine, low housing index ($p < 0.01$) and 5 and above ($p < 0.05$). Similarly, infant's age 6 months and above, low parity ($p < 0.001$), low maternal care receptivity, infant's weight for age below 75%, weight for height below 90% ($p < 0.01$), maternal weight less than 40 kgs and age at marriage below 15 were significantly associated with non-compliance of immunization.⁴

The world continues to under use the most cost-effective public health intervention of all immunization. It is unacceptable that at least 2 million children still die each year from diseases for which vaccines are available at low cost. Immunization has been responsible for the most dramatic changes in the last few decades.⁵

In India, in the state of Bihar, Rajasthan, UP, MP and NE states (combined) coverage levels were relatively lower. The coverage levels were also lower for children of illiterate mothers and in small, inaccessible and tribal village.⁶

The objective of this study was to find out the reasons for dropout of EPI vaccination in a selected area on the basis of sociodemographic status.

Methods:

This study was a descriptive type of cross sectional study carried out between the periods of January 2003 to June 2003. This study was carried out at different wards in Rangpur municipality. The mothers having children of ages ranging from 12-23 months with history of EPI vaccinations within one year age were subjects of the study. The sample size estimated by the WHO 30 clusters survey methodology and total sample size were 210.

From different Mohollah each cluster was selected randomly by using COSAS software. From each cluster 7 mothers were selected purposively. A structured 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:

Out of 210 infants, 73(34.8%) were drop out from immunization and 137(65.2%) infants completed the vaccination against immunization schedule. The mean age of the respondents who drop out from immunization was 26.2±6.7 years and who did not were 27.5±6.3 years. No statistically significant mean age difference was found in terms of drop out of immunization and age of the respondents, although the younger mother tends to higher drop out from immunization than the older mother (Table 1).

Table 1: Distribution of respondents by age and drop out from immunization

Age in years	Drop out		Total
	Yes	No	
<20	10(38.5)	16(61.5)	26
20-29	41(37.6)	68(62.4)	109
≥ 30	22(29.3)	53(70.7)	75
Total	73(34.8)	137(65.2)	210
Mean±SD	26.2±6.7	27.5±6.3	27.1±6.5

N.B: Figure in parenthesis indicate percentage
 $t = -1.375$, $df = 208$, $p \text{ value} = 0.171$

Among the male infants, the drop out was 35(31.8%), whereas among the female infants, it was 38(38.0%), but the difference was not statistically significant ($p > 0.05$), although the rate of drop out was high among the female infants than male infants (Table 2).

Table 2: Distribution of dropout infant by sex

Sex	Drop out		Total
	Yes	No	
Male	35(31.8)	75(68.2)	110
Female	38(38.0)	62(62.0)	100
Total	73(34.8)	137(65.2)	210

$\chi^2 = 0.883$, $df = 1$, $p \text{ value} = 0.347$

It was evident from Table 10 that the rate of drop out from immunization was high 63(43.4%) among the respondents of housewife than the

respondents engaged in other job 10(15.4%) and the difference was statistically significant ($p < 0.01$) (Table 3).

Table 3: Distribution of dropout respondents by occupation

Occupation (respondent)	Drop out		Total
	Yes	No	
Housewife	63(43.4)	82(56.6)	145
	10(15.4)	55(84.6)	65
Total	73(34.8)	137(65.2)	210

$X^2 = 15.586$, $df = 1$, p value = 0.001

It was evident that no statistically significant difference was found in terms of drop out of immunization and occupation of husbands ($p > 0.05$), although the drop out was high among the infant's father engaged in manual job 27(38.6%) than the engaged in non-manual job 46(32.9%) (Table 4).

Table 4: Distribution of dropout respondents by occupation of husband

Occupation (Husband)	Drop out		Total
	Yes	No	
Housewife	46(32.9)	94(67.1)	140
Manual job	27(38.6)	43(61.4)	70
Total	73(34.8)	137(65.2)	210

$X^2 = 0.672$, $df = 1$, p value = 0.412

It was evident that the dropout rate was 40(44.4%) among the illiterate mother and 33(27.5%) among the literate mother. A statistically significant difference was found in terms of literacy and drop out of immunization ($p < 0.05$) indicating the illiterate mother were not aware about immunization (Table 5).

Table 5: Distribution of dropout respondents by level of education of respondents

Level of education (respondent)	Drop out		Total
	Yes	No	
Illiterate	40(44.4)	50(55.6)	90
Literate	33(27.5)	87(72.5)	120
Total	73 (34.8)	137(65.2)	210

$X^2 = 6.511$, $df = 1$, p value = 0.011

Table 6 revealed that among the illiterate father, the dropout rate was 27(50.9%), whereas it was 46(29.3%) among the literate father and the difference was statistically significant ($p < 0.01$)

indicating the illiterate fathers were not aware about immunization.

Table 6: Distribution of dropout respondents by level of education of husband

Level of education (husband)	Drop out		Total
	Yes	No	
Illiterate	27(50.9)	26(49.1)	53
Literate	46(29.3)	111(70.7)	157
Total	73(34.8)	137(65.2)	210

$X^2 = 8.185$, $DF = 1$, p value = 0.004

It was noted that no statistically significant difference was found in terms of drop out of immunization and marital status of the respondents ($p > 0.05$) although the drop out of immunization was high among the divorced mother (40.0%) compared with currently married women (34.6%) (Table 7).

Table 7: Distribution of dropout respondents by marital status

Marital status	Drop out		Total
	Yes	No	
Married	71(34.6)	134(65.4)	205
Divorced	2(40.0)	3(60.0)	5
Total	73(34.8)	137(65.2)	210

$X^2 = 0.062$, $df = 1$, p value = 0.803

It was observed that the drop out of immunization was high among the respondents having low income (53.8%) compared with upper middle or higher income group (20.0%) and the difference was statistically significant ($p < 0.01$) indicating the respondents with low income were not aware about immunization (Table 8).

Table 8: Distribution of dropout respondents by monthly income

Monthly income	Drop out		Total
	Yes	No	
Low (Tk.<2500)	35(53.8)	30(46.2)	65
Lower middle (Tk.2500-5000)	25(31.3)	55(68.8)	80
Upper middle (Tk. 5000-10000)	10(20.0)	40(80.0)	50
Higher (Tk. \geq 10000)	3(20.0)	12(80.0)	15
Total	73(34.8)	137(65.2)	210

$X^2 = 17.120$, $df = 3$, p value = 0.001

It was revealed that no statistically significant difference was found in terms of drop out of

immunization and religion of respondents ($p>0.05$) although it was observed that the drop out was just a bit high among the Muslim respondents (34.9%) than the non-Muslim counterpart (33.3%) (Table 9).

Table 9: Distribution of dropout respondents by religion

Religion	Drop out		Total
	Yes	No	
Muslim	65(34.9)	121(65.1)	186
Non-muslim	8(33.3)	16(66.7)	24
Total	73(34.8)	137(65.2)	210

$X^2 = 0.024$, $df = 1$, p value = 0.876

The mean family size of the drop out family was 5.1 ± 1.4 and that of non-drop out family was 5.2 ± 1.5 . No statistically significant difference was found in terms of drop out of immunization and family size ($p>0.05$), although the drop out was high among the small family size compared with large family of 7 and above (Table 10).

Table 10: Distribution of dropout respondents by family size

Family size	Drop out		Total
	Yes	No	
3-4	39(34.5)	74(65.5)	113
5-6	27(38.0)	44(62.0)	71
≥ 7	7(26.9)	19(73.1)	26
	73(34.8)	137(65.2)	210
Total	5.1 ± 1.4	5.2 ± 1.5	5.2 ± 1.5

$X^2 = 1.042$, $df = 2$, p value = 0.594

Discussion:

From this study it was evident that among the mothers of age group below 20 years highest percentage of dropout was present and 20 to 29 years age group was in second position. Majority of the respondents were young aged group and this has similarities with the study conducted by Khanom⁷ where she showed that young mothers were less aware and experience about the six killer diseases as well as wives were dominated by their husbands or mother-in-law. But another study done by Hossain⁸ showed that dropout cases were more likely to occur in the children of middle aged (20-30) mothers. It was evident that the rate of drop out from immunization was high 63(43.4%) among the respondents who were housewife than the respondents engaged in other job 10(15.4%) and the difference was statistically significant ($p<0.01$). This occupational variation may be due to difference in characteristics of the population in respect of socioeconomic and cultural variation. In another

study conducted by Azad⁹ majority of the respondents were housewife. In regard to educational status, it was found that among children of illiterate respondents, the highest percentage of dropout was present and among children of illiterate respondent's husbands, the highest percent of dropout was present. This educational level of respondents and their husbands had similarity with the study conducted by Rahman¹⁰ where majority of the respondents and their husbands were illiterate. The educational level of mother and father had the strongest positive effect on child immunization.¹¹ Regarding family size, majority of dropout cases was in the small family in comparison with large family size. The present study had a similarity with the study conducted by Jamiruddin¹² where majority dropout was observed in the family who had 4-6 members.

Considering family income, majority of dropout cases was from those families who had monthly income below Tk. 2500.00. But in the study conducted by Jamirudin,¹² maximum family monthly income was Tk. 2001.0 to 2500.00.

Conclusion & recommendation:

The findings of the study suggested that the majority dropout cases belonged to younger mothers. The younger mothers were less experienced about the childhood infectious diseases and lack of empowerment as a new member in the family.

The dropout was high among female infants. High dropout was observed among the respondents of housewife than the respondent engaged in other job. It was evident that the dropout rate was high among the illiterate mother and father than the literate mother and father. The dropout rate was high among the divorced mother compared with married women. The drop out of immunization was high among the respondents having low income compared with upper middle or higher income group. The drop out was high among the small family size compared with large family of 7 and above. So improvement of socioeconomic status and literacy rate to reduce dropout rate in EPI vaccination are required. Parents should be motivated for completion the EPI vaccine schedule for their child. The government and the media should play their role for prevention of dropout. Further in depth studies are needed to determine the actual reasons for dropout cases.

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Assessment of Risk Factors in Chronic Kidney Disease in Adult Rural Population

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Abstract:

Context: CKD is a major public health problem worldwide and a significant cause of morbidity and mortality. With this background the present study was done to find out the exact prevalence of CKD with associated risk factor in rural area. **Method:** 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. 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. **Results:** Study population was categorized by BMI where 789(62.3%) as normal, 278 (22%) as underweight, 165(13.0%) as overweight, 31(2.5%) as obese 2(0.2%) as morbidly obese. This study revealed 47(3.7%) participants were diabetic of them 23(49%) were self reported and 24(51%) were diagnosed during the survey. A total 243 (19.2%) were hypertensive. Among them 84 (34.6%) were established hypertensive and the rest 159 (65.4%) were unaware of their disease. **Conclusions:** Association of risk factors like obesity, diabetes, hypertension was significantly higher. Increasing number of risk factors multiply the chance of development of CKD.

Indexing words: Chronic kidney disease, Body mass index, Hypertension, Diabetes mellitus

Introduction:

According to National Kidney Foundation, Chronic Kidney Disease (CKD) is defined according to the presence or absence of kidney damage and level of kidney function- irrespective of the type of kidney disease. So, CKD is defined as either kidney damage and /or GFR < 60 ml/min/1.73m² for ≥ 3 month. Kidney damage is defined as pathological abnormalities or markers of damage, including abnormalities in blood or urine tests or imaging studies.¹

Chronic kidney disease (CKD) is a major public health problem worldwide and emerging as an epidemic proportion. In the terminal stage of CKD, when life is incompatible without renal replacement therapy either by dialysis or transplantation named as end stage renal failure (ESRD).²

Staging of CKD is based on estimation of renal function by GFR. GFR is calculated from serum Creatinine by Cockcroft-Gault and MDRD (Modification of Diet in Renal Disease) equation. Some study showed that there were significant

number of patients with normal serum Creatinine level had abnormal GFR with Cockcroft-Gault values <50 ml/min.³ This group of patients may remain unrecognized by primary care physician who rely on serum creatinine abnormality to identify renal insufficiency. In our country the most common causes of ESRD are chronic glomerulonephritis (47%), diabetes mellitus (24%) and hypertension (13%).⁴ The incidence of increase of DM was 2% in 1986 and increased to 6% in 2001. A survey in the community level has shown that about 10-12% has been suffering from hypertension in our country. Many of them will be presenting with advanced kidney failure either to physician or with hospital. The majority of these patients are younger in age which is the most productive age of life. 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.

Proper intervention of risk factors in early stage of CKD will slow the progression and reduce the rate of ESRD. So, country like us it is very

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important to know the prevalence of CKD which emphasis the early detection and prevention. So, the present study was aimed at to assess the prevalence of risk factors of Chronic Kidney Disease (CKD) in adult rural population.

Methods:

This was a cross sectional study carried out in Nephrology department, Bangabandhu Sheikh 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 included in this study. Age <15 year and above >65 years, Fever at the time of screening, recent history of fluid loss such as diarrhea, vomiting, trauma etc. and pregnant women were excluded from the study.

Duration of study: Sampling procedure:

A multistage clustered sampling design was utilized by following simple random sampling procedure. First of all a Thana of Dhaka district was selected named Savar. This thana comprises with 12 Unions. Out of these 12 Union Bongaon Union was selected. According to local Union parishod authority there were about 15 thousand adult populations who met the inclusion criteria. Among them 1265 participated in the study within mentioned period. Local authority, Public leaders, Imam, social workers motivated people to participate in this program. Leaflet distribution, miking, postering was done to create awareness about this program regularly.

Data Collection:

- (a) Data were collected from all participants by direct interview and using structured questionnaire. Informed consent was obtained from all participants.
- (b) In order to collect data and sample, there was a fixed centre where study subjects would come every Friday from 9:00 AM to 2:00PM.
- (c) Age, occupation, marital status, addresses were recorded as per statement of the participants at the time of interview.
- (d) Height, weight and blood pressure was measured according to standard procedure. BMI was calculated.

Blood samples were collected on the spot for estimation of blood glucose and serum creatinine.

Spot urine sample was collected in test tubes labeled with individual's registration no. for each participants and dipstick test was done. Positive test was labeled as + (30mg/dl), ++ (100mg/dl), +++(300mg/dl), ++++(1000mg/dl) depending on amount of proteinuria. At the same time urinary sugar was also detected and was labeled as ±(100mg/dl),+(250mg/dl), ++(500mg/dl), +++(1000mg/dl) depending on the amount of glycosuria.

Body mass Index (BMI):

BMI was calculated taking weight in kg divided by height in meter squared.

- Normal : BMI 18.5 – 24.9 kg/m²
- Overweight : BMI 25 – 29.9 kg/m²
- Obese : BMI 30 – 39.9 kg/m²
- Extremely obese : BMI ≥ 40kg/m²
- Underweight : BMI <18.5

Data processing and analysis:

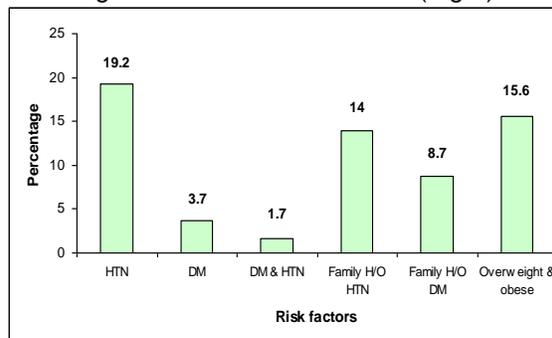
Data were analyzed through SPSS program. Continuous data were presented as mean and standard deviation from the mean. Chi-square, fishers exact test, Students t- test and Spearman scorrelation test was used for statistical analysis. Results were presented in tabulated form, charts and diagrams along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

Results:

Out of 1265 participants proteinuria and MDRD equation depicted 238 (18.8%) were having CKD, on the other hand, C-G equation revealed 226 (17.9%) having CKD.⁵

Prevalence of risk factors for CKD:

Out of 1265 participants, 19.2% were hypertensive, 3.7% diabetic, 1.7% combined hypertensive and diabetic. Family history of hypertension, and family history of diabetes mellitus were 14% and 8.7% respectively. Overweight and obese were 15.6% (Fig 1).



M = Diabetes mellitus, HTN = hypertension

Fig. 1: Prevalence of risk factors of CKD (n = 1265)

Body Mass Index (BMI):

Majority (62.3%) of the participants' Body Mass Index (BMI) was within normal range, 22% underweight, 13% overweight and 2.5% obese. Only 2(0.2%) participants had morbid obesity (Table 1).

Table 1: Distribution of the participants by Body Mass Index (n= 1265)

BMI (kg/M ²)	No	%
Normal (18.5 – 24.9)	789	62.3
Underweight (< 18.5)	278	22.0
Over-weight (25.0 – 29.9)	165	13.0
Obese (30.0 – 39.9)	31	2.5
Morbid (≥ 40.0)	02	0.2

*Mean BMI = (21.34 ± 3.67) kg/M²; range: (11.47 – 40.66) kg/M²

Distribution of diabetes:

Out of 1265 participants 47 (3.7%) were diabetics (Fig. 2). Of them 24(51%) were newly diagnosed (unaware) (Fig. 3).

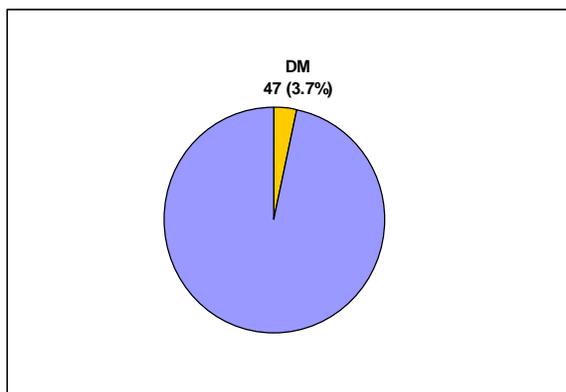


Fig. 2: Distribution of diabetes mellitus (DM) (n = 1265)

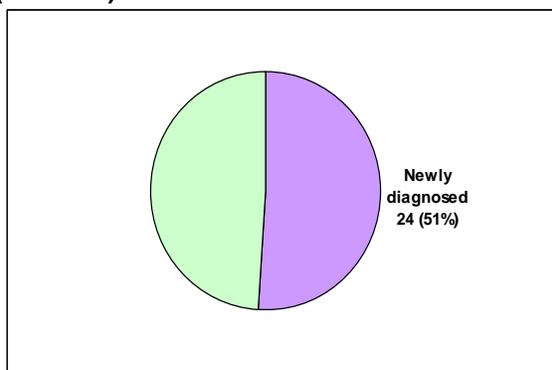


Fig. 3: Awareness about diabetes mellitus (n = 47)

Distribution of hypertension:

Out of 1265 participants 243 (19.2%) were hypertensive (Fig. 4). Of them 159(65%) were detected first time during survey (unaware) (Fig. 5).

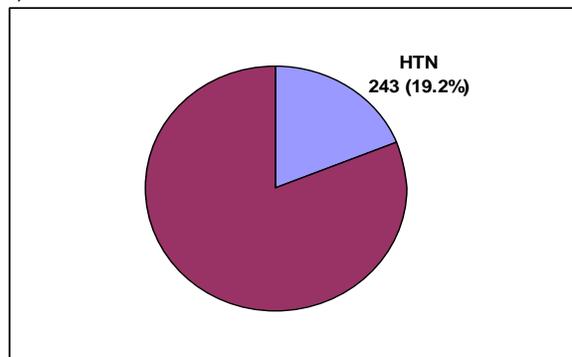


Fig. 4: Distribution of hypertension (HTN) (n = 1265)

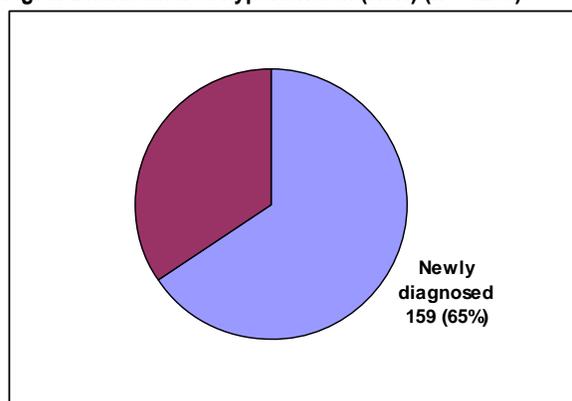


Fig. 5: Awareness about hypertension (n = 243)

Distribution of proteinuria:

Out of 1265 participants 21(1.66%) had DM with proteinuria, 33(2.6%) had HTN with proteinuria, while 31(2.5%) had isolated proteinuria. A total of 76(6%) were proteinuric (Fig. 6).

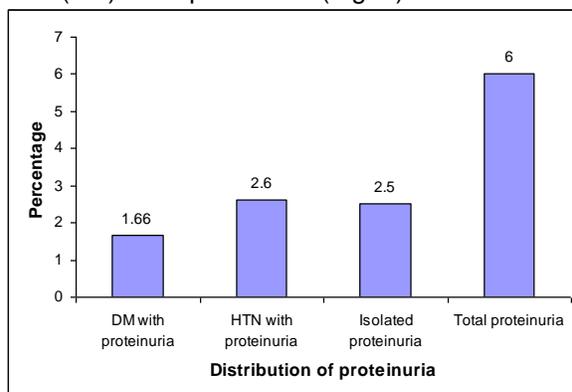


Fig. 6: Distribution of proteinuria among participants (n = 1265)

Distribution of CKD:

Distribution of CKD among risk groups demonstrates that around 25% of the hypertensives had CKD (28.8% by C-G equation and 28.8% by MDRD equation). Among diabetics the presence of CKD was much higher (46.8% by C-G equation and 51.1% by MDRD) than those among hypertensives. However, in case of combined HTN & DM the prevalence of CKD was found to be even higher 68.2% and 68.2% by C-G and MDRD equations respectively) (Fig. 11).

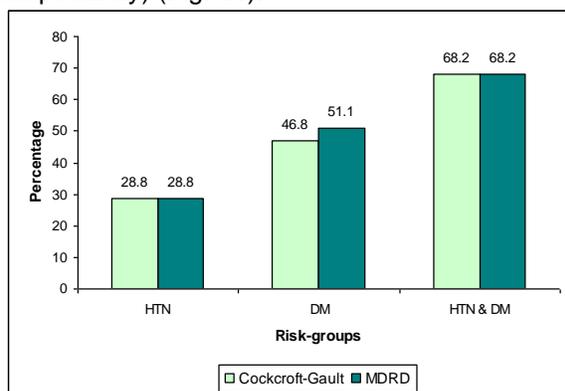


Fig. 7: CKD among risk groups by different equations (n = 1265)

Association of CKD (C-G) with nutritional and systemic diseases:

The associations of CKD with nutritional and systemic diseases were evaluated. The variables that were selected to be studied were BMI, DM, HTN and combined DM & HTN association Apart from BMI. Apart from BMI all other variables demonstrated their significant presence in the CKD population compared to normal ones ($p < 0.001$) (Table 2).

Table 2: Association of CKD (C-G) with nutritional & systemic diseases

Nutritional & systemic diseases	Group		χ^2	*p-values
	CKD (n=226)	Normal (n=1039)		
Over-wt & obese (BMI ≥ 25 Kg/M ²)	27(11.9)	171(16.5)	2.86	0.091
DM (self-reported + RBS ≥ 11.1 mg/dl)	22(9.7)	25(2.4)	27.86	<0.001
TN (self-reported + newly-diagnosed)	70(31.0)	173(16.7)	24.53	<0.001
Combined DM & HTN	15(6.6)	7(0.7)	38.62	<0.001

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

Association of CKD (MDRD) with nutritional and systemic diseases

The associations of CKD (MDRD) with nutritional and systemic diseases were studied. All the variables, except BMI, demonstrated their significant predilection with the CKD population compared to normal ones ($p < 0.001$) (Table 3).

Table 3: Association of CKD (MDRD) with nutritional & systemic diseases

Nutritional & systemic diseases	Group		χ^2	*p-values
	CKD (n=238)	Normal (n=1027)		
Over-wt & obese (BMI ≥ 25 Kg/M ²)	36(15.1)	162(15.8)	0.061	0.804
DM (self-reported + RBS ≥ 11.1 mg/dl)	24(10.1)	23(2.2)	33.23	<0.001
HTN (self-reported + newly-diagnosed)	70(29.4)	173(16.8)	19.66	<0.001
Combined DM & HTN	15(6.3)	7(0.7)	35.72	<0.001

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

Comparison of risk factors between CKD (C-G) and CKD (MDRD)

The distribution pattern BMI and certain systemic diseases like HTN and DM in CKD population are almost similar whether CKD (C-G) or CKD (MDRD) equations are used for staging of CKD ($p > 0.05$) (Table 4).

Table 4: Comparison of risk factors between CKD(C-G) & CKD(MDRD)

Nutritional & Systemic disease	Group		χ^2	*p-values
	CKD(C-G) (n=226)	CKD(MDRD) (n=238)		
Over-wt & obese	11.9%	15.1%	0.17	0.678
DM	9.7%	10.1%	0.06	0.809
HTN	31.0%	29.4%	0.02	0.877
Combined DM & HTN	6.6%	6.3%	0.08	0.774

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

Discussion:

Among adults in rural population of Bangladesh the prevalence study was done to examine the prevalence of diabetes, hypertension, and chronic kidney disease (based on proteinuria and/or low GFR, estimated GFR was calculated from Cockcroft-Gault and MDRD equation) and to find out the association of CKD with risk factors like hypertension, diabetes mellitus.

Of the 1265 population studied total 47 (3.7%) participant were diabetic in the study; of them 23 (about 49%) were self reported and 24 (about 51%) were newly diagnosed during survey.

Previously studied prevalence of type- 2 DM in Bangladesh in rural area was 4.3%,⁶ in sub urban population it was 4.1% and in urban population it was 7.9%.⁷ Rahim et al showed the prevalence of type 2 diabetes in urban slum of Dhaka was 8.5%.⁸ A similar type of study was done in urban disadvantageous population in Mirpur slum area and found 4.1% of population with DM, of them 50% was newly diagnosed. The global prevalence of DM in the year 1995 showed 4%; developed countries 5.9%, developing countries 3.3%.⁹ In this study only random plasma glucose was measured. Fasting plasma glucose and 2 hours after plasma glucose can reveal the more accurate prevalence of DM.

A total of 243(19.2%) among 1265 of our study population were hypertensive. Of them 84 (34.6%) were self reported and the rest 159 (65.4%) diagnosed during the survey. In a small community based study Sayeed et al showed that in native Bangladeshi overall prevalence rates of systolic hypertension 14.4% and diastolic hypertension 9.1%.¹⁰ The prevalence of systolic hypertension was significantly higher in rural than urban participants ($p<0.001$). Compared with the poor the rich class had significantly higher prevalence of both systolic ($p=0.002$) and diastolic ($p=0.041$). In a recent study among urban slum population in Dhaka showed that 11.6% had hypertension.

Proteinuria is the cardinal manifestation of overt diabetic nephropathy, hypertensive renal damage and glomerulonephritis. Out of 1265 participants urine protein analysis using multisticks demonstrated that 21(1.66%) participants had DM with proteinuria, 33(2.6%) had HTN with proteinuria, while 31(2.5%) had isolated proteinuria.

In this study 11.9% of the CKD population were overweight and obese compare to 16.5% without CKD, although the difference between the two groups did not reach the level of significance ($P=0.091$) when using C-G equation. Also 15.1% of the CKD population were detected as overweight and obese compared to 15.8% of those without CKD and show no difference between the two groups ($p=0.804$) when using MDRD equation.

In our study, diabetes mellitus was present in significant proportion in CKD group than those in the normal population ($p<0.001$). When using C-G equation CKD was four times higher in comparison to normal that is CKD was 9.7% in

DM patient and 2.4% in normal population ($p<0.001$). Based on MDRD equation CKD was 10.1% in diabetic patient and 2.2% in normal population ($p<0.001$). The prevalence of a reduced GFR <60 ml/min (CKD stage 3 to 5) was three fold higher in those with DM compared with those without (27.6%; 95%CI: 22.0%, 33.1% VS 9.8%; 95% CI: 7.6%, 12.1%) ($P<0.001$).¹¹ The association of DM and low GFR (<60 ml/min) was not significant in Iceland male (Low GFR 65% vs. control 6%) but it was significant in female (low GFR 6.6% vs. control 4.4%) ($p<0.05$).

In the survey, association of CKD with risk factor revealed significant relation. Those having CKD, 31.0% of them had hypertension (HTN) compared to 16.7% of normal population, showing statistically significant association of CKD with HTN ($p<0.001$) based on C-G equation. The association of HTN and CKD also significant when MDRD equation was used (CKD was 29.4% in hypertensive's and 16.8% in normal population, $p<0.001$).

The AusDiab kidney study demonstrated hypertension (odds ratio: 5.4, 95% CI: 4.3, 6.9) were strongly predictive of proteinuria on univariate analysis and hypertension also predictive of renal impairment. The prevalence of reduced GFR <60 ml/min/1.73 m² was five-fold more prevalent in those with hypertension compared to those without ($p<0.001$).

NHANES III data of US adult population also showed significant prevalence of CKD among hypertensive and diabetics.¹² Along with past population based study some of which mentioned above and the present study revealed that hypertension and diabetes is established cause of CKD.

Among high risk group having hypertension and diabetes was studied in community health clinic by Patel et al¹³ and found the prevalence of CKD was 68.9%. In the United States 70% of patient who are getting renal replacement therapy are having diabetes or hypertension or both. Blood pressure systolic or diastolic is significantly higher in low GFR group compared with normal in Iceland study.¹⁴

From this study we found those having the combination of risk factors like diabetes and hypertension, CKD was nine times higher compared with normal population when C-G or MDRD equation used ($P<0.001$).

The present study revealed the increase number of risk factor multiplying the probability of developing of

CKD. As we found hypertensive or diabetic patient was 2 or 4 times prone to develop CKD compared with normal ($P < 0.001$). But already mentioned both the factor together can raise the probability of CKD nine times ($p < 0.001$).

According to NKF: K/DOQI guideline: CKD should be labeled if kidney damage with or without decreased GFR persist for ≥ 3 months. In the follow up programme out of 226 CKD patient only 72 (32%) attended and complying to the advise. Out of these 72 person 57 (79%) met the CKD criteria after reevaluation. In other studies 18% of the participants showed compliance in KEEP study.¹⁵

Conclusion:

The survey data revealed that CKD is not less common (18%) in the rural population. A similar survey conducted recently in the urban disadvantaged population also demonstrated a significant percentage of CKD. The commonest risk factors for CKD like diabetes and hypertension are also highly prevalent in adult rural population and majority of the population were unaware of their disease. The combined effect would increase the burden of CKD. So to prevent or slow the progression of CKD, early detection and therapeutic intervention of risk factors 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.

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Evaluation of Risk Factors in Patients with Dementia

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Abstract:

Background: Dementia is a global burden. Despite recent advances, current pharmacological treatment of dementia is unrewarding. Diabetes mellitus, dyslipidemia and hypertension are being increasingly recognized as major modifiable risk factors of dementia. Therefore, an approach towards risk factor modification and neuroprotection is needed for prevention and slowing the progression of the disease. **Objective:** The objective of the study was to determine the cardiometabolic risks in patients with dementia. **Methods:** This cross sectional study was conducted in the department of Neurology of Rangpur Medical College Hospital among patients with dementia between January 2016 and December 2018. 150 eligible participants of all ages with cognitive dysfunction fulfilling the selection criteria were enrolled into the study. Mini-Mental Status Examination (MMSE) was done for each subject. All patients were undergone relevant investigations. Patients having blood glucose levels of 200 mg/dl or more at 2 hours samples were termed undiagnosed DM (UDM). The outcome variables were: age, sex, hypertension, diabetes and dyslipidemia (DL). **Results:** Out of 150 patients, 95 were males and 55 females with a male to female ratio 1.7:1. 37 subjects had known diabetes and 70 patients had unknown diabetes (detected after oral glucose tolerance test). An overall 71.33% subjects had diabetes, 65.33% had DL, 64.24% had HTN and 50% subjects had DM plus DL. The gender difference of DM (male vs female) were (64.89% vs 82.14%, $p < 0.02$), DM plus DL (41.49% vs 64.29%, $p < 0.01$) significantly higher in females, that of DL (60.63% vs 73.21% $p = 0.08$) and HTN (60.21% vs 71.42%, $p = 0.14$) were also higher but the differences were not significant. **Conclusion:** The prevalence of diabetes among subjects of dementia was higher than dyslipidemia and hypertension. Frequency of dementia with previously unknown diabetes outweighed known diabetes and dyslipidemia. All the metabolic abnormalities were found to be worse in females suggesting a clear sex difference in dementia.

Indexing words: Dementia, Hypertension, Diabetes mellitus, Dyslipidemia

Introduction:

Dementia is an age related organic brain disorder with loss of previously acquired intellectual functions. The characteristic symptoms of dementia are difficulties with memory, language, problem-solving and other cognitive skills that affect a person's ability to perform everyday activities.¹ Genetics, higher age (>65 years) and female gender are the

recognized risk factors of dementia. Trivial changes in the brain start approximately 20 years before the clinical onset of the disease with memory and language problems. Most people with dementia do not complain by themselves and brought about by relatives or friends because of dependence for survival or getting lost in a previously acquainted environment.¹ The major modifiable risk factors; insulin deficient Type 2 diabetes mellitus (DM), hypertension (HTN) and dyslipidemia (DL) may remain silent for long period until complications become overt.^{2,3,4} Insulin has a neuroprotective effect⁵ and a significant role in memory processing and memory preserving.^{6,7} Insulin and its analogues are used successfully in treating Alzheimer's disease (AD).⁸⁻¹¹ Conversely, uncontrolled DM accelerate memory decline, cause dementia at an earlier age.^{12,13,14} Studies demonstrate that recommended

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glycaemic targets prevent dementia and favours healthy brain aging.^{15,16} An undoubted role of brain insulin deficiency or dysfunction behind the neuropathology of AD gave rise the concept of brain diabetes or "Type 3 diabetes".¹⁷⁻²⁰ This study explored the cardio-metabolic profile of patients with cognitive dysfunctions by means of levels of glycaemia, dyslipidemia and hypertension.

Methods:

This cross sectional study was conducted in the department of Neurology of Rangpur Medical College Hospital among patients with dementia between January 2016 and December 2018. 150 eligible persons of all ages with cognitive dysfunction fulfilling the selection criteria were enrolled into the study. Caregivers narrated the history because subjects with memory decline had inability to self care (dependence), irrelevant speech, wandering, cognitive dysfunction, loss of insight, difficulties with ADL,²¹ and loss of sphincter control. Included patients were known cases of DM or unknown DM. Patients with acute organic or psychiatric illness such as confusion, delirium, stroke, myocardial injury, ongoing psychiatric treatment, insulin treated DM, alcoholic, drug addict, clinically hypo/hyperthyroid, blind, deaf or suffering from or being treated for any obvious debilitating illness and mild dementia were excluded. Meticulous review of all previous clinical and investigation records of each patient was done to identify any relevant disease, modes of treatment and reasons that can systemically affect cognition. A detailed history, clinical examination and investigations to confirm diabetes and dyslipidemia were done. Mini-Mental Status Examination (MMSE)²² was done for each subject and a test score of 26-30 was considered normal and score 21- 25 mild, 11-20 moderate and 10 or less was considered severe dementia. All patients were investigated for complete blood count, blood sugar, serum lipid status, electrocardiography (ECG) and brain CT/MRI to exclude organic lesion other than changes due to aging. Subjects with known or previously treated diabetes or those with a random blood sugar of more than 200 mg /dl (11.1 mmol/L)²³ on 2 or more occasions were labeled as known DM and those with normal blood sugar levels on routine tests with fasting or random samples had to undergo a standard oral glucose tolerance test (OGTT) with 75 gram glucose. After OGTT patients having blood glucose level of 200 mg/dl

or more at 2 hours were termed undiagnosed DM (UDM).

Results:

The mean age (in years) was 61.29±13.44 (95% CI; 59.14-63) years and weight (in Kg) 57.43±10.68 (95% CI; 55.46-59.40). HTN was common with a BP (mm of Hg) systolic 155.64±24.30 (95% CI; 151.73-159.56), diastolic 94.18±12.59 (95% CI; 92.16-96.21). No sex difference was found (Table 1).

Table 1: Distribution of patients by clinical information (n= 150)*

Variables	Overall (n)	Males (n)	Females (n)	Student's t-test
Age (years)	61.29±13.44 (150)	62.06±14.24 (95)	59.95±11.94 (55)	NS
Weight (kg)	57.43±10.68 (113)	59.25±9.95 (75)	53.89±11.27 (38)	NS
SBP (mm of Hg)	155.64±24.30 (150)	153.76±23.95 (93)	158.82±24.77 (55)	NS
DBP (mm of Hg)	94.18±12.59 (150)	93.01±13.37 (95)	96.18±12.80 (55)	NS

* All units were expressed as (mean ± SD). 'Students t test' was done between male and female subjects for different variables. NS= not significant.

Table 2 illustrates previously known DM in 37(24.83%) subjects and DM after OGTT in 107 (71.33%) subjects and 70 (46.67%) as unknown DM.

Table 2: Distribution of patients by diagnosis of diabetes mellitus subjects before and after OGTT (n= 150)

Variable	Overall % (n)	Males % (n)	Females % (n)	Chi-squared test*
Diagnosed DM	24.83 (37)	25.80 (24)	23.61 (13)	NS
DM after OGTT	71.33 (107)	64.89 (61)	82.14 (46)	S 6.42/ p<0.02
UDM	46.67 (70)	37.89 (36)	61.82 (34)	S 8.63 / p<0.01

*Chi Squared test done between male and female groups. NS=not significant; S=significant at p<0.05 or less.

Fig 1 shows frequency of unknown DM outnumbered known DM among subjects with dementia.

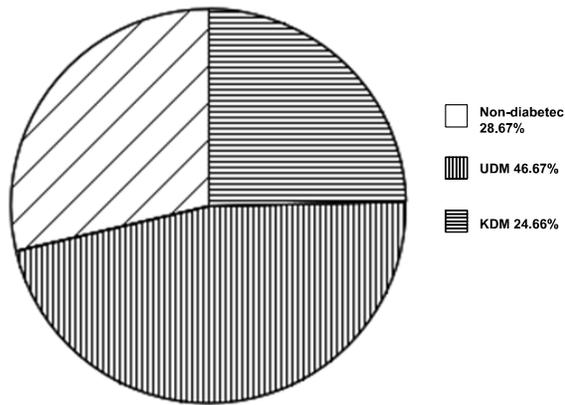


Fig 1: Prevalence of diabetes among subject with dementia

Fig 2 shows age distribution of the subjects with dementia. It was observed that more than 62% persons were above the age of 60 years and 28% among them were UDM.



Fig 2: Age distribution of 150 dementia subjects according to DM

KDM=known diabetes subjects, UDM= unknown DM.

Table 3 demonstrates frequency of DM was highest (107/ 150, 71.33 %) followed by dyslipidemia (98/150, 65.33%, $p < 0.02$).

The metabolic parameters were worse in females. The gender differences of DM (male vs female) were (64.89% vs 82.14%, $p < 0.02$), DM plus DL (41.49% vs 64.29%, $p < 0.007$) significantly higher in females, that of DL (60.63% vs 73.21% $p = 0.08$) and HTN (60.21% vs 71.42%, $p = 0.14$) were also higher and the differences were not significant.

Table 3: Distribution by metabolic profile of subjects

Problems	Overall % (n)	Males % (n)	Females % (n)	Chi Squared test*
DM	71.33 (107)	64.89 (61)	82.14 (46)	S 6.42/ $p < 0.02$
DL	65.33 (98)	60.63 (57)	73.21 (41)	NS 3.25/ $p = 0.07$
DM+DL	50.00 (75)	41.49 (39)	64.29 (36)	S 8.29/ $p < 0.01$

*Chi Squared test done between male and female groups. NS=not significant; S=significant at $p < 0.05$.

Discussion:

Cardiometabolic risk factors increase the risk of developing cognitive impairment in the elderly population. Among the important risk factors, diabetes, hypertension and dyslipidemia are on the top of list. This study showed that 71.33 % of subjects with dementia had diabetes at the time of diagnosis, 24.83% were known DM and 46.67% had UDM. Among the participants, 65.33% had DL, 50% had DM with DL and 64.24% had HTN. Among them, DM appeared to be causally related to dementia and could be managed effectively.²⁴

In this study despite higher prevalence of DM and HTN, females were found to be less susceptible to develop dementia than males. The prevalence of DL is higher in females but not statistically significant and a previous study suggests that it could be secondary to concomitant DM resulting from insulin deficiency.²⁵

A meta-analysis of 28 longitudinal studies demonstrated that people with DM had a 73% increased risk of developing dementia and a 56% increased risk of developing AD compared to the general population.²⁶ Chatterjee et al. found 60% greater risk for the development of dementia compared with those without DM.²⁷ Apart from established cases of known DM, newly diagnosed diabetes was associated with a 16% increase in the risk of dementia among the elderly population.²⁸

Growing evidences suggest that normal metabolic homeostasis is essential for a healthy brain and poor glycemic control over long duration leads to brain atrophy, cognitive impairment and dementia.^{29,30,31,32} Insulin

deficiency or dysfunction was identified as the common etiology behind DM, DL, and HTN.²⁵ Subjects with cognitive impairments are frequently found to have concomitant DM.^{33,34} The implication of present study findings is that people with dementia with risk factor DM can substantially improve with insulin therapy and DL, HTN can be treated adequately with appropriate therapy.³⁵

Conclusion:

In this study the prevalence of diabetes among subjects of dementia was higher than dyslipidemia and hypertension. Frequency of dementia with previously unknown diabetes outweighed known diabetes and dyslipidemia. All the metabolic abnormalities were found to be worse in females suggesting a clear sex difference in dementia. The study concluded that cardiometabolic risk factors increase the risk of developing cognitive impairment.

Limitations:

This study did not include vascular or mild dementia. Greater number of subjects was hypertensive and a vascular etiology could underlie dementia in those without diabetes.

Acknowledgement:

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Management of Fractures of the Distal Third of Tibia by Minimally Invasive Plate Osteosynthesis (MIPO) Technique

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Abstract:

Background: Distal tibia fractures are challenging injuries. They are primarily located within a square based on the width of the distal tibia without intra-articular extension. **Objective:** To evaluate the management of fractures of the distal third of Tibia by minimally invasive plate osteosynthesis (MIPO) technique. **Methods:** Fifty patients with distal tibia fractures treated with locked compression plating were included in the study. This was a prospective study done in a tertiary care centre from January 2017 to December 2018. All patients with age >18 years, closed fractures without intra-articular extension and Gustillo type 1 fractures were included. Intra-articular fractures, tibial shaft fractures, elderly patients with co-morbid condition, non-weight bearing limb, pathological fractures and Gustillo type II open fractures were excluded. **Results:** Two (4.0%) were delayed union, 4(8.0%) were ankle stiffness, 4(8.0%) were superficial skin infection and 1(2.0%) were deep infection. Among AOFAS scores, 34(68.0%) cases had excellent, 13(26.0%) had good and 3(6.0%) had fair. **Conclusion:** Distal Tibia fractures can be managed by distal Tibia locking plating through MIPO technique which helps in achieving less infection and also be in rapid union, because it facilitates preservation of the most of skin and soft tissues, blood supply to the bone fragment and anatomical reduction of the fracture. It is a simple, rapid (less hospital stay) and straight forward procedure which has excellent results.

Indexing words: Fracture of tibia, Minimally plate, Osteosynthesis

Introduction:

Distal tibia fractures are challenging injuries. They are primarily located within a square based on the width of the distal tibia without intra-articular extension. They are often caused by high energy axial compressive, direct bending or low energy rotation forces. These fractures constitute less than 7% of all the tibial fracture and less than 10% of all lower extremity fractures.¹ Fractures of distal tibia have been difficult to treat. In this era of increasing life expectancy, there is a rise of elderly population

which increases the incidence of these fractures in osteoporotic bones, adding to the morbidity.^{2,3} Minimal invasive plating osteosynthesis (MIPO) has evolved as a newer concept to treat distal tibial fractures with minimal articular comminution and minimal soft tissue damage. Several methods of treatment are implemented including non-operative treatment, external fixation, intramedullary nailing, and internal fixation with traditional implants (standard screws and plates).⁴ However, each of these treatment options is associated with certain challenges.⁵ But currently, two methods are gaining popularity. One method is wire fixators, which is useful in highly comminuted fractures with significant soft tissue damage. Other is MIPO technique (Minimal invasive plating osteosynthesis) when there is minimal articular comminution and the soft tissue envelope is minimally damaged.⁶ However, compared with the traditional approach, minimally invasive techniques appear to have higher rates of the union, lower rates of postoperative complications and lower incidences of bone grafting.^{7,8} In this series, the

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results of 50 cases of fracture distal tibia treated with minimal invasive plating over a period of two years were studied.

Methodology:

Fifty patients with distal tibia fractures treated with locked compression plating were included in the study. This was a prospective study done in a tertiary care centre from January 2017 to December 2018. All patients with age >18 years, closed fractures without intra-articular extension and Gustillo type 1 fractures were included. Intra-articular fractures, tibial shaft fractures, elderly patients with co-morbid condition, non-weight bearing limb, pathological fractures and Gustillo type II open fractures were excluded. AO/OTA classification system was used to classify fractures. Institutional ethics committee clearance was taken for study. Informed consent was obtained from all patients before surgical procedure and for participation in the study. Complete preoperative radiographic assessment was done and preoperative plan was prepared. Broad spectrum intravenous antibiotics were given immediate preoperatively. The patient was positioned supine on a radiolucent operating table under spinal or epidural anaesthesia. Locking Plate Osteosynthesis is done with the MIPO technique. Incision is made over the medial malleolus measuring about 3cms with a gentle curve, sparing the saphenous vein and nerve. Extraperiosteally a tunnel is made by blunt dissection in right orientation. Anatomical distal tibial locking plate is passed through this tunnel by retrograde technique. Locking sleeves can be attached to plate and used to hold the plate at distal end while insertion. Plate is passed in such a way that end of plate is visualized adequately and screws can be inserted distally. Using C arm plate is adjusted to meet the contour of the bone. Fracture reduction is achieved under image intensifier by assessing length, axial and rotational alignment. Plates can be held temporarily by K wires whenever required. Varus-valgus angulation of <50, anterior posterior angulation <100, and shortening of <15mm were considered acceptable reduction. Sagging of distal fragment at fracture site-can be prevented by elevating fracture site with a bolster and plantar flexion of foot Fig-1. A locking cortical or cancellous screw is inserted. Fracture reduction is confirmed and cortical screw is inserted into proximal diaphyseal fragment which helps plate to contact

with plate surface [8]. Remaining screws are inserted by stab incisions. Associated fibula fractures when present at syndesmotic level was fixed with plates or Rush nail depending on fracture type. Wound was irrigated with saline and closure done in layers. Sterile dressing was done and well padded posterior splint was given with ankle in neutral position. Static quadriceps exercises & toe movements, as tolerated were begun from 1st postoperative day. Ankle mobilization was started from 3rd postoperative day. Intra-venous antibiotics were given for 3 days followed by a course of oral antibiotics for 5 days. Analgesics were given as per need. Suture removal was done usually on 12th to 14th postoperative day. Protected weight bearing was allowed only once signs of progress toward union were evident, usually at 6 weeks postoperatively. Full weight bearing was allowed after 10 to 12 weeks, depending on the radiographic signs of fracture healing. X-rays would be taken at regular intervals and evaluated for fracture healing, alignment at fracture site & look for any evidence of mal-alignment. Clinically union was defined as painless fracture site during full weight bearing. Radiographically fracture was considered united if 3 of 4 cortices in 2 radiographic views were continuous. Patients were followed up for a period of 1 year at 6 weeks, 12 weeks, 3 months, 6 months and 1 year Fig-2. At the final follow up patients were evaluated using American Orthopaedic Foot and Ankle Society (AOFAS) score.



Fig 1: Compression locking plate and accessories

Result:

Majority (42.0%) patients belonged to age 21-30 years. The mean age of the patients was 39.7±11.0 years with range from 18 to 56 years. Thirty six (72.0%) patients were male and 14 (28.0%) female. Twenty five (50.0%) patients had fracture of left and right tibia respectively. Majority (70.0%) patients were road traffic accident (high energy trauma) was etiological factor, 6(12.0%) were head injury and 33(66.0%) were fibular fractures. More than half (54.0%) patients were injury surgery interval 1-7 day. The mean duration of surgery was found 50.3±8.9 minutes with range from 35 to 70 minutes. The mean duration of union was found 19.1±4.9 weeks with range from 12 to 27 weeks (Table 1). Two (4.0%) were delayed union, 4(8.0%) were ankle stiffness, 4(8.0%) were superficial skin infection and 1(2.0%) were deep infection (Table 2). Among AOFAS scores, 34(68.0%) cases had excellent, 13(26.0%) had good and 3(6.0%) had fair (Table 3).

Table 1: Demographic characteristics of the study patients

	Number of patients	Percentage
Age (years)		
≤20	6	12.0
21-30	21	42.0
31-40	12	24.0
41-50	7	14.0
51-60	4	8.0
Mean±SD (Range)	39.7±11.0	(18-56)
Sex		
Male	36	72.0
Female	14	28.0
Side of fracture		
Left	25	50.0
Right	25	50.0
Road traffic accident		
High trauma	35	70.0
Low trauma	15	30.0
Injury		
Head	6	12.0
Chest	2	4.0
Patellar fracture	3	6.0
Radius fracture	1	2.0
Fibular fractures		
Yes	33	66.0
No	17	34.0
Injury surgery interval		
<12 hour	19	38.0
1-7 day	27	54.0
>7 day	4	8.0

Duration of surgery (min)		
<60	44	88.0
61-120	6	12.0
Mean±SD (Range)	50.3±8.9	(35-70)
Duration of union (weeks)		
≤15	39	78.0
16-30	11	22.0
Mean±SD (Range)	19.1±4.9	(12-27)

Table 2: Complications of the study patients

	Number of patients	Percentage
Delayed union	2	4.0
Ankle stiffness	4	8.0
Superficial skin infection	4	8.0
Deep infection	1	2.0

Table 3: AOFAS scores of the study patients

AOFAS scores	Number of patients	Percentage
Excellent	34	68.0
Good	13	26.0
Fair	3	6.0

Discussion:

In this study showed that the majority (42.0%) patients belonged to age 21-30 years. The mean age of the patients was 39.7±11.0 years with range from 18 to 56 years. Thirty six (72.0%) patients were male and 14 (28.0%) female. Twenty five (50.0%) patients had fracture of left and right tibia respectively. Majority (70.0%) patients were road traffic accident (high energy trauma) was etiological factor, 6(12.0%) were head injury and 33(66.0%) were fibular fractures. More than half (54.0%) patients were injury surgery interval 1-7 day. The mean duration of surgery was found 50.3±8.9 minutes with range from 35 to 70 minutes. The mean duration of union was found 19.1±4.9 weeks with range from 12 to 27 weeks. Jaswani et al.⁹ study reported the age of the patients ranged from 20-60 years with the majority (19; 42.22%) of them being in the age of 40-50 years. 26 had a fracture on right and 19 on the left side. The most common mode of injury was road traffic accident in 33 (73.33%) cases. Dhakar et al¹ reported The age of the patients in this study, ranged from 22 years to 62 years average being 41 years. There were 34 male and 16 female patients, 26 patients had fracture of left and 24 patients had fracture of right tibia. Forty three fractures were closed and 7 were open fractures. Road traffic accident (high energy trauma) was etiological factor in 33,

17 cases sustained fractures following fall (low energy trauma). Head injury was present in 5 cases, chest injury in 2 and radius fracture in 1 case. There were 33 cases of associated fibular fractures. Injury surgery interval was less than 8 hours in 14 cases, <3 days for 20 cases, 3-7 days for 14 cases and more than 7 days in 2 cases. Average surgery time was 49mins, 13 cases took 31-40 minutes, 17 (35%) took 41-50 minutes, 12 (24%) took 51-60 minutes, 8 cases took 61-70 minutes. Average union time was 20.96 weeks. Guo et al¹⁰ in their study concluded nailing to be better option for treating distal tibial fractures with atleast 3 cm distal fragment and no articular incongruity. They found no difference in union rate but mean radiation time and operating time were significantly longer in LCP group and no statistical difference was noted in alignment.^{10,11} Open reduction and internal fixation leads to increased risk of infection and nonunion.^{12,13} Minimally invasive plating techniques reduce iatrogenic soft tissue trauma and damage to vascularity of bone fragments, as well as preserve the fracture haematoma resulting in uncomplicated union. Anatomical reduction of fractures should be done under image intensifier before fixation. Different methods for fracture reduction include calcaneal traction, external fixators or distractors, reduction clamps and interfragmentary screws through stab incision.^{14,15} Senthilkumar et al¹⁶ study reported the age groups of patient chosen for the study varied from 21 years to 51 years with the mean age of 36.5 years. Eight among the eighteen cases had associated injuries which include four cases of patellar fracture, two cases of head injury, a case of supracondylar femur fracture and a distal radius fracture. Eleven cases (66%) had signs of union within 16 weeks, four cases (23%) had signs of union within 16-24 weeks, and two cases (11%) had union of more than 2 months. Ashwani et al¹⁷ also reported the mean age of the patients was 39.09±10.13 years with 15 males and 6 females with 52.38% having left tibia involvement. The operating duration mean was 66.67±5.55 min with ranged from 60-80 minutes. The average time for union in our study was 21.70±2.67 weeks.

In this study observed that 2 (4.0%) were delayed union, 4(8.0%) were ankle stiffness, 4(8.0%) were superficial skin infection and 1(2.0%) were deep infection. Dhakar et al.¹ reported Two (4.0%) were superficial skin infection, 2(4.0%) were deep infection, 3(6.0%)

were ankle movement restriction, 2(4.0%) were valgus angulation and 4 (8.0%) were implant failure. Intramedullary nailing has advantages of closed stabilization with preservation of fracture haematoma and no damage to overlying soft tissues.¹⁸ However, due to the widening of medullary canal at metaphysis, angular and rotational stability is not achieved. Inadequate reduction, intraoperative loss of reduction after nail insertion, implant failure and malunion are reported complications.^{19,20} Ashwani et al.¹⁷ observed implant irritation (23.80%), ankle stiffness (23.80%) and infection (19.04%) were the main complications noted amongst patients. Jaswani⁹ reported postoperative complications observed were a superficial infection (1 case), deep infection (1 case) and non-union was seen in one patient. The period of hospitalization ranged from 5 to 21 days.

Dorsiflexion of the ankle is done while observing the anterior aspect of the ankle for skin creases; the absence of a skin crease or wrinkle suggests severe swelling.^{20,21} Lau et al. reported late infection rate of 15% in fixation with locking plates.²² Average rate of infection in various literature available was 5-15%. Delaying surgery if limb is swollen and bruised, gentle soft tissue handling and reducing operative time helps in reducing infection rates.^{22,23} Collinge et al. reported a reoperation rate of 5% which included secondary procedure like bone grafting for delayed union.²⁴ Rate of secondary procedures for delayed union or non union or change of hardware has been reported 3.8% to as high as up to 35%. Implant failure has been reported to be 2-6%. Plate bending or breakage is often associated with malalignment, delayed or nonunion.^{22,23,25}

In this study showed that among AOFAS scores, 34(68.0%) cases had excellent, 13(26.0%) had good and 3(6.0%) had fair. Dhakar et al.¹ reported based on AOFAS scores excellent results were obtained in 33, good in 14 and fair in 3 cases. Senthilkumar et al.¹⁶ showed that they achieved 54% excellent, 29% good, and 17% fair results that results is similar to our observation. Functional outcome according to AOFAS score was measured in Ashwani et al.¹⁷ study which came out to mean score was 96.52±4.16, which was similar to studies by Guo et al.¹⁰ and Collinge et al.²⁴ Jaswani⁹ study showed On analyzing the results of MIPO, excellent results were seen in 66.66% cases and 33.34% had satisfactory results. In Ravindra

study of 20 cases, 10(50%) patients had excellent outcome, 4 (20%) had good outcome, 4(20%) had fair outcome and 2 (10%) had poor outcome.²⁶

Conclusion:

Distal Tibia fractures can be managed by distal Tibia locking plating through MIPO technique which helps in achieving less infection and also be in rapid union, because it facilitates preservation of the most of skin and soft tissues, blood supply to the bone fragment and anatomical reduction of the fracture. It is a simple, rapid (less hospital stay) and straight forward procedure which has excellent results.

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Evaluation of Phyllodes Tumor of Breast - A Retrospective Study

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Abstract:

Background: Phyllodes tumours are typically large fast growing masses that form from the periductal stromal cell of the breast. The patients typically present with a firm, palpable, rapidly growing mass. This is a retrospective study of clinical experience regarding management of phyllodes tumour both benign and malignant. **Method:** This is a personal study of 28 patients who were studied retrospectively in a time span of June 2011 to February 2018. **Result:** All of these patients were histologically diagnosed cases of different varieties of phyllodes tumours (benign 17, borderline 8, malignant 3). Patients were evaluated in relation to their degree of different categories and different modalities of treatment given. All patients were followed up for 2 years of time after treatment. **Conclusion:** Phyllodes tumour are rare fibroepithelial lesion of breast. Accurate preoperative diagnosis is mandatory for correct surgical planning and avoidance of reoperation. Recommended operative technique is wide excision with at least 1 cm of normal margin to avoid recurrence for both benign and malignant tumours.

Indexing words: Phyllodes tumour, Surgical margin, Fibro adenoma, Malignant phyllodes

Introduction:

Phyllodes tumour is a relatively uncommon benign fibroepithelial lesion of the breast which accounts for <1% (0.3-0.9%) of all breast neoplasm.¹ Most commonly found women between 40-50 years² of age.

Chelius described this tumour first in 1827. Johannes Muller (1838) was the first person to use the term cystosarcoma phyllodes. It was believed to be benign until 1943, when Cooper and Ackerman reported on the biological potential of this tumour. In 1981 the World Health Organization adopted the term phyllodes tumour and as describe by Rosen subclassified them as histologically benign, borderline and malignant according to the features such as tumour margins, stromal overgrowth, tumour necrosis, cellular atypia and number of mitosis per high power field.³⁻⁶

Most common grade of phyllodes tumour is benign (60-75%) of the cases.⁷ phyllodes tumour represents a wide range of clinical and pathological behaviour, so should be regarded as a spectrum of fibroepithelial neoplasm rather than a single disease entity. Histologically these tumours are characterized by presence of an epithelial component with stromal components which differentiates it from other stromal sarcomas. It is characterized by long clefts and myxoid cellular stroma.⁸⁻¹⁰ Preoperative accurate tissue diagnosis is required to avoid reoperation. Malignant phyllodes tumour if inadequately treated can show rapid growth and metastatic spread, while phyllodes tumour which are benign on clinical, radiological and cytological examination are often indistinguishable from fibroadenomas and can be cured by local surgery. So as the nonoperative management of fibroadenomas is widely adopted, the importance of phyllodes tumour today is based on the need to differentiate them from other benign breast lesions. Treatment wide local excision (free margin at least 1 cm) or mastectomy provided histologically clear specimen margin are ensured.¹¹⁻¹³

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In this study patient characteristic, findings on imaging, histopathological diagnosis, evaluation and outcome of surgical treatment given and risk factors associated with recurrence are assessed.

Methods:

This is a retrospective study of 28 patients who were diagnosed case of Phyllodes tumour and underwent surgical management in Rangpur Medical College & Hospital Surgery Department in a time frame of June-2011 to February-2018. The data were collected from hospital registry, analyzed retrospectively regarding physical examination of the patient including age, menopausal status, location and size of the tumour. Investigation reports reviewed including breast imaging (USG and Mammography), histopathological reports. Data regarding therapeutic intervention are also analyzed. Different operative procedures were performed including excision, wide excision, mastectomy, excision followed by mastectomy. Patients are classified into benign, boderline and malignant tumour according to WHO guideline after final histopathological diagnosis. All of the patients were followed up for 2 years after operation for detection of any recurrence.

Result:

We included 28 patients of phyllodes tumour among which 20 patients were premenopausal and 8 were post menopausal. Age range of the pratients was 30 to 55 years and the average age was 39 years of whom 23 patients came with tumour in right breast and remaining patients had tumour in left breast .Lumps were found in upper and outer quadrant in 15 patients, 4 in upper and inner quadrant, 5 patients had centrally locating lump,3 in lower and outer and 1 in lower and inner quadrant. Among 28 patients, 17 patients had benign phyllodes tumour of 3-4 cm in diameter, 8 patients with boderline phyllodes of 5-5.5cm diameter and rest of the patients (3 in number) were found with a malignant phyllodes tumour of 6.5 to 7 cm diameter. The skin changes were observed in the form of dialated veins and blue discoloration in larger tumours with 6-7 cm diameter in 11 patients, but there was no history of nipple retraction of any of them. Two patients with malignant phyllodes and 1 patient of borderline phyllodes found with skin fixity. None of the patients had pectoralis muscle fixation. Clinically palpable axillary lymph nodes were present in 4 patients (11.4%).

Table 1 Details of tumor

Parameter	Benign	Borderline	Malignant
Age			
<40 years	11	2	0
≥40 years	6	6	3
Site			
Right	13	7	3
Left	4	1	0
Quadrant			
UOQ	10	3	2
UIQ	2	1	1
Central	2	3	0
LOQ	2	1	0
LIQ	1	0	0
Operation Type			
Wide Excision	17	8	0
Mastectomy	0	0	3
Operation done for local recurrence			
Wide Excision	2	1	0
Mastectomy	0	0	0
Surgical free margin			
Free >1cm	15	7	3
Positive margin	2	1	0
Tumour size			
3-4 cm	17	0	0
5-5.5 cm	0	8	0
6.5-7 cm	0	0	3
Recurrence (Within 2 years of primary treatment)			
Yes	2	1	0
No	15	7	3

[N.B: UOQ= Upper Outer Quadrant, UIQ= Upper Inner Quadrant, LOQ= Lower Outer Quadrant, LIQ= Lower Inner Quadrant]

Radiological Investigations:

Ultrasonography was used to evaluate 11 cases and mammogram was done in remaining patients.

USG Findings:

On USG tumours were lobulated or rounded or oval with a well circumscribed smooth margin which often shows smooth contours with low level of homogenous internal echoes and the absence of posterior acoustic enhancement. In a predominantly solid mass, fluid filled clefts were highly suggestive of phyllodes tumour.

Mammography Findings:

In this study tumours were found on mammography as well defined mass lesion with a smooth and sometimes lobulated border, a radiolucent halo may be seen around the lesion

due to the compression of the surrounding breast stroma. Coarse microcalcification reported to be found both in fibroadenomas and phyllodes but malignant microcalcification is rare. But USG and mammography could not differentiate between benign and malignant phyllodes tumour on the basis of any definite radiological criteria. Core cut biopsy was performed for preoperative histopathological diagnosis. Which revealed 17 patients with benign phyllodes, 8 had equivocal or indeterminate report, 4 patients had fibroadenoma and remaining 3 patients had malignant phyllodes tumour.

Management:

In our personal series with a preoperative Core cut needle biopsy diagnosis of benign phyllodes tumour of 17 patients we performed wide excision with ≥ 1 cm margin. Patients with indeterminate histology who were 8 in number underwent wide excisional biopsy. The remaining 3 patients with malignant phyllodes underwent mastectomy without any axillary staging. According to the final histopathological report, 17 patients with preoperative diagnosis of benign phyllodes tumour, 11 patients had the same histology and 6 patients had borderline phyllode. Among 8 patients with indeterminate histopathology, 2 patients had borderline phyllodes tumour and 6 patients' benign phyllodes. The remaining 3 patients had malignant phyllodes in final histopathological report. Margin clearance achieved in first operation in 25 patients and in remaining 3 patients we didn't achieve surgical free margin of at least 1 cm from the tumour. Among 28 patients, 3 patients were with malignant phyllodes tumour and we performed simple mastectomy over there. In remaining 25 patients, 17 patients had benign Phyllodes and 8 had borderline tumour. All of our 3 patients in which margins clearance was not achieve, developed local recurrence without any evidence of distant metastases. Among them 2 patients had benign Phyllodes and 1 patient had borderline tumour and the histopathological types were same as the primary tumour. All of those patients developed recurrence within 1-2 years follow up period, we performed reexcision in all of these cases with a view to achieve ≥ 1 cm tumour free margin. We achieved tumour free margin in all of the cases and we followed up these patients for another 2 years. None of those patients developed any further recurrence.

Table 2 Rading of tumor

Tumour Grade	Size (cm)	Initial Method	≥ 1 cm margin clearance	Number of recurrence (within 2 years of primary treatment)	Method of recurrence
Benign	3-4	WLE	15	2	WLE
Borderline	5-5.5	WLE	7	1	WLE
Malignant	6.5-7	Simple mastectomy	3	0	0

[N.B: WLE = Wide Local Excision]

Discussion:

Phyllodes tumour is a relatively uncommon benign fibroepithelial lesion of breast accunts for <1% (0.3-0.9%) of all breast neoplasm that most commonly found in women between 40-50 years.¹⁻² In our study, the age range is 30-55 years and the average age 39 years with a time span June 2011 to February 2018. All of the patients presented with breast lump of which 14 patients had rapidly growing lump and 6 had pain in the side of the lump. On USG the tumour were lobulated or rounded or oval with a well circumscribed smooth margins with a low level homogenous internal echoes and on mammography, there were well circumscribed oval or lobulated mass with rounded border.¹⁴⁻¹⁷ In our series by imaging characteristics we were unable to distinguish fibroadeonoma from phyllodes tumour. According to the international literature, the average size of the fibroadeonoma 2cm where as phyllodes tumour size range in between 4-7 cm.¹⁸ In our personal series the average size for phyllodes tumour was 3.5 cm for benign, 5 cm for borderline and 6.5 cm for malignant phyllodes. Surgical management is the mainstay of treatment. If diagnosed preoperatively, tumour should be resected with atleast 1 cm margins, specifically in the borderline and malignant phyllodes tumours and in case of benign phyllodes, that diagnosed after local excision, of what appeared to be a fibroadeonoma, the approach should be "watch and wait" policy. But as in case of giant phyllodes, an excision with the required margin is often impossible, mastectomy should reserved for larger tumours and should considered in recurrent tumours specially for the malignant histotype.^{19,20} Local recurrence in phyllodes tumour is associated with inadequate local excision and various histological characteristic, including mitotic activity, tumour margin, stromal cellular

atypia. Mastectomy may also be required in tumours of 5-10 cm.²¹ As malignant phyllodes mainly spreads by haematogenous route, the proportion of lymph node metastases are <1% (lymph node enlargement in about 10%). That's why routine axillary clearance is not recommended and axillary dissection is needed, when there are histologically positive malignant cells. Chest wall invasion is uncommon.²³

According to NCCN guidelines wide excision means, excision with a view to obtain surgical margin ≥ 1 cm narrow surgical margin usually associated with high local recurrence risk but not an absolute indication for mastectomy when partial mastectomy fails to obtain margin of ≥ 1 cm. Though the role of adjuvant radiotherapy and chemotherapy for soft tissue sarcomas suggest their considerable use in case of malignant phyllodes tumour.²²

In our personal series we performed wide excision and biopsy with at least 1cm margin clearance in 17 patients, who had preoperative histopathological diagnosis of benign phyllodes tumour, we performed wide excisional biopsy in 8 patients who had preoperative indeterminate histopathological diagnosis. Three patients who had preoperative histopathological diagnosis of malignant phyllodes tumour, underwent mastectomy without axillary staging. We were able to achieve surgical clear margin in 25 patients. Among them 17 patients had benign phyllodes on their final histopathological diagnosis, 8 had borderline phyllodes and 3 had malignant phyllodes. In our series local recurrence occurred within 2 years of follow up in 3 patients. We performed wide excisional biopsy in all of those 3 patients with ≥ 1 cm margin in all of them and this time we achieved surgical margin clearance. None of those patients developed recurrence in next 2 years of follow up period. If the surgical margin doesn't obtain 1 cm, then further management is different in different classification of phyllodes. Because benign phyllodes tumour should be watched carefully as positive margin in benign has no relation to local recurrence whereas in case of borderline and malignant phyllodes, a reexcision or mastectomy should be done to obtain an adequate margin.^{18,21,24}

In our study we found that benign phyllodes tumour (2 in no.) recur more than borderline phyllodes (1 in no.). In all of the malignant cases (3 in no.) we didn't find any recurrence and didn't give any radio r chemotherapy as adjuvant

treatment for them. Moreover malignant phyllodes are rare cancer of the breast for which surgery is the only effective treatment modality at present. Complete resection with margin clearance appears to be the best method. Inadequate margin clearance associated with local recurrence and conventional chemotherapy and radiotherapy has no effective role.²⁵

So according to our study, histopathological type of the phyllodes tumour doesn't correlate to the recurrence because of the very small size, it's difficult to comment on the result. From our data, it's apparent that patients with narrow margin of excision developed recurrence that correlate with many other international literature. A study from the British Columbia Cancer Agency, in July 23rd 2019, analyzed local recurrence rate in 183 patients, where overall 8.7% experienced local recurrence who were followed up for a median of 65 months. With respect to individual sub groups, 5 years outcome for women with benign, borderline and malignant phyllodes were as follows: 6%, 9% & 21% respectively. The 5 years local recurrence rate were 8% for women with negative margins, 6% for those with close margin and 37% for those with positive margins.

In our study we found that the relationship between margin clearance and local recurrence similarly correlate with the international literature. But we were unable to demonstrate a statistically significant correlation between age, race, pain or size of the mass, family H/O breast cancer, H/O OCP, post-menopausal HRT and local recurrence, metastatic disease or death.

In conclusion from our study surgical margin significantly affect the risk of local recurrence for all subtypes of phyllodes tumour.

Conclusion:

Phyllodes tumour is relatively rare tumour of the breast with specific clinical characteristics. Preoperative histopathological diagnosis is very important for proper management of phyllodes tumour and because of their tendency to recur, surgical wide excision (≥ 1 cm normal margin) is necessary and malignant potential of this tumour should also be kept in mind.

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Assessment of Changes in Macroscopic Components of Placenta in Maternal Anemia

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Abstract:

Background: Maternal anemia causes macroscopic changes in human placenta which may lead to adverse pregnancy outcome. So, the present study was planned to observe the effect of maternal anemia in macroscopic components of placenta. **Methods:** This cross sectional, analytical type of study was carried out on 100 placenta collected from the Department of Gynecology and Obstetrics, Rangpur Medical College and Hospital, Rangpur just after delivery. Among them 62 placentas were collected from anemic mother and 38 placentas were collected from healthy pregnant mothers. Among 62 anemic placentas, 20 were from mild anemic mothers, 38 were from moderate anemic mothers and 4 from severe anemic mothers. Volume of each placenta was measured by water displacement method. The percentage of the total volume of placenta occupied by parenchyma and non-parenchyma were counted by using the macroscopic point-counting techniques and absolute volume was calculated from total volume of placenta. Any macroscopic pathology in these placentas was also noted. **Results:** Though statistically significant difference was found between proportional volume of parenchyma and non-parenchyma between the four groups by one way ANOVA test ($p=0.000$), but the difference was significant only in absolute volume of non-parenchyma between groups. Infarction, calcification and hemorrhage affected anemic placenta more commonly than control group. **Conclusion:** From this study it may be concluded that proportional volume of parenchyma of placenta in moderate anemia of mother was increased may be due to support the fetal growth.

Indexing words: Parenchyma, Non-parenchyma, pathological component, Maternal anemia

Introduction:

Anemia is a very common hematological problem and creates an important risk factor in pregnancy in developing and underdeveloped countries.¹ The placenta is essential for maintaining pregnancy and promoting normal fetal development. This foetomaternal organ comprises of a fetal portion the chorionic plate and a maternal portion the decidual plate separated by a lacunar space the intervillous space.² Placenta, a documentation of events of

gestational life, may have a causal relationship to abnormal fetal outcome.³ So, by examining the changes of in placental component, one could easily identify any deviation of fetomaternal outcome from normal. So, the present study was aimed at to find out the changes in the macroscopic components of the human placenta in maternal anemia.

Methods:

This cross sectional, analytical type of study was carried out on 100 placenta (anemic and control) between the period of July 2015 to June 2016. The placentas were collected from the Department of Gy+ necology and Obstetrics, Rangpur Medical College and Hospital, Rangpur just after delivery. Among the 100 placentas, 62 placentas were collected from anemic mother, 38 placentas were collected from healthy pregnant mothers.

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Among 62 anemic placentas, 20 were from mild anemic mothers, 38 were from moderate anemic mothers and 4 from severe anemic mothers. Grading of anemia was done according to WHO.⁴ Just after collection, each specimen was gently washed in tap water on a dissection tray; the film of blood and blood clots on the maternal surface were removed with hand gently, without disturbing any firm clot which were embedded in the substance of placenta. The umbilical cord was cut 2 cm away from disc margin. The amniotic membrane was trimmed at disc margin with a scissors. Then the placenta was mopped and dried with dry cotton pad and blotting papers very gently. Volume of the placenta was measured in milliliters (ml), by water replacement method using Archimedes principle. At first the placenta was immersed in a wide jar filled with water. After wards, the total amount of water displaced from the jar was collected and measured in 1000 cc graduated cylinder. This volume in milliliter represented the volume of the placenta. Then the placenta was placed in a 10% formalin filled plastic jar with cover for at least 7 days with appropriate tag. After fixation, proportions of parenchyma to non-parenchyma and presence and area occupied by calcification, infarction and hemorrhage were noted.

The placental tissue can be described as a sum of parenchymal, non-parenchymal and pathological components. The parenchyma comprised of chorionic villi with their fetal vessels and the maternal intervillous space and non-parenchyma consists of chorionic and decidual plates, fetal vessels of diameter >0.1 cm and intercotyledonary septa along with the pathological components e.g. old and recent infarcts, calcification and subchorionic fibrin.⁵ Placental infarction is a zone of ischemic necrosis of a group of villi due to complete interference with their blood supply in the decidua or by thrombosis of a spiral arteriole or a retroplacental hemorrhage. Placental infarcts, when fresh, are demarcated, dark red and moderately firm; as they age they become converted into hard, white structure less plaques. Morphologically calcium deposits are seen as white or pale color fine granules or clumps often felt as gritty deposits.⁶ A hematoma is formed by blood insinuating itself between the cotyledons of placenta proper. If the placenta is delivered soon after the hemorrhage has occurred it shows a depression on the maternal surface with firmly attached blood clot. These

pathological components were included in the non-parenchyma in the present study.⁷

In the present study, the percentage of the total volume occupied by parenchyma and nonparenchyma were calculated by using the macroscopic point-counting technique.⁵ The principle depends on the facts that in a composite organ, the volume of the components are equivalent numerically to the relative areas occupied by these components on cut surface. If a grid (as shown in Figure1) of regularly spaced points are placed over the cut surfaces, the number of points over these components would be proportional to their area, hence to their volume.

For this purpose, each formalin-fixed placenta was placed flat on a tray on fetal surface and cut into 10 to 15 slices with a sharp knife (Fig 2a). Each slice was 1 cm thick, containing 4 surfaces one maternal, one fetal and two internal surfaces. The internal surfaces placed flat and carefully examined for any unusual thickness and color change. A grid composed of points spaced 0.5 cm apart printed on transparent plastic material, was placed on the internal surface of each of the fixed slices of placenta. The position of each point, whether lying over parenchyma or non-parenchyma, was recorded.

For each of the placenta, the positions of about 1000 points were recorded. From the 1000 points, the percentage of the points falling on the parenchyma or non-parenchyma was calculated. These percentages represented the proportional volume of individual components. Absolute volume of the parenchyma and non-parenchyma were calculated from the total volume of the placenta measured by water displacement method. Percentage of pathological components like infarction, calcification and hemorrhage were noted (Fig. 2b and 3).



Fig 1: Photographs showing transparent grid indexed with points at 0.5 cm intervals.

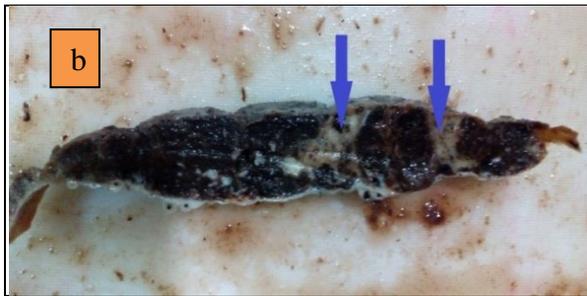


Fig 2 Photograph showing(a) cut pieces of placenta and(b) infarction

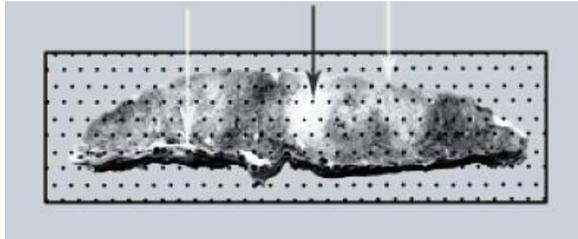


Fig 3. Photograph showing cut pieces of placental calcification.

Results:

The mean (\pm SD) of volume of the placenta was 406.61 ± 59.50 ml in control group and were 396.10 ± 61.15 ml, 385.53 ± 76.22 ml, and 349 ± 115.54 ml in mild, moderate and severe anemic groups respectively. Though the placental volume was lower in anemic groups than control group with ascending grades of anemia and the lowest value was found in severe anemic group but these differences did not reach significant level. The mean \pm SD of proportional volume of the parenchyma of the placenta was $74.56 \pm 5.94\%$ in control group and $69.76 \pm 11.89\%$, $80.35 \pm 3.92\%$ and $75.30 \pm 18.05\%$ in mild, moderate and severe anemic groups respectively (Table 1). It was observed that the proportional volume of parenchyma was reduced in mild anemic group but increased than control in moderate anemic group and again reduced in severe anemic group to be similar value like control group. The mean \pm SD of proportional volume of the non-parenchyma of the placenta in control group was $24.13 \pm 5.99\%$ and were $29.97 \pm 12.06\%$, $19.52 \pm 4.30\%$ and $24.03 \pm 18.71\%$ in mild, moderate and severe anemic groups respectively (Table 1). It could be stated that the proportional volume of non-parenchyma was increased in mild anemic group but reduced in moderate anemic group than control group. However the severe anemic group showed similar value of proportional volume of non-parenchyma than control. Statistically the difference in proportional volumes of parenchyma and non-parenchyma between the four groups was highly significant ($p=0.000$).

Table 1: Proportional volume of parenchyma and non-parenchyma of placenta in control and anemic groups

Volume of placental macroscopic components	Control group (n=38)	Anemic group (n=62)			p value
		Mild n=20	Moderate n=38	Severe n=4	
Parenchyma:	53.8-92.4	34.5-83.5	68-88.80	48.9-88.9	0.000
Proportional (%)	74.56 ± 5.94	69.76 ± 11.89	80.35 ± 3.92	75.3 ± 18.05	(S)
Non-parenchyma:	6.5-45.2	16.50-65.40	9.7-32	8.6 - 51.1	0.000
Proportional (%)	24.13 ± 5.99	29.97 ± 12.06	19.52 ± 4.30	24.07 ± 18.71	(S)

Results are shown as range and mean \pm SD

p values reached from ANOVA test

S: significant at 95% confidence level

NS: non-significant.

In control group, the mean \pm SD of absolute volume of the parenchyma of the placenta was 303.02 ± 52.15 and were 273.67 ± 46.51 ml, 309.22 ± 60.68 and 279.62 ± 102.75 ml in mild, moderate and severe anemic groups respectively. The absolute volume of the parenchyma in the mild and severe anemic group were lower than that in the control group but in moderate anemia it was slightly higher than control group. However, the differences between the four groups were statistically not

significant. The mean \pm SD of absolute volume of non-parenchyma were 103.58 ± 28.07 ml in control group and were 122.42 ± 56.17 , 76.30 ± 23.17 and 100.38 ± 81.87 ml in mild, moderate and severe anemic groups respectively. It was observed that the absolute volume of non-parenchyma was increased in mild anemic group but reduced in moderate and severe anemic group than control group. These differences between groups were statistically significant ($p=0.000$).

Table 2: Absolute volume of parenchyma and non-parenchyma of placenta in control and anemic groups

Volume of placental macroscopic components	Control group (n=38)	Anemic group (n=62)			p value
		Mild n=20	Moderate n=38	Severe n=4	
Parenchyma:	209.82-425.04	120.75-308	136.51-422.28	177.80-379.80	0.131
Absolute (ml)	303.02 ± 52.15	273.68 ± 46.51	309.22 ± 60.68	279.62 ± 102.75	(NS)
Non-parenchyma:	34.97-180.18	51.15-237.39	28-150.40	22.2 – 214.62	0.000
Absolute (ml)	103.58 ± 28.07	122.42 ± 56.17	76.30 ± 23.17	100.38 ± 81.87	(S)

Results are shown as range and mean \pm SD

p values reached from ANOVA test

S: significant at 95% confidence level

NS: non-significant.

Percentages of macroscopic pathological components:

Different types of placental pathology were observed during macroscopic point counting examination. These were infarction, calcification and hemorrhage. These pathologies were present in a variable percentage in the placenta of control group but more frequently in the placenta of the different anemic groups (Table 3).

Infarction was present in 29 (out of 38) and 18 (out of 20) placenta in control and mild anemic groups respectively but all 38 placenta of moderate anemic group and 4 placenta of severe anemic group was affected by this pathology. Volume proportion of area of placenta occupied by this pathology was only 4.31% areas of total volume in control group but area occupied by this pathology was 2.11%, 9.65% and 10.2% in mild, moderate and severe anemic groups respectively. So it could be stated that the presence of infarction was increased in a

variable proportion in the moderate and severe anemic groups but reduced in mild anemic groups than control group. The differences between the four groups were statistically not significant.

Regarding calcification, though it was present in four groups, in control group presence of calcification was seen in 35 (out of 38) cases and all placenta of different anemic groups. Volume proportions of area of placenta occupied by this pathology was only 8.23% of total volume in control group but were 11.6%, 17.08% and 21.5% in mild, moderate and severe anemic groups respectively. The difference was statistically not significant between the four groups.

Regarding hemorrhage, it was present in 3 placenta of severe anemic group and occupies 7% area of total proportional volume but hemorrhage was not found in control, mild and moderate anemic groups.

Table 3: Proportional volume of different macroscopic pathological components in control and anemic group

Pathological components	Control group (n=38)	Anemic group (n=62)		
		Mild (n=20)	Moderate (n=38)	Severe (n=4)
Infraction (%)	29(4.31%)	18(2.11%)	38 (9.65%)	4(10.2%)
Calcification (%)	35(8.23%)	20 (11.6%)	38(17.08%)	4(21.5%)
Hemorrhage (%)	No case	No case	No case	3(7%)

Results are shown as number cases affected
Values in parenthesis indicates the percentages of areas occupied by these pathologies

Discussion:

The present study shows increase proportional volume of parenchyma in moderate anemic group than normal but lower value than normal was found in severe and mild anemic group. Proportional volume of parenchyma was increased in expense of non-parenchyma in moderate anaemic group than control but opposite was true in mild anemia. Though the absolute volume of parenchyma was reduced in mild and severe anemic groups and increased in moderate anemic group than control, the differences between the four groups by ANOVA were statistically not significant. It could be explained that though the proportional volume of parenchyma was decreased in mild anemic group and increased in moderate anemic group than control, but as the total volume of placenta was decreased in anemic groups than control, did not reached a significant level for these variables in terms of absolute volumes. This study is similar to findings of study Singla et al.⁸ One study showed parenchyma was altered disproportionately with volume of placenta in maternal anemia. Findings are similar to present study.⁵ In one study, Huang et al showed volume proportion of parenchyma in term of villi and intervillous space was significantly increased in maternal anemia.⁹ Present study also reflects proportional volume of parenchyma is increased in moderate anemia. In one study Huang et al described the volume of intervillous space increased in maternal hypoxia.⁷ In control group of present study, infarction was present in 29 (76.31%) cases and the extent of infarction was less than 5% of placental tissue. However, all placentas out of anemic group except 2 placentas of mild anemia were affected by infarction; among them the extent of infarction was more than 5% of placental tissue. Placental infarct was found to be significantly more at decreasing concentration of hemoglobin in

present study. Similar findings were found by other studies.⁹⁻¹³ They all suggested that increase in infarcted area decreases functional villous mass. When the infarcts were located away from the placental margins, and particularly when they were haphazardly distributed, conditions of malperfusion always exist. Infarcts in any location in first and second trimester placenta are always abnormal. Placental infarcts that make up more than 5% placental mass are considered pathologic and may influence the fetal oxygen/nutrition state.¹² In moderate and severe anemia same findings are also true in case of present study. It was found extensive areas of infarction, characterized by villous crowding and increased number of hypovascular villi in anemic placentae by Biswas et al.¹⁴ Infarction was more in small for gestational age babies as compared to normal group.¹⁵ One study stated that the placenta can withstand the loss of nearly a third of its functional parenchyma without any fetal embarrassment bears eloquent witness to the fact that, it has very considerable functional reserve capacity.¹⁶ Calcification is common in human placenta and recognized as a normal part of maturation and is thought to represent a physiological aging process of this organ. It is not only an aging process, but also a reflection of underlying placental dysfunction when it occurs in earlier stages of pregnancy. Possible mechanisms of tissue calcification involve physiological, dystrophic and metastatic.¹⁷ Again in a study Fox stated that, it was categorized as severe when it occupies 25% area of the surface of placenta in naked eye and associated with calcified patches.¹⁶ In present study it is not similar as in anemic placenta calcification occupying less than 25 % surface area. In present study in control group calcification was seen in 35 (92.10%) cases and the extent of calcification was less than 10% of placental tissue on gross macroscopic examination. However, placental calcification was seen in all cases of anemic groups except 2 placentas in mild anemic group. Infarction and calcification were significantly more in anemic group. However, Rohini et al stated calcification was found more frequently in anemic placenta (63.33%/26.66%).¹³ There was significant increase in calcification in placenta of anemic groups in comparison to control group.¹⁸ One study stated that placental calcification, often thought as a hallmark of degeneration or

senescence, is of no clinical or pathological significance.¹⁵

Conclusion:

From this study it may be concluded that maternal anemia may affect the macroscopic components of placenta and the pathological components affect these placentas in a higher proportion than healthy control group.

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Pattern of Salivary Gland Diseases Diagnosed by Fine Needle Aspiration Cytology- in Rangpur

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Abstract:

Context: The purpose of the study was to know the overall prevalence of various salivary gland diseases. **Methods:** One hundred patients with salivary gland swelling of both sexes were selected from out patients department. We performed Fine Needle Aspiration Cytology (FNAC) of all patients in the Department of Pathology, Rangpur Medical College, Rangpur, from January 2015 to December 2018. **Results:** The age range of the patients was 15 to 65 years. Out of 100 cases, 40 cases (40%) were inflammatory lesions, 43 cases (43%) benign neoplasms (pleomorphic adenoma), 5 cases (5%) were non-neoplastic cysts, 8 cases (8%) mucoepidermoid carcinoma, 2 cases (2%) adenocarcinoma 1 case (1%) adenoid cystic carcinoma and malignant mixed tumor 1 cases (1%). **Conclusions:** Fine Needle Aspiration Cytology successfully evaluated salivary gland diseases in Rangpur Medical College. Among the neoplastic lesions, pleomorphic adenomas were the most common salivary gland lesion (43%).

Indexing words: Fine Needle Aspiration Cytology (FNAC), Salivary gland diseases

Introduction:

There are 3 pairs of major salivary glands- parotid, submandibular and sublingual glands. In addition, there are innumerable minor salivary glands distributed throughout the mucosa of the oral cavity. Salivary gland swellings may result from a variety of different diseases like inflammation, cyst or neoplasm. Among the primary epithelial tumors, 64-80% occur in the parotid glands, 7-11% occur in the submandibular glands, less than 1% occur in the sublingual and 9-23% occur in the other minor salivary glands.^{1,2,3} Salivary gland tumors are uncommon, corresponding to approximately 3-10% of neoplasms of the head and neck regions. Salivary gland swellings are often visible and palpable, and are not difficult to sample.^{4,5} Fine needle aspiration cytology (FNAC) of suspected salivary gland lesions has an established role in preoperative diagnosis and management of patients. It has acquired an edge over incisional biopsy and frozen section.⁶ Fine needle aspiration cytology (FNAC) is a simple, inexpensive and easily performed outpatient procedure which can provide a rapid diagnosis.^{7,8,9,10} FNAC has proved to be a very important diagnostic tool in salivary gland swellings.^{11,12,13} FNAC is more acceptable to the patient, surgeon and pathologist because of its easy technique, reliability, less morbidity, a low incidence of complication.^{14,15} The present study was carried out

to find out the overall pattern of diseases of salivary gland swellings by fine needle aspiration cytology.

Methods:

This study was done in the Department of Pathology, Rangpur Medical College, Rangpur from January 2015 to December 2018. Subjects of the study were mostly the patient attended in ENT outpatient Department from the territory of Rangpur. During this period a total 100 FNACs were done on salivary gland swellings after taking informed written consent from the patient following a brief history and physical examination. Cytology slides were stained with Haematoxyline and Eosin (H & E) stain and examined under microscope. Then data were compiled and tabulated as per age.



Figure 1: Salivary gland Swelling (Neck Mass)

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Results:

Out of 100 patients who underwent fine needle aspiration cytology and included in this study, 52 (52 %) were males and 48 (48%) were females with male to female ratio was 1: 0.92. Most of the males were in the 30-50 years age group and females in 21-50 years age group (Table 1).

Table 1: Distribution of the patients as per age and sex

Age group (n=100)	Male (52)	Female (48)
<20	3	5
21 – 30	15	10
31 – 40	17	12
41 – 50	12	13
>60	5	8

The results of FNAC showed that 40 cases (40%) were inflammatory lesions, 5 cases (5%) were non-neoplastic cyst, 43 cases (43%) were benign neoplasms and 12 cases (12%) were malignant neoplasms (Table 2).

Table 2: Distribution of salivary gland diseases (n=100)

Diseases	Number (n)	Percentage (%)
Inflammatory lesions	40	40
Non-neoplastic cysts	5	5
Benign neoplasms	43	43
Malignant neoplasms	12	12
Total	100	100

The number of cases which were seen in the parotid gland, the submandibular gland and the minor salivary glands were 60 (60%), 37 (37%) and 3 (03%) respectively. The commonest gland which was involved was the parotid gland in both males (60%) and females (40%).

Non-specific sialadenitis was common in major salivary glands, particularly submandibular glands.

Benign neoplasms were common in 30-40 years age group with slight female predominance. Pleomorphic adenoma is the commonest of all salivary gland neoplasms (78.2%).

Malignant tumors were common in 40-65 years age group with male predominance. The commonest malignant tumor was mucoepidermoid carcinoma (14.55 %) followed by adenocarcinoma (3.63%), adenoid cystic carcinoma (1.81%) and (1.81%) were carcinoma expleomorphic adenomas (malignant mixed tumor).

Table 3: Frequency of distribution of neoplastic tumors (n=55)

Cytological types	Number (55)	Percentage (%)
Pleomorphic adenoma	43	78.20
Mucoepidermoid carcinoma	8	14.55
Adnocarcinoma	2	3.63
Adenoid cystic carcinoma	1	1.81
Malignant mixed tumor	1	1.81
Total	55	100

Discussion:

A salivary gland swelling can present in a variety of locations, depending on the salivary gland affected. A swelling that arises in the parotid or submandibular gland usually presents as an upper neck mass. A swelling of minor salivary gland or sublingual gland typically presents as an intra-oral swelling.

In this study, we analyzed the pattern of cytological findings in patients presenting in our institution with swelling arising from salivary gland. Male predominance was observed in our study similar to that reported by other studies in the literature.^{16,17,18,19}

In the present study parotid gland was the most commonly affected site (60%) followed by submandibular gland (37%) and minor salivary glands (03%). These findings were in accordance with the studies Frable and Frable, Boccato et al, and Rajdeo et al.^{11,12,20}

In our study maximum patients (79%) were in the age range of 30-50 years. Ahmed S et al also observed maximum patients in the age range of 31-40 years.²¹

In the present study FNAC showed that 40% were sialadenitis, 05% were non-neoplastic cysts, 43% were benign neoplasms and 12% were malignant neoplasms. This findings was in accordance with studies of Frable and Frable et al, Stewart et al. and Elagoz et al.^{11,22,23}

Benign neoplasms were common in 30-40 years with female predominance, which is comparable with the study done by Ahmed et al.²¹

Malignant neoplasms were common in 40-65 year age group with male predominance which is also comparable with study done by Ahmed et al.²¹

Pleomorphic adenoma was the commonest of all salivary gland lesions (78.2%) which are similar to studies of Gandhi et al and Roy et al.^{18,24} Mucoepidermoid carcinoma were most common

malignant tumors (14.55) in our study which were comparable with studies conducted by Fernandes et al and Singh et al.^{1,19}

Conclusion:

FNAC is a safe and effective modality in diagnosis of patients with salivary gland lesions. This procedure catagirized 45 (45%) of the salivary gland lesions as non-neoplastic and 55(55%) as neoplastic lesions. Among the neoplastic lesions, pleomorphic adenomas was the most common salivary gland lesion.

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Effects of Tobacco Consumption on Blood Pressure Levels in Smokers

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Abstract:

Background: The recent decades have been a massive global increase in tobacco use. Tobacco use is a major preventable cause of premature death and diseases. Immediate availability and the low price gives rise to high consumption of tobacco smoking and this may affect blood pressure.

Objectives: To observe the effects of tobacco consumption on blood pressure levels in smokers.

Methods: This cross sectional analytical study was conducted from July 2016 to June 2017 in the Department of Physiology, Rangpur Medical College, Rangpur. A total number of 60 subjects were selected, among them 30 were apparently healthy non-smoker subjects as control group (group A) and 30 were apparently healthy smoker subjects (group B). The subjects were selected from different area of Rangpur city. The effects of cigarette smoking on blood pressure were studied by measuring the levels of blood pressure. For statistical analysis independent sample "t" test was performed by computer based software SPSS-17.0 version for windows. **Results:** Mean blood pressure levels were significantly higher ($p < 0.001$) in smoker subjects as compared with the healthy control subjects.

Conclusion: The increased blood pressure levels in smoker subjects were evidence of development of cardiovascular disorders due to tobacco smoking and this might offer a new approach to cardiovascular risks prevention in population with tobacco smoking.

Indexing words: Tobacco, Tobacco smoker, Blood pressure

Introduction:

Tobacco is a product prepared from the plant by curing them.¹ Tobacco contains the alkaloid nicotine, which is an extremely addictive drug.^{1,2} In addition to nicotine, tobacco contains thousands of other chemicals such as cresol, pyrene, DDT, carbon monoxide, ammonia, hydrogen cyanide, acetone, methanol, formaldehyde, arsenic, cadmium etc.^{3,4} Dried tobacco leaves are mainly used for smoking in cigarettes, cigars, pipe tobacco, and flavored shisha tobacco. They can be also consumed as snuff, chewing tobacco and dipping tobacco.¹ There are two kinds of commonly used tobacco products in Bangladesh i.e. smoking and smokeless tobacco products.⁴

In Bangladesh 43.3% of adults (41.3 million) use tobacco in smoking and or smokeless form. More than five million people die globally each year due to tobacco related illness, the figure expected to increase to 8.3 million by 2030.^{5,6}

Tobacco smoke contains over 4,000 particles and gases, some of which are cardiotoxic. Particles include heavy metals known to cause tubular injury such as cadmium and lead, which may reach serum concentrations above 40% in smokers.⁷ Cigarette smokers are exposed to significant amounts of cadmium (Cd) and lead (Pb), which also accumulate in kidney tissue more than in any other organ.⁸

Cigarette smoking is associated with acute increase in arterial pressure due to systemic vasoconstriction and decreased skin and coronary blood flow.⁹ Blood pressure and heart rate are increased by smoking, due to the action of nicotine.⁸ The action of nicotine on specific cholinergic receptors causes hemodynamic changes such as increase heart rate and peripheral vascular resistance.⁷ The rise in blood pressure is due to an increase in cardiac output and total peripheral vascular resistance. The blood pressure rise appears immediately increase in circulating catecholamines.⁸

Consumption of tobacco is now increasing rapidly throughout the developing world and is one of the biggest threat to current and future world health.

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According to the official Agricultural Statistics (2010) in different districts of Bangladesh. Rangpur still remains highest with 40,345 acres during 2008-2009.¹⁰

The purpose of this study was to assess the effect of tobacco on blood pressure of smoker subjects of northern region because the rate of tobacco use is more among the people of this region.

Methods:

The cross-sectional analytical study was conducted in the Department of Physiology, Rangpur Medical College, Rangpur from July 2016 to June 2017. The Rangpur Medical college ethical committee and thesis protocol review committee approved the study protocol. Total numbers of 60 apparently healthy subjects of both sexes with age 30-45 years were divided into following groups: Group A - 30 apparently healthy non smokers and Group B - 30 apparently healthy smokers. The subjects included in each group matched in their age and socio-economic condition. The duration of smoking is more than three years. The

experimental subjects were recruited from Rangpur City and outskirts. All the subjects were free from history of liver, heart, lung and other chronic systemic diseases, obesity & diabetes mellitus, hypertension, pregnancy and lactating mother. Tobacco chewers were also excluded from this study.

After selection of subjects, the objectives and the procedure of the study were explained in detail to them and their informed written consent were taken. A standard questionnaire was filled after taking history and through clinical examinations.

Blood pressures were measured by palpatory method¹¹ and auscultatory methods.¹²

For statistical analysis independent sample “t” test was performed by computer based software SPSS-17.0 version for windows.

Results:

The data depicted in Table 1. In this cross sectional study, the mean blood pressure levels are significantly higher (p<0.01) in smoker subjects than those of healthy control subjects.

Table 1: Mean ± SD Blood Pressure levels in two groups (n=60)

Variables	Group A (non smokers)	Group B (Smokers)	p value
Systolic Blood Pressure mm of Hg	107.1667 ± 10.14408 (90 – 120)	138.6667 ± 7.18395 (120 – 145)	0.000***
Diastolic Blood Pressure mm of Hg	69.6667 ± 8.08717 (60 – 80)	85.0000 ± 5.08548 (70 – 90)	0.000***
Pulse Pressure mm of Hg	37.5000 ± 7.74040 (20 – 50)	53.6667 ± 6.14948 (35 – 60)	0.000***
Mean Blood Pressure mm of Hg	82.1660 ± 8.03641 (70 – 93.33)	102.8887 ± 5.10188 (86.67 – 108.33)	0.000***

Results are shown as mean ± SD and ranges (L-H)

A= Apparently healthy subjects of non-smokers (Control).

B= Apparently healthy subjects of smokers (Experimental). n= Number of subjects. ***= p<0.001.

= Normal systolic blood pressure level is < 130 mmHg.¹³

= Normal diastolic blood pressure level is average 85 mmHg.¹³

= Normal pulse pressure level is average 40 mmHg.^{14,15}

= Normal mean pressure level is average 93 mmHg.¹⁵

Discussion:

In this cross sectional study, blood pressure levels were significantly higher (p<0.01) in smoker non tobacco chewer subjects than those of healthy control subjects which is comparable to others.^{16,17,18,19,20,21}

Literature review suggested several mechanisms for these changes of blood pressure levels in

smoker non tobacco chewer subjects. Higher levels of blood pressure in smoker non tobacco chewer subjects might be due to tobacco which contains nicotine. Blood pressure is increased due to sympathetic stimulation by nicotine which causes release of epinephrine and norepinephrine as a result there is increased heart rate and cardiac output that causes rise in systolic blood pressure. Nicotine diminishes

baroreceptor sensitivity and increases the production of thromboxane A₂ which is a powerful vasoconstrictor.^{16,17,18} In addition high blood pressure readings in smokers are also affected by high Na⁺ content in tobacco. Systemic absorption of sodium and active ingredient licorice in tobacco smokes increase blood pressure by inhibiting metabolism of mineralocorticoids and causes Na⁺ retention. As a result increased extracellular fluid volume, blood volume and cardiac output which in turn increase systolic blood pressure.¹⁹

At the same time norepinephrine causes consequent vasoconstriction which increased peripheral resistance which in turn increases diastolic blood pressure. As nicotine together with cholesterol and other fat deposits contribute to the narrowing of the lumen of the blood vessels there by the peripheral resistance is also increased which gives rise to high diastolic blood pressure. Mean pressure is also increased due to increased diastolic pressure.^{16,17,18}

Tobacco contains nicotine which increased blood pressure in smokers. Smoking induces morphological and functional changes in blood vessels, including the induction of proliferation of intimal smooth muscle cells, decreases in endothelial prostacyclin synthesis and endothelial-derived vascular tone regulators, which induce an imbalance between vasodilator and vasoconstrictor vasoactive mediators. Interference with the vascular responses to acetylcholine, nitric oxide and endothelin-1 might cause predisposition to hypertension.^{20,21}

From the results of the present study, higher levels of blood pressure in smoker non tobacco chewer subjects might be due to tobacco smoking for a prolong period of time which induced sustained rise of blood nicotine, carboxyhemoglobin levels.

Conclusion:

In this present study, it has been concluded that the higher blood pressure levels was found in smoker subjects may be due to tobacco conjumption. Reduction in tobacco smokes improves cardiovascular disorders & reduce mortality and morbidity in smokers non tobacco chewers.

As far as our knowledge, this kind of study is not previously done in our country. This study would increase awareness about the adverse effects of unjudicial tobacco use on cardiovascular system.

But study population was small so further study with large sample size may help us to avoid bias.

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Frequency of Transfusion Transmitted Infections in Blood Donors at Prime Medical College Hospital, Rangpur, Bangladesh

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Abstract:

Context: Blood transfusion is a distinct route of transmission of infections to the recipients. Hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), malaria and syphilis can be easily transmitted to the recipients during blood transfusion. Transfusion transmitted infections (TTIs) create major burden on health care system. Blood donor selection is very much important because infected individuals serve as an asymptomatic reservoir and a potential source of transmission of some diseases. **Methods:** A retrospective study was carried out over a period of three and a quarter years' i.e. from 02/05/2016 to 03/08/2019 in the northern area of Bangladesh. The study was performed to determine the prevalence of transmission of HBV, HCV, HIV, malaria and syphilis during blood transfusion in order to provide information for relevant national health policies. **Results:** Out of 8356 sample of blood donors, recorded mean prevalence for HBsAg, HCV and syphilis was 0.957%, 0.047% and 0.287% respectively. HIV and malaria was not found in this series. **Conclusions:** This study reflect that blood transfusion is one of the major risk factors of spread the TTIs which showed the importance of the mandatory screening of these infection markers during donation of blood.

Indexing words: TTIs, HBV, HCV, HIV, Malaria, Syphilis, Blood donors

Introduction:

HBV, HCV, HIV, and syphilis are the most important agents in TTIs and these diseases are a great health care problem in the world. In Bangladesh, especially in the Hill tracts, malaria is additional health burden. The incidence rate throughout the world are not easy to determine given the asymptomatic and latent nature of the diseases before the clinical presentation.¹ Every blood transfusion therefore carries a potential risk for transmissible diseases.^{1,2} According to the WHO estimate, the lack of effective screening of blood donors results in up to 16 million new infections with hepatitis B, 5 million new infections with hepatitis C and 160,000 new cases of HIV infections every years.³

Blood transfusion is a therapeutic procedure, as there is no genuine substitution. But contaminated blood transfusion can transmit infectious diseases and can be fatal instead of saving life. Safe blood transmission services are very much important for high quality health care

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system⁴ and requires organized structure, well-educated staff and uninterrupted electricity supply.

Evaluation of data on these prevalence of TTIs among blood donors permits an assessment of the accurate estimate of risk of TTIs which helps in the creation of long-term strategies to improve public health and to prevent spreading of the disease in the population.¹ The purpose of present study was to provide the frequency of TTIs in blood donors of northern part of Bangladesh.

Methods:

The present retrospective study was carried out at blood bank of Prime Medical College Hospital, Rangpur after due ethical clearance from the institutional ethical committee. The data of present study corresponds to period of May of 2016 to July of 2019 and includes in house voluntary and replacement donors. The donors were first required to fill up a registration form which includes all the information like personal details, occupation and medical history. Hemoglobin estimation was performed and donors with haemoglobin less than 13g/dl were excluded. Subjects with previous history of HBV, HCV and HIV infections were also excluded. The

donors were then screened by medical officer according to blood donor selection criteria. Only the first time donors were included in this study. Individuals with good health and physically fit were selected as blood donors. The age range of the donor was 18 to 55 years. The donors were then asked to sign the donor questionnaire and consent form.

Blood sample was collected and tested in the blood bank of Prime Medical College Hospital. HBsAg, anti-HCV, anti-HIV and Venereal Disease Research Laboratory test (VDRL) for syphilis were detected using BEST2000 ELISA (Biokit, Spain), according to manufacturer's instructions. All seropositive samples were re-tested for the confirmation with the same serological test kit for confirmation.

Results:

The study was based on records of blood bank. Total number of donor is 8356.

HBV infection: HBsAg positive rate for blood donors was found to be 0.957% (80 out of 8356 donors)

HCV infection: HCV prevalence was found to be 0.047% (4 out of 8356 donors)

HIV infection: HIV prevalence was found to be 0.000% (0 out of 8356 donors)

Malaria infection: Malaria prevalence was found to be 0.000% (0 out of 8356 donors)

Syphilis infection: VDRL was found to be reactive in 0.287% donors (24 out of 8356 donors).

Discussion:

Hepatitis B and hepatitis C are the two of the common causes of chronic liver diseases. In this regard, hepatitis B is leading which is followed by hepatitis C disease. Chronic liver diseases result in a fatal disease called cirrhosis of liver.^{6,7} HIV causes acquired immune deficiency syndrome (AIDS). In this disease condition the defensive immune system of the body is depressed. As a result, the patient become prone to develop various other infectious diseases.⁸ In Bangladesh, malaria is endemic in 13 of 64 districts. About 14 million people in this country are at risk of the disease.⁹ Syphilis may involve the central nervous system and may cause permanent disabilities. It is one of the common sexually transmitted diseases.¹⁰ Limited surveillance data is present for HIV and syphilis in Bangladesh. In this country, the prevalence of

AIDS remains low, certainly lower than the neighbouring countries.⁶ Therefore, Bangladesh still has opportunity to take proper steps to prevent its spread.

Some authors states that blood donors may not be considered the representative of general population as the prevalence rate may underestimate or overestimate due to their different characteristics.^{11,12}

In Brazil, screening test among blood donors was mandatory in 1993. That is one of the significant factors of low magnitude of hepatitis in all studied population in Brazil.¹³

In the present study, prevalence of hepatitis B is more than hepatitis C infection. Not a single donor was found infected by HIV and malarial parasite. But the screening tests revealed 0.28% positive donors for syphilis.

Conclusion:

Safe blood, free from transfusion transmitted infections is our desired goal. But the present situation is not satisfactory especially for HBV, HCV and syphilis infections. Similar studies should be conducted in different places in our country to know the overall real condition of TTIs, so that more effective measure can be taken accordingly. Results of this study reflect that more effective procedure should be adopted in the screening tests to prevent the transmission of transfusion mediated infections.

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Effect of Perinatal Asphyxia with Hypoxic-Ischemic Encephalopathy on Blood Glucose and Calcium Level in Term Neonates

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Abstract:

Perinatal asphyxia is a major cause of neonatal death and disability worldwide. Asphyxiated newborn are vulnerable to develop hypoglycaemia and hypocalcaemia. The objective of the study was to determine the effect of birth asphyxia with hypoxic- ischemic encephalopathy on blood glucose and calcium level in term neonates. This cross-sectional observational study was conducted at department of Pediatrics of Rangpur Medical College Hospital from January 2017 to December 2018. After ethical clearance, total 87 eligible hospitalized term neonates fulfilling the inclusion and exclusion criteria were enrolled into the study. Estimation of blood glucose and calcium were done within one hour of admission. Data were analyzed through SPSS software (version 23.0). Minimum level of significance was predetermined as $p < 0.05$. Analysis revealed that frequency of hypocalcaemia ($p < 0.001$) and hypoglycaemia ($p < 0.05$) were significant. Hypocalcaemia was significant ($p < 0.001$) among three grades of Sarnat and Sarnat HIE staging. Present study concluded that hypoglycaemia and hypocalcaemia were significant findings in perinatal asphyxia with hypoxic-ischemic encephalopathy in term neonates.

Indexing words: Neonates, Perinatal asphyxia, Hypoxic ischemic encephalopathy, Hypoglycaemia, Hypocalcaemia.

Introduction:

Perinatal asphyxia is an insult to the fetus or newborn infant due to lack of oxygen and perfusion to various organs and manifests as difficulty in establishing spontaneous respiration evident by delayed cry after birth, at least one minute.¹ Hypoxic- ischemic encephalopathy (HIE) is characterized by clinical and laboratory evidence of acute or sub-acute brain injury due to asphyxia. Perinatal asphyxia is the second leading cause of neonatal mortality in Bangladesh.²

Neonatal hypocalcaemia is defined as a total blood calcium concentration less than 7.0 mg/dl in preterm infants, and <8.0 mg/dl in term infants and an ionized calcium concentration of less than 4.0 mg/dl (1.0 mmol/L).^{3,4} Neonatal hypoglycaemia is defined as the level of glucose in whole blood below 40 mg/dl (2.2 mmol/L).⁵ In asphyxiated infant, clinically it is difficult to distinguish the effects of hypoglycaemia and hypocalcaemia from hypoxic ischemic encephalopathy (HIE). Therefore, it is essential to monitor blood calcium and blood glucose level to evaluate hypoglycaemia and hypocalcaemia for prompt and proper management of perinatal asphyxia to reduce neonatal mortality and morbidity.

Methods:

This cross sectional observational study was conducted at inpatient department of Paediatrics of Rangpur Medical College Hospital from January 2017 to December 2018. Main outcome variables were blood calcium and blood glucose level, stages of HIE. All asphyxiated term neonates, hospitalized within 72 hours of birth, fulfilling the selection criteria were enrolled into

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the study. Inclusion criteria were-term neonates of both sex, age-within 72 hours of birth, birth weight 2500 to 4000 gm, history of perinatal asphyxia evident by failure to initiate and sustain breathing at birth or delayed cry after birth at least for one minute, term neonates showing the neurobehavioral signs of HIE. Exclusion criteria were- congenital anomaly, early onset neonatal

sepsis, congenital infection, infant of diabetic mother, clinically suspected inborn error of metabolism. 2 ml of venous blood was collected within one hour of admission for estimation of blood glucose and blood calcium and for sepsis screening. The level of significance of 0.05 was used for this study.

Results:

A total of 87 asphyxiated neonates were enrolled into the study.

Table 1: Distribution of the term neonates by Sarnat and Sarnat HIE staging (n=87)

Sarnat and Sarnat staging	Number of patient	Percentage
HIE stage I	10	11.49
HIE stage II	38	43.87
HIE stage III	39	44.82

Table 1 shows that 90% term neonates belonged to HIE stage II and HIE stage III divided into two equal halves.

Table 2: Frequency of hypoglycaemia in PNA with HIE (n=87)

Glycaemic status	Sarnat and Sarnat staging						p value
	HIE stage I (n=10)		HIE stage II (n=38)		HIE stage III (n=39)		
	N	%	N	%	N	%	
Hypoglycaemia	01	10	10	26.3	18	46.2	0.046 (S)
Normoglycemia	09	90	28	73.7	21	53.8	

n: Number of neonates, %: Percentage, **S**: Significant in Chi-square test of significance of difference. Table 2 shows frequency of hypoglycaemia was significant in HIE stage III (p= 0.046)

Table 3: Severity of hypocalcaemia in PNA with HIE staging (n=87)

Blood calcium (mg/dl)	Sarnat and Sarnat HIE staging						p value
	HIE stage I (n=10)		HIE stage II (n=38)		HIE stage III (n=39)		
	N	%	n	%	n	%	
<04	0	00	0	00	3	7.7	<0.001 (S)
04-08	0	00	10	26.3	23	59	
>08	10	100	28	73.7	13	33.3	

n: Number of neonates, %: Percentage, **S**:significant, in Chi-square test of significance of difference. Table 3 shows severity of hypocalcaemia escalated with progressive severity of HIE

Table 4: Severity of hypoglycaemia in PNA with HIE staging (n=87)

Blood glucose (mg/dl)	Sarnat and Sarnat HIE staging						p value
	HIE stage I (n=10)		HIE stage II (n=38)		HIE stage III (n=39)		
	N	%	n	%	N	%	
<20	0	00	1	2.6	3	7.7	0.165 (NS)
20-40	1	10	9	23.7	15	38.4	
>40	9	90	28	73.7	21	53.9	

PNA: Perinatal asphyxia, **HIE**: hypoxic ischemic encephalopathy n : Number of neonates, %: Percentage, **NS**: Non-significant, in Chi-square test of significance of difference

Table 4 shows severity of hypoglycaemia increased with severity of HIE.

Table 5: Frequency of hypocalcaemia in PNA HIE staging (n=87)

Status of serum calcium	Sarnat and Sarnat staging						p value
	HIE stage I (n=10)		HIE stage II (n=38)		HIE stage III (n=39)		
	N	%	n	%	n	%	
Hypocalcaemia	0	00	10	26.3	26	66.7	<0.001 (S)
Normocalcemia	10	100	28	73.7	13	33.3	

n: Number of neonates, %: Percentage, **S**: Significant in Chi-square test of significance of difference Table 5 shows hypocalcaemia was most frequent in HIE stage III (p<0.05)

Discussion:

This study was carried out with an aim to evaluate the effect of perinatal asphyxia with hypoxic ischemic encephalopathy on blood glucose and calcium level in term neonates. In this study, it was found that 11.49% of neonates were in Sarnat and Sarnat's HIE stage I, 43.87% in stage II, and 44.82% in stage III.

Chiabi et al found 51.0% of neonates were in Sarnat and Sarnat's stage I, 26% in stage II, and 23% in stage III.⁶ This is in contrast with the findings of current study. Current study revealed that 90% neonates belonged to HIE stage II and HIE stage III divided into two equal halves. On initial neurological evaluation Memon et al found 15.0% were normal while clinical signs of HIE were present in 85.0%, with 30.0% in stage I, 35.0% in Stage II and 20.0% in stage III of HIE.⁷ Olusegun J et al found that out of 563 asphyxiated neonates 50.3% had moderate asphyxia and 49.7% had severe asphyxia (Apgar score ≤ 3), which resemble with the present study.⁸

In this current study, almost two third 58(66.66%) of the patients had blood glucose level >40 mg/dl, 4(4.59%) neonates had <20 mg/dl in HIE and 25(28.73%) had 20-40 mg/dl in HIE. This significant decrease in blood glucose was directly associated with degree of asphyxia. This is similar to the study by Kiyani et al who observed temporary hyperinsulinism contributing to hypoglycaemia in asphyxiated neonates.⁹ Olusegun et al also reported hypoglycaemia in severe asphyxia.⁸ Shinghal et al. concluded that among hypoglycemic babies, birth asphyxia contributed to 24.2% of cases.¹⁰

In this study majority 51(58.62%) of the patients had blood calcium level >8 mg/dl, 3(3.44%) had <4 mg/dl and 33(37.93%) had 4-8 mg/dl. There was significant decrease in calcium level in the asphyxiated babies and the decrease was directly proportionate to the degree of asphyxia. This is similar to observations reported by MacDonald who estimated hypocalcaemia in asphyxiated neonates and concluded that the decrease in blood level of total calcium was more profound in asphyxiated newborns than non-asphyxiated newborns.¹¹ Ria et al also observed high incidence of low blood calcium in asphyxiated infants.¹² A study conducted by Perlmann et al among asphyxiated infants exhibited significantly low plasma calcium concentrations than their controls.¹³ These

findings closely resemble with the findings of present study.

It was observed that 9(90%) of the patients had blood glucose level >40 mg/dl in HIE stage I, 28(73.7%) in HIE stage II and 21(53.9%) in HIE stage III. There was association between severity of Sarnat and Sarnat staging with low blood glucose level.

Study findings revealed that 10(100.0%) patients who had blood calcium level >8 mg/dl were in HIE stage I, 28(73.7%) in HIE stage II and 13(33.3%) in HIE stage III. There was a significant association between Sarnat and Sarnat staging with blood calcium level.

Regarding association between hypoglycaemia of asphyxiated newborn with Sarnat and Sarnat staging it was observed in this study that 1(10%) of the patients had hypoglycaemia in HIE stage I, 10(26.3%) in HIE stage II and 18(46.2%) in HIE stage III. The difference was statistically significant ($p < 0.05$) among three groups.

Association between hypocalcaemia with Sarnat and Sarnat staging revealed that none in HIE stage I had hypocalcaemia, 10(26.3%) in HIE stage II and 26(66.7%) in HIE stage III were hypocalcaemic. Hypocalcaemia was significantly ($p < 0.05$) associated with HIE stage III. Vamne et al observed hypocalcaemia in hypoxic Ischemic encephalopathy, 30.0% in stage I, 56.0% in stage II and 14.0% in stage III cases.¹⁴

Conclusion:

This study concluded that there was significant positive association between severity of perinatal asphyxia with hypoglycemia and hypocalcaemia in term neonates.

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Outcome of Sutureless, Glue Free Conjunctival Autograft in Pterygium Surgery - A Prospective Study

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Abstract:

Background: Conjunctival graft with limbal stem cell from patient's own eye is used as a popular practice to avoid recurrence after excision of pterygium. Suture materials used to secure the graft have some local complications and also time consuming. Plasma derived fibrin glue is used, but has risks of hypersensitivity reaction, transmission of blood borne diseases. In the present study we use no suture, no glue to adhere the graft in position, natural homeostasis is achieved here. Now a days natural homeostasis is allowed to achieve a better result. Purpose of the study was to determine the outcome of sutureless, glue free conjunctival autograft as a safe, economic and effective procedure on pterygium surgery. **Method:** This study was a hospital based prospective study and carried out on Rangpur Medical College Hospital. 32 patients of primary single head nasal pterygium were selected for study who admitted from July'2018 to December'2018. Study population was chosen by purposive sampling. The patients were non diabetic, convinced not to rub eye postoperatively. Excision of pterygium and limbal conjunctival autograft was performed without using suture or fibrin glue in all patients. Follow up was done on 1st POD, after one week, two weeks, one month and after three months. **Result:** Among the 32 patients 21(66%) were male and 11(34%) female, age range was 29 to 66 years. Maximum size of pterygium was 8mm and minimum size was 4mm. 5(15.6%) patients had foreign body sensation, 8(25%) watering on immediate postoperative days, mild subconjunctival hemorrhage in 2(6.25%) patients and Inferior graft dislocation in 5(15.6%) patient probably due to frequent blinking. There was no graft retraction and no recurrence was recorded among these study population. Surgeries were performed by single surgeon, and mean surgery time was 29.52 minutes. **Conclusion:** Sutureless, glue free procedure is safe, convenient, and effective for management of primary nasal pterygium with excision followed by conjunctival autograft.

Indexing words: Sutureless, Glue free, Conjunctival autograft, Pterygium surgery

Introduction:

Pterygium arises from Greek word Pterygion, means wing .Pterygium is a triangular wing shaped fibrovascular subepithelial ingrowth of degenerative bulbar conjunctival tissue over the limbus onto the cornea. It is a common ocular disease, especially in hot and windy areas. Pterygium causes visual disturbance by producing astigmatism, visual problem is severe when it invades the pupillary area. Permanent

deterioration of vision may occur if still remains untreated.

Pterygium is common ocular disorder worldwide. Global prevalence varies from 0.3 to 29%.^{1,2} The prevalence is high in Bangladesh, and it is 3.77%.³

There are various surgical techniques for treatment of pterygium. They are bare sclera techniques, transposition of pterygium to fornix, excision with simple closure, conjunctival autograft, limbal stem cell transplant, amniotic membrane graft, buccal mucosal graft and adjuvant therapy with beta irradiation, mitomycin-C and 5-fluorouracil.

Superior limbal conjunctival autograft is the most popular modality now a day, has a long time benefit with low recurrence rate.⁴ The graft can be attached with suture or fibrin glue. But suture

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less glue free conjunctival autograft is a newly emerging procedure.

Sutures have been traditionally used to adhere graft in position but it requires longer operating time, surgical expertise, post-operative discomfort, local complications like suture abscesses, button holes and granuloma formation.^{5,6}

Graft fixation with fibrin glue is another technique which is convenient as it is less time consuming and needs less surgical expertise. But it carries risks of infection and foreign body reaction. Fibrin glue is expensive and it is not available everywhere. Autologous fibrin is an alternative method. In developing countries it is preferred as safe, effective and economic.

Methods:

This was a hospital based prospective study. It was carried out among the patients admitted in Ophthalmology department of Rangpur Medical College Hospital, Rangpur with primary pterygium, from July 2018 to December 2018. Cases of nasal pterygium were selected for the study. Method of sampling was purposive sampling. Total study population was 32 and their age range was 29 to 66 years. Patients with recurrent and primary temporal or bi-head pterygium were excluded. We excluded diabetic patients from the study. The patients gave consent to be sample of the study and was committed for periodic follow up and avoiding eye rubbing on immediate post operative days. Routine preoperative evaluation, including systemic and ocular were done. Surgeries were performed by single surgeon. Excision of pterygium followed by superior limbal conjunctival autograft was done in all patients. The graft tissue was left there for 10 minutes, then pad bandage was given. Patients were instructed to avoid eye rubbing. After 24 hours bandage was removed and dressing was done gently. Steroid and antibiotic drops were instilled and pad bandage was given again for another 24 hours. After 48 hours of surgery pad bandage was removed. All the patients were prescribed steroid eye drop it tapering dose and antibiotic drop also. Follow up was done on 1st POD, after one week, two weeks, one month and after three months. On each follow up they were examined for subconjunctival hemorrhage, graft displacement, graft rejection, recurrence or any other complications.

Results:

Table 1: Distribution according to age

Age Range(Years)	Number	Percentage
29-40	11	34
41-50	14	44
51-66	07	22

Table 2: Distribution according to sex/gender

Sex	Number	Percentage
Male	21	66
Female	11	34

Table 3: Size of pterygium

Size of pterygium (In mm)	Number	Percentage
4-6	13	40.62
7-8	19	59.37

Table 4: Different Postoperative complaints

Symptoms	Number of patients	Percentage
No complaint	13	40.63%
Photophobia	9	28.13%
Watering	8	25%
FB Sensation	5	15.6%
Eye ache	4	12.5%
Ocular Itching	3	9.38%

Table 5: Postoperative complications

Complications	Number	Percentage
Subconjunctival hemorrhage	2	6.25%
Graft displacement	5	15.6%
Graft rejection	0	0%
Recurrence	0	0%

Discussion:

Pterygium is not an uncommon ocular problem in Bangladesh, especially in north Bengal. Age range of the patients was 29 to 66, mean age 47.2. Among them 32 patients 21(66%) were male and 11(34%) female. Mean operation time was 29.52 minutes. Bhatia (2017) in a study found mean age 47.7 and mean operation time 35 minutes.⁷ In the present study no change of visual acuity was observed like other workers. The present study found no change in visual acuity postoperatively which is consistent with the study of Bhatia.

In the current study sutureless, glueless method was adopted to improve patient's postoperative complaints, reduce operation cost, time and recurrence. Out of 32 patients 5 (15.6%) patients reported foreign body sensation, 8 (25%)

patients had watering, 4(12.5%) complained of postoperative ocular pain, 3(9.38%), itching, 9(28.13%), photophobia on immediate postoperative days which disappeared on subsequent follow up. Subconjunctival hemorrhage was seen in two patients, graft displacement was seen in 5 patients who healed spontaneously without any surgical intervention. No sign of recurrence were seen within 3 month follow up period. Kumar and Singh (2018) in a comparative study found patients in whom autologous blood was used to adhere the graft material had less post operative complaints for few days in comparison to which suture or fibrin glue was used.⁸ In our study we also found that major fraction of the patients, that was 13(40.63%) had no complaints.

Conclusions:

The study concluded that sutureless, glueless conjunctival autograft after excision of primary pterygium was safe, effective and economic.

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Unilateral Versus Bilateral Spinal Anesthesia - A Comparative Study

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Abstract:

Background: A restricted sympathetic block during spinal anaesthesia may minimize the intra- and postoperative hemodynamic changes. **Aims:** To compare unilateral and bilateral spinal anaesthesia with and complications of each technique. **Methods:** This study was conducted in the Department of Anaesthesia, Analgesia and Critical Care, Combined Military Hospital (CMH), Chattogram. Study was carried out over a period of one year from January 2018 to December 2018. Total 80 patients were included in this study and were randomly divided into two groups, Group-U (Unilateral spinal anaesthesia group) and Group-B (Bilateral spinal anaesthesia group). Patients with ASA grade 1 & 2, aged 18-50 years were included. Spinal anaesthesia was induced with 0.5% hyperbaric bupivacaine and a 25-G Quincke needle in two groups of patients who had been admitted for orthopedic and general surgeries. In group-U, dural puncture was performed with the patient in the lateral decubitus position with 1.75ml of hyperbaric bupivacaine and 25 µg Fentanyl. The speed of injection was 1 ml/30 sec, and the duration of time spent in the lateral decubitus position was 15 minutes and then placed in supine position. In group-B, dural puncture was also performed with the patient in the same lateral decubitus position using the same dose, i.e. 1.75 ml of hyperbaric bupivacaine with 25 µg Fentanyl but patients were then placed in the supine position as quickly as possible. **Results:** The demographic data were similar in both groups. The time to the onset of the sensory and motor block was significantly shorter in group-B ($p < 0.05$). The duration of motor and sensory block was shorter in group-U ($p < 0.05$). The success rate for unilateral spinal anaesthesia in group-U was 94%. In two patients, the spinal block spread to the non-dependent side. The incidence of complications (nausea, headache, and hypotension) was lower in group-U. **Conclusion:** When unilateral spinal anaesthesia was performed using a low-dose, low-volume and low-flow injection technique, it provides adequate sensory-motor block, stable hemodynamic parameters, faster time to micturition, early ambulation, more patient satisfaction as opposed to the conventional bilateral approach. Furthermore, this technique avoids unnecessary paralysis on the non-operated side.

Indexing words: Spinal anesthesia, Unilateral, Bilateral, Bupivacaine

Introduction:

Conventional spinal anaesthesia (bilateral) is an effective alternative to general anaesthesia when the surgical site is located on the lower extremities, perineum (eg, surgery on the genitalia or anus), or lower body wall (eg, inguinal herniorrhaphy). Cesarean deliveries are routinely performed under spinal anaesthesia, as are total hip arthroplasty and total knee arthroplasty.¹ Unilateral spinal anaesthesia may be performed for all procedures involving the lower limb both orthopaedic and vascular, some operations in the perineal area and some

general surgical procedures such as inguinal hernia repair, varicose vein ligations etc.²

Unilateral spinal anaesthesia was first achieved in 1947 by subarachnoid injection of a hypobaric solution with the patient placed in the lateral position.³ The term unilateral spinal anaesthesia is used when block is of operative side only with absence of block on non-operative side.⁴ There are many benefits to this technique including fewer hemodynamic changes, less urinary retention, more satisfied patients, better motility during recovery and the restriction of selective nerve block to the relevant limb.⁵ Several factors are required for successful unilateral spinal anaesthesia, including: the type of needle and its bevel direction, the speed of injection, volume, baricity, the concentration of local anaesthesia as well as the position of the patient on the operating table.⁶

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Cardiovascular system may be profoundly affected by spinal anesthesia due to unavoidable sympathetic blockade. Numerous studies have been conducted to see the cardiovascular effects of spinal blockade.⁷ In conventional bilateral spinal anesthesia it is not possible to limit the accompanied sympathetic block that normally exceeds the sensory block by 2-6 segments. The cardio accelerator fibres originate from T1-T4 so the level of spinal anesthesia affecting these dermatomes may cause bradycardia.⁸ Unilateral spinal anesthesia has been claimed by many as an alternative technique, to restrict the undesired sympathetic block.⁹ This study was undertaken to evaluate the benefits of unilateral as compared with bilateral spinal anaesthesia.

Methods:

This study was conducted in the Department of Anaesthesia, Analgesia and Critical Care, Combined Military Hospital (CMH), Chattogram. Study was carried out over a period of one year from January 2018 to December 2018. Total 80 patients were included in this study and randomly divided into two groups, Group-U (Unilateral spinal anesthesia group) and Group-B (Bilateral spinal anaesthesia group). Patient age ranged from 18 to 50 years and the patients were in ASA grade I or II. The duration of nil by mouth time and the sedation regimen were the same in both groups. Patient who had a history of cardiovascular disease, hypertension, neuropathy, addiction, or smoking, surgery requiring over 2 hour was excluded from the study. Required approval for this study was taken and Informed consent was also obtained from each patient to ensure that he or she understood that the technique. An iv cannula was inserted, then a 10 ml/kg intravenous infusion of lactated Ringer's solution was administered over 20 min. All patients underwent standard monitoring, including electrocardiography, non-invasive blood-pressure measurements and pulse oximetry. In group-U (unilateral spinal), the patients were placed in the lateral decubitus position. The L3-L4 intervertebral space was detected and then spinal anaesthesia was performed with a 25-G Quincke spinal needle. After the confirmation of intrathecal needle placement, 1.75 ml of hyperbaric bupivacaine 0.5% with 25 µg fentanyl was injected at a speed of 1 ml every 30 sec. The bevel of the needle pointed downward during the injection. The patients were kept in the lateral position for 15 min and then placed in the supine position for surgery.

In group-B (bilateral spinal), spinal anaesthesia was also performed with the patient in the lateral decubitus position at the L3-L4 interspace using a 25-G Quincke spinal needle in sterile condition. Once intrathecal placement had been confirmed, 1.75 mL of hyperbaric bupivacaine 0.5% with 25 µg fentanyl was injected. The patient was then placed in the supine position as quickly as possible. To reduce anxiety, 2.5 mg midazolam was injected iv to each patient.

Hemodynamic variables such as blood pressure and heart rate were checked before spinal anesthesia and then every 5 min in both groups. If blood pressure decreased by more than 25% of baseline and heart rate dropped to less than 50 beats/min, the patient was considered to suffer from hypotension or bradycardia, respectively.

The hypotension was managed by rapid iv infusion of 250 ml of normal saline. If the hypotensive patient did not respond to treatment, ephedrine 5 mg iv was injected. Bradycardia was managed using 0.6 mg of intravenously administered atropine.

A visual analog scale ranging from 0 to 10 was used for evaluation of nausea and the number of vomiting episodes was used to evaluate the extent of patient vomiting. To check the level of sensory block, a cold object was held in contact with the skin. The Bromage scale was used to check the accuracy of the motor block (Table 1).¹⁰

Table 1: Bromage Score

Grade	Criteria	Degree of Block
I	Free movement of legs and feet	Nil (0%)
II	Just able to flex knee with free movement of the feet	Partial (33%)
III	Unable to flex knees but with free movement of the feet	Almost complete (66%)
IV	Unable to move the legs or feet	Complete (100%)

The clinical data including the onset of sensory and motor block, hemodynamic changes and the duration of sensory and motor block and the complications of spinal anaesthesia were evaluated using SPSS version 19.6. In this statistical analysis, a *p* value of <0.05 was considered as significant.

For statistical analysis of the hemodynamic changes, the paired t-test was used. The independent t-test was used to compare the efficacy of the sensory and motor blocks. The Mann-Whitney U-test was used to evaluate the level of patient satisfaction.

Results:

There were no significant differences in age, sex, height, weight, duration of surgery and type of surgery between both groups (Table 2).

Table 2: Demographic data, duration of surgery, type of surgery according to group (Mean ± SD)

Specifications	Group-U (Unilateral group. N=40)	Group-B (Bilateral group. N=40)	P- value
Age (years)	36.2 ± 5.8	32.4 ± 6.2	0.308
Sex (male/ female)	22/18	23/17	0.358
Height (cm)	152.8 ± 6.5	156.2 ± 6.7	0.656
Weight (Kg)	56.7 ± 3.5	60.2 ± 9.4	0.364
Duration of surgery(min)	72.2 ± 10.4	78.6 ± 11.2	0.765
Type of surgery(orthopedics/ general surgery)	21/19	22/18	0.356

T10-T12 anesthesia was achieved in both groups. The average time to onset of sensory block in the unilateral group (Group-U) was 3.48 ± 0.11 min. In the bilateral group (Group-B), this value was 2.12 ± 0.31 min (p value = 0.028).Duration of motor and sensory block were 118.35 ± 32.38 min and 137.27 ± 17.07 min in unilateral group respectively. Duration of motor and sensory block was 146.11 ± 17.42 min and 174.11 ± 17.41 min in bilateral group. These differences were statistically significant (p <0.05).Time to reach Bromage score 4 was achieved at 6.57 ± 2.34 min in unilateral group and 5.02 ± 1.54 min in bilateral group (Table 3). The average time to voiding after spinal anesthesia was 430 ± 94 min in the unilateral group and 519 ± 109 min in the bilateral group (p =0.18). The time to ambulation was 332.4 ± 1.08 min in unilateral group and 353.5 ± 78.9 min in bilateral group(p=0.690).

Table 3: Sensory and motor block characteristics (Mean ± SD)

Characteristics	Group-U (Unilateral group. N=40)	Group-B (Bilateral group. N=40)	P-value
Time to onset of sensory block (min)	3.48 ± 0.11	2.12 ± 0.31	0.028
Time to onset of motor block (min)	5.02 ± 1.14	4.21 ± 1.23	0.018
Duration of motor block (min)	118.35 ± 32.38	146.11 ± 17.42	0.027
Duration of sensory block (min)	137.12 ± 17.07	174.11 ± 17.41	0.039
Time to reach motor block Bromage scale 4 (min)	6.57 ± 2.34	5.02 ± 1.54	0.042
Time of first voiding (min)	430 ± 94	519 ± 109	0.18
Time to ambulation (min)	332.4 ± 1.08	353.5 ± 78.9	0.690

None of the patients in the unilateral group experienced nausea or vomiting. In the bilateral group, 09 patients had nausea and 01 of them experienced episodes of vomiting (p = 0.021). 03 patients in the unilateral group and 08 patients in the bilateral group had headaches (p = 0.032). None of the patients in the unilateral group had hypotension or bradycardia. In the bilateral group, 12 patients had hypotension and 07 of them bradycardia (p values 0.027 and 0.029 respectively). The level of patient satisfaction was 89.2% in the unilateral group and 84.3% in

the bilateral group (p> 0.05).The rates of complications are presented in Table 4.

Table 4: Complications

Complications	Group-U (Unilateral group. N=40)	Group-B (Bilateral group. N=40)	P- value
Nausea and vomiting	0	10	0.021
Headache	3	8	0.032
Hypotension	0	12	0.027
Bradycardia	0	7	0.029

The success rate for unilateral spinal anesthesia in our study was 94%, in two cases, the anesthetic drug spread to the other side of the canal, resulting in bilateral anesthesia.

Discussion:

Spinal anaesthesia is an anaesthetic technique that is easy, fast and relatively inexpensive in comparison to general anaesthesia. But it produces some adverse effects, the commonest being the intraoperative hypotension and bradycardia and post-operative headache. Precipitous arterial hypotension due to high sympathetic block remains a common problem associated with conventional bilateral spinal anaesthesia, specially in high risk patients.¹¹ The haemodynamic effects of spinal anaesthesia are mainly a result of both the resistance and capacitance vascular changes induced by the block of pre-ganglionic sympathetic fibres.¹²

The spinal anaesthesia is termed as unilateral when the sensory block was upto or above T12 level and modified Bromage score for motor block was >2 on the operative limb and no detectable sensory and motor block on the other limb. The simultaneous factors for unilateral spinal block are: lateral decubitus position during and subsequently after intrathecal injection, low dose of local anesthetic and slow speed of injection. Position of patient (lateral decubitus) with respect to baricity of local anaesthetic and duration of lateral position after intrathecal injection are main determinants of distribution of spinal block to one side.^{13,14}

One of the main advantage of unilateral block is more stable haemodynamic status. In agreement with previous investigators no significant fall in BP and heart rate was noted in any patient. Less hypotension is due to lower dose of anaesthetic and slow ascent of block. This allows patients to activate homeostatic vascular mechanism more efficiently.^{15,16}

The optimum duration of lateral position is difficult to define as it is also related to local anaesthetic dose. When 5-10 mg of hyperbaric bupivacaine is used, maintaining lateral position for 15-20 minutes is enough to prevent anaesthetic migration to other side when the patients are turned supine.¹⁷ As we used hyperbaric bupivacaine we positioned the patients in lateral position with operative side in dependent position and maintained this position for 15 minutes after spinal injection. Slow speed

of injection minimizes mixing of local anaesthetic with CSF and thus facilitates unilateral block.¹⁸

In this study, we injected 1.75 ml of hyperbaric bupivacaine 0.5% with Fentanyl 25 µg to achieve unilateral spinal anaesthesia. The patient was kept in the lateral position for 15 min, which led to unilateral spinal anaesthesia in 94% of cases. In two cases, the anesthetic drug spread to the other side, resulting in bilateral spinal anaesthesia. In a study performed by Esmoğlu, the patient was in the lateral position for 10 min. This approach yielded an 85.7% success rate. This discrepancy in terms of the success rate seems to be dependent on the duration of time spent in the lateral position.¹⁹

None of the patients in the unilateral spinal anaesthesia group experienced hypotension, but twelve patients in the bilateral group had hypotension ($p < 0.05$). Chohan and Afshan administered unilateral spinal anaesthesia prior to lower-limb surgery in elderly patients with ASA classification of III or IV (average age, 60). The authors found no significant hemodynamic changes. They used hyperbaric bupivacaine 0.5% (1.1-1.8 ml).²⁰

In our study, there was no bradycardia in the unilateral group, but in the bilateral group, 7 patients had bradycardia ($p = 0.029$). On average, the time to the onset of anaesthesia and immobility was faster in the bilateral as compared to the unilateral spinal anaesthesia group ($p = 0.028$ and 0.018 respectively). The sensory and motor block lasted for less time in the unilateral as compared to the bilateral group. Unilateral spinal anaesthesia is therefore suitable for out-patient surgery.

Valanne used 4 or 6 mg of bupivacaine to induce unilateral spinal anaesthesia in 106 patients scheduled to undergo knee arthroscopy. While both doses were sufficient for sensory and motor block, 4 mg of bupivacaine achieves a more rapid regression of motor function.²¹

Headache after spinal anaesthesia was reported in three and eight patients in the unilateral and bilateral groups respectively. In contrast, Smaoğlu used 1.5 ml and 3 ml of hyperbaric bupivacaine 0.5% for unilateral and bilateral anaesthesia, respectively: six and nine patients, respectively, experienced headache. This discrepancy may be related to the type of needle used (Quincke).²²

In our investigation, the average time to voiding after spinal anaesthesia was 7.3 and 8.65 hour in the unilateral and bilateral groups, respectively. This difference was not significant ($p=0.18$). Atef et al. reported no urinary retention after unilateral spinal anaesthesia with 5 mg of hyperbaric bupivacaine, while in their study, after induction with 12.5 mg dosage, this complication observed in five percent of the subjects. So, it appears that a reduction in the bupivacaine dosage decreases the likelihood of urinary retention, as well.²³

In the available literature reports, the unilateral anaesthesia, like in our study, is shorter than conventional anaesthesia. In operations such as knee arthroscopy, inguinal herniorrhaphy, and other operations, this is rather an advantage which means less need of postoperative observation and earlier discharge of patients, as seen in our study.²⁴

Reduction of local anaesthetic dose is crucial for unilaterality of block. However, too small dose can increase failure rate of spinal and shorten the duration of block. We used intermediate dose of 1.75ml of 0.5% heavybupivacaine with adjuvants Fentanyl 25 µg which allowed surgery without need of supplementary analgesia and also reduce risk of failed block.²⁵

Conclusion:

Unilateral spinal anaesthesia with a low dose, limited volume and low-flow injection technique induces sufficient sensory and motor block with an appropriate level of analgesia. This technique achieves stable hemodynamics, also results in rapid recovery and greater satisfaction among patients, in addition to preventing unnecessary nerve block in the contra lateral side.

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An Overview on Heart Failure

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Introduction:

Heart failure is a complex clinical syndrome that results from any structural or functional impairment of ventricular filling or ejection of blood. The cardinal manifestations of heart failure are, dyspnea and fatigue limiting exercise tolerance and fluid retention. This may lead to pulmonary and/or splanchnic congestion and/or peripheral edema.¹

As some patients present with sign and symptom of volume overload, the term "Heart Failure" is preferred over "Congestive Heart Failure". There is no single diagnostic test used for diagnosis of heart failure. It is largely a clinical diagnosis based on a careful history taking and physical examination. However, ECG, chest X-Ray, echocardiography and natriuretic peptides are supportive investigation tools used in the flowchart for diagnosis of heart failure.¹

Heart failure may be associated with a wide spectrum of left ventricular functional abnormalities. In most patients's abnormalities like systolic and diastolic dysfunction coexist. Ejection Fraction (EF) is considered important in classification of patients with heart failure. EF values are dependent on imaging techniques. Normally it is more than 60%. Heart failure according to guideline is referred as with preserved EF (HFpEF) i.e. EF > 40% and heart failure with reduced EF (HFrEF) i.e. EF ≤40% respectively.¹

Indexing words: Heart failure, HFpEF, HFrEF, Overview

Epidemiology:

The lifetime risk of developing heart failure is 20% in Americans ≥40 years of age. In US 6.5 million cases of heart failure are diagnosed annually. Heart failure incidence increases with age and raises from approximately 20 per thousands in individuals of 65-69 years to > 80 per thousands in individual ≥85 years of age.¹

In Europe, prevalence of asymptomatic ventricular dysfunction is evident in about 4% of the population. Prevalence is 70-80 years old people are in between 10-20 %. Overall 50% of the patients are dead at 4 years. Heart failure in overall population is between 2-3%. 40% patients admitted in hospital are dead or readmitted within 1 year.²

In Bangladesh due to lack of national surveillance and registry such data are lacking. However, data published from National Institute of Cardiovascular Disease (NICVD) in a manual showed that approximately 1-2 % of the adult population has heart failure with prevalence risen to more than 10% annually in persons of 70 years of age and older. The picture is almost identical in other developed countries.³

Other than hypertension and coronary artery disease, Bangladesh has still to face the burden of Rheumatic Heart disease as a cause of heart failure.³

Blacks have highest risk of heart failure. In the ARIC (Atherosclerotic Risk In Community) study,⁴ incidence is highest among the black men than among the white women. Blacks have a greater 5- year mortality than whites.

ARIC and Multi Ethnic Study of Atherosclerosis (MESA)⁵ also showed that HF incidence was higher in blacks than in the whites. In both studies the difference between blacks and whites were attempted and overall the greater HF incidence in blacks was observed to be related to their greater burden of atherosclerotic risk factors as well as to socioeconomic status.

Etiology:

For LV systolic dysfunction, common causes are damage or loss of heart muscle due to acute or chronic ischemia, increased ventricular resistance as in hypertension, the development of tachyarrhythmia such as atrial fibrillation (AF). Coronary heart disease (CAD) by far the commonest cause (70%), valve disease accounts for 10% and cardiomyopathy 10% and others 10%.²

Diastolic dysfunction (HFpEF) in general population is are usually due to hypertension,

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obesity, coronary artery disease (CAD), Diabetes mellitus (DM), renal disease, atrial fibrillation (AF) and hyperlipidemia. Age and sex (common in female sex) are also important independent predictors in both HFrEF and HFpEF.¹

Classification & Presentation of heart failure¹:

	EF	Description
HFrEF	≤40%	Referred as systolic HF
HFpEF	≥40%	Referred as diastolic HF
HFpEF Borderline	41-49%	Borderline or intermediate group
HFpEF Improved	>40%	Subset of patients who has improved and previously had HFrEF

Several criteria have been proposed to define the syndrome of HFpEF. This includes,¹

- clinical signs symptoms of heart failure
- evidence of preserved or normal LVEF (variably classified as EF>40%, EF>45%, EF>50%, and ≥55%) and,
- evidence of LV diastolic dysfunction that can be determined by Doppler echocardiogram or cardiac catheterization.

Asymptomatic LV dysfunction:

The prevalence of asymptomatic LV systolic and diastolic dysfunction ranges from 6-21% and increases with age. In community based population in US asymptomatic mild diastolic LV dysfunction was seen 21% and moderate to severe diastolic LV dysfunction in 7% and both were associated with increased risk of symptomatic heart failure and mortality.

Its synonym “Pre-clinical Diastolic Dysfunction (PDD)” have a significantly higher risk of progression to heart failure and death compared with patient without PDD.⁶

Heart failure significantly decreases Health Related Quality of Life (HRQOL). Lack of improvement of HRQOL after discharge from hospital is a powerful predictor of re-hospitalization and mortality.

Women with HF are found to have poorer HRQOL than men. Other determinants include-depression, older age, higher body mass index (BMI), lower systolic blood pressure and sleep apnea. Angiotensin converting enzyme inhibitors (ACE inhibitors) and angiotensin receptor blockers (ARB) improves HRQOL only modestly

and delay the progressive worsening of HRQOL in heart failure.

Only therapy shown to improve HRQOL is cardiac resynchronization therapy (ACRT). Self-care exercise may also improve HRQOL.¹

Risk factors:

Important risk factors of HF are,¹

Hypertension- Long term treatment of both systolic and diastolic hypertension reduces the risk of heart failure by approximately 50%.

DM- Obesity and insulin resistance are important risk factors for development of heart failure.

Metabolic syndrome- Includes any three of the following- abdominal adiposity, hypertriglyceridaemia, low High density lipoprotein (HDL), HTN and fasting hyperglycemia.

Atherosclerotic disease- Patient with known atherosclerotic disease of coronary, cerebral or peripheral blood vessels are likely to develop heart failure.

Hospitalization: HF is the primary diagnosis in >1 million hospitalization annually. Patients hospitalized for HF are at high risk for 1-month readmission rate of 25%. The total cost of HF care in the United States exceeds \$40 billion annually.¹

Mortality: Although survival has improved, the absolute mortality rates for HF remains approximately 50% within 5 years of diagnosis. In the ARIC study, the 30-day, 1-year and 5-year case fatality rates after hospitalization for HF were 10.4%, 22% and 42.3% respectively.¹

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