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Editorial

Original Article

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Editorial

Antioxidants: Effects on Health

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Introduction:

The process of oxidation in the human body damages cell membranes and other structures, including cellular proteins, lipids and DNA. When oxygen is metabolized, it creates unstable molecules called 'free radicals', which steal electrons from other molecules, causing damage to DNA and other cells. Free radicals can weaken cells and cause premature aging and inflammation. But antioxidants may play a role in countering these effects.

The body can cope with some free radicals and needs them to function effectively. However, the damage caused by an overload of free radicals over time may become irreversible and lead to certain diseases (including heart and liver disease) and some cancers (such as oral, oesophageal, stomach and bowel cancers). Oxidation can be accelerated by stress, cigarette smoking, alcohol, sunlight, pollution and other factors.

Antioxidants

Antioxidants are found in certain foods and may prevent some of the damage of cells caused by free radicals by neutralizing them. These include the nutrient antioxidants, vitamins A, C and E, and the minerals copper, zinc and selenium.

Other dietary food compounds, such as the phytochemicals in plants, are believed to have greater antioxidant effects than vitamins or minerals. These are called the non-nutrient antioxidants and include phytochemicals, (such as lycopenes in tomatoes and anthocyanins found in cranberries).

Natural or synthetic antioxidants can be added to supplements, processed foods, and even beauty products. But it's recommended to get antioxidants through foods that naturally contain them, rather than through supplements.

Every day, our body's cells are threatened by free radicals, which can weaken healthy cells and cause cancer and other diseases. Thankfully, we have antioxidants. These molecules help protect our cells from free-radical damage. And they are found in many foods, so it's not difficult to add them to our diet.

Health benefits of antioxidants

Antioxidants might not make us look 18 again, but the compounds do appear to have some impressive benefits.

Antioxidants may:

- **Slow cell damage:**
  Research suggests that antioxidants can help delay or prevent cell damage from free radicals. In studies, higher levels of antioxidants are associated with lower levels of free-radical damage.
- **Reduce rates of macular degeneration:**
  Studies have shown that low dietary intake of zinc and carotenoids are associated with macular degeneration. On the other hand, antioxidant intake might help prevent eye problems.
- **Lower risk of heart disease and some cancers:**
  People who consume antioxidant-rich foods have a lower risk of heart disease and some cancers. It's unclear if the reduced risk is from the antioxidants themselves or the combination of nutrients and antioxidants in healthy foods. It could also be that people who consume larger quantities of fruits and vegetables already have healthier lifestyles.

Overall, it's safe to say that adding more antioxidants to our diet through whole foods is a wise choice. Studies examining the consumption of high levels of antioxidants through supplements have not shown the same consistent decrease in rates of heart disease and cancer. In fact, in some cases, certain supplements that appear to have antioxidant activity — like those containing vitamin E and beta-carotene — can be more harmful than beneficial.

Types of antioxidants

It's a little misleading to call a substance an "antioxidant." Antioxidants are more accurately categorized by their chemical properties or their ability to fight free radicals. In one instance, a substance may

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have that ability but, in another, it may not.

There are likely hundreds or thousands of substances that act as antioxidants. Vitamins, minerals, and pigments can all be antioxidants. But some are more well known and better researched than others.

Here are five popular antioxidants and where to find them.

1. **Beta-carotene**
   Beta-carotene, a member of the carotenoid family, is an antioxidant that has been studied for its cancer-fighting and eye-health benefits. While the findings on its effects on cancer risk are mixed, beta carotene has shown promise as a preventative treatment for age-related macular degeneration (AMD). The famous AREDS trial found that participants with a high risk of developing advanced AMD had a 25% lower risk after they took a daily supplement containing beta-carotene. That said, unless a healthcare provider recommends it, it's best to avoid taking beta-carotene in supplement form. Research suggests long-term use of beta-carotene supplements may raise your risk for lung cancer.
2. **Lutein**
   Another member of the carotenoid family, lutein has also been studied as a preventative treatment for AMD. Some of these studies have shown promise, but others have been inconclusive on lutein's efficacy when taken in supplement form.
3. **Selenium**
   Selenium is a mineral that has been studied for its role in preventing cancer. According to findings, it might help reduce the incidence of prostate, lung, and colon cancers. In studies, these effects were strongest for those who previously had low selenium levels. However, more research is needed to confirm these results.Though, a small trial found that taking selenium in higher amounts — around 300 micrograms per day — is linked to a higher risk of mortality.
4. **Vitamin C**
   It's no secret that vitamin C has a wide range of health benefits, including potentially shortening the duration of colds. And it's been found that diets high in vitamin C are associated with a lower risk of developing heart disease. Luckily, fruits and vegetables are plentiful in this vitamin.
5. **Vitamin E**
   Another essential vitamin, vitamin E is associated with a reduced risk of cataracts and heart disease mortality. But, again, getting vitamin E through supplements may do more harm than good. Specifically, vitamin E supplements can increase your risk of bleeding if you take blood thinners and may interact with other medications and treatments. So it's best to stick to food sources of vitamin E, like nuts, seeds, and green vegetables.

Good source of antioxidants

Antioxidants occur naturally in a variety of foods. We can get the benefits of the five supplements outlined above by eating more:

- Beta carotene from pumpkin, carrot, and sweet potato
- Lutein from kale, spinach, and egg yolks
- Selenium from organ meats, grains, and fish like tuna and halibut
- Vitamin C from bell pepper, broccoli, and citrus fruits like oranges and grapefruit
- Vitamin E from plant oils and nuts and seeds, like almonds and sunflower seeds

Best way to get antioxidants in our diet

Experts seem to agree that the best way to get antioxidants is to eat a variety of fruits and vegetables. For adults, that means eating 1 ½ cups of fruits and 2 ½ cups of vegetables each day.

Here are some ways to make sure we are getting enough antioxidant-rich foods in our diet:

- **Choose foods that fit our lifestyle.** Get our fruits and vegetables in any combination of fresh, frozen, or canned versions that works for us and our family.
- **Eat the rainbow.** Naturally colorful foods are higher in antioxidants, so try adding as many colors to our plate as we can.
- **Power up our snacks.** Eating fruits and vegetables when we are craving a snack adds an opportunity to get more antioxidants. Consider blending fruits, vegetables, nuts, and seeds together for an antioxidant-rich smoothie. Blueberries, spinach, a handful of almonds, and a tablespoon of chia seeds make a great combination. Another tasty combination is strawberries, kale, and a scoop of nut butter.
- **Use herbs and spices.** In addition to adding flavor, herbs and spices — like peppermint, clove, and cinnamon — also contain antioxidants.

Effects of intake too many antioxidants

High doses of some vitamins and minerals can be dangerous. For example, consuming excessive

amounts of vitamin A can lead to headaches and blurred vision. In people who smoke, beta-carotene supplements appear to increase rates of lung cancer. Possible theories behind these negative effects include:

- In high amounts, antioxidant supplements may interfere with the absorption of other nutrients that have protective effects.
- Taking too many antioxidants may block the production of reactive oxygen molecules that are needed for important processes, like immune function.

In general, experts recommend getting nutrients by eating whole foods rather than by taking supplements, if possible. A diet rich in fruits and vegetables provides plenty of antioxidants and is safe for most people. This type of diet has also been consistently linked to a reduced risk of heart disease, certain eye diseases, and cancer.

But, when it comes to supplements, the science is murky. Some studies have shown that getting antioxidants in supplement form doesn't change the risk for some health conditions, like cancer and heart disease. Similarly, consuming antioxidants through fortified foods rather than through natural food sources — like fruits and vegetables — is less desirable because these foods may not be as healthy. For example, vitamins and minerals are often added to sweetened dairy products and cereal.

It's important to only take an antioxidant supplement if a healthcare provider recommends it. Here are a few reasons why:

- Supplements are unregulated. So check labels for a third-party seal, like from NSF, that indicates the contents were tested and shown to be accurate.
- Even natural products can interact with some medications. So be sure to tell your healthcare provider or pharmacist about any supplements you're taking.
- High doses of vitamins and minerals can have unwanted side effects.

Conclusion:

Antioxidants help protect cells against damage from free radicals. But antioxidant supplements have not shown to be more protective against cell damage than antioxidants from food sources. Experts agree the best way to get antioxidants is by eating a variety of fruits and vegetables.

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Original Article

Association of Fragmented QRS (Fors) on Twelve Lead ECG with Severity of Coronary Artery Disease

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Abstract:

Background: *Coronary angiogram is the gold standard for evaluation of coronary artery disease, which is an invasive tool for evaluation of severity of CAD. Fragmented QR Son twelve lead ECG can be an easily available and non-invasive tool for evaluation of severity of CAD.*

Objective: *The aim of the study was to observe the correlation of fQRS complex with the angiographic severity of CAD in patients with ischemic heart disease.*

Materials and Methods: *This observational study was conducted in the National Institute of Cardiovascular Diseases between June 2015 to May 2016. A total 100 patients were categorized into two groups according to the presence or absence of fQRS. Group I comprised 50 patients with fQRS and group Il consisted of 50 patients without fORS on ECG. Patients with bundle branch block, CKD, CLD, with valvular or congenital heart disease were excluded from the study.*

Results: *Patients demographics were the same in both groups. The mean Gensini score 17.7±14.6 in fQRS group patients and 7.8±13.4 in non-fQRS group patients. The difference was statistically significant (p=0.001). The mean vessel score was greater in fQRS group patients than non-fQRS group patients (1.5±0.7 vs 1.0±0.6) with statistically significant difference (p=0.001). Depending on the number of vessel involvement, it was found that among fQRS group patients, highest percentage had 1 vessel (56%) followed by 2 vessels (30%), (12%) patient had 3 vessels and (2%) patients did not have any vessel involvement. On the other hand, among non-fQRS group patients, highest percentage had 1 vessel (78%) followed by no vessel (14%), 2% had 2 vessels and (6%) patients had 3 vessels involved, no vessel involved patients had significantly more in non-fQRS group patients than fQRS patients (p=0.04).*

Conclusion: *Presence of fQRS on 12 lead ECG is associated with more severe form of coronary artery disease. This can be used for further evaluation and follow-up of a patient. Once the finding is observed, the particular patient should be targeted for aggressive management.*

Keywords: *Fragmented QRS, Coronary artery disease*

Introduction:

Coronary heart disease (CHD) is a major cause of mortality globally and this health problem is reaching pandemic in developed as well as in developing countries.[1] ischemic heart disease was the leading cause of death in developed countries and second leading cause of death in developing countries and by the year 2020, ischemic heart disease will hold first place in the World Health Organization's list of leading cause of disability.[2]

The south Asian countries, India, Pakistan, Bangladesh, Sri Lanka and Nepal contribute the highest proportion of the burden of cardiovascular disease (CVD) compared to any other region globally.[3] Estimates from global burden of disease study suggests that by the year 2020 this part of the world will have more individuals with atherosclerotic cardiovascular disease than any other region.[4]

Bangladesh is a small country with vast population. Cardiovascular disease is becoming asignificant burden on health care services in Bangladesh. According to one survey, prevalence rate of ischemic

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heart disease in Bangladesh was 3.4% in 2001. Khandaker, Hossain and Hossain (1987) found that myocardial infarction is one of the leading causes of death in Bangladesh mostly in the 4th decade of life. In a study of 2690 patients, in hospital mortality was11.8%. The main cause of death was pump failure and ventricular fibrillation. The 12-lead electrocardiogram (ECG) is the most readily available noninvasive test by which in addition of diagnosis, we can also localize and estimate the size of myocardial infarction. Prior to technological revolution in non-invasive cardiac imaging of the 1970s and 1980s the ECG and chest X-ray were the most commonly performed tests to cardiac diagnosis.

Fragmented QRS (fQRS) is a convenient marker of myocardial scar evaluated by 12 lead electrocardiogram recording. fQRS is defined as additional spikes within the QRS complex. In patient with coronary artery disease (CAD), fQRS is associated with myocardial scar detected by single photon emission tomography and was a predictor of cardiac events.[5]

fQRS was also a predictor of mortality and arrhythmic events in patients with reduced left ventricular function. The usefulness of fQRS for detecting myocardial scar and for identifyinghigh-risk patients have been expanded to various cardiac diseases, such as acute coronarysyndrome, Brugada syndrome, and acquired long QT syndrome.[6]

fQRS can be applied to patients with wide QRS complexes and is associated with myocardial scar and prognosis. Myocardial scar detected by fQRS is associated with subsequent ventricular dysfunction and heart failure and is a substrate for reentrant ventricular tachyarrhythmias.[7]

Fragmented QRS complexes are novel electrocardiographic signals, which reflect altered ventricular conduction delays around regions of a myocardial scar. The detection of fQRS complexes in a routine 12-lead ECG is a marker for abnormal cardiac depolarization. Previous studies have shown that fQRS complexes are useful for diagnosing coronary artery disease.[8]

The ECG and supplemental criteria for fQRS patterns were defined by the resting 12-lead ECG (filter range, 0.15-100 Hz, AC filter, 60 Hz, 25 mm/s, 10 mm/mV) was analyzed by 2 independent readers blinded to the CAG results.[9] The fQRS pattern was defined as the presence of an additional R' or crochetage wave, notching in the nadir of the S wave or fragmentation of the RS or QS complexes in 2 contiguous leads corresponding to a major coronary artery territory. The fQRS pattern could occur in patients with or without Q waves.However, patients with a typical bundle-branch block pattern (QRS 120 ms) were excluded.Coronary angiographic findings are gold standard test to see the coronary artery anatomy.

(Korhonen, et al., 2009) found that the prevalence of a fORS complex on the resting ECG correlated with the severity of coronary artery disease diagnosed by coronary angiography.[10] They studied 2196 patients with suspected coronary artery disease and found that higher percentage 27% patients with fQRS had tripe vessel diseases followed by double vessel diseases (21%), single vessel disease(17%), non-obstructive coronary artery disease (16%) and no vessel disease (14%) Patient with coronary artery diseases are the main bulk of admission to coronary care unit where 12 lead ECG provide the earliest available objective information for risk stratification.

Qualitative importance of fQRS on the ECG in patient with coronary artery disease is recognized clinically but quantification of this phenomenon is less commonly used in clinical practice. No study was performed with fQRS on 12 lead electrocardiograms in coronary artery disease patients and their angiographic status in our country before.

The purpose of this study of fQRS complex in CAD patients with their angiographic status will give us a clue, which will help to follow up the patient make subsequent plan of management, so that mortality and morbidity rate in each case can be reduced. So, we decided to complete the present study.

Materials and Methods:

This is a cross sectional observational study. This study was carried out on 100 patients the find out about the population including male and female patients in the Department of cardiology, National Institute of Cardiovascular Diseases, Dhaka, Bangladesh. The duration of the period from June 2015 to May 2016. After collection, the data were checked and cleaned, followed by editing, compiling, coding and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. The choice of treatment was made by the patient after a full discussion with the multidisciplinary team consisting of Transfusionists. The data for this study about had been accumulated from patients' medical information. Statistical evaluation of the results used to be got via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24).

Results:

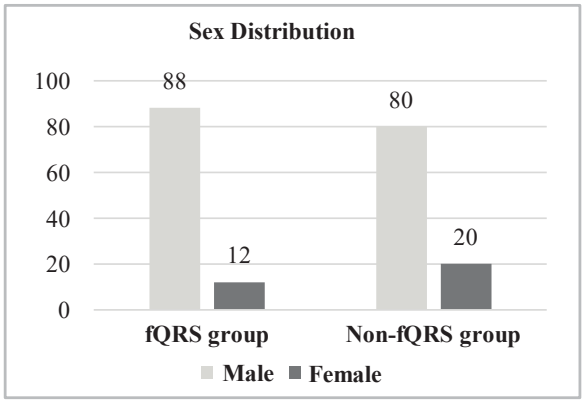
Table-I: Age distribution of the study patients (n=100)

Age in years	fQRS group (n=50)		Non- fQRS group (n=50)		Total (n=100)		p value
	Number	%	Number	%	Number	%	
30-40	7	14.0	12	24.0	19	19.0	
41-50	16	32.0	15	30.0	31	31.0	
51-60	18	36.0	18	36.0	36	36.0	
>60	9	18.0	5	10.0	14	14.0	
Mean±SD	52.5±9.8		52.5±9.8		52.5±9.8		0.18ns
Range	(30-81)		(31-80)		(30-81)		

ns = Not significant (p>0.05)
p value reached from unpaired student t test.

Table-I shows that total number of 100 patients were studied. It was found that among the fQRS patients, highest percentage was in the range of 51-60 years (36%). Almost in the same direction among the non-fQRS patients (36%) was in the age group of 51-60 years with no statistical significance (p value 0.18).

This study was conducted in 100 patients. In fQRS group, 44(88%) patients were male and 6(12%) patients were female. In non-fQRS group, 40(80%) patients were male and 10(20%) were female. Male patients were predominant in both groups. Male female ratio was 5.25:1. No significant association (p=0.28) was found between two groups in terms of sex distribution, p value reached from Chi Square(x^2) test.



p value reached from Chi Square (x^2) test.

Figure-1: Sex distribution among the study patients (n= 100)

Table-II: Risk factors of the study patients (n=100)

Risk Factors		fQRS group (n=50)		Non- fQRS group (n=50)		p value
		Number	%		%	
Smoking	Yes	27	54.0%	23	46.0	0.42^{ns}
	No	23	46.0%	27	54.0	
Hypertension	Yes	37	74.0%	25	50.0	0.01^{s}
	No	13	26.0%	25	50.0	
Dyslipidaemia	Yes	22	44.0%	12	24.0	0.03^{s}
	No	28	56.0%	38	76.0	
Diabetes mellitus	Yes	19	38.0%	14	28.0	0.28^{ns}
	No	31	32.0%	36	72.0	
Family H/O of CAD	Yes	13	26.0%	10	20.0	0.47^{ns}
	No	37	74.0%	40	80.0	

p value reached from Chi Square test

The studied patients, highest percentage had history of hypertension (74%) followed by smoking (54%), dyslipidaemia (44%), diabetes mellitus (38%) and family history of CAD (26%) in the fQRS group. Smoking, hypertension, dyslipidaemia, diabetes mellitus and family history of CAD were greater among the fQRS group patients than those of the non-fQRS group patients. It was observed that only hypertension and dyslipidaemia were significantly higher in fQRS group than non-fQRS group patients ($p<0.05$).

Table-III: Comparison of severity of CAD between diabetic & non-diabetic patients (n=100)

Severity of CAD	DM Gensini score	Non-DM Gensini score	p value
	Mean±SD	Mean±SD	Mean±SD
fQRS	17.73±11.71	11.97±845	0.01[s]
Non-fQRS	17.83±13.88	17.61±12.55	0.54[ns]

Table-IV: Biochemical status of the study patients (n=100)

Biochemical parameters	fQRS group (n=50)	Non- fQRS group (n=50)	p value
	Mean±SD	Mean±SD	
RBS mg/dl	7.4±2.7	7.0±3.0	0.47[s]
Total Cholesterol mg/dl	171.1±13.3	169.1±10.5	0.09[s]
LDL cholesterol mg/dl	120.6±12.9	114.5±15.2	0.10[s]
HDL cholesterol mg/dl	36.2±3.6	39.0±2.6	0.42[s]
Triglyceride mg/dl	149.6±18.8	138.7±16.9	0.004[s]
Creatinine mg/dl	1.1±0.16	0.9±0.11	0.41[s]

p value reached from Chi Square (x^2) test, s = significant ($p<0.05$), ns = Not significant ($p>0.05$)

Table-V: fQRS among IHD subsets (n=100)

Biochemical parameters	fQRS group (n=50)		Non- fQRS group (n=50)		p value
	n	%	n	%	
Anteroseptal MI	8	16.0	17	34.0	0.04[s]
Anterior MI	2	4.0	10	20.0	0.01[s]
Extensive anteriorMI	6	12.0	1	2.0	0.04[s]
Inferior MI	32	54.0	19	38.0	0.009[s]
NSTEMI	1	2.0	2	4.0	1.00[s]
CSA	1	2.0	1	2.0	1.00[s]

p value reached from Chi Square (x^2) test and Fisher's Exact test
s = significant ($p<0.05$)
ns = Not significant ($p>0.05$)

Table-VI: Comparison of mean percent of ejection fraction between two groups (n=100)

	Number	%	Number	%	Number	%	p value
< 50	30	60.0	10	20.0	40	40.0	
≥50	20	40.0	40	80.0	60	60.0	
Mean±SD	45.5±9.4		57.8±6.5		52.6±8.6		1.001[s]
Range	(30-60)		(42-74)		(30-74)		

p value reached from unpaired student t test
s = significant ($p<0.05$)

Table-VII: Comparison number of vessel involvement between two groups (n=100)

Biochemical parameters	fQRS group(n=50)		Non- fQRS group (n=50)		p value
	Number	%	Number	%	
1	1	2.0	7	14.0	
2	28	56.0	39	78.0	0.02[s]
3	15	30.0	1	2.0	0.001[s]
4	6	12.0	3	6.0	0.31[s]

p value reached from Chi Square (x) test and Fisher's Exact test
s = significant (p<0.05)
ns = Not significant (p>0.05)

Table-VIII: Comparison of the study patients according to Gensini score (n=100)

Gensini score	fQRS group (n=50)		Non- fQRS group (n=50)		p value
	Number	%	Number	%	
Mild (1-10)	19	38.0	45	90.0	0.001[s]
Moderate (11 -50)	20	58.0	4	8.0	0.001[s]
Severe (> 50)	2	4.0	1	2.0	1.00[s]

p value reached from Chi Squaretest and Fisher's Exact test
s = significant (p<0.05)

Table-IX: Comparison between fQRS and non-fORS patients by severity of CAD (n=100)

Gensini score	fQRS group(n=50)		Non- fQRS group (n=50)		p value
	n	%	n	%	
Gensini score	17.7±14.6		7.8±13.4		0.001[s]
	1-84		1-80		
Involved no. of vessels	1.5±0.7		1.0±0.6		1.00[s]
	0-3		0-3		

p value reached from unpaired student t test
s = significant (p<0.05)

The table III shows that fQRS diabetic patients Gensini score was significantly (p=0.01) higher than non-diabetic patients (17.73±11.71 vs. 11.97±8.45). Non- fORS diabetic patients Gensini score was almost identical with non-diabetic patients (p=0.54).

The table IV shows biochemical status of the study patients. The mean RBS level observed identical both groups with statistical insignificant difference (p=0.47). The mean total cholesterol level was 171.1±13.3 mg/dl in fQRS group and 169.1±10.5 mg/dl in non-fQRS group. The difference was statisticaly insignificant (p=0.09). The mean LDL cholesterol level was 120.6±12.9 mg/dl in QRS group and 114.2±15.2 mg/dl in non-fQRS group. The difference was statistically insignificant (p=0.10). The mean HDL cholesterol level was 36.2±3.6 mgidl in fQRS group and 39.0±2.6 mg/dl in non-fQRS group. The difference was statistically insignificant (p=0.42). The mean triglyceride was 149.6±18.8 mg/dl in fQRS group and 138/7±16.9 mg/dl in non-fQRS group patients. Mean difference of triglyceride level was statistically significant in two groups (p=0.004). The mean creatinine level was 1.1±0.16 mg/dl in fQRS group and 0.9±0.11 mg/dl innon-fQRS group with statistical insignificant difference (p=0.41).

Anteroseptal infarction had significantly (p=0.04) more in non-fQRS group than fQRS group patients (34% vs. 16%). Anterior infarction had also significantly (p=0.01) more in non-fQRS group than fQRS group patients (20% vs. 4%). Extensive anterior infarction had significantly (p=0.04) higher in fQRS group than Inferior infarction had significantly non-fQRS group patients (12% vs. 2%). (p=0.009) higher in fORS group than non-fQRS group patients

(64% vs. 38%). The rest infarctions like as NSTEMI and CSA were identical in n both groups.

Table-IV shows that the mean percent of ejection fraction was 52.6±8.6. It was 47.5±9.4 for the patients with fQRS group and 57.8±6.5 for the patients of non-fQRS group and the mean difference was statistically significant (p=0.001).

The above table VII shows the number of vessels involvement of the study patients. It was found that among fQRS group patients, highest percentage had1 vessel 56% followed by 2 vessels 30%, 12% patient had 3 vessels and 2% patients had no vessel involvement. On the other hand, among non-fQRS group patients, highest percentage had 1 vessel 78% followed by no vessel 14%, 2% had 2 vessels and 6% patient had 3 vessels involvement. No vessel involvement found significant in both groups (p>0.05). No vessel involved patients had Significantly more in non-fQRS group patients than fQRS patients (p=0.04). Single vessel involved patients had significantly more in non-fQRS group patients than fQRS patients (p=0.02). Double vessel involved patients had significantly more in fORSaroup patients than non-fQRS patients (p=0.001). Triple vessel involved patients had insignificantly more in fQRS group patients than non-fQRS patients (p=0.31).

The above table VIII shows the severity of CAD in both groups of patients by Gensini score. The table shows that mild Gensini score was found in 38% patients in fQRS group and 90% patients in non-fQRS group with statistically significant difference (p=0.001). Moderate Gensini score was found in 58% and 8% patients in fQRS group and non-fQRS group respectively with significant difference (p=0.001). Severe Gensini score was found in 4% patients in fQRS group and 2% patients in non-fQRS group with statistically insignificant difference (p=1.00).

The above table IX shows severity of CAD among the study patients. The mean Gensini score was found 17.7±14.6 in fORS group patients and 7.8±13.4 in non-fQRS group patients. The difference was statistically significant (p=0.001). The mean vessel score was greater in fQRS group patients than non-fQRS group patients (1.5±0.7 vs 1.0±0.6) with statistically significant difference (p=0.001).

Discussion:

This observational study was carried out with an aim to find out association of fORS on 12 lead ECG with severity of coronary artery disease as evidenced by coronary angiography. A total 100 patients of ischemic heart disease admitted in the department of cardiology, ranging from NICVD were evaluated considering inclusion and exclusion criteria.Patients were divided into two groups on the basis of fragmented QRS, of which 50npatients were in (group 1) and 50 patients were in (group II), The mean age of the fQRS patients was 52.5±9.8 years and the mean age of the non-fORS patients was 49.8±10.5 years This study revealed statistically not significant mean age difference (p= 0.18) between two groups. The maximum number of patients were found in the age group of 51-60 years in both groups. Mean age of both groups was 51.1±10.2 years history 30 to 81 years. Berna and Murat (2010) showed that mean age was 60.9±13.02 years in patients with fQRS and 61.05±12.84 years in patients without fORS of their study population.

Male patients were predominant in this study. In the fQRS group, 44 (88%) patients male and 6 (12%) patients were female. In non-fQRS group, 40 (80%) patients were male and 10 (20%) were female. Male patients were predominant in both groups. Male, female ratio was 5.25:1. Similar male preponderance was found in almost all studies in IHD. Berna and Murat showed 12.5% was female in fQRS group and 27.8 % in non- fQRS group in their study. In another study showed 9.5% was female in his study which is similar with this study.[11] Female are less prone to developed IHD in premenopausal age due to protective role of estrogen, moreover smoking as a ISK 1actor of IHD is less common in our country among female, which may explain male predominance of IHD.

In the study, highest percentage had history of hypertension (74%) followed by smoking (54%), dyslipidaemia (44%), diabetes mellitus (38%) and family history of CAD (26%) in the fORS group. Smoking, hypertension, dyslipidaemia, diabetes mellitus and family of CAD were greater among the fQRS group patients than those of the non-fORS group. It was observed that only hypertension and dyslipidaemia were significantly higher in fQRS group than non-fQRS group patients (p<0.05). This study revealed that male fORS patient's Gensini score was significantly (p<0.05) higher than that of female patients (18.54±15.33 vs. 11.35±4.67). In hemodynamic evaluation, systolic blood pressure was 131.4±19.5 in fQRS group and 126.2±15.6 in non-fORS group and diastolic blood pressure was 87.5±11.5 in Gr | and 80.8±11.8 in Gr I|, Both systolic and diastolic blood pressure was not statistically significant. No statistically significant differences were found in pulse and systolic blood pressure and

diastolic blood pressure fORS and non-fCQRS group patients respectively (p>0.05).

Biochemical status of the studied patients showed mean RBS level was observed identical both groups with statistical insignificant difference (p=0.47). The mean total cholesterol level was 171.1±13.3 mg/dl in fQRS group and 169.1±10.5 mg/dl in non-fORS group.The difference was statistically insignificant (p=0.09). The mean LDL cholesterol level was 120.6±12.9 mg/dl in fQRS group and 114.2±15.2 mg/dl in non-fORS group. The difference was statistically insignificant (p=0.10). The mean HDL cholesterol level was 36.2±3.6 mg/dl in fQRS group and 39.0±2.6 mg/dl in non-fQRS group. The difference was statistically insignificant (p=0.42). The mean triglyceride was 149.6±18.8 mg/dl in fQRS group and 138/7±16.9 mg/dl in non-fQRS group patients. Mean difference of triglyceride level was statistically significant in two groups (p=0.004).

The mean creatinine level was 1.1±0.16 mg/dl in fQRS group and 0.9±0.11 mg/dl in on-fQRS group with statistical insignificant difference (p=0.41).

According to site of MI extensive anterior infarction was significantly (p=0.04) higher in fORS patients (12% vs. 2%). Inferior infarction was group than non-fORS group significantly (p=0.009) higher in fQRS group than non-fQRS group patients (64% vs.38%). The rest NSTEMI and CSA were similar in both groups. In the study done by showed more involvement of inferior infarction in Gr l as that of our study.[12] According to left ventricular ejection fraction showed that the mean percent of ejection fraction was 52.6±8.6. It was 47.5±9,4 for the patients with fQRS group and 57.8±6.5 for the patients of non-fQRS group and the mean difference was statistically significant (p=0.001).

According to number of vessel involvement, it was found that among fQRS group patients, highest percentage had 1 vessel 56% followed by 2 vessels 30%, 12% patient had 3 vessels and 2% patients had no vessel involvement. On the contrary among non-fQRS group patients, highest percentage had 1 vessel 78% followed by no vessel in non-fQRS group patients than fQRS patients (p=0.02). Double vessel involved 14% and 6% patient had 3 vessels and 2% patients had 1 vessel. No vessel involved patients was significantly more in non-fQRS group than fQRS group (p=0.04). Singlevessel involved patients were more in fQRS group than non-fQRS group (p=0.001). Triple vessel involved patients was insignificantly more in fQRS group than non-fQRS group (p=0.31). Similar study result was found by which showed multivessel involvement was more in fQRS group than that of non-fQRS group.[13]

In the study, the mean Gensini score was found 17.7E14.6 in fQRS group and 7.8+13.4 in non-fORSaroup. The difference was statistically significant (p=0.001). The Vessel score was greater in fQRS group patients than non-fQRS group patients (1.5+0.7 vs 1.0+0.6) with statistically significant difference (p=0.001).

Conclusion:

Presence of fragmented QRS on 12 lead ECG is associated with more severe form of coronary artery disease. This can be used for further evaluation and follow-up of a patient. Once t the finding is observed, the particular patient should be targeted for aggressive management.

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Original Article

Assessment of Blood Pressure in Geriatric Persons

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Abstract:

Background: *Now a days,'Aging' is a challenge that affects rich and poor countries. Almost 700 million people are now over the age of 60. By 2050, 2 billion people, over 20% of the world's population, will be 60 and above. Hypertension in elderly has been recognized independent risk factors for cardiovascular disease. As a result, morbidity and mortality rate may beincreased.*

Objective: *To determine all types of blood pressure in apparently healthy geriatric persons.*

Materials and Methods: *This cross-sectional study was conducted from July 2015 to June 2016 in the Department of Physiology, Rangpur Medical College, Rangpur. For this study,total number of 100 subjects was selected. Among them 50 apparently healthy male and female age between 35 to 45 years were selected as group-A (control) and 50 male and female agebetween60 to 90 years were selected as Group-B (experimental).The subjects were selected from Rangpur city and outskirts. For statistical analysis unpaired "t" test was performed by computer based software SPSS 17.0 version for windows.*

Results: *Mean systolic blood pressure, mean pulse pressure were significantly ($p<0.001$) higher but mean diastolic blood pressure and mean pulse pressure were non-significantly ($p>0.05$) higher in geriatric subjects.*

Conclusion: *All types of blood pressure were higher in geriatric subjects.*

Key words: *Geriatric persons, Blood pressure*

Introduction:

Geriatrics is the branch ofmedical science concerned with the diagnosis and treatment of diseases affecting older people[1]. Aging is a general physiologic process[2]. The UN has not adopted standard criteria, but generally use more than 60 years to refer to the older population by personal correspondence at 2001[3]. Government of India adopted 'National Policy on Older Persons' in January, 1999. The policy defines 'senior citizen' or 'elderly' as a person who is of age 60 years or above[4]. Aging is a challenge in today's world that affects developed and developing countries. It is estimated that around one million people cross the threshold of 60 years of age every month, throughout the world[5]. Worldwide almost 700 million people are now over the age of 60. By 2050, 2 billion people, over 20 percent of the world's population will be age of 60 or above. The increase in the number of older people will be the greatest and the most rapid in the developing world, with Asia as the region with the largest number of older persons[6]. In India the elderly population (aged 60 years or above) account for 7.4% of total population in 2001. For males it was marginally lower at 7.1%, while for females it was 7.8%[4]. Regarding Bangladesh, the proportion of the population 65 years and older will move from 4.5%, in 2000, to 6.6%, in 2025[7].

In the United States, life expectancy has increased from 47 years in 1900 to about 75 years today[2]. The impact on health services is highly important of 60 years and above person due to high prevalence of chronic degenerative diseases, which cause of dependency and impairment[8].

Hypertension is a common problem in elderly. A higher incidence of hypertension in the geriatric patients attending the tertiary care teaching hospital in India was observed as 34.96%. It is more in between 60-69 years (23.59%)[9]. An increase in blood pressure (BP) has always been taken as an inevitable

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consequence of aging in industrialized societies, leading to hypertension in a high proportion of elderly subjects[10].

Researchers of different countries observed, hypertension and associated diseases may cause disability to older people. But there is little published research work regarding hypertension of geriatric population in Bangladesh. So this study was planned to conduct a study on blood pressure in geriatric persons of Rangpur District and this would be helpful for prevention of age related morbidity and mortality.

Materials and Methods:

This cross-sectional analytical study was done in the Department of Physiology, Rangpur Medical College, Rangpur, on 100 subjects between the periods of July 2015 to June 2016. Among the subjects 50 persons were 60 to 90 years old geriatric persons and 50 subjects were 35 to 45 years old subjects for control were selected from Rangpur city and outskirts by purposive sampling method. Each group comprises 25 male and females. Subjects suffering from systemic disorder like diabetes mellitus, kidney disease, liver disease, severely ill and also obese persons and subject who were on medication like aspirin, steroid etc were excluded from the study. After selection of subjects, the objective and procedure of the study was explained detail to them and their informed written consent were taken. Blood pressure of the subjects was measured using same sphygmomanometer to avoid any variation three times at an interval of five minutes and mean of these three measurements was taken. Then pulse pressure and mean pressure was calculated. A standard questionnaire was filled after taking history and through clinical examination.

Blood Pressure:
Blood pressure means the force exerted by the blood against any unit area of the vessel wall.
Blood pressure = Cardiac output x Total peripheral resistance.

Blood pressure is four types:

1. **Systolic blood pressure** is defined as the **maximum pressure** exerted in the arteries **duringsystole** of heart. Normally it is120 mm Hg (110 mm Hg to 140 mm Hg).
2. **Diastolic blood pressure** is defined as the **minimum pressure** exerted in the arteries **duringdiastole** of heart. Normal diastolic pressure is80 mm Hg (60 mm Hg to 80 mm Hg).
3. **Pulse pressure** is the difference between the systolic and diastolic pressure. Normal pulse pressure: about 40-50 mm Hg.[11-13]
4. **Mean pressure:** The mean arterial pressure is the average of the arterial pressures measured millisecond by millisecond over a period of time. It is the pressure throughout the cardiac cycle. Because systole is shorter than diastole, the mean pressure is slightly less than the value halfway between systolic and diastolic pressure. It can actually be determined only by integrating the area of the pressure curve. However, as an approximation, mean pressure equals the diastolic pressure plus 1/3rd of the pulse pressure, therefore it determined about 60 percent by the diastolic pressure and 40 percent by the systolic pressure. Normal mean blood pressure: 93 mm of Hg[14].

The results were expressed as mean value with standard deviation (±SD).

All the data were recorded systematically in a preformed master sheet and analyzed by computer using SPSS program version 17 for windows and comparison of blood pressure in geriatric subjects with control group were done by using unpaired sample 't' test (Independent sample test).

In the interpretation of results, <0.05 level of probability (P) was accepted as significance.

Results:

The subjects were regarded as Group A (control) and Group B (geriatric) for convenience of description. Table-I shows the characteristics of the study subjects. It was observed from the table that except the age, height, weight and body mass index was similar between the control and experimental groups.

Table-I: Comparison of Mean ± SD of Age, Height, Weight and BMI of control and Experimental group of subjects (n=50 in each group), n=50 in each group

Variables	Group A (Control)	Group B (Experimental)	p value
Age (years)	40.84 ± 3.79 (35 -45)	65.72 ± 7.36 (60 - 90)	0.001
Height (m)	1.575 ± 0.08 (1.40 -1.72)	1.570 ± 0.09 (1.40 -1.77)	0.795^{NS}
Weight (kg)	54.94 ± 7.53 (54.00 -72.10)	55.00 ± 7.31 (56.15 -71.00)	0.968^{NS}
BMI (kg/m ^{2})	22.07± 1.85 (18.4 -25.7)	22.25± 2.03 (20.7 -25.7)	0.649^{NS}

Results are shown in ranges and mean±SD

Results of measurement of blood pressure

Table-II shows the results of the blood pressure of the two groups of study subjects. The mean ± SD of **systolic blood pressure** level were 124.60 ± 16.68 mmHg in group A and 137.90 ± 20.53 mm of Hg in group B. In this study mean systolic blood pressure was significantly higher in group B than group A ($p<0.01$).

The mean±SD **diastolic blood pressure** levels were 77.90±7.96 mm of Hg in group A and 78.20 ± 9.24 mm of Hg in group B. In this study mean diastolic blood pressure levels was non-significantly higher in group B than group A ($p >0.05$).

The mean±SD **pulse pressure** levels were 46.20±15.99 mm of Hg and 59.00 ±17.78 mm of Hg in group A and group B respectively. In this study mean pulse pressure levels was significantly higher in group B than group A and group B($p<.001$).

The mean ± SD **mean pressure** levels were 93.79 ± 8.74 mm of Hg in group A and 95.22 ± 14.98 mm of Hg in group B. In this study mean of mean pressure showed no significant difference between group A and group B($p>0.05$).

Table-II: Comparison of the results of blood pressure levels in group A (control) and group B (experimental), n=50 in each group

Variables (mm of hg)	Group A (Control)	Group B (Experimental)	p value
Systolic blood pressure	124.60±16.68 (100-180)	137.90±20.53 (100-180)	0.001**
Diastolic blood pressure	77.90±7.96 (60-90)	78.20 ± 9.24 (60-100)	0.862NS
Pulse pressure	46.20±15.99 (60-90)	59.00±17.78 (60-100)	0 .000***
Mean pressure	93.79±8.74 (78.5-113)	95.22±14.98 (73.3-123.3)	0.562NS

Results are shown in ranges and mean±SD

Discussion:

The present study was carried out to assess blood pressure in the geriatric persons aged 60 to 90 years. The parameters were also studied in apparently healthy control subjects aged 35 to 45 years for comparison. In the present study, the findings of the parameters in healthy control group were within normal range and the findings of the parameters in healthy experimental group were increased compared to control and also similar to those reported by the various investigators from different countries. However very few published data of these study parameters in geriatric persons was available for comparison from our country.

In this study all type of blood pressure increased in geriatric population. Systolic blood pressure and pulse pressure was significantly ($p<0.001$) higher and diastolic blood pressure and mean pressure non significantly ($p >0.05$)higher than those of control. These finding is in agreement with those reported by Quasem et al[15], Tanaka et al[16] Seowet al[17], Malhotra et al[18].

Quasem et al[15] explain that increased blood pressure might be due to various socioeconomic factors (increased dependence, burden of drug costs), reduced physical mobility, and a low level of overall education, in general, and health education. A combination of these factors possibly contributes to the low level of awareness, treatment and control of hypertension in the elderly thus increase blood pressure.

Tanaka et al[16]study explained that arterial blood pressure progressively increased with advancing age might be due to Ohm's law. They explained by it that the steady-state component of blood pressure is characterized by mean arterial BP. The elevation of mean arterial pressure with aging is related to an increase in total peripheral resistance. So total peripheral resistance has a dominant influence on mean arterial pressure. Mean arterial pressure increase not so much in aging person. They observed that most of the hemodynamic determinants, including arterial stiffness, stroke volume, arterial wave reflection, left ventricular ejection time, and upstroke time, were significantly related to brachial systolic pressure and increase large artery stiffness (central) is the primary mechanism underlying the age-associated increase in systolic blood pressure and pulse pressure.

Seow et al[17]explain that increased mean systolic blood pressure might be due to that older people are associated with disease of old age like blood pressure, diabetes mellitus. The risk of increase blood pressure also tends to be higher in more developed countries as well as among the Asian compared to the Western populations. They said possible reasons for the variation could be due to difference in demographics makeup as well as different lifestyles factors (e.g., diet and physical activity). High salt intake may have contributed to the high prevalence of blood pressure observed in their study. They found systolic blood pressure tends to show continuous increase until the 8th decade of life. This is expected as advancing age is

associated with a degenerative process that involves the thickening and loss of elasticity of arteries, hence contributing to high blood pressure.

Their study also found low education has been associated with elevated levels of BP. Unemployment was associated with a higher risk of uncontrolled blood pressure as unemployed or having a low income have a negative impact to purchase prescribed antihypertensive drugs and thus, lead to low medication compliance. Also blood pressure usually gets more difficult to control with increasing age.

Malhotraet al[18] observed that increased systolic blood pressure might be due to age, gender, ethnicity, physical activity, diet. They said higher prevalence of blood pressure in more developed economies.

Rockwood and Howlett[14] agreed that systolic blood pressure increase after age 93 years. They explain that this increase is at the highest level of frailty and this might be due to survivor effect: Individuals with higher systolic blood pressure may be more likely to survive to the highest levels of frailty.

All types of blood pressure levels were higher in geriatric (age 60 to 90 years) subjects may be due to that the major effects of normal aging is increased thickness and decreased vessel elasticity of arterial wall, endothelial dysfunction, arterial stiffening, reduction in compliance or distensibility and an increase in peripheral vascular resistance. These changes may be associated with elevated diastolic blood pressure in geriatric persons. Decreased baroreceptor sensitivity occurs in old age may be a cause of increase systolic and diastolic blood pressure in geriatric population. Sodium retention occurs may be due to decreased excretion by kidneys in aged persons. This sodium increase body fluid volume, increase cardiac output and ultimately systolic blood pressure increased. Isolated systolic hypertension is common in elderly. Increased diastolic pressure ultimately increase mean blood pressure. Diminished endothelial nitric oxide synthase (eNOS) expression and NO production in aging endothelial cells may be a cause of increase diastolic and mean blood pressure in old age[19].

Imbalance in collagen and elastin in aged leads to excessive ECM (extracellular matrix) protein deposition. Transglutaminase (TG2) an extracellular scaffold protein is in the ECM is also increased in aged. Increased TG2/ECM protein cross-linking and altered TG2 activity in elderly cause increased rigidity, fibrosis and stiffening of the vascular wall. These vascular changes in combination with atherosclerotic change increase diastolic and mean blood pressure in old age. Low level of high density lipoprotein cholesterol and high level of triglyceride and LDL cholesterol can increase fat deposition in the arteries, then increase peripheral resistance and ultimately causes increase diastolic blood pressure and thus all types of blood pressure are increased in geriatric persons[20].

Conclusion:

Results of the present study conclude that all type of blood pressure are altered in geriatric populations as evidenced by all types of blood pressure were higher in geriatric subjects as compared with the healthy control subjects. Therefore, routine examination of blood pressure measurement in geriatric populations at regular interval may be helpful to prevent age associated complications like hypertension and cardiovascular diseases.

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Original Article

Environmental Sanitation and Personal Hygiene Status of Rural Residents: A Cross Sectional Study

***Begum M[1], Morshed SM[2], Nisa MMI[3]**

Abstract:

Background:

The goal of environmental sanitation and personal hygiene is to improve the quality of life and to protect the natural environment. But the level of facilities and practices are poor among the people especially in the rural areas which affect the health condition of millions of people. Bangladesh is vulnerable in this regard.

Objectives: *The study aimed to assess environmental sanitation and personal hygiene facilities and practices and their association with socio-demographic characteristics of the respondents in selected villages of Taragonj Upazilla, Rangpur.*

Materials and Methods: *This cross-sectional study was conducted among 307 rural residents from six villages of Taragonj Upazilla, Rangpur district using a pretested semi-structured questionnaire and an observation checklist. Data were collected through face-to-face interview and observing the facilities.*

Result: *Most of the respondents of this study (48.2%) were in the age group of (31-50) years and majority were female (75.9%). All the respondents in this study were using improved source of water for both drinking and other domestic purposes but only 4.6% respondents safely treated water for drinking. Only 16% household's water source was found 50 feet or more from latrine. Around 95.8% respondents used an improved toilet facility and 22.1% respondents shared their toilet facility with other households. Other environmental sanitation practices like safe disposal of children stool (91.2%) and proper disposal of grey water (73.4%) were satisfactory but only 64.8% respondents properly disposed household garbage and 40.7% safely disposed excreta after latrine emptying. Almost all the respondents said that they washed hand before meal (97.7%) and after defecation (99%). During observation of the site for hand washing water supply and soap availability were found in 83.1% respondents' house. Good practices for environmental hygiene, personal hygiene and overall hygiene were found among 30.3%, 78.2%, 39.7% respectively. Socio-demographic variables like educational status, monthly income and family type were significantly associated with respondents' overall hygiene status.*

Conclusion*: The findings in this study suggestive of need to come up with strategies of health education and promotion to ensure respondents understanding the importance of safe treatment for drinking water, safe distance of latrine from drinking water source, safe environmental sanitation practices regarding proper garbage disposal and excreta disposal after latrine emptying in order to prevent spread of diseases. Effective policies should be developed by authorities, media and communication specialists who should convey clear messages for everyone, particularly illiterate rural population.*

Keywords: *Environmental sanitation, facilities, hygiene, practices.*

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Introduction:

Although environmental sanitation and personal hygiene are basic human necessity, but the level of facilities and practices are poor among the people especially in the rural areas. Lack of domestic environmental sanitation and inadequate hygiene practices causes the increase risk of transmitting infectious diseases like typhoid, hepatitis A, cholera, diarrhea and other water borne diseases. In 2020, 74% of the global population (5.8 billion people) used a safely managed drinking-water service-that is, one located on premises, available when needed, and free

from contamination. But at least 2 billion people use a drinking water source contaminated with faeces[1]. Over 1.7 billion people still do not have basic sanitation services, such as private toilets or latrines. In 2020, 45% of the household wastewater generated globally was discharged without safe treatment[2]. A recent study found that only 19% of people worldwide wash their hands after potential contact with excreta[3]. A large percentage of rural communities in Nigeria live without access to safe sanitation and hygiene facilities. The situation has thus subjected the communities to the utilization of water from rivers, ponds and streams for drinking and domestic activities and to the practice of open defecation. Practices of household and environmental hygiene were not also satisfactory there. Proper disposal of waste water, cleanliness of toilets, proper disposal of solid waste were found 35.5%, 46.6%, 30.6%[4]. In South Asia, now the percentage of people practicing open defecation fell from 65% to 34%. Access to improved water increased from 73% to 93%. However, over 134 million people still do not have access to improved drinking water[5]. Household and environmental hygiene also tend to be poor found in a study conducted in Nigeria and children stool is often overlooked and perceived harmless, hence increasing the risk of disease transmission[4]. These types of hazards are happening due to limited domestic environmental sanitation and hygiene facilities and practices.

Bangladesh is also vulnerable in this regard. The country has made significant progress in transitioning from traditional water sources to piped/improved water sources with 97.5% of households now having access to improved water supply[6]. The amazing decline in open defecation is only 1.7% and the accessibility of improved sanitary latrines approximately 86% of households[6]. Despite of significant downfall in open defecation, unsafe environmental sanitation and poor hygiene behaviors persist in many parts of the country. The goal of environmental sanitation and hygiene practice is to improve the quality of life and social development. Sustainable Development Goal 6 aims to ensure availability and sustainable management of water and sanitation for all[7]. Water Supply and Sanitation Collaborative Counsel (WSSCC) considered that environmental sanitation should create and maintain conditions whereby people lead healthy and productive lives and the natural environment is protected and enhanced. To achieve these goals environmental sanitation should include on and off-side disposal of human wastes, wastewater disposal, solid waste disposal and storm water drainage[8]. Personal hygiene especially hand washing practice is also a vital component. The non-availability of water influences hand washing. Additionally, 107 million people in Bangladesh do not have basic hand washing facilities with soap and water at home. The study also found out that almost half of schools in Bangladesh do not have facilities for washing hands with soap and water[9]. For this reason, this survey we conducted in selected villages of Taragonj Upazilla in the Rangpur district which has a high population density. So, it is a great challenge for the authority to ensure the proper environmental sanitation and hygiene facilities and monitor the practices of them. The purpose of this study was to assess the environmental sanitation and personal hygiene facilities and practices in those villages.

Materials and Methods:

This Cross-sectional type of descriptive study was carried out in selected villages of Taragonj Upazilla, Rangpur. These six villages were selected conveniently. Total 307 adult (≥18 years) respondents were interviewed. Overall hygiene status was separated into two portions, environmental and personal. Data were collected through face-to-face interview with the respondents with a pre tested semi-structured questionnaire and observation of their environmental and personal hygiene facilities and practices with an observation check list. Respondents collected drinking water from an improved source and did safe water treatment, use improved sanitation facility without sharing with others, buried their excreta into pit after latrine emptying, safely disposed children stool into latrine or buried into ground, discard household garbage into designated places or burned/buried it and safely, removed grey water/sullage were given one point for each satisfactory/standard answer. On observation, respondents whose drinking water storage vessels were clean with lid, whose latrines were situated 50 feet or more from drinking water source, whose sanitation facility had enough privacy and slab was clean, soap and water was present near latrine were given one point for each satisfactory observation.

After calculating the total score (14) participants were categorized into good (10-14), average (5-9) and poor (0-4) environmental hygiene practices. In case of personal hygiene, respondents who wash hands before meal and after defecation, use soap and water for hand washing, can show their soap and water to the observer got one point for each standard answer. After calculating the total score (4) participants were

categorized into good (4) and poor (0-3)

Overall hygiene status (both personal and environmental-18) was assessed and categorized into good (≥13), average (7-12) and poor (≤6). Improved or unimproved source or facilities and standard environmental and personal hygiene facilities and practices were defined according to 'Core questions on Water, sanitation and hygiene for household surveys' by WHO/UNICEF Joint Monitoring Program for Water supply, Sanitation and Hygiene[7]. Data were edited and analyzed by SPSS software, expressed in frequency (percentages), association of environmental, personal and overall hygiene status with baseline characteristics of the respondents were done by Pearson's Chi-square test. Any p value below 0.05 was considered statistically significant.

Results:

In this study, most (48.2%) of the respondents were in the age group of 31-50 years with an average age was 37.3±12.9 years. Majority (75.9%) of the study participants were female. Most (61.2%) of the respondent's monthly family income was below 15000 BDT with an average income was 13278.5±9560.2 BDT. About 42.3% respondent's educational qualifications were SSC or above. Majority (80.1%) of the respondents belonged to nuclear family (Table-I).

Table-I: Distribution by socio-demographic variables (n=307)

Variables	Frequency (%)
Sex	
Male	74 (24.1)
Female	233 (75.9)
Age group (years)	
18-30	115 (37.5)
31-50	148 (48.2)
51-70	44 (14.3)
Mean±SD	37.3±12.9
Educational status	
Illiterate	90 (29.3)
<SSC	87 (28.3)
≥SSC	130 (42.3)
Monthly income (Taka)	
<15000	188 (61.2)
≥15000	119 (38.8)
Mean±SD	13278.5±9560.2
Sex	
Male	74 (24.1)
Female	233 (75.9)
Age group (years)	
18-30	115 (37.5)
31-50	148 (48.2)
51-70	44 (14.3)
Mean±SD	37.3±12.9
Educational status	
Illiterate	90(29.3)
<SSC	87(28.3)
≥SSC	130(42.3)
Monthly income (Taka)	
<15000	188(61.2)
≥15000	119(38.8)
Mean±SD	13278.5±9560.2
Joint	61(19.9)

Table-II showed the distribution of the respondents by their environmental sanitation and hygiene status. In this study area all households (100%) were using improved source of water, adequately cleaned the water storage vessel (91.2%) and properly covered it by lids (66.4%). But only 4.6% respondents safely treated the drinking water and only 16% respondents' source of water was situated ≥50 feet from the toilet. 95.8% respondents used improved sanitary latrines and 77.9% respondents didn't share toilet facility with others. But slab of toilet was satisfactory cleaned in case of only 18.9% respondents although 73.3% respondent's toilet had adequate privacy and 50.8% respondents had hand washing facility available at toilet. 91.2% respondents safely disposed children stool, proper disposal of grey water and solid waste was found in 74.3% and 60.4% respondents respectively. But only 40.7% respondents safely disposed household excreta. Almost all the respondents (97.7%) wash hands before meal and after defecation (99%). Majority (95.8%) use soap and water to wash hands and these materials were available at most of the (83.1%) hand washing sites.

Table-II: Distribution of the respondents by their sanitation and hygiene status (n=307)

Attributes	Frequency (%)
Improved source of water	307(100.0)
Safely treated drinking water	14(4.6)
Source of water ≥50 feet from toilet	49(16.0)
Storage vessels properly covered by lid	204(66.4)
Adequate cleanliness of storage vessels	280(91.2)
Use improved sanitary latrine	294(95.8)
Do not share toilet facility	239(77.9)
Adequate privacy maintained in toilet	225(73.3)
Slab of toilet satisfactorily cleaned	58(18.9)
Hand washing facility available at toilet	156(50.8)
Safe disposal of excreta	125(40.7)
Safe disposal of children stool	280(91.2)
proper disposal of solid waste	199(64.8)
Proper disposal of grey water	228(74.3)
Wash hand before meal	300(97.7)
Wash hand after defecation	304(99.0)
Use soap and water to wash hands	294(95.8)
Availability of soap and water at handwashing site	255(83.1)

Figure-1 showed the distribution of the respondents according to their hygiene status (facilities and practices). Nearly half (45%) of the study participants environmental hygiene status was average. And around one third (30.3%) of them had good environmental hygiene status. Most of the respondents (78.2%) personal hygiene status was good. Regarding overall hygiene status 39.7% respondents had and followed good facilities and practices whereas same proportion of respondents had and followed poor hygiene facilities and practices.

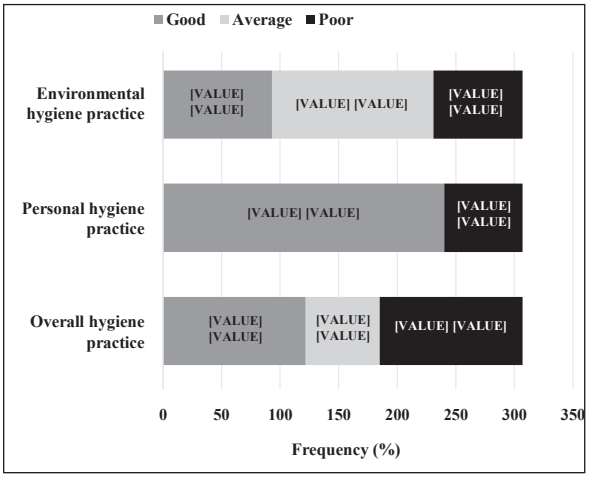

Figure-1: Distribution of respondents according to their hygiene practice (n=307)

Table-III: Association of socio demographic variables with overall hygiene status of respondents (n=307)

Variables	Frequency (%)	Overall hygiene status			
		Good	Average	Poor	Statistic
Sex					
Male	74 (24.1)	35 (47.3)	8 (10.8)	31 (41.9)	0.05
Female	233 (75.9)	87 (37.3)	55 (23.6)	91 (39.1)	
Age group (years)					
18-30	115 (37.5)	41 (35.7)	24 (20.9)	50 (43.5)	
31-50	148 (48.2)	60 (40.5)	31 (20.9)	57 (38.5)	0.705
51-70	44 (14.3)	21 (47.7)	8 (18.2)	15 (34.1)	
Educational status					
Illiterate	90 (29.3)	27 (30.0)	25 (27.8)	38 (42.2)	
<SSC	87 (28.3)	25 (28.7)	19 (21.8)	43 (49.4)	<0.001
≥SSC	130 (42.3)	70 (53.8)	19 (14.6)	41 (31.5)	
Monthly income (Taka)					
<15000	188 (61.2)	62 (33.0)	41 (21.8)	85 (45.2)	<0.01
≥15000	119 (38.8)	60 (50.4)	22 (18.5)	37 (31.1)	
Family type					
Nuclear	246 (80.1)	90 (36.6)	50 (20.3)	106 (43.1)	<0.05
Joint	61 (19.9)	32 (52.5)	13 (21.3)	16 (26.2)	

Pearson's chi square test was done

Table-III showed association of socio-demographic variables with overall hygiene status of respondents. Respondents with poor overall hygiene had significantly lower educational status than those who had good overall hygiene (p value <0.001). Respondents whose monthly income ≥ 15000 BDT was significantly had overall good hygiene status than the respondents who earned <15000 BDT (p value <0.01). There is no significant association between the age of the respondents and overall hygiene status. Although this study was female predominant but female respondents' overall hygiene status was significantly poor than the male (p value 0.05). In this study, maximum respondents (80.1%) belonged to nuclear family but respondents belonged to joint family had significantly good overall hygiene status than them (p value <0.05).

Discussion:

This study aimed to assess environmental sanitation and personal hygiene status in rural residents in selected villages of Taragonj Upazilla, Rangpur. Respondents of this study was female predominant. Among 307 respondents's male female ratio was 1:3. In this study, most (48.2%) of the respondents were in the age group of 31-50 years. Most (61.2%) of the respondent's monthly family income below 15000 BDT. 42.3% respondents' educational qualifications were SSC or above. Majority (80.1%) of the respondents belonged to nuclear family. For proper environmental sanitation, safe water is a basic need. In this study all respondents were using improved source of water for drinking and other domestic purposes which is consistent with the latest national hygiene survey of Bangladesh in 2018[10], households of St Martin's Island[6] and urban slums in India[11] although only 16% households it was found 50 feet or more from latrine.

Only 4.6% respondents safely treated the drinking water particularly using efficient methods like boiling, water filter or add bleach or chlorine. This was similar to the findings of studies done by Sridhar et al[4]and Kanungo et al[11], but lower in comparison to 2018 national hygiene survey of Bangladesh[10]. Appropriate use of storage vessels and handling attitudes are vital to maintain quality drinking water and preventing waterborne disease[4]. In this study area, 91.2% respondents adequately cleaned their water storage vessels and 66.4% respondents properly covered them by lid. 95.8% respondents used improved toilet facilities like flush to septic tank or pit and dry pit latrine with slab. It was higher than the countryside households access to improved latrine which was 86% described in 2018 national hygiene survey[10]. This study revealed that among all the respondents, 1.6% respondents having no toilet facility at all which is quite similar with nationwide data (1.7%)[10]. 77.9% respondents didn't share toilet facility with others but slab of toilet was satisfactory cleaned in case of only 18.9% respondents and 73.3% respondent's toilet had adequate privacy. 50.8% respondents had hand washing facility available at toilet which was clearly higher than the study done in households of St Martin's Island[6]. 91.2% respondents safely disposed children stool by rinsed into latrine, drain or buried; it was similar to the findings of Sridhar et al[4].

Proper disposal of grey water was found in 74.3% respondents which was clearly better than the practice found in the study conducted in two communities in rural Alaska whereas maximum (68-79%) respondents discharged grey water <5m away from the home or directly underneath the home on the ground[12]. 68.4% respondents properly disposed household garbage or solid waste which is clearly a good practice. A study conducted in Benin, West Africa there is almost total absence of controlled garbage dumps and the lack of garbage collections systems[13]. Safe disposal of excreta after latrine emptying was practiced in 40.7% respondents. Almost all the respondents (97.7%) wash hands before meal and after defecation (99%). Majority (95.8%) use soap and water to wash hands and these materials were available at most of the (83.1%) hand washing sites. Respondents' good practices for environmental, personal and overall hygiene were found in 30.3%, 78.2%, 39.7% respectively. In this study, overall hygiene status was significantly associated with some of the baseline characteristics of the respondents. Respondents with poor overall hygiene had significantly lower educational status (below SSC) than those who had good overall hygiene (p value <0.001). Respondents whose monthly income ≥ 15000 BDT was significantly had overall good hygiene status than the respondents who earned <15000 BDT (p value <0.01). There is no significant association between the age of the respondents and overall hygiene status. We found that, maximum respondents (80.1%) belonged to nuclear family but respondents belonged to joint family had significantly good overall hygiene status than them (p value <0.05).

Conclusion:

Although in this study all respondents used improved water source but a negligible portion of them (4.6%) were in safe water treatment practices. Most of the respondents having improved toilet facility but still

there was a few percent (1.6%) who did not have toilet facility at all. Other practices of environmental hygiene like safe disposal of children stool (91.2%) and proper disposal of grey water (74.3%) were satisfactory but 64.8% properly disposed solid waste and only 40.7% safely disposed excreta after latrine emptying. This discrepancy in hygiene practices may be related to educational status and monthly family income as these variables are significantly associated with overall hygiene status. Though personal hygiene (hand wash) practices were found good in this study, these findings suggestive of need to come up with strategies of health education and promotion to ensure respondents understanding of the importance of safe treatment of drinking water, safe distance of latrine from drinking water source, safe environmental sanitation practices regarding proper garbage disposal and excreta disposal after latrine emptying in order to prevent spread of diseases.

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Original Article

Effects of Cement Dusts on FVC in Male Cement Dust Exposed Construction Workers

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Abstract:

Background: *Occupational and environmental lung diseases are the major problems of clinical medicine. The cement dust workers are constantly exposed to high amount of visible ambient air particulate matter mostly without any respiratory protective device. Therefore, the inhalation of dusts over periods of time leads to impaired lung functions.*

Objective: *To observe the effects of cement dust exposure on FVC in male cement dust workers.*

Materials and Methods: *This cross-sectional study was conducted in the Department of Physiology, Rangpur Medical College, Rangpur from July, 2016 to June, 2017. Total 60 male subjects aged 20-50 years were selected for the study. Among them 30 were apparently healthy workers exposed to cement dust, and 30 apparently healthy height, weight & BMI matched subjects not exposed to cement dust were selected as control from surrounding community. Their pulmonary functions were studied by measuring FVC. For statistical analysis unpaired 't'-test was performed by computer based software SPSS-17.0 version for windows.*

Results: *The mean measured and mean percentage of predicted value of FVC were significantly ($p<0.001$) lower in cement dust exposed workers (CD- EW) than the control group (CD-NEW).*

Conclusion: *From the result of this study it can be concluded that cement dust (CD) may have harmful effects on some pulmonary functions.*

Keywords: *Cement dust workers, Spirometric test, Forced vital capacity (FVC)*

Introduction:

Occupation is the one in which person not only earn his daily bread but also spend one third of average adult life. Health hazards caused due to a particular occupation is yet to gain importance in public health measures[1]. Occupational health is a multidisciplinary field of healthcare concerned with enabling an individual to undertake their occupation. Since 1950, the International Labour Organization (ILO) and the World Health Organization (WHO) have shared a common definition of occupational health. "Occupational Health is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs"[2].

Globally, the peoples in developing as well as in developed countries, are facing increasing risks of respiratory diseases due to development of industrialization and modernization[3]. Some researcher showed the prevalence of respiratory morbidity among the construction workers 22.34% in Europe and 42.3% in India 2016[3,4]. The main job of our lungs is to bring oxygen into and carbon dioxide eliminate from the body. The lung's defense mechanisms can become overloaded and worn out by too much exposure to dusts and fumes for too long a time. This can allow lung tissue to be damaged. Healthy lung tissue is elastic; it can expand and contract. Some lung diseases interfere with the lungs' elastic property and make the lungs "stiff." Stiff lungs often cause the lung volume to be reduced, which is called lungrestriction. Other diseases can cause airways obstruction, a narrowing of the tubes of the lung. Airways obstruction reduces the rate at which air can pass through the airways. Both lung restriction and airways obstruction can be caused by overexposure to certain chemicals[5].

It is impossible to envisage a modern life without

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cement. Cement is an extremely important construction material used for housing and infrastructure development and a key to a development process[6] . The aerodynamic diameter of cement particles range from 0.05 to 5.0 µm. This size is within the size of respirable particles and make the tracheobronchial respiratory zone is the primary target of cement deposition. Hence cement dust is important as a potential cause of occupational pulmonary disease. Problems may arise with this sort of cement dust exposure, when one or more protective mechanisms are damaged. If dusty air is breathed continuously and heavily mixing between the inspired and the dead space air cause some dust to reach the terminal airways. The dusts tends to accumulate in the alveoli, in the periphery other lobule and with the passing time causes inflammatory changes and ultimately fibrosis[7].

In occupational respiratory diseases, spirometry is one of the important diagnostic tools. A spirometer is a device that monitors the flow of air in and out of a person's lungs. It plays a significant role in the diagnosis and prognosis of lung diseases and describes the effects of restriction or obstruction on the lung functions. Periodic testing among workers can detect pulmonary diseases in its earlier stages when corrective measures are more likely to be beneficial[8]. A number of studies has demonstrated effects of cement dust exposure on lung functions[8,9]. On the other hand there is probably no study regarding respiratory status of Bangladeshi cement dust construction workers.

So I planned is to estimate the effects of occupational exposure of cement dusts in the different construction site male workers by Spirometric measurement of Forced Vital Capacity (FVC).

Materials and Methods:

This cross- sectional study was conducted in the Department of Physiology, Rangpur Medical College, Rangpur from July, 2016 to June, 2017. Out of total 120, 60 apparently healthy non- smoker male workers exposed to cement dust (CD- EW) for at least 6 months, age ranged 20- 50 years were taken as study group. They were selected from different construction area of Rangpur city. Another 60 apparently healthy, age and BMI matched male cement dust non- exposed workers (CD- NEW) were also included as control for comparison. All the subjects belonged to lower socioeconomic status. After selection of the subjects the objectives, perspective, benefits and risk of this study were briefed in detail to the study subjects. An informed written consent was taken from all the participants. Ethical committee and Thesis protocol review committee of Rangpur Medical College approved the study protocol. A detailed medical and family history of all subjects was recorded in a performed questionnaire. Through physical examination of study subjects were done and documented. Height and weight of the subjects were measured for calculation of BMI. For assessment of lung function, PEFR of all subjects were measured by using a digital spirometer. For statistical analysis, unpaired students 't'- test was performed by computer based software SPSS- 17.0 version for windows.

Results:

Demographic data of all subjects are presented in Table-I. The mean predicted value of FVC was compared between CD- EW & CD- NEW and there was no statistically significant difference between 2 groups. The mean measured value of FVC were significantly lower ($p<0.001$) in CD- EW, than those of CD- NEW. The mean percentage of predicted value of FVC were significantly lower ($p<0.001$) in CD- EW, than those of CD- NEW (Table-II).

Table-I: Distribution of subjects according to Mean (±Sd) age and BMI in both groups

Parameters	CD–NEW (n=30)	CD–EW (n=30)
Age (years) (n= 30)	37.27±2.490 (36.34–38.20)	36.83±2.350 (36.96–37.71)
BMI (Kg/m^2 (n=30)	22.567±1.2405 (22.103-23.03)	22.443±1.1965 (21.99-22.89)

Data are expressed as mean ± SD.
Statistical analysis was done by unpaired students'' test.
n= total number of subjects.
CD- EW= Cement dust exposed workers.
CD- NEW= Cement dust non- exposed workers.
CD- EW= Cement dust exposed workers.

Table-II: Percentage of predicted value of FVC in both groups

Parameter	Value	CD-NEW (n= 30)	CD-EW (n= 30)
FVC (Liters)	Predicted value	4.2543±.53222	4.1503±.78316
	Measured value	4.2523±.49617	2.6173±.29568***
	Percentage of predicted value	98.933±3.13966	62.4000±4.70949***

Data are expressed as mean±SD ***=P < 0.001.
Statistical analysis was done by unpaired student's 't' test.
N= number of subjects in each group.
CD- NEW= Cement dust non- exposed workers.

Discussion:

In this study mean measured and percentage of predicted values of FVC of male cement dust exposed workers were significantly lower than the control subjects ($p<0.001$). This finding is in agreement with that of some other researcher.[4,7,10,14] the aerodynamic diameter of the cement dust ranges from 0.05 to 20 µm which easily deposited in the respiratory tract and irritating of the mucus membranes and increased mucus secretion in the respiratory tract, this hyper secretion of mucus and inflammation of lung parenchyma due to scavenger cells like macrophages dissolve the dust particles by surrounding them, resulting in coughing, wheezing, dyspnea, sinusitis, shortness of breath, bronchitis and bronchial asthma[14], the raw particles of cement dust deposit from nose to alveoli can also result in fibrosis of lung producing scar tissue, resulting in impaired pulmonary function.[8,9,11,12,17] All of them leads to decreased lung function and predisposing to chronic obstructive and restrictive lung diseases as well as pneumoconiosis and fibrosis of lung resulting in significantly lower FVC in the cement dust exposed workers.[8,9,14,15] Person with long time exposed also have high, mean percentage of airway neutrophils and interleukin-1β in induced sputum samples and mean concentrations of Ig A.[16]

Conclusion:

Therefore, from this study, it may be concluded that lung function parameter FVC decreases in non-smoker male cement dust exposed workers.

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Original Article

Pattern of Death among the Autopsy Cases of Rangpur Medical College Hospital

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Abstract:

Background: *Medicolegal autopsy is done to find out the cause of death in case of suspected unnatural death.This study was aimed at finding the pattern of death in the samples from the place of the study.*

Objective: *To find out the pattern of death among the post mortem cases that brought to Rangpur medical college and hospital over a period of one year from January 2022 to January 2023.*

Materials and Methods: *100 samples were selected by convenient sampling in Rangpur medical college hospital in this yearlong study, from January 2022 to January 2023.*

Results: *Among the 100 samples, 46% were found to be of suicidal death. Homicide consisted of 27%. Accidental & natural were 13% & 11% respectively. Only 3% resulted in obscure findings.*

Conclusion: *Such preliminary studies can pave the way for larger studies which may provide more impactful results.*

Key words: *Suicide, Homicide, Hanging, Strangulation, Stab wound*

Introduction:

Death, the total cessation of life processes that eventually occurs in all living organisms. The state of human death has always been obscured by mystery and superstition, and its precise definition remains controversial, differing according to culture and legal systems. One definition state that "Death is the permanent end of the life of a person or animal."[1]. In forensic medicine death may be considered as the cessation of life at either the cellular level or the overall level of an organism. Traditionally, Bichat's triad has been used to define death of a person: 'failure of the body as an integrated system associated with the irreversible loss of circulation, respiration, and innervation'[2]. Death and dying are processes characterized by loss of function of the great organ systems (cardiovascular system, respiratory system, nervous system) and their coordination. Loss of coordination of the great organ systems reveals a dissociation of the function of the different organs. The agonal period may be initiated either by disease or trauma. The final crisis leads to a state of vita minima in which no vital signs may be apparent and to a state of death characterized by irreversible cessation of circulation or respiratory arrest. Under special clinical conditions brain death may replace the classical signs of death (irreversible circulatory or respiratory arrest and their consequences of postmortem lividity and rigor mortis)[3]. Where death investigation is concerned, the cause, mechanism and manner of death shall be determined by a postmortem examination. Autopsy findings may help in providing clues as to how and why a person dies. In order to establish manner of death, one must first understand the cause and mechanism of death. Cause of death is defined as a disease or injury that initiates the events leading to death, while mechanism of death is a physical

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abnormality produced by cause of death, that is incompatible with life[4]. Manner of death means the mode or method of death whether natural, homicidal, suicidal, accidental, unclassifiable or undeterminable[5]. In this study our main goal was to find out the pattern of death in Rangpur by studying the dead on arrival cases in Rangpur Medical College hospital for a year.

Materials & Method:

This cross-sectional study was carried out at Rangpur Medical College & Hospital from January 2022 to January 2023. Among numerous DOA patients brought in, 100 were selected by convenient sampling. Nature of death were determined Medicolegal autopsy. Necessary permission was taken from the authorities before starting the study.
All collected data were input in MS Office. Descriptive statistics were done.

Results:

Among the study subject 54% were male and 46% were female. Female and male ratio is being 1:1.13 (Fig-1).

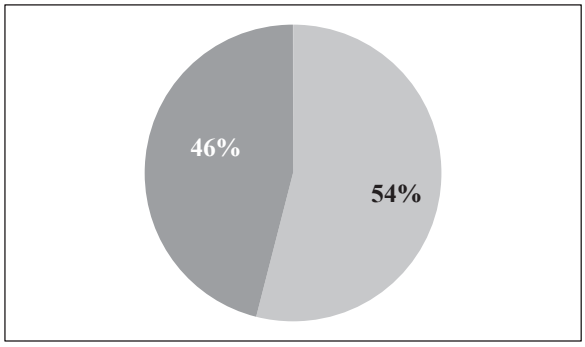

Fig-I: Gender distribution among the study sample

Table-I: Age distribution of the study sample

Age limit	Number	Percentage
<10 years	06	0.06%
11-20 years	18	0.18%
21-30 years	22	0.22%
31-40 years	32	0.32%
41-50 years	08	0.08%
>50 years	14	0.14%
Total	100	100%

In table-I shows age distribution among the autopsy cases. 32(0.32%) were in the age group of 31-40 years, followed by 21-30 years, i.e. 22 cases(0.22%) and 11-20 years, i.e. 18cases(0.18%).

Table-II: Distribution of manner of death

Manner of death	Number	Percentage
Suicide	46	46%
Homicide	27	27%
Accident	13	13%
Natural	11	11%
Obscure	3	3%
Total	100	100%

In Table-II shows the manner of death among the cases. Almost half (46%) of the cases died due to Suicide. Homicide was the closest second (27%). Only 3 cases were obscure as autopsy failed to show specific cause of death.

Table-III: Distribution of manner of death (suicidal)

Manner of Death (Suicidal)	Number	Percentage
Hanging	15	33%
Poisoning	31	67%
Total	46	100%

In Table-III shows the manner of death in case of suicide. Nearly two third of the suicides were due to poisoning. OPC & Harpic were the common methods of poisoning.

Table-IV: Distribution of manner of death (homicidal)

Manner of Death (Homicidal)	Number	Percentage
Strangulation	18	67%
Homicidal Cutthroat	3	11%
Stab Wound	6	22%
Total	27	100%

In Table-IV shows the manner of death in case of homicide. Nearly two thirds (67%) of homicides were due to strangulation. Strangulation mainly consisted of smothering, bansdola, strangulation by ligature. Homicide cutthroat were minimal (11%)

Table-V: Distribution of manner of death (Accidental)

Manner of Death (Accidental)	Number	Percentage
RTA	9	69%
Fall from height	3	23%
Drug OD	1	1%
Total	13	100%

In Table-V shows the manner of death in case of accident. Almost two third (69%) of accidents were due to RTA. Only one case was found Dead due to OD.

Table-VI: Distribution of manner of death (Natural)

Manner of Death (Natural)	Number	Percentage
DM	3	27%
Stroke	2	18%
MI	6	55%
Total	11	100%

In Table-VI shows the manner of death due to natural causes. Among 11 cases, more than half (55%) died due to MI.

Discussion:

In this study, medicolegal autopsy was performed to determine the cause & manner of death of the cases. A forensic autopsy is an examination conducted postmortem to address medicolegal objectives. A forensic autopsy is also called a medicolegal autopsy. The performance of a forensic autopsy follows instructions from the concerned legal authority responsible for the medicolegal investigation of sudden, unexpected, suspicious, mysterious, unwitnessed, obscure, unexplained, or litigious deaths, criminal deaths, industrial deaths, and deaths associated with medical or surgical treatment where medical negligence is alleged or anesthetic deaths. In brief, all deaths of unnatural (homicide, suicide, accident) manner, suspicious deaths, and unexpected deaths necessitate a legal investigation, which includes an autopsy as a portion of the evidence-gathering process[6].

Autopsy revealed that almost half (46%) of the cases were suicidal in nature. Second majority were homicidal (27%). It coincides with the factor that suicide is indeed a major burden in rural Bangladesh[7], given the study took place in Rangpur which is mostly rural area. Hanging & poisoning were common form of suicide. Among homicide, strangulation was most common (67%). This method of homicide is common not only in Rangpur, but worldwide[8,9]. Given the rural background, bansdola were the most common method of homicide. Among accidental deaths, RTA consisted most (69%). RTA is already considered a major problem in Bangladesh[10].Among natural deaths, MI nearly consisted half (55%) cases followed by DM (27%) & Stroke (18%).

Conclusion:

Identification of manner of death is a vital step in autopsy. knowing the pattern of manner of death and cause of death in region may help to counter ongoing issues with that region, be it legal or social or health related.

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Original Article

Realization of Informed Consent Among Undergraduate Medical Students

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Abstract:

Background: *Consent means voluntary agreement, permission or compliance. Informed consent in medical practice is the grant of permission by a patient for an act to be carried out by a doctor, such as a diagnostic, surgical or therapeutic procedure. Informed Consent in research is the voluntary agreement to participate in the study.*

Objectives: *The study was undertaken with the objective to assess the level of knowledge regarding informed consent among MBBS undergraduate medical students at the beginning of the class by a pretest and to demonstrate measurable gain in knowledge at the end of the class by a posttest using the same questionnaire.*

Materials and Methods: *This quasi-experimental study was conducted in the Department of Forensic Medicine, Prime Medical College, Rangpur, among 118 students using a structured and close ended, pretested questionnaire containing 13 multiple choice questions.*

Result: *Statistical analysis done on average pre and posttest score and on difference in pre and posttest responses to individual questions; revealed measurable gain in knowledge at the end of the class, since p value was <0.05.*

Conclusion: *Bangladesh is a low socio-economic country. Doctors must treat the poor patient. It'sdifficult to make them understand the management procedure. But not to take consent properly is not allowed in any circumstances. It's all about improving students' academic knowledge and professional skills.*

Key words: *Informed consent, Clinical practice, Pre and posttest, Gain in knowledge*

Introduction:

Consent is a voluntary agreement, permission or compliance which should be free, voluntary, informed, clear and direct. According to Bangladesh Contract Act no 9 of 1872 "all agreements are contracts if they are made by free consent of parties competent to contract, for a lawful consideration."[1]. As per Bangladesh Medical and Dental Council (code of Professional conduct, Etiquette and Ethics) 2.3.1 that a physician should inform the patient all aspects of their clinical management including examination and investigation.[2]

Informed Consent must be obtained for all types of human subjects' research including diagnostic, therapeutic, interventional, social and behavioral studies and for research conducted domestically or abroad.[3] A doctor must give a patient adequate information to understand the various aspects of the proposed treatment such as: The nature and procedure of the treatment, purpose and benefits, likely effects and complications, alternatives if available, substantial risks and adverse consequences of refusing treatment[2].

Types of Consent

Implied consent**:** Seen in routine medical practice. Here the consent is implied in the mere fact that the patient comes to the physician with a problem or when a patient holds out his arm for an injection.

Expressed consent: May be written or oral. Any procedure beyond the routine physical examination, like operation, collection of blood, blood transfusion etc. needs expressed consent. Consent should be taken before the proposed act and not at the time of

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admission to the hospital.
Informed consent: In medical practice anything beyond routine would require informed written consent.

Blanket consent: It is consent taken on a printed form that covers (like a blanket) almost everything a doctor or a hospital might do to a patient, without mentioning anything specifically. Blanket consent is legally inadequate for any procedure that has risks or alternatives.[4,5]

The concept of informed consent is embedded in the principles of Nuremberg Code, The Declaration of Helsinki and The Belmont Report[6,7]. Consent to participate in research should be understood as a processrather than an event. For participants to give meaningful consent, they should be able to understand the intent of the research, be clear about what they are being asked to do and if any risks are involved and know how their information will be used[8].

Informed Consent Document (ICD)[6]
Before requesting an individual's consent to participate in research, the researcher must provide the individual with detailed information and discuss her/his queries about the research in the language she/he is able to understand. ICD has two parts –
• Patient/participant information sheet (PIS)
• Informed consent form (ICF).

Information on known facts about the research, which has relevance to participation, is included in the PIS. This is followed by the ICF in which the participant acknowledges that she/he has understood the information given in the PIS and is volunteering to be included in that research. Adequate time should be given to the participant to read the consent form.

Special situations[6]

1. Waiver of consent: The researcher can apply to the Ethics committee (EC) for a waiver of consent if the research involves less than minimal risk to participants and the waiver will not adversely affect the rights and welfare of the participants.
2. Re-consent or fresh consent: Re-consent is required in situations where new information pertaining to the study becomes available, a research participant who is unconscious regains consciousness, a child becomes an adult during the study, research requires a long-term follow-up or requires extension, there is a change in treatment modality, procedures, site visits, data collection methods or tenure, and when there is possibility of disclosure of identity.
3. Assent: Assent is defined as a child's affirmative agreement to participate in research. The assent process should consider the children's developmental level and capability of understanding and should be obtained from children of 7to18 years of age.[6,9]
4. Electronic consent: Electronic media can be used to provide information as in the written informed consent. Hon'ble Supreme Court has issued direction that in all clinical trials, in addition to the requirement of obtaining written informed consent, audio-visual recording of the informed consent process also should be done. This is applicable to the new subjects to be enrolled in all clinical trials including Global Clinical Trials[6,10]
5. Gatekeepers: Permission of the gatekeepers, that is, the head/leader of the group or culturally appropriate authorities, may be obtained in writing or audio/video recorded on behalf of the group and should be witnessed.
6. Community consent: There may be situations when individual consent cannot be obtained as it will change the behavior of the individual. In such situations community consent is required. When permission is obtained from an organization that represents the community, the quorum required for such a committee must be met. Individual consent is required even if the community gives permission.
7. Consent from vulnerable groups: Vulnerable persons are those individuals who are relatively or incapable of protecting their own interests and providing valid informed consent.

Informed consent is probably the most important concept flowing from the doctrine of autonomy. In the Indian context, informed consent was practically nonexistent till the Consumer Protection Act was made applicable to the medical profession. Now, both doctors and patients are becoming more aware about this concept, and patients are better informed of their rights[11].

This study was undertaken with the objective to assess the level of awareness regarding informed consent among Second MBBS undergraduate medical students at the beginning of the class by giving a pretest and todemonstrate measurable gain in knowledge at the end of the class by a posttest using the same questionnaire.

Materials and Method:

This quasi-experimental study was conducted in the Dept. of Forensic Medicine, Prime Medical College,

Rangpur for one month period. One Hundred and Eighteen (118) Second professional MBBS students willing to participate in the study were included. Students who were absent on the day of assessment, did not participate both in pre and posttest and have given partly filled questionnaire were excluded. Domains included definition, types and components of consent, informed consent in medical and medicolegal practice, informed consent in research and special situations.

The study tool was structured and close ended, pilot tested questionnaire based on informed consent in clinical practice and research containing 13 multiple choice questions with five options and single correct response, covering key points. After obtaining informed consent, a pretest questionnaire was given, then a lecture pertaining to the topic was delivered for about 40 minutes and the same questionnaire was given as posttest. For pre and posttest 10 minutes each was given.

Data entered Microsoft Excel worksheet and analysis done using SPSS version 18.0. Correct answers were given a score of 1 and wrong answers were given a score of 0. The maximum achievable score was 13. Average score and standard deviation (SD) for pre and posttest were calculated, and analysis done using Wilcoxon signed rank test for paired data. Responses to individual questions were also expressed as number and percentage and difference in responses were subjected to statistical analysis using McNamar's test for paired samples. Gender-wise distribution of students and its relationship with score obtained was also studied.

Results:

Gender wise distribution of the students and score gained:

Among the students participated, 39 (33.1%) were males and 79 (66.9%) were females. Pre and posttest scores were categorized into two groups, those who scored ≤6 and who scored ≥7. These groups were cross tabulated with gender. Majority of male students scored less than or equal to 6 (19.5%) for pretest and more than or equal to 7 in posttest (28.0%). Majority of female students scored more than or equal to 7 in both (38.1% and 64.4% respectively). Only posttest values showed significant association with gender (p=0.026 i.e.,<0.05) (Table-I).

Table-I: Showing association of gender of students and test score

Gender	Pretest group Number (%)		Posttest group Number (%)		Total Number (%)
	Score ≤6	Score ≥7	Score ≤6	Score ≥7	
Male	23(19.5%)	16(13.6%)	6(5.1%)	33(28.0%)	39(33.1%)
Female	34(28.8%)	45(38.1%)	3(2.5%)	76(64.4%)	79(66.9%)
Total	57(48.3%)	61(51.7%)	9(7.6%)	109(92.4%)	118(100%)
Significance (Chi square)	P=0.103	(p>0.05)	P=0.026	(p<0.05)	-

Analysis for paired data:

Mean and standard deviation (SD) calculated for pre and posttest samples for all questions (1 to13). The mean pretest score was 6.32 with SD 1.871 and mean posttest score was 9.57 with SD 2.154. Wilcoxon signed rank test for paired data revealed highly significant p value.

i.e., p=0.000 (p<0.05), so there is statistically significant difference between pre and posttest score (Table-II).

Domains were classified into informed consent in clinical practice including its essential elements, application in medical and medicolegal practices (questions 1 to 6) and informed consent in research. including informed consent document and special situations (questions 7 to 13). Mean and SD calculated for these subgroups also. For questions 1to 6, the mean pretest score was 3.60 with SD 1.269 and mean posttest score was 4.74 with SD 0.910 and for questions 7 to 13, mean pretest score was 2.72 with SD 1.161 and mean posttest score was 4.83 with SD 1.635. Wilcoxon signed rank test revealed statistically significant difference between pre and posttest subgroup values (for questions 1to6, p=0.000 and for 7 to 13, p=0.000) (Table-II).

Table-II: Showing Mean, Standard Deviation (SD), Median and Wilcoxon Signed Rank Test

Score	Question numbers 1 to6		Question numbers 7to13		Total (1to13)	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Mean	3.6	4.74	2.72	4.83	6.32	9.57
SD	1.269	0.910	1.161	1.635	1.871	2.162
Median	4.0	5.0	3.0	5.0	7.0	10.0
Wilcoxon Signed Rank Test						
Z value	-6.900a		-7.875a		-8.493a	
P value	0.000		0.000		0.000	
a. Based on negative ranks.						

Analysis based on response to individual questions: Individual questions were analyzed and the difference in pre and posttest responses were expressed as number and percentage. Statistical analysis was also done using McNamar's test, for comparison of responses in paired samples. All questions except 2 and 10 showed an increase in frequency of correct response and statistically significant p value (Table-III).

Table-III: Distribution of correct response for individual questions and p value of McNamar's test for paired samples

Quest. no	Question	Correct response (Pretest)		Correct response (Posttest)		p value
		Percent	Percent	Percent	Percent	
1	Informed consent in medical practice refers to	89	75.4%	109	92.4%	0.000
2	The type of consent required for medicolegal examination is	75	63.6%	62	52.5%	0.098
3	Minimum age for giving valid consent for surgery is	93	78.8%	110	93.2%	0.002
4	Consent is not required as per law in the following situations, EXCEPT.	44	37.3%	60	50.8%	0.014
5	A person can give consent for physical examination if he is above	24	20.3%	100	84.7%	0.000
6	Essential component/s of consent includes	99	83.9%	118	100%	Cannot be done (100% in posttest)
7	Parts of informed consent documents are	67	56.8%	94	79.7%	0.000
8	Audio-visual recording of consent process has been made mandatory in	64	54.2%	93	78.8%	0.000
9	Waiver of consent may be granted by the ethics committee in following situations, EXCEPT	15	12.7%	46	39.0%	0.000
10	Reconsent or fresh consent is required in situation/s	65	55.1%	54	45.8%	0.161
11	In some situations, consent has to be obtained from organization's that represents the community. This type of consent is termed as	38	32.2%	82	69.5%	0.000
12	Fundamental ethical principles of autonomy is ensured through the practice of	55	46.6%	101	85.5%	0.000
13	Assent is obtained from	18	15.3%	100	84.7%	0.000

Discussion:

Didactic lecture is one of the most widely accepted methods among teaching and learning methodology. Because of time restriction and vast syllabus to be covered through lectures, feedback knowledge before and after the lectures to assess the extent of knowledge of learners gained provides the platform for feedback[12,13].

The pretest can be used as a feasible tool to get useful information about the knowledge of students, to shape group specific education programs, to use as a diagnostic tool for obtaining early feedback on the need for assistance and to provide a benchmark for assessing teaching effectiveness[14].

Post testing is valuable to teachers because it allows for real-time progress monitoring. Multiple posttests can be administered throughout a student's enrollment, and thus educational gains can be monitored, and instruction can be adjusted appropriately[15]. In preand posttest-based learning methods, the student will be actively involved in education[12]. Pre and posttest can also be used as a powerful diagnostic tool to identify; weak students, strongest students, topics students already know, topics students don't know, and the topics students have not leaned[16].

Disadvantages of pre and posttest includes, students may absorb knowledge just from taking the test and may attend more readily to the content and there may be a tendency to teach to the posttest[17].

A pre and posttest study conducted to evaluate whether formal communications skills training on informed consent improves the quality of written informed consent among untrained Post-Graduate Residents in the Department of Obstetrics and Gynaecology at a Medical College Hospital, Maharashtra revealed that the intervention had increased the mean scores in post-test (5.17 to 9.33) and the paired t test was highly significant with t = -13.61, <0.0001[18]. In the present study also statistical analysis done on average pre and posttest score and on difference in pre and posttest responses to individual questions; revealed measurable gain in knowledge at the end of the class, since $p < 0.05$.

Conclusion:

Knowledge regarding informed consent is indispensable in medical practice and research and it is an integral part of medical curriculum. Measuring academic progress through appropriately administered pre-posttests can be a powerful tool in providing teachers feedback about how to better meet students' academic needs.

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Original Article

Significant Anthropometric Parameters that Can Predict Coronary Artery Disease Risk Factors in Bangladeshi Adult Male People

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Abstract:

Background: *Considering the clinical importance of anthropometric parameters the present study is planned to: collect data regarding anthropometric parameters like total body fat, waist circumference, waist to hip ratio, and abdominal volume index to find out their relation with coronary artery disease risk factors like hypertension, diabetes mellitus and obesity of adult male Bangladeshi people.*

Materials and Methods: *This cross sectional study was conducted in the anatomy department of Dhaka Medical College, during the period of January 2014 to December 2014.The present study was performed on 100 adult male Bangladeshi ranging from35-64 years of age. Out of hundred male populations, fifty persons were suffering from coronary artery disease. They were selected as case. Fifty persons were without coronary artery disease and considered as control.*

Results: *This study showed total body fat, waist circumference, waist-hip ratio, and abdominal volume index were significantly higher in cases than in control ($p<0.05$).*

Conclusions: *Total body fat, waist circumference, waist-hip ratio and abdominal volume index significantly predict coronary artery disease risk factors in adult male people of Bangladesh.*

Keywords: *Total body fat, Waist circumference, Waist-hip ratio, Abdominal volume index, Adult male, Bangladeshi,*

Introduction:

A Coronary artery disease is the most common type of heart disease. Coronary artery disease has absorbed large share of time and wealth on research all over the world. Disease of the coronary arteries is almost always due to atherosclerosis. Atherosclerosis is a disease of the large and medium sized arteries. Endothelial cell dysfunction facilitates the development of atherosclerotic plaques. In the heart, atherosclerosis cause stable and unstable angina, myocardial infarction, arrhythmia and sudden death. Coronary artery disease is the most serious and immediate health problem in many countries worldwide. It is a common and life threatening disease in both developed and developing country. Coronary heart disease mortality in developing countries is expected to be much greater than among the developed countries.[1] In contrast to the developed countries, countries of the South East Asia region are experiencing an increasing trend in the prevalence of coronary artery disease.[2]

The UK incidence of coronary artery disease remains amongst the highest in the world.[3] It is the largest single killer of American people.[4]

Bangladesh is one of the developing countries whose both incidence and prevalence of coronary heart disease has been increasing gradually and unless national policy of prevention of risk factors are undertaken , it is feared that in next 10-15 years time the number of coronary artery disease patients will increase dramatically.

The prevalence of coronary heart disease in Bangladesh was estimated as 3.3/1000 in 1976 and 17.2/1000 in 1986 indicating five folds increase in the

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disease in ten years.[5] More recent data indicates coronary artery disease prevalence between 1.85% and 3.4% in rural and 19.6% in an urban sample of working professionals.[6] In contrast to male , mortality levels due to cardiovascular disease among females remain considerably lower throughout the period 1986-2006 in Bangladesh.[7]

Coronary artery disease has a number of well determined risk factors. People with a combination of risk factors are at greatest risk. Age is the most powerful risk factor for atherosclerosis. A positive family history is present when clinical problems in first- degree relative occur at relatively young age, such as <50 years for men. Obesity particularly if central or truncal, is an independent risk factor, although it is often associated with other adverse factors such as hypertension, diabetes mellitus. A close relationship has been found between coronary artery disease risk factors and different anthropometric parameters like weight, height, waist circumference, waist to hip ratio, abdominal volume index.

Although there are clinical and several biochemical investigations to diagnose coronary artery disease risk factors, anthropometric measurements play an important role in clinical practice.

According to Zhu et al waist circumference is the best screening measure for coronary artery disease.[8] Huang et al in a general population study in Taiwan found that the four anthropometric indices such as body mass index, waist circumference, waist to hip ratio, and waist to height ratio are closely related to coronary artery disease risk factors.[9] Guerrero-Romeo in their study randomly recruited 746 man and women from Durango city in northern Mexico.

They stated that abdominal volume index is a reliable risk factor for coronary artery disease.[10]

With the above perspective this study was carried out to find out whether anthropometric parameters like waist circumference, waist to hip ratio, abdominal volume index, can predict coronary artery disease risk factors in adult male Bangladeshis.

Materials and Methods:

This was a cross-sectional analytical type of study in the department of Anatomy, Dhaka Medical College, Dhaka from January 2014 to December 2014 on100 adult male Bangladeshi age ranging from 35-64 years. Out of hundred male populations, fifty persons were suffering from coronary artery disease. They were selected as case. Fifty persons were without coronary artery disease and considered as control. Data from controls were collected from different surgery wards of Dhaka Medical College Hospital who were admitted for elective operations like cholecystectomy, hernia repair, vagotomy, etc. and had fitness for anaesthesia. These persons had normal chest skiagram, normal ECG findings, normal blood sugar level and normal blood pressure. Data from cases were collected from post coronary care unit of Dhaka Medical College and post coronary care unit and cardiac surgery wards of NICVD.

Patients suffering from coronary artery disease confirmed by cardiologist/cardiac surgeon and patients who had received coronary stents were included as cases and also patients who had undergone coronary artery bypass surgery

Persons with history of angina, family history of premature coronary artery disease and endocrine diseases like Acromegaly, Cushing's syndrome, or thyroid disorders were excluded as control. No biochemical tests were performed for these patients rather they were excluded on the basis of history, physical examination, and hospital records. Heart disease other than coronary artery disease like congenital heart disease, valvular heart disease, heart failure, and any chronic disease like chronic kidney disease, pulmonary tuberculosis, and endocrine diseases such as Acromegaly, Thyroid disorders, Cushing syndrome were excluded as cases. These diseases were excluded by history taking and clinical examinations but no laboratory investigations were possible to carry out to exclude these diseases.

Age of the persons were confirmed by national ID cards. Each participant was given an ID number so that repetition could not take place. The study was carried out on two groups – the control group and the case group. Each group of 50 participants was further divided into three subgroups according to body mass index(BMI). Body mass index is considered as an indicator of coronary artery disease.[11] Distribution of study population in each subgroup is shown in table below:

Grouping of participants

Body mass index (BMI)	Control (n=50)	Case (n=50)
18-22.99 (normal)	A (17)	A1 (16)
23-27.99 (overweight)	B (17)	B1 (18)
28 0r >28 (obese)	C (16)	C1 (18)

This work was carried out after the Ethical Committee of Dhaka Medical College, Dhaka, approved the

protocol of the research work. All data were checked and edited after collection. Later the data were put into computer and were analyzed with the help of SPSS version 20.0 for windows. Statistical analyses were done by Unpaired Student 's't' test and One way ANOVA (PostHoc).

Results:

Total body fat in kg of control and case group:
Total body fat of normal weight group of control and case ranged from 8.24-15.16 kg and 11.29-16.25 kg respectively and the mean (±SD) total body fat was 12.46±1.86 kg and 14.06±1.52 kg respectively. In overweight group, the total body fat ranged from 14.12-22.46 kg and 15.15-22.10 kg for control and case respectively and the mean (±SD) total body fat was 18.12±2.48 kg and 19.67±1.83 kg for control and case respectively. On the other hand in obese group, total body fat of control and case ranged from 26.21-33.87 kg and 26.37-37.74 kg respectively and the mean (±SD) total body fat was 28.97±2.09 kg and 31.82±2.82 kg respectively. Significant difference in total body fat was observed between normal weight ($p<0.05$), overweight ($p<0.05$) and obese ($p<0.01$) group.

Table-I: Total body fat (TBF) of control and case group

Group	Total body fat (TBF) Mean±SD
Control (n=50)	
A (n=17)	12.46±1.86 (8.24-15.16)
B (n=17)	18.12±2.48 (14.12-22.46)
C(n=16)	28.97±2.09 (26.21-33.87)
Case (n=50)	
A1 (n=16)	14.06±1.52 (11.29-16.25)
B1 (n=18)	19.67±1.83 (15.15-22.10)
C1 (n=16)	31.82±2.82 (26.37-37.74)

Group	Pvalue
A vs A1	0.011*
B vs B1	0.042*
C vs C1	0.003**
A vs B	0.0001***
B vs C	0.001***
A vs C	0.001***
A1 vs B1	0.0001***
B1 vs C1	0.001***
A1 vs C1	0.001***

Comparison between values of same body mass index groups of control and case was done by Unpaired Student's 't' test

Comparison between different body mass index groups of control and case was done by One-way ANOVA
n= Number of subjects, ns = Not significant,
* = Significant at P<0.05,
**= Significant at P<0.01,
***= Significant at P<0.001
Control: Group A, Group B, Group C
Case: Group A1, Group B1, Group C1

Normal weight group	Overweight group	Obese group
Group A	Group B	Group C
Group A1	Group B1	Group C1

Waist circumference (cm) of control and case group:

Waist circumference of normal weight group of control and case ranged from 74-85cm and 78-86cm respectively and the mean (±SD) waist circumference was 79.41±3.54cm and 81.69±2.44cm respectively. In overweight group, the waist circumference ranged from 84-92cm and 87-95cm for control and case respectively and the mean (±SD) waist circumference was 88.53±2.65cm and 92.33±2.83 cm for control and case respectively. On the other hand in obese group, waist circumference of control and case ranged from 94-108cm and 97-107 cm respectively and the mean (±SD) waist circumference was 99.13±4.47 cm and 102.63±2.70cm respectively. There was significant difference in waist circumference between normal weight ($p<0.05$), overweight ($p<0.001$) and obese ($p<0.01$) group.

Table-II: Waist circumference (cm) of control and case group

Group	Waist circumference(cm) Mean±SD
Control (n=50)	
A (n=17)	79.41±3.54v(74-85)
B (n=17)	88.53±2.65v(84-92)
C(n=16)	99.13±4.47 (94-108)
Case (n=50)	
A1 (n=16)	81.69±2.44 (78-86)
B1 (n=18)	92.33±2.83 (87-95)
C1 (n=16)	102.63±2.70 (97-107)

Group	Pvalue
A vsA1	0.041*
B vs B1	0.0001***
C vs C1	0.002**
A vs B	0.0001***
B vs C	0.001***
A vs C	0.001***
A1vs B1	0.001***
B1vs C1	0.001***
A1vs C1	0.001***

Results are expressed as Mean±SD. Figures in parentheses indicate range.

Comparison between values of same groups of control and case was done by Unpaired Student's't' test

Comparison between different groups of control and case was done by One-way ANOVA

n=Number of subjects, ns = Not significant,

* = Significantat P<0.05,

**= Significant at P<0.01,

***= Significant at P<0.001

Control: Group A, Group B, Group C

Case: Group A1, Group B1, Group C1

Normal weight group	Overweight group	Obese group
Group A Group A1	Group B Group B1	Group C Group C1

Waist to hip ratio of control and case group:

Waist to hip ratio of normal weight group of control and case ranged from 0.82-0.90 and 0.84-0.93 respectively and the mean (±SD) waist to hip ratio was 0.847±0.021 and 0.873±0.026 respectively. In overweight group, the waist to hip ratio ranged from 0.89-0.99 and 0.90-1.02 for control and case respectively and the mean (±SD) waist to hip ratio was 0.940± 0.033 and 0.970±0.033 for control and case respectively. On the other hand in obese group, waist to hip ratio of control and case ranged from 0.98-1.10 and 0.98-1.17 respectively and the mean (±SD) waist to hip ratio was 1.031±0.034 and 1.069±0.046 respectively. Significant difference in waist to hip ratio was observed between normal weight (p<0.01), overweight (p<0.01) and obese (p<0.05) group.

Table-III: Waist to hip ratio (WHR) of control and case group

Group	WHR Mean±SD
Control (n=50)	
A (n=17)	0.847±0.021 (0.82-0.90)
B (n=17)	0.940±0.033 (0.89-0.99)
C(n=16)	1.031±0.034 (0.98-1.10)
Case (n=50)	
A1 (n=16)	0.873±0.026 (0.84-0.93)
B1 (n=18)	0.970±0.033 (0.90-1.02)
C1 (n=16)	1.069±0.046 (0.98-1.17)

Group	Pvalue
A vs A1	0.003**
B vs B1	0.007**
C vs C1	0.011*
A vs B	0.0001***
B vs C	0.0001***
A vs C	0.0001***
A1vs B1	0.0001***
B1vs C1	0.0001***
A1vs C1	0.0001***

Results are expressed as Mean±SD. Figures in parentheses indicate range.

Comparison between values of same groups of control and case was done by Unpaired Student's't' test

Comparison between different groups of control and case was done by One-way ANOVA

n=Number of subjects, ns = Not significant,

* = Significantat P<0.05,

**= Significant at P<0.01,

***= Significant at P<0.001

Control: Group A, Group B, Group C

Case: Group A1, Group B1, Group C1

Normal weight group	Overweight group	Obese group
Group A	Group B	Group C
Group A1	Group B1	Group C1

Abdominal volume index of control and case group:

Abdominal volume index of normal weight group of control and case ranged from 11.05-14.65 and 12.35-14.88 respectively and the mean(±SD) abdominal volume index was 12.8±1.10 and 13.7±0.8 respectively. In overweight group, the abdominal volume index ranged from 14.11-17.01 and 15.16-18.11 for control and case respectively and the mean(±SD) abdominal volume index was 15.70±1.0 and 16.9±0.9 for control and case respectively. On the other hand in obese group, abdominal volume index of control and case ranged from 17.68-23.33 and 18.82-22.98 respectively and the mean(±SD) abdominal volume index was 19.7±1.8 and 21.1±1.1 respectively. Significant difference in abdominal volume index was observed between normal weight ($p<0.05$), overweight ($p<0.01$) and obese ($p<0.05$) group.

Table-IV: Abdominal volume index(AVI) of control and case group

Group	(AVI) Mean±SD
Control (n=50)	
A (n=17)	12.8±1.1 (11.05-14.65)
B (n=17)	15.7±1.0 (14.11-17.01)
C(n=16)	19.7±1.8(17.68-23.33)
Case (n=50)	
A1 (n=16)	13.7±0.8 (12.35-14.88)
B1 (n=18)	16.9±0.9 (15.16-18.11)
C1 (n=16)	21.1±1.1 (18.82-22.98)

Group	Pvalue
A vs A1	0.012*
B vs B1	0.001**
C vs C1	0.012*
A vs B	0.0001***
B vs C	0.0001***
A vs C	0.0001***
A1vs B1	0.0001***
B1vs C1	0.0001***
A1vs C1	0.0001***

Results are expressed as Mean±SD. Figures in parentheses indicate range.

Comparison between values of same body mass index groups of control and case was done by Unpaired Student's't' test

Comparison between different body mass index groups of control and case was done by One-way ANOVA

n=Number of subjects, ns = Not significant,

* = Significantat P<0.05,

**= Significant at P<0.01,

***= Significant at P<0.001

Control: Group A, Group B, Group C

Case: Group A1, Group B1, Group C1

Normal weight group	Overweight group	Obese group
Group A	Group B	Group C
Group A1	Group B1	Group C1

Discussion:

The anthropometric parameters(total body fat, waist circumference, , waist-hip ratio, abdominal volume index, is an easy and remarkable predictor of coronary artery disease risk factors. In the adult male population of Bangladesh increasing burden of coronary artery disease has an enormous impact on population health, the health care system and the economy. The need for a better

understanding of how to slow down the process of coronary artery disease generation and progression and how to improve preventive and therapeutic strategies is obvious in societies with a steadily rising life expectancy. he present study was carried out on 100 adult Bangladeshi male(50 controls without coronary artery disease and 50 cases with coronary artery disease)age ranged 35-64 years. In the present study, Heath-Carter method is used for a comprehensive evaluation of various parameters. In the present study, highly significant difference was present between total body fat of control and case ($P<0.05$). In the present study, waist circumference of case was significantly higher than control ($P<0.05$). In the present study, significant difference was observed between waist-hip ratio of control and case where waist-hip ratio of case was higher than control ($P<0.05$). In the present study, significant difference was observed between abdominal volume index of control and case, where abdominal volume index of case was higher than control ($P<0.05$). Shankarappa conducted a cross-sectional study on 150 adult male (56 controls without coronary artery disease and 94 cases with coronary artery disease) in Vydehi Institute Of Medical Sciences and Research Centre, Bangalore,

India.[12] Uma worked on 128 adult (control-64& case-64), in The Maharaja Sayajirao University of Baroda, Gujarat, India.[13] In both of their study similar result found by Rohit S and Islam M.T reported also similar result with the present study.[6, 14]

Conclusion:

This study was done to determine whether anthropometric parameters (total body fat, waist circumference, waist-hip ratio, abdominal volume index,) can predict coronary artery disease risk factors in adult male population of Bangladesh. This study showed total body fat, waist circumference, waist-hip ratio, abdominal volume index, were significantly higher in cases than in control ($p<0.05$) and can predict coronary artery disease risk factors in adult male population of Bangladesh. To further validate these findings further studies with larger sample size for a longer period would be required.

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Original Article

Assessment of The Quality of Life After Tonsillectomy in Children with Recurrent Tonsillitis in Bangladesh

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Abstract

Background: *Tonsillectomy is a common surgical intervention in children. The effectiveness of tonsillectomy for the treatment of chronic and recurrent tonsillitis has been largely supported by various studies using patient surveys.*

Objective: *The aim of this study is to assess the quality of life after tonsillectomy in children with recurrent tonsillitis in developing countries.*

Materials and Methods: *This cross-sectional study was conducted among 200 patients in a tertiary care hospital of Sylhet, Bangladesh from August 2022 to July 2023. Data on certain basic parameters were obtained on the basis of the clinical records. Data collected were displayed in tabular form in terms of different parameters and statistical analysis was conducted to observe the statistical significance.*

Results: *In this study, the frequency of the episodes of sore throat of patients during prior 6 months are shown. Initially at the baseline period, maximum episodes (76.5%) were found 2 to 4 per month which reduced to 31% after 6 months, and to 6.5% after 1 year. At baseline, maximum patients missed school 6 to 10 days. After 6 months and 1 year, the maximum patients missed 1 day or less than that. At baseline maximum patients visited doctor 2 to 6 times. After 6 months and 1 year, maximum patients visited 1 time. At baseline maximum patients (46.5%) used to take upto 3 antibiotics. After 6 months and 1 year, maximum patients (62% and 69%) did not have to take any antibiotics. Before surgery the well-being score, general health score and energy score was 2.5, 2.6 and 2.4. And after surgery the well-being score, general health score and energy score was 4.6, 4.5 and 4.6 respectively.*

Conclusion*: In this study of children with recurrent or chronic tonsillitis demonstrated significant improvements in disease-specific and global quality of life (QOL) after tonsillectomy.*

Keywords: Quality of life, Tonsillectomy, Quality of life

Introduction:

One of the most frequent yet expensive surgical operations carried out by otolaryngologists is the tonsillectomy. Although tonsillectomy is a common surgical procedure, there are only a few number of published research that have examined its effects on health and quality of life. The optimal way to carry out the surgical surgery or the reasons for tonsillectomy have not been agreed upon, either nationally or globally. After more conservative medicinal approaches have failed, surgery is typically considered. A list of clinical factors for choosing which patients should have tonsillectomies was published by the American Academy of Otolaryngology in 2000[1]. These defined the threshold for surgical surgery as three or more occurrences of tonsillitis and/or adenoiditis per year, despite receiving acceptable medical care[2]. Patients are advised to meet all of the following requirements, according to the Scottish Intercollegiate Guidelines Network: tonsillitis-related painful throats, five or more episodes of tonsillitis per year, symptoms for at least a year, and episodes of sore throat that impair normal function[3].

The most common reasons for tonsillectomy in children are either recurrent tonsillitis or obstructive symptoms brought on by tonsillar hypertrophy. These

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signs might, however, go away with time. It is unclear whether the potential hazards and expenses of surgery balance the advantages of the procedure in terms of symptom reduction and healthcare costs. There have been conflicting reports regarding the cost-effectiveness of pediatric tonsillectomy. While other studies have found tonsillectomy to be both financially and clinically beneficial for children[5,6], Buskens et al.[4] identified increased total health-related expenses without a discernible clinical advantage. The number of infections or sick days is typically tallied in order to determine whether tonsillectomy is beneficial for patients. Tonsillectomy was found to decrease the number of painful throat episodes and days with sore throat in a Cochrane review[7]. The advantages of a particular intervention might be estimated more subjectively by tracking changes in health-related quality of life (HRQoL). There have been some research on the effect of pediatric tonsillectomy on HRQoL, and all have found a favourable result[8,9].

Materials and Methods:

This cross-sectional study was conducted among 200 patients in a tertiary care hospital of Sylhet, Bangladesh. Data on certain basic parameters were obtained on the basis of the clinical records. Data collected were displayed in tabular form in terms of different parameters and statistical analysis was conducted to observe the statistical significance.

We obtained the medical records and compiled data of 200patients in this study. All data was received through the complete consent of the patients and hospital. Data were collected according to the predesigned structural data collection sheet on the basis of specific prefixed parameters. At first all of the relevant collected data were edited and complied on a master chart.

Statistical analysis

Collected data was analyzed using appropriate computer-based statistical tool SPSS (Statistical Program for Scientific Study) version 25. P-value <0.05 was considered significant in this study.

Results:

Table-I shows the frequency of the episodes of sore throat of the patients during the prior 6 months. Initially at the baseline period, maximum episodes (76.5%) were found 2 to 4 per month which reduced to 31% after 6 months, and to 6.5% after 1 year. The following table is given below in detail:

Table-I: Frequency of the episodes of sore throat of the patients during the prior 6 months

Episodes of sore throat	Baseline (n=200) No. (%)	6 months (n= 200) No. (%)	1 year (n= 200) No. (%)
None	0	112 (56%)	68 (34%)
<1 per month	0	0	43 (21.5%)
1 per month	146 (73%)	138 (69%)	51 (25.5%)
2 to 4 per month	153 (76.5%)	62 (31%)	13 (6.5%)
1 per week	4 (2 %)	0	0
2 per week	16 (8%)	0	0
>2 per week	45 (22.5%)	0	0
Unknown	0	3 (1.5%)	0
P-value	<0.001	<0.001	<0.001

Figure 1 shows the child school days missed because of sore throat. At baseline, maximum patients missed 6 to 10 days. After 6 months and 1 year, maximum patients missed 1 or less than that. See the figure below-

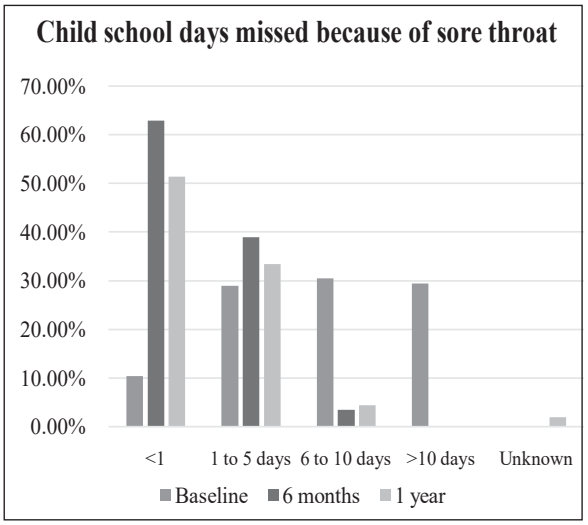

Figure-1: Child school days missed because of sore throat

Figure 2 shows the child doctor visits because of sore throat. Here, at baseline maximum patients visited doctor 2 to 6 times. After 6 months and 1 year, maximum patients visited 1 time. See the figure below-

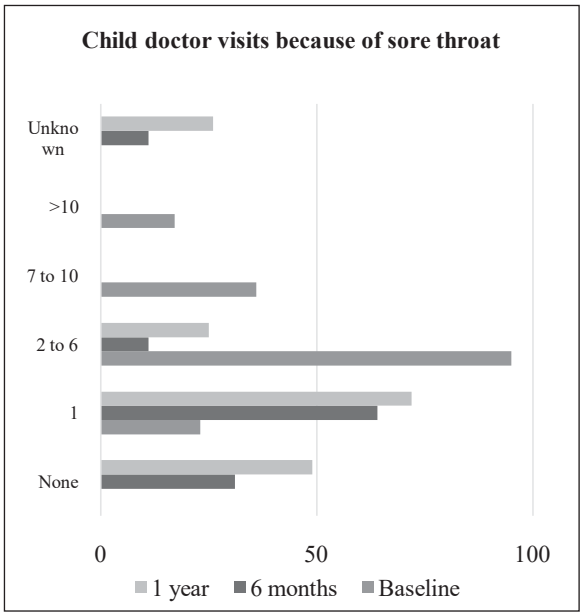

Figure-2: Child doctor visits because of sore throat

Table II shows the frequency of the child antibiotic use of our study. Here, at baseline maximum patients (46.5%) used to take up to 3 antibiotics. After 6 months and 1 year, maximum patients (62% and 69%) did not have to take any antibiotics.

Table-II: Frequency of the child antibiotic use

Child antibiotic use	Baseline (n=200) No. (%)	6 months (n=200) No. (%)	1 year (n=200) No. (%)
None	0	124 (62%)	138 (69%)
1	19 (9.5%)	27 (13.5%)	32 16%)
2	28 (14%)	0	0
3	62 (31%)	0	0
>3	93 (46.5%)	0	0
Unknown	0	0	0
P-value	<0.001	<0.001	<0.001

Figure 3 shows the feeling score of patients before and after surgery. Here, before surgery the well-being score, general health score and energy score was 2.5, 2.6 and 2.4. And after surgery the well-being score, general health score and energy score was 4.6, 4.5 and 4.6 respectively. See the figure below-

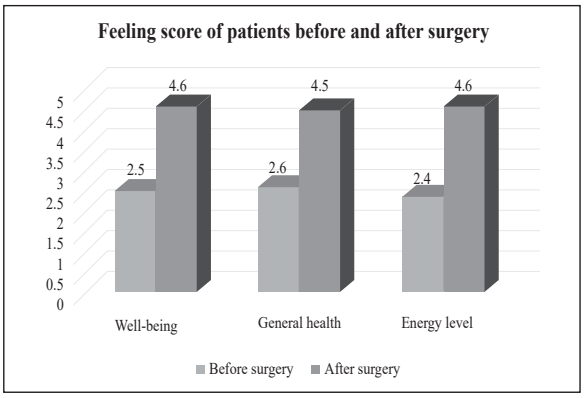

Figure-3: Feeling score of patients before and after surgery

Discussion:

Tonsillectomy enhanced children's and adolescents' HRQoL. Additionally, tonsillectomy resulted in a decrease in the need for medical services and sick days. As a result, tonsillectomy-related medical expenses were decreased. Numerous studies have shown that tonsillectomy improves children's quality of life and reduces behavioral and emotional issues[10,11]. Our study's questionnaires have been verified, in contrast to some other research, and the follow-up time is fairly extensive. The long-term impact of tonsillectomy has rarely been demonstrated due to follow-up periods as brief as 1-3 months[12].

91% of young adults reported continued improvements in wellbeing, less obstructive issues, and fewer infections 6 years after tonsillarectomy in a research by Wireklint et al.[13] In addition, a substantial impact was reported up to 2 years following surgery in a prospective trial of 34 children with obstructive sleep apnea[14]. According to our earlier report in adults[15], there has been a decrease in the utilization of healthcare services in this area. Additionally, a recent extensive review from the United Kingdom showed that tonsillectomy is a cost-effective procedure for children as well[5]. This is consistent with a small (25 children), retrospective Japanese study that found tonsillectomy to be both financially and clinically beneficial[6].

In our study, participants saw doctors a maximum of 2 to 6 times at baseline. After six months and a year, patients typically visited once. The primary outcome under investigation was the decline in fever episodes, upper respiratory infections, or throat infections, which are typically viral diseases in children and cannot be treated surgically. For children with sleep disordered breathing, tonsillectomy has been shown to

improve disease-specific and overall quality of life (QOL) in a number of prospective outcomes studies[16-18]. Our study compares the patients' feelings scores before and after surgery. Six months and a year following surgery, the sensation ratings on the disease-specific instrument dramatically improved. Children demonstrated improvement in the airway and breathing, eating and swallowing, and behavior subscale scores in addition to the infection and health care subscale scores, despite the fact that they were chosen for the trial based on their history of recurrent infection. Previous studies have also shown a significant prevalence of sleep apnea in children having tonsillectomies for the treatment of recurrent tonsillitis, followed by a reduction in obstructive symptoms after surgery[17].

Although earlier research concentrated on the reduction of tonsillitis episodes following tonsillectomy, our findings indicate improvements in the general health status and quality of life (QOL) of affected children. In evaluating treatment outcomes and patient satisfaction, caregiver perspectives on QOL and health care status are crucial[16]. Our findings are consistent with other research that found high parent satisfaction levels a year after the operation.

We observed notable improvements in QOL in these kids following tonsillectomy. According to validated tools, tonsillectomy significantly improved both disease-specific and overall QOL in children with recurrent or chronic tonsillitis. After tonsillectomy, they also had fewer infections, medical visits, and antibiotic courses.

The very limited number of patients in our study is one of its limitations. Although a patient sub-group study by surgical indication would have been intriguing, the tiny patient population prevents accurate analysis. All tonsillectomy patients were given the opportunity to take part, but only roughly half of them did. As we have seen comparable low response rates in previous child and adolescent HRQoL study groups, this appears to be more typical in adolescents and children than it is in adults. A further drawback of the study would be the absence of a control group.

Conclusion:

We arrive at the conclusion that patients with recurring acute and chronic tonsillitis benefit from tonsillectomy. The tonsillectomy in our patients led to a considerable decrease in visits to the general practitioner and an increase in overall health and well-being. Children's HRQoL is increased, there is less of a need for medical attention, and fewer kids miss school because of oropharyngeal problems. After tonsillectomy, they also had fewer infections, medical visits, and antibiotic courses. In order to achieve a better result over the long run, more research on the topic is required.

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Original Article

Disease Pattern of Patients Attending OPD of Skin and VD in 250 Bedded General Hospital, Jamalpur

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Abstract:

Background: *The prevalence of skin diseases varies throughout different countries and even among different regions of the same country. The incidence of dermatological conditions in the general population is increasing. The population has a range of variability, spanning from 11.16% to 63%. Additionally, the prevalence of this phenomenon varies throughout.*

Objective: *The aim of the study was to find out the disease pattern of patients attending outpatient department (OPD) of skin and VD in 250 Bedded General Hospital, Jamalpur.*

Materials and Methods: *This cross-sectional study was conducted to assess the Disease pattern of 150 patients attending at outpatient department of skin& VD in 250 Bedded General Hospital, Jamalpur during the period of January to December2022.*

Results: *The study revealed that the respondents were aged 5 to 61. The majority of the patients were below the age 30 years. Regarding sex distribution, 82(54.7%) and 68 (45.3%) cases were male and female respectively. Most of the respondents (56.7%) came from urban areas in contrast to rural (14.0 %.) Regarding socio economic status (59.33%) of the patients with low socio-economic status, (32.0% middle and (8.7%) were belong to) higher socio-economic status. It was seen that recurrence of disease was (56.0%),of them maximum was occur below the age of 10 years followed by (23.8%) in the age group of10 to 19 years. and 50 years and above it was only (9.0%).It was found that out of 21 (14%) STDs all cases of NGU (7) were male within the age group of below 30 years and mainly originating from a low socio-economic condition. On the basis of the findings of the present study, further in-depth studies on large scale sample are recommended to draw conclusive inferences.*

Conclusion: *The abundance of infection and parasitic skin diseases and STDs may indicate a major public health problem in Bangladesh. Addressing these issues seriously and sympathetically is crucial to ensure the success of the "Health for all by the year 2000 AD" program.*

Keywords: *Prevalence, Disease pattern, Skin disease, VD.*

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Introduction:

Acording to prevailing discourse, the escalating phenomenon of global warming and the consequent fluctuations in climate patterns have been purported to contribute to a notable surge in the prevalence and incidence of skin ailments on a global scale. In the present scenario, it is imperative to conduct research studies aimed at identifying the prevalence and distribution patterns of skin disorders. Such investigations are crucial for effective healthcare planning and management. The spatial distribution of patterns typically varies throughout countries and within different parts of a country, influenced by a range of factors including economic, social, racial, and environmental considerations[1]. According to a survey, the prevalence of skin problems in the general population exceeds 60%. Despite the prevalence of some skin illnesses in underdeveloped nations, these conditions have not been prioritized as serious health

concerns within their public health plans[2]. The classification of skin disorders is determined by various factors such as race, heredity, religion, nutrition, occupation, and lifestyle[3]. Geographical considerations, such as seasonal variations and climate conditions, are additional factors that contribute to the occurrence of specific skin diseases in particular regions[4]. Bangladesh exhibits significant diversity in terms of climate, religion, social circumstances, and cultural practices across its various regions. In underdeveloped nations, various factors contribute to the development of certain skin illnesses such as scabies, pyoderma, and fungal infections. These factors include hot and humid climates, limited access to water, insufficient hygiene practices, overcrowding, and frequent interpersonal contact. According to a study, a significant proportion of individuals in poor nations, almost 70%, experience skin problems at various stages throughout their lives[6]. In the context of impoverished nations, a significant proportion of individuals lack access to vital dermatological services. Furthermore, in industrialized nations, approximately 15% of patients resort to conventional home remedies prior to seeking appropriate medical interventions. The understanding of the epidemiology of this disease among the population in Bangladesh is limited. In the Indian subcontinent, the prevalence of infectious skin disorders surpasses that of non-infectious diseases, especially when compared to Ghana. The user has provided a numerical range. In contrast, the prevalence of dermatitis is higher in Egypt, Denmark, and Singapore, while the United Kingdom has a higher incidence of pre-malignant and malignant skin illnesses. The user has provided a numerical range, specifically[13,14]. The necessity of raising awareness about the genesis, pattern, and prevention of skin disorders is crucial in order to mitigate the burden imposed by this particular ailment[15].

Materials and Methods:

This descriptive cross-sectional study was conducted at the outpatient department of skin and VD, 250 Bedded General Hospital, Jamalpur from January 2022 to December 2022. Total 150 Patients of all ages with different types of skin and VD OPD of 250 Bedded General Hospital, Jamalpur during the study period was included as a study sample. The purposive sampling method was followed for data collection.

Data Collection and Analysis:

At the onset of the investigation, a meticulously designed questionnaire was prepared. Prior to conducting the study, a pretest was administered for the questionnaire. Subsequently, the ultimate questionnaire was designed. The sample that has undergone pretesting was eliminated from the study. The questionnaire comprised a series of carefully designed and organized questions. Prior to the commencement of data collection, the respondents were requested to provide verbal consent. The information from the patients was obtained by the investigator personally using a structured questionnaire. The interview was done in a designated space to ensure complete confidentiality using a face-to-face interview format. Following the conclusion of data gathering, the acquired data underwent a thorough process of examination, verification, and editing prior to its organization into tabular form. The data was replicated within Excel spreadsheets. The data were examined using SPSS 23 software, focusing on individual variables. Tables were constructed in accordance with the specified criteria, accompanied by corresponding descriptions.

Results:

A survey of 150 participants revealed that 21 individuals, constituting 14% of the sample, were found to be afflicted with venereal diseases. Among the various groups, it was seen that NGU had the highest proportion, accounting for 4.7%. Conversely, the groups with the lowest proportions were chancroids and syphilis, each comprising 1.3% of the total.

A survey of 150 participants revealed that 129 individuals, accounting for 86% of the sample, had symptoms of skin disorders. Among the observed skin conditions, Scabies exhibited the greatest proportion, accounting for 24.0% of cases. Following closely were Ringworm and Eczema, each comprising 8.7% of the cases. Seborrhoeic dermatitis, on the other hand, constituted 7.3% of the observed cases.

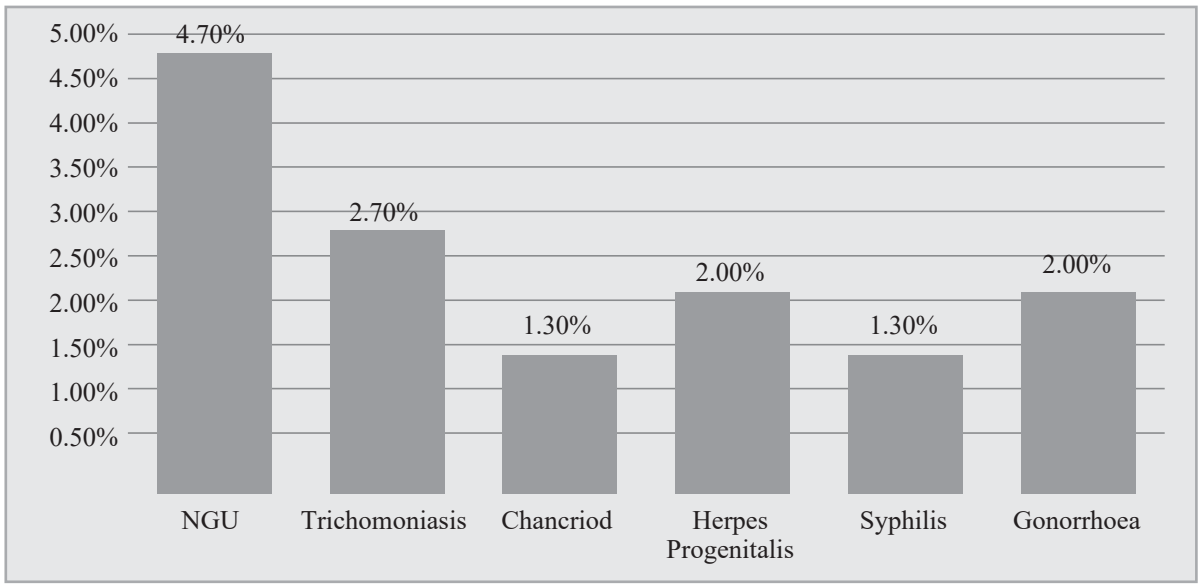

Figure-1: Distribution of Respondents by Sexually Transmitted diseases

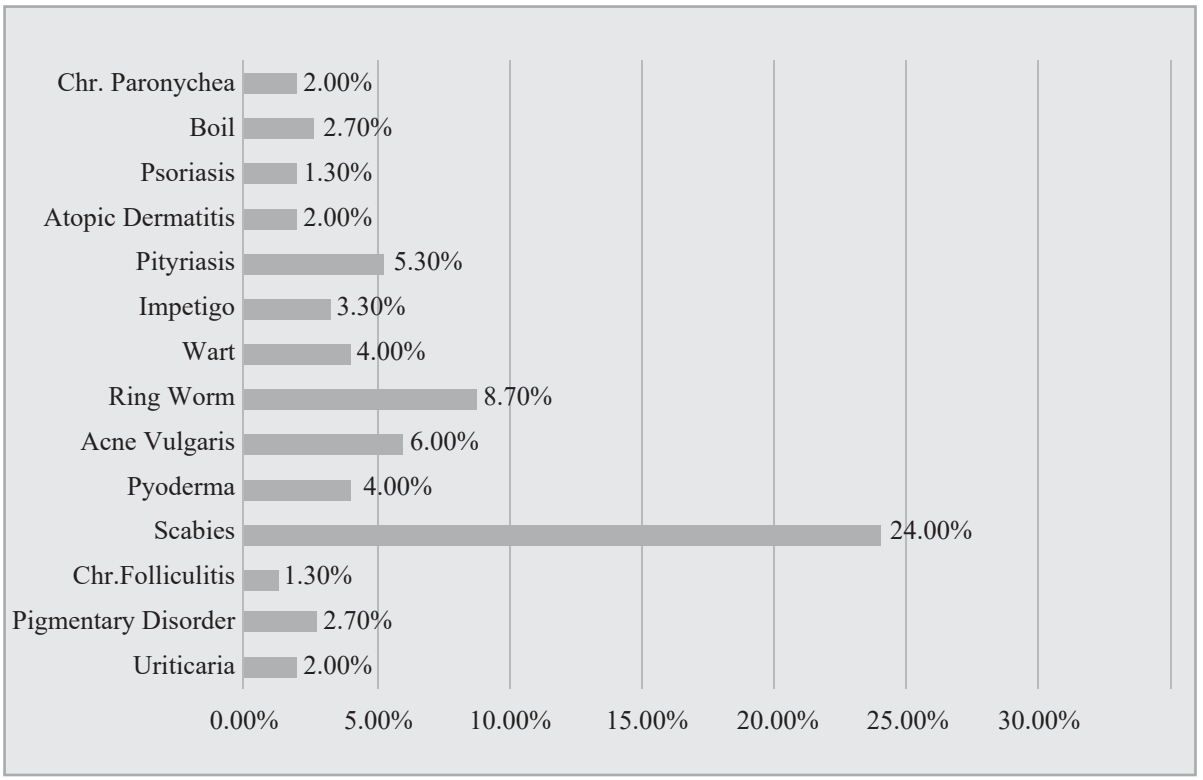

Figure-2: Distribution of Respondents by Skin Diseases

The study findings revealed that a significant proportion of the patients (28%) fell within the age range of 20-29 years, with 23.3% and 18.7% falling within the age ranges of 10-19 years and <10 years, respectively. A mere 7.3% of individuals were encompassed within the age bracket of 50 years and older. Among the cohort of 63 individuals falling within the age bracket of less than 20 years, Scabies emerged as the predominant and significant ailment, impacting approximately 41.26% of the participants. Both NGU and Scabies have an equal proportion of 14.28% within the age group of 20-29 years. The demographic group consisting of individuals aged 50 years and older exhibited a predominant infection rate of 27.2% with wart.

Table-I: Distribution of Respondents by age and disease

Diseases	Age in years												Total	
	<10		10-19		20-29		30-39		40-49		50+		No	%
	No	%	No	%	No	%	No	%	No	%	No	%		
Uriticaria	-	-	1	2.9	1	2.38	-		-		1	9.0	3	2.0
Pigmentary Disorder	-	-	-	-	-		2	11.1	1	6.25	1	9.0	4	2.7
Chr.Folliculitis	-	-	-		-		-		2	12.5	-		2	1.3
Scabies	15	53.6	11	31.4	6	14.28	4	22.2	-		-		36	24.0
Pyoderma	-	-	3	8.6	3	7.14	-	-	-		-		6	4.0
Gonorrhoea	-	-	1	2.9	2	4.76	-	-	-		-		3	2.0
Acne Vulgaris	-	-	6	17.1	3	7.14	-	-	-		-		9	6.0
Ring Worm	-	-	1	2.9	5	11.9	3	16.7	3	18.8	1	9.0	13	8.7
Wart	-	-	1	2.9	1	2.38	-	-	1	6.25	3	27.2	6	4.0
Impetigo	2	7.1	1	2.9	1	2.38	-	-	-		1	9.0	5	3.3
Trichomoniasis	-	-	-		3	7.14	1	5.6	-		-		4	2.7
NGU	-	-	1	2.9	6	14.18	-		-		-		7	4.7
Atopic Dermatitis	-	-	-	-	4	9.52	3	16.7	1	6.25	-		8	5.3
Pityriasis	1	3.6	2	5.7	-	-	1	5.6	-		1	9.0	3	2.0
Eczema	5	17.9	4	11.4	3	7.14	-	-	2	12.5	1	9.0	13	8.7
Seborrhoeic dermatitis	2	7.1	-	-	1	2.38	3	16.7	1	6.25	-		11	7.3
Alopecia	-	-	-	-	-	-	-	-	1	6.25	-		1	0.7
Psoriasis	-	-	1	2.9	-	-	-	-	1	6.25	1	9.0	2	1.3
Boil	3	10.7	1	2.9	-	-	-	-	-		-		4	2.7
Chancriod	-	-	1	2.9	1	2.38	-	-	-		-		2	1.3
Chr.Paronychea	-	-	1	2.9	-	-	-	-	1	6.25	1	9.0	3	2.0
Herpes Progenital	-	-	-	-	-	-	1	5.6	1	6.25	-		3	2.0
Syphilis	-	-	-	-	2	4.76	-		-		-		2	1.3
Total	**28**	**100.0 (18.7)**	**35**	**100.0 (23.3)**	**42**	**100.0 (28.0)**	**18**	**100.0 (12.0)**	**16**	**100.0 (10.7)**	**11**	**100.0 (7.3)**	**150**	**100.0**

The study findings indicate that the rate of recurrence for the same disease was reported to be 56.0%. Notably, the highest incidence of recurrence was observed among individuals below the age of 10 years. Subsequently, a proportion of 23.8% was seen among the demographic of individuals aged 10-19 years.

In contrast, individuals aged 50 years and beyond exhibited a lower rate of disease recurrence, namely 6.0%.

Table-II: Distribution of Respondents by age and Recurrence of disease

Age in years	Recurrence of disease				Total	
	Yes		No			
	No	%	No	%	No	%
<10	21	25.0	7	10.6	28	18.7
10-19	20	23.8	15	22.5	35	23.3
20-29	17	20.2	25	37.9	42	28.0
30-39	12	14.3	6	9.0	18	12.0
40-49	9	10.7	7	10.7	16	10.7
50+	5	6.0	6	9.0	11	7.3
Total	**84**	**100.0 (56.0)**	**66**	**100.0 (44.0)**	**150**	**100.0**

It was further disclosed that a significant proportion (54.7%) of the patient population consisted of males. 45.3% of the remainder population consisted of individuals who identified as female. The prevalence of Scabies was found to be highest among males, with a proportion of 19.5%. A significant proportion of the female population exhibited symptoms of Scabies, with a prevalence rate of 29.4%, whereas Eczema was observed in 13.2% of the same group. Regardless of gender, the majority of individuals were experiencing scabies.

Table-III: Distribution of Respondents by sex and disease

Disease	Male		Female		Total	
	No	%	No	%	No	%
Uriticaria	1	1.2	2	2.9	3	2.0
Pigmentary Disorder	3	3.7	1	1.47	4	2.7
Chr. Folliculitis	1	1.2	1	1.47	2	1.9
Scabies	16	19.5	20	29.4	36	24.0
Pyoderma	3	3.7	3	4.4	6	4.0
Gonorrhoea	2	2.4	1	1.47	3	2.0
Acne Vulgaris	4	4.9	5	7.35	9	6.0
Ring Worm	7	8.5	6	8.8	13	8.7
Wart	3	3.7	3	4.4	6	4.0
Impetigo	2	2.4	3	4.4	5	3.3
Trichomoniasis	1	1.2	3	4.4	4	2.7
NGU	7	8.5		-	7	4.7
Atopic Dermatitis	6	7.3	2	2.9	8	5.3
Pityriasis	1	1.2	2	2.9	3	2.0
Eczema	4	4.9	9	13.2	13	8.7
Seborrhoeic Dermatitis	8	9.6	3	4.4	11	7.3
Alopecia	1	1.2		-	1	0.7
Psoriasis	2	2.4		-	2	1.3
Boil	2	2.4	2	2.9	4	2.7
Chancriod	2	2.4		-	2	1.3
Chr.Paronychea	2	2.4	1	1.47	3	2.0
Herpes Progenital	2	2.4	1	1.47	3	2.0
Syphilis	2	2.4		-	2	1.3
Total	**82**	**100.0 (54.7)**	**68**	**100.0 (45.3)**	**150**	**100.0**

The study revealed that among those experiencing disease recurrence, a higher proportion of males (53.6%) experienced such recurrence compared to females (46.4%), with an overall recurrence rate of 56.0%.

Table-IV: Distribution of Respondents by sex and recurrence disease

Sex	Recurrences				Total	
	Yes		No			
	No	%	No	%	No	%
Male	45	53.6	37	56.0	82	56.7
Female	39	46.4	29	44.0	68	45.3
Total	**84**	**100.0 (56.0)**	**66**	**100.0 (44.0)**	**150**	**100.0**

Based on the data shown in the table-IV, it is evident that a significant proportion of the patients (56.7%) originated from metropolitan areas. Regardless of the place of residency, scabies was shown to be the most prevalent condition, with a somewhat consistent proportion observed across all locations. Pyoderma, a dermatological condition, has been identified as the

Table-V: Distribution of Respondents by Residence and disease

Disease	Rural		Semi Urban		Urban		Total	
Uriticaria	-	-	2	4.54	1	1.17	3	2.0
Pigmentary Disorder	1	4.8	2	4.54	1	1.17	4	2.7
Chr.Folliculitis	-	-	1	2.27	1	1.17	2	1.3
Scabies	5	23.80	11	25.0	20	23.52	36	24.0
Pyoderma	3	14.28	1	2.27	2	2.35	6	4.0
Gonorrhoea	-	-	1	2.27	2	2.35	3	2.0
Acne Vulgaris	2	9.52	1	2.27	6	7.05	9	6.0
Ring Worm	2	9.52	4	9.0	7	8.23	13	8.7
Wart	-	-	4	9.0	2	2.35	6	4.0
Impetigo	-	-	1	2.27	4	4.70	5	3.3
Trichomoniasis	-	-	-	-	4	4.70	4	2.7
NGU	-	-	1	2.27	6	7.04	7	4.7
Atopic Dermatitis	1	4.8	2	4.54	5	5.88	8	5.3
Pityriasis	1	4.8	-	-	2	2.35	3	2.0
Eczema	2	9.52	3	6.81	8	9.41	13	8.7
Seborrhoeic dermatitis	2	9.52	3	6.81	6	7.05	11	7.3
Alopecia	-	-	1	2.27	-	-	1	0.7
Psoriasis	1	4.8	-	-	1	1.17	2	1.3
Boil	1	4.8	2	4.54	1	1.17	4	2.7
Chancriod	-	-	1	2.27	1	1.17	2	1 .3
Chr.Paronychea	-	-	1	2.27	2	2.35	3	2.0
Herpes Progenital	-	-	1	2.27	2	2.35	3	2.0
Syphilis	-	-	1	2.27	1	1.17	2	1.3
Total	21	100.0 (14.0)	44	100.0 (29.33)	85	100.0 (56.70)	150	100.0

second most prevalent ailment in rural areas, accounting for 14.28% of reported cases.

In relation to the respondents' marital status, it was observed that a majority of unmarried individuals (53.3%) exhibited a higher prevalence of scabies (33.75%). Among the cohort of individuals who identified as married, a notable proportion of 39.3% were found to be afflicted with scabies, with a specific subset of 13.6% being affected by this condition. In contrast, individuals who were widowed (7.3%) experienced a higher prevalence of both ringworm and warts, with each condition affecting 18.8% of this population.

In relation to socio-economic status, it was noted that a significant majority of the respondents (59.3%) belonged to the lower socio-economic group and exhibited a prevalence of scabies at 29.2%. Among the medium socio-economic group (32.0%), scabies also constituted a substantial proportion, specifically 20.83%.Conversely, individuals belonging to higher socio-economic groups (8.7%) exhibited a greater prevalence of Eczema (23.0%).

Table-VI: Distribution of Respondents by Marital status and diseases

Disease	Marital status						Total	
	Married		Unmarried		Widow			
Uriticaria	1	1.7			-	-	3	2.0
Pigmentary Disorder	3	5.0	-	-	1	9.09	4	2.7
Chr. Folliculitis	1	1.7	-	-	1	9.09	2	1.3
Scabies	8	13.6	27	33.75	1	9.09	36	24.0
Pyoderma	4	6.8	2	2.5	-	-	6	4.0
Gonorrhoea	2	3.38	1	1.25	-	-	3	2.0
Acne Vulgaris	2	3.38	7	8.75	-	-	9	6.0
Ring Worm	7	11.9	4	5.0	2	18.18	13	8.7
Wart	4	6.8	-	-	2	18.18	6	4.0
Impetigo	2	3.38	3	3.75	-	-	5	3.3
Trichomoniasis	3	5.08	1	1.25	-	-	4	2.7
NGU	2	3.38	5	6.25	-	-	7	4.7
Atopic Dermatitis	4	6.68	4	5.0	-	-	8	5.3
Pityriasis	2	3.38	1	1.25	-	-	3	2.0
Eczema	3	5.08	9	11.25	1	9.09	13	8.7
Seborrhoeic dermatitis	4	6.66	6	7.5	1	9.09	11	7.3
Alopecia	1	1.7	-	-	-	-	1	0.7
Psoriasis	1	1.7	-	-	1	9.09	2	1.3
Boil	1	1.7	3	3.75	-	-	4	2.7
Chancriod	-	-	2	2.5	-	-	2	1.3
Chr.Paronychea	1	1.7	1	1.25	1	9.09	3	2.0
Herpes Progenital	3	5.08	-	-	-	-	3	2.0
Syphilis	-	-	2	2.5	-	-	-	-
Total	59	100.0 (39.3)	80	100.0 (53.3)	11	100.0 (7.3)	150	100.0

Table-VII: Distribution of Respondents by Socio- economic Status and diseases

Disease	Socio-economic Status						Total	
	Lower		Middle		Higher			
Uriticaria	3	3.37	-	-	-	-	3	2.0
Pigmentary Disorder	3	3.37	-	-	1	7.7	4	2.7
Chr.Folliculitis	2	2.22	-	-	-	-	2	1.3
Scabies	23	29.21	10	20.83	-	-	36	24.0
Pyoderma	4	4.49	2	4.16	-	-	6	4.0
Gonorrhoea	2	2.24	1	2.08	-	-	3	2.0
Acne Vulgaris	3	3.37	5	10.41	1	7.7	9	6.0
Ring Worm	8	9.0	4	8.33	1	7.7	13	8.7
Wart	1	1.12	4	8.33	1	7.7	6	7.0
Impetigo	1	1.12	2	4.16	2	15.38	5	3.3
Trichomoniasis	2	2.24	1	2.08	1	7.7	4	2.7
NGU	6	6.74	1	2.08	-	-	7	4.7
Atopic Dermatitis	2	2.22	-	-	1	7.7	3	2.0
Pityriasis	3	3.37	5	10.41	-	-	8	5.3
Eczema	6	6.74	4	8.33	3	23.0	13	8.7
Seborrhoeic dermatitis	3	3.37	6	12.5	2	15.38	11	7.3
Alopecia	1	1.12	-	-	-	-	1	0.7
Psoriasis	1	1.12	1	2.08	-	-	2	1.3
Boil	3	3.37	1	2.08	-	-	4	2.7
Chancriod	2	2.22	-	-	-	-	2	1.3
Chr. Paronychea	3	3.37	-	-	-	-	3	2.0
Herpes Progenital	2	2.24	1	2.08	-	-	3	2.0
Syphilis	2	2.24	-	-	-	-	2	1.3
Total	89	100.0 (59.33)	48	100.0 (32.0)	13	100.0 (8.7)	150	100.0

Of the participants surveyed, 36.0% reported having a family history of sickness. Among those individuals, the majority (46.29%) said that they were affected by Scabies.

Table-VIII: Distribution of Respondents by family history of diseases

Disease	Family history				Total	
	Yes		No			
Uriticaria	1	1.9	2	2.08	3	2.0
Pigmentary Disorder	1	1.9	3	3.12	4	2.7
Chr.Folliculitis	0	0.0	2	2.08	2	1.3
Scabies	25	46.29	11	11.45	36	24.0
Pyoderma	2	3.70	4	4.16	6	4.0
Gonorrhoea	2	3.70	1	1.04	3	2.0
Acne Vulgaris	3	5.6	6	6.25	9	6.0
Ring Worm	6	11.11	7	7.29	13	8.7
Wart	0	0.0	6	6.25	6	4.0
Impetigo	0	0.0	5	5.20	5	3.3
Trichomoniasis	3	5.6	1	1.04	4	2.7
NGU	1	1.9	6	6.25	7	4.7
Atopic Dermatitis	0	0.0	3	3.12	3	2.0
Pityriasis	3	5.6	5	5.20	8	5.3
Eczema	2	3.70	11	11.45	13	8.7
Seborrhoeic dermatitis	3	5.6	8	8.33	11	7.3
Alopecia	1	1.9	-	-	1	0.7
Psoriasis	0	0.0	2	2.08	2	1.3
Boil	-	-	4	4.16	4	2.7
Chancriod	-	-	2	2.08	2	1.3
Chr.Paronychea	-	-	3	3.12	3	2.0
Herpes Progenitalis	1	1.9	2	2.08	3	2.0
Syphilis	-	-	2	2.08	2	1.3
Total	21	100.0 (14.0)	44	100.0 (29.33)	150	100.0

Discussion:

Skin and venereal infections are significant public health issues that affect the human population. These phenomena are prevalent throughout many age groups, genders, and social strata within society, hence contributing to community health challenges in emerging nations. Individuals residing in unsanitary and substandard housing conditions, urbanized areas, and regions affected by environmental pollution, coupled with limited access to education, have been shown to contribute to the movement of commercial sex workers. Additionally, the excessive utilization of chemicals and cosmetics has been identified as a contributing factor to this phenomenon. The present study presents an analysis of the disease patterns observed in patients visiting the Outpatient Department (OPD) of the Skin and Venereal Diseases (VD) department at 250 Bedded General Hospital, Jamalpur.

The study included a total of 150 patients, with males accounting for 54.7% and females accounting for 43.3% of the sample. The male-to-female ratio was 1.2:1. A significant proportion, exceeding 40% of the patient population was under the age bracket of less than 20 years, a finding consistent with numerous another research[16-18].

Among the patients, 86% had skin diseases and 14% VD diseases. Regarding skin diseases highest proportion were Scabies (24%), followed by ring worm and Eczema each of which obtained 8.7% then seborrheic dermatitis (7.3%) with least percentage of Alopecia (0.7%). 124 (82.7) were diagnosed by clinical manifestations and 26 (17.3) were diagnosed by laboratory investigations.According to several research, it is evident that fungal or bacterial infections are the predominant types of infective dermatoses, as opposed to parasitic and protozoal infestations[19,20].

In case of sexually transmitted disease, NGU obtained highest proportion (4.7%) with least percentage of syphilis and chancriod (each with 1.3%).This result was compatible to a that 22.08% of patients were Scabies, followed by Fungal infection (20.91%), Eczema (19.29%), Seborrhoeic dermatitis (8.80%) psoriasis (0.19%) and NGU 3.33%[21]. But it is inconsistent to another study that higher proportion were Eczema (19.73%) followed by Scabies (18.0%) in first chamber. On the other hand in the second chamber higher sufferers were Fungal infection (30.8%) followed by Scabies (29.3%)[22].

It was found the irrespective of age below 40 years, scabies constitute the bulk of the disease being responsible for 24.0% of all the disorders with none in the age group of 40 years and above. The proportion of psoriasis was 1.3%, In another study,it was 1.5% which consistent to the present study[23]. Recurrence of disease was high (25.0%) below the age of <10 years probably due to higher proportion of respondents in that age group,

Irrespective of residence, main sufferers were scabies. It signifies that residence had no influence on scabies but regarding pyoderma which contain 14.28% came from rural area with least proportion from semi-urban (2.27) and urban side (2.35).It was evident in this study that out of total respondents more than 53% were unmarried. They were the main (33.75%) victims of Scabies. This was probably due to the fact that the major bulk of the unmarried population were students with age group below 20 years and have poor knowledge regarding prevention of disease.

Regarding socio-economic status, it was observed that only 8.7% of the patients were from higher class. It was possibly due to personal shyness and excessive rush in the hospital or may be due to their ability for treatment in private clinics by specialists. Highest percentage (59.33%) were came from low socio-economic group, of them scabies occupied the higher percentage (29.2%).This study is comparable with astudy found that poor income group (54.46%) were more affected with scabies and least from higher income group (9.76%)[24].

From these observation it can be said that scabies is an endemic disease in our Country under certain prevailing conditions, such as lack of personal hygiene, under nutrition, bad housing, low socio-economic condition etc. this was reflected in the present series, as the majority of the patients belong to low income group are treated in hospital out door. So, the present study will try to give approximate picture of the whole Country.

Conclusion:

Skin and venereal diseases (S & VD) are highly contagious and often occur in populations ravaged by war, famine, or disease, where personal hygiene becomes less important. These diseases cause less mortality, leading patients to seek specialist help late. Poor socio-economic conditions often result in more scabies, ring worm, and eczema, which can be preventable through improved personal hygiene, health education, and better housing conditions. The majority of respondents were students under 20, with unmarried individuals being more affected. The study's small sample size does not reflect the entire population of Bangladesh, but scabies was the most frequently observed skin disease in the 250 Bedded General Hospitals, Jamalpur. The abundance of infection and parasitic skin diseases and STDs may indicate a major public health problem in Bangladesh. Addressing these issues seriously and sympathetically is crucial to ensure the success of the "Health for all by the year 2000 AD" program.

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Original Article

Comparison in Vitro the Antioxidant Activity Between Olmesartan and Cilnidipine by Nitric Oxide (NO) Assay

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Abstract:

Background:*Hypertension is a leading cause of morbidity and mortality and even small reduction of blood pressure can significantly reduce the associated cardiovascular complication and end organ damage. (Sudesh, Pawan 2006)Antioxidants are the agent, which scavenge and quench the free radicals and prevent the damage caused by them. (Seethalakshmi 2015).*

Objective: *Here quasi experimental type of study was done to compare the antioxidant effect between two antihypertensive drug and they are olmesartan (angiotensin receptor blocker) and cilnidipine (calcium channel blocker).*

Materials and Methods: *For comparing the antioxidant effect of olmesartan and cilnidipine, NO assay was done. On NO assay result of absorbance of both drugs was taken by using spectrophotometer. Percentage of inhibition was calculated by using recommended formula. By NO assay the antioxidant activity of olmesartan was more than cilnidipine.*

Results: *The antioxidant activity of olmesartan was consistent and concentration dependent by NO assay, whereas the antioxidant activity of cilnidipine was also significant but non-concentration dependent. For statistical analysis an unpaired student's t-test was done. The P value was <.005 on NO Assay. Which indicate that the result was significant.*

Conclusion: *The antioxidant effect between two antihypertensive drug and they are olmesartan (angiotensin receptor blocker) and cilnidipine (calcium channel blocker) was significant.*

Keywords: *Olmesartan, Cilnidipine, Nitric Oxide (NO)*

Introduction:

Hypertension is a major risk factor of coronary artery disease. It is a chronic medical condition that is rarely accompanied by any symptoms[1,2,3]. It is usually identified through screening or when the patient is seeking for an unrelated problem. It's also a major risk factor for myocardial infarction, heart failure, stroke, peripheral arterial disease, aortic aneurysm, and is a cause of chronic kidney disease. Elevation of arterial blood pressure is associated with a shortened life expectancy[4]. The main characteristic of arterial hypertension is a systolic pressure over 140 mm hg and a diastolic pressure over 90 mm hg[5]. Endothelial dysfunction is associated with essential hypertension and other risk factors for cardiovascular disease[6], resulting in a self-perpetuating lipid peroxidation reaction, producing free radicals, which are responsible for oxidative stress[7]. Such disturbance in oxidant antioxidant reaction within endothelial cells, play an important roles in the pathogenesis of numerous cardiovascular diseases[8]. Oxidative stress also activates renin-angiotensin system, resulting in production of AT-II, a potent vasoactive peptide. Increased AT (angiotensin)-II production above normal levels is able to induce vascular remodeling and endothelial dysfunction, as well as increases in

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level of blood pressure. At the cell level, AT-II acts as a potent NOX (NADPH oxidase) activator, thus leading to enhancement of ROS production. The effect of AT-II is not only confined to increasing NADPH oxidase activity but also up regulating of SOD (super oxide dismutase), likely as a compensation mechanism against ROS increase. All of these resulting in hypertension. Besides renin-angiotensin system and some hormones like acetylcholine, Norepinephrine, Prostaglandins and Homocysteineare also responsible for hypertension[9].

Halliwell and Gutteridge (2007) defined antioxidants as ‘‘any substance that delays, prevents or removes oxidative damage to a target molecule’’. In the same year Khlebnikovet al. defined antioxidants as ‘any substance that directly scavenges ROS(Reactive Oxygen Species) or indirectly acts to up-regulate antioxidant defenses or inhibit ROS production[10]. Endogenous compounds in cells can be classified as enzymatic antioxidants and non-enzymatic antioxidants. The major antioxidant enzymes directly involved in the neutralization of ROS and RNS (Reactive Nitrogen Species) are: superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx) and glutathione reductase (GRx). SOD, the first line of defense against free radicals, catalyzes the dismutation of superoxide anion radical ($O2^{\bullet -}$) into hydrogen peroxide (H2O2) by reduction. The oxidant formed (H2O2) is transformed into water and oxygen (O2) by catalase (CAT) or glutathione peroxidase (GPx). Besides hydrogen peroxide, GPx also reduces lipid or nonlipidhydroperoxides while oxidizing glutathione (GSH). The non-enzymatic antioxidants are also divided into metabolic antioxidants and nutrient antioxidants. Metabolic antioxidants belonging to endogenous antioxidants, are produced by metabolism in the body, such as lipoic acid, glutathione, L-ariginine, coenzyme Q10, melatonin, uric acid, bilirubin, metal-chelating proteins, transferrin, etc. While nutrient antioxidants belonging to exogenous antioxidants, are compounds which cannot be produced in the body and must be provided through foods or supplements, such as vitamin E, vitamin C, carotenoids, trace metals (selenium, manganese, zinc), flavonoids, omega-3 and omega-6 fatty acids, etc.[11]

ACEI (angiotensin converting enzyme inhibitor) and ARB (angiotensin receptor blocker) both improve endothelial function[6]. All of the ARBs tested (losartan, olmesartan, telmisartan, valsartan) caused an increased in endothelial NO release compared with untreated cells. Olmesartan had the greatest effect on NO release as it enhanced NO concentrations by 30%[12]. Calcium channel blockers, on the other hand which are antihypertensive and anti anginal drugs, also exert antioxidant and cyto protective effect against free radical mediated vascular injury[13].

Cilnidipine, a dihydropyridine (DHP) derivative of calcium channel blocker that inhibits both N-type VDCCs (Voltage dependent calcium channels), has been shown to be more effective than blockers of L-type VDCCs alone in patients with essential hypertension. As N-type VDCCs are predominantly distributed in the sympathetic nervous system and regulate the noradrenaline release from the sympathetic nerve endings. N-type VDCCs may be one of the key players in agonist-induced ROS production in endothelial cells, but not in nerve terminals, directly contribute to ROS production[14]. In the cardiovascular system, L-type Ca2+ channels are predominantly expressed in the heart and vessels, which regulate cardiac contractility, sinus nodal function and vascular tone[15]. Dihydropyridines on cardiac L-type Ca2+ channels decreases plasma levels of vasoconstrictor, thromboxane A, elevates vasodilators like prostacyclin, Nitric Oxide (NO), increases aortic tissue cyclic guanosine monophosphate (cGMP) and cyclic adenosine monophosphate (cAMP). It also increases NO production in pulmonary circulation in patients of essential hypertension. It is known to up regulate the activity of Superoxide Dismutase[15,16].

Both angiotensin converting enzyme inhibitors (ACEIs) and angiotensin II (Ang II) type 1 receptor antagonists (ARB) are essential drugs for such patients, and have been reported to restore decreased endothelial function by improving NO availability[6]. The covalent structure of olmesartan includes a hydroxyl group and an intermediate-sized alkyl substituent (isopropyl) at the 4-position, which undergoes hydrogen bonding with the carboxylate anion at the 5-position of the imidazole ring, allowing the isopropyl substituent to interact with a hydrophobic region on the AT1 receptor. The other ARBs also interact with a hydrophobic region of theAT1 receptor[12]. The presence of the hydroxyl group may contribute to free radical scavenging properties for olmesartan, including chain-breaking antioxidant activity. In particular, the hydroxyl group may provide proton donation and electron stabilization properties that reduce free radical propagation resulting in loss of NO bioavailability through formation of peroxynitrite ion. Also, it is possible that olmesartan attenuates the activation of

NADPH oxidase and decreases superoxide generation in the absence of angiotensin II, leading to an increase in NO bioavailability[17]. Cilnidipine is a newly synthesized dihydropyridine (DHP) derivative that inhibits both N-type and L-type VDCCs (Voltage dependent calcium channels). It is more effective than blockers of L-type VDCCs alone in patients with essential hypertension[18]. With this unique dual L/N type blocking property, cilnidipine might have clinical advantages over other CCBs with respect to cardiovascular protection[19]. N-type VDCCs may be one of the key players in agonist-induced ROS production in endothelial cells, but not in nerve terminals, directly contribute to ROS production[14]. L-type Ca2+ channels are predominantly expressed in the heart and vessels, which regulate cardiac contractility, sinus nodal function and vascular tone[15]. Dihydropyridines on cardiac L-type Ca2+ channels decreases plasma levels of vasoconstrictor, thromboxane A, elevates vasodilators like prostacyclin, Nitric Oxide (NO), increases aortic tissue cyclic guanosine monophosphate (cGMP) and cyclic adenosine monophosphate (cAMP). It also increases NO production in pulmonary circulation in patients of essential hypertension. It is known to up regulate the activity of Superoxide Dismutase[15,16]. It has been estimated that electron donor substituents in positions 2- and 6- of 1, 4-DHP cycle usually promote oxidation, while electron acceptor substituents promote quench oxidation. Stronger electron acceptors in positions 3- and 5- also significantly quench oxidation. These estimations are based for the chemical, enzymatic, and electrochemical oxidation of 1, 4-DHP derivatives[20]. The dihydropyridine ring of cilnidipine has also proton donating mechanism that quench the free radicals also by chain breaking mechanism[21].

In context to the treatment of hypertension, olmesartan and cilnidipine are the new generation angiotensin ll receptor and calcium channel blocker. They also possess some antioxidant property. But regarding this property which one is superior is not studied, so far searching through papers in our country. So the research work was concentrated to find out the antioxidant property of olmesartan and cilnidipine, through in vitro study by which a hypertensive patient may get added benefit[4].

Materials and Methods:

The drug sample used here was olmesartan and cilnidipine, collected from the local market. The chemical Reagent used here was Sodium Nitroprusside, Griess reagent, Absolute Alcohol and Phosphate buffer solution, also purchased from the local market.

Procedure:

Drug Samples Preparation**:**
For 1 mg/ml stock solutions of olmesartan and cilnidipine were prepared separately with ethanol. For these purpose100 mg 0f each tablet was crushed at first and then 100 ml of ethanol was mixed with that 100 mg of each crushed drug sample to make solution. Now the mixture was stirred with vortex mixer for 10 minute. These solution then filtered with #41 whatman filter paper. Filtered solution now centrifuge at 4000 rpm for 10 minute. Centrifuged solution, then collected on a reagent bottle. So, 1 ml of solution now contain 1 mg of drug.

NO (Nitric Oxide) Assay:

Preparation of Sodium Nitroprusside Solution for NO assay:
As molecular weight of Sodium nitroprusside 261.918 gm /L. For preparation of 10mM Sodium nitroprusside solution in phosphate buffer solution, 262 mg of sodium nitriprusside was mixed with 100 ml of phosphate buffer solution and stirred until it dissolve completely

Preparation of Griss reagent for NO assay:
Griess reagent contains 1% Sulphanilamide, 2% Phosphoric acid and 0.1% Naphthyl ethylene diaminedihydrochloride in 100 ml of distilled water. Molecular weight of Sulphanilamide, Phosphoric acid and Naphthyl ethylene diaminedihydrochloride respectively are 172.20 gm/mol, 97.994 gm/mol and 259.174gm/mol.

Determination of Antioxidant activity by Nitric oxide (NO) free radical scavenging Assay:
3ml of reaction mixture containing sodium nitroprusside (10mM in phosphate buffer solution) and serial dilutions (100 µg to 1000µg) of the sample drugs olmesartan and cilnidipine solution was incubated separately at 37^0C for 4 hour. This was estimated by using Griss reagent and the absorbance was read at 540 nm using colorimeter. Control sample was prepared by mixing 1 ml of solvent (Ethanol) + 2 ml of sodium nitroprusside + 0.5 ml of Griss reagent. The percentage scavenging of Nitric oxide free radical activity of olmesartan and cilnidipine were calculated by using the formula:
% of inhibition = [Absorbance of control –Absorbance of test sample] X 100 / Absorbance of control.

Table-I: Preparation of sample for Nitric oxide Assay

Test tube	Drug solution	Solvent	Sodium nitroprusside in phosphate buffer soln	Control sample	Blank
1	.1ml	.9ml	2ml	-	
2	.2ml	.8ml	2ml	-	
3	.3ml	.7ml	2ml	-	
4	.4ml	.6ml	2ml	-	
5	.5ml	.5ml	2ml	-	
6	.6ml	.4ml	2ml	-	
7	.7ml	.3ml	2ml	-	
8	.8ml	.2ml	2ml	-	
9	.9ml	.1ml	2ml	-	
10	1ml	-	2ml	-	
11	-	-	-	1ml solvent +2ml Na Nitroprusside +.5mlreagent	-
12	-	-	-	-	Griess reagent

Statistical Analysis:

The results were calculatedas means ± Standard deviation (SD). The percentage of inhibition of Olmesartan and Cilnidipine by Nitric Oxide (NO) Assay was compared with Students Unpaired t-test. A P-value less than 0.05 was considered to be statistically significant.

Results and Observations:

On Nitric Oxide Assay, Olmesartan exhibited good free radical scavenging activity with nitric oxide at lower concentrations (100 to 600 µg) and also at higher concentrations (800 to 1000 µg). The radical scavenging activity of olmesartan was keep rising and highest activity was found at 1000 µg. Similarly cilnidipine exhibited moderate free radical scavenging activity with nitric oxide at lower concentrations (100 to500 µg). The radical scavenging activity was insignificant or plateau at 600 to1000 µg drug concentrations, (Table-II).

Table-II: Nitric oxide free radical scavenging assay

Test tube no.	Concentration of drug (µg)	Olmesartan (% of inhibition)	Cilnidipine (% of inhibition)
1	100	65	47
2	200	70	54
3	300	74	52
4	400	73	66
5	500	70	68
6	600	73	65
7	700	74	66
8	800	77	65
9	900	78	63
10	1000	81	68

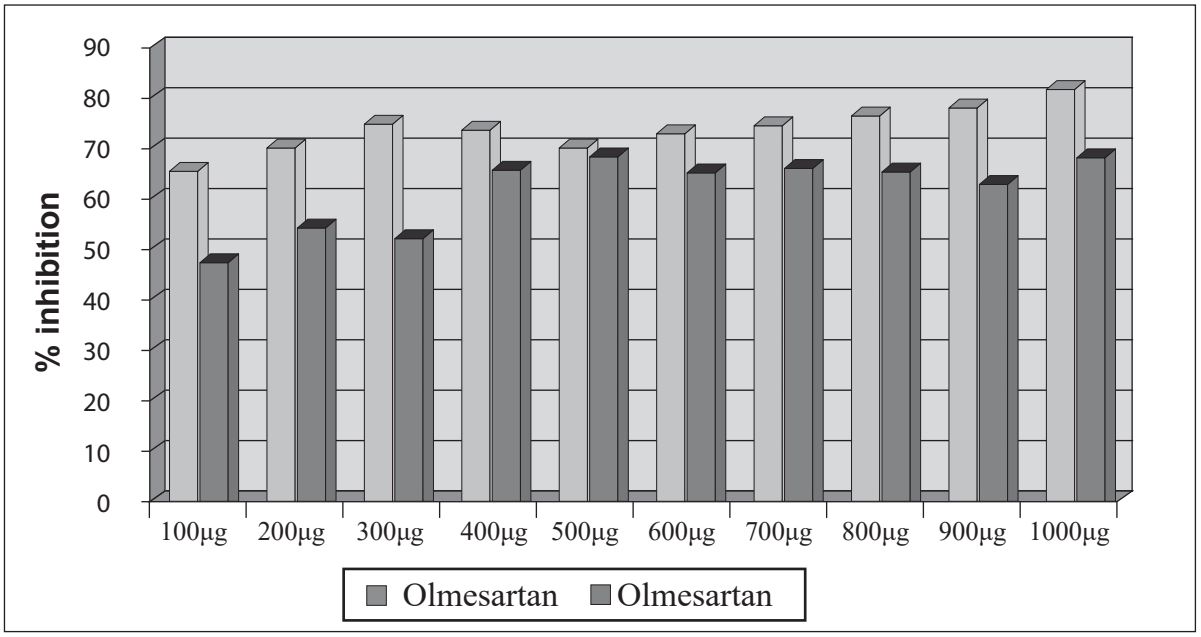

Figure-2: Comparison of Free radical scavenging activity of olmesartan and cilnidipine by Nitric Oxide assay.

Table-III: Statistical analysis of DPPH Assay

Drug	Mean±SD	df	Table Value	t-test value	P-value
Olmesartan	63.6±7.15	18	2.10	6.67	<0.05
Cilnidipine	48.3±3.00	18	2.10		

Table-IV: Statistical analysis of NO Assay

Drug	Mean ± SD	df	Table Value	t-test value	p-value
Olmesartan	73.5± 4.5	18	2.10	4.48	< 0.05
Cilnidipine	61.4 ± 7.5	18	2.10		

It is clearly observed that Olmesartan has more free radical scavenging activity than Cilnidipine and in the NO Assay, P-value was <0.05 with unpaired students t-test, Which was considered to be both Assay was statistically significant.

Discussions:

The study observation showed that angiotensin receptor blocker, olmesartan has better antioxidant activity than calcium channel blocker, cilnidipine by NO assay. The antioxidant effect of olmesartan is consistent and concentration dependent whereas antioxidant effect of cilnidipine is inconsistent and not concentration dependent on NO assay. Therefore, olmesartan though it is an antihypertensive drug, yet may have some antioxidant effect.

In a study conducted by Rajathilagam T , 2015 found that, DPPH free radical scavenging assay of olmesartan showed a gradual increase in free radical scavenging activity in a concentration dependent manner upto 800 µg. Amlodipine though showed more significant free radical scavenging activity upto 800 µg concentration it was not concentration dependent. Then there was a slight decrease in percentage inhibition for both olmesartan and amlodipine at maximal drug concentration of 1000 µg. Olmesartan exhibited good free radical scavenging activity with nitric oxide at lower concentrations (10 & 50 µg) and also at higher concentrations (400, 800, 1000µg). The radical scavenging activity was insignificant at 100 & 200 µg drug concentrations. Similarly amlodipine exhibited good free radical scavenging activity with nitric oxide at lower concentrations (10 & 50 µg) and also at higher concentrations (800, 1000 µg). The radical scavenging activity was insignificant at 200 & 400µg drug concentrations.In this in vitro study it has been found that angiotensin receptor blocker, olmesartan has better antioxidant activity than calcium channel blocker, amlodipine.

In a study by Seethalakshmi S, 2015 found that, DPPH free radical scavenging assay of Olmesartan showed a gradual increase in free radical scavenging activity in a concentration dependent manner up to 800 µg. Then there has been a slight decrease in percentage inhibition at a maximal drug concentration of 1000 µg. Olmesartan exhibited good free radical scavenging activity with NO at lower concentrations (10 and 50 µg) and also at higher concentrations (400, 800, 1000 µg). The radical scavenging activity was insignificant at 100 and 200 µg drug concentrations. In our present study olmesartan showed significant free radical scavenging activity both on lower and also on higher concentration of drug by NO assay.

From the study by Anandpriya V and Chellathai D., 2016, found that Angiotensin receptor blockers has got anti-oxidant effect. They conducted a comparative study between Valsartan and Telmisartan against Ascorbic acid about their antioxidant effect, both the drug showed significant free radical scavenging activity by NO Assay. The free radical scavenging activity showed that percentage of inhibition increases with increase in concentrations of both the drugs just like the present study[22].

It has been observed that olmesartan and cilnidipine both exhibit antioxidant activity independent of their antihypertensive effects but the free radical scavenging activity of olmesartan was always more than that of cilnidipine. There are not many in vitro studies to analyze which drug is a better antioxidant though, NO assay reveals that the antioxidant and antiradical activity was more on olmesartan compared to cilnidipine due to its structural ability. Another few assay can be done both in vitro and in vivo to establish this finding.

Conclusion:

Free radical mediated oxidative stress has been implicated in the pathology of a wide variety of clinical disorders. Antioxidants are agents which scavenge the free radicals and prevent the damage caused by them. Olmesartan (Angiotensin II receptor) and cilnidipine (calcium channel blockers) are used in the treatment of hypertension has also been reported to protect organs such as kidney , heart and brain through their antioxidant effect and the antioxidant effect of olmesartan was always more than cilnidipine. It is generally thought that, the mechanism of their antioxidant effects is due to their structural modification. For this reason there was in vitro study (DPPH assay) was done to confirm the pharmacological antioxidant activity of a commonly used Angiotensin receptor blocker Olmesartan and calcium channel blocker cilnidipine.

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Original Article

Role of Ultrasonography and Core Biopsy in Detecting Breast Cancer: A Single-Center Study in Rangpur

***Suravee AN[1], Imran SA[2], Afrose T[3], Islam SMN[4], Roy SK[5]**

Abstract:

Background: *Breast cancer is the predominant form of cancer in women globally, while its occurrence in men is infrequent. Breast cancer can manifest in several regions of the breast, such as the ducts responsible for transporting milk to the nipple (ductal carcinoma), the lobules responsible for milk production (lobular carcinoma), or other tissues within the breast.*

Objective: *The objective of this study was to find out the Role of Ultrasonography and core biopsy in detecting breast cancer.*

Materials and Methods: *This prospective observational study, was carried out between June 2022 and December 2023 at the private chamber, Rangpur, Bangladesh. By the inclusion criteria, a total of fifty samples were included by purposive sampling. During the care processes, such as selecting a therapy and maintaining effective communication between the patient and the physician, the participants had finished their primary treatment, which consisted of surgery, radiation therapy, and/or chemotherapy.*

Results: *Among the 50 patients maximum of 14 patients (28%) between the ages of 28 and 37, 13 patients (26%) between the ages of 38 and 47, 11 patients (22%) between the ages of 48 and 57, 10 patients (20%) between the ages of 58 and 67, and only 1 patient (2%), between the ages of 18 and 27 and 68 and 77.only 12 patients (24%) had a positive family history of cancer, whereas a majority of 38 cases (76%) did not have any positive family history of cancer. In this study, 26 cases (52%) had hypoechoic areas in USG, while 24 cases (48%) had mixed echogenicity. Only 22 cases (42%) had an unclear margin, while 29 (58%) had clear margins. The majority (44%) had no calcification in their report.In our study, the USG assessments indicated a heightened risk for malignancy in 20 patients, constituting 40% of the cases, while the larger portion of 30 cases (60%) displayed lower risk levels for malignancy.Meanwhile, 15% of patients were diagnosed with invasive ductal carcinoma and 10% exhibited invasive lobular carcinoma.*

Conclusion: *Ultrasonography (USG) offers promise as an initial breast cancer screening tool, providing an early glimpse into malignancy risks. Its cost-effectiveness makes it viable for rural or resource-limited areas, initiating the diagnostic process by identifying concerning areas. Yet, the superior precision of Core Biopsy surpasses USG's initial assessment, delivering definitive results crucial for accurate diagnosis. Core Biopsy's ability to offer detailed histological insights into breast lesions ensures a higher accuracy in detecting cancer presence and type. While more invasive and potentially costly, Core Biopsy remains the gold standard, especially when precise diagnosis is pivotal in breast cancer cases.*

Keywords: Breast carcinoma, USG, Corebiopsy

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Introduction:

Breast cancer is a significant health concern affecting millions of women worldwide. Its early detection is crucial for successful treatment and improved outcomes. In this pursuit, medical advancements have introduced various screening methods, among which Ultrasonography (USG) and Core Biopsy play pivotal roles. These technologies have revolutionized the approach to detecting and diagnosing breast cancer, offering precision, accuracy, and early intervention opportunities. Ultrasonography, commonly known as ultrasound, has emerged as a valuable imaging technique in breast cancer screening. Unlike mammography, which uses X-rays to produce images,

ultrasound employs high-frequency sound waves to visualize breast tissue. This non-invasive procedure is particularly useful in evaluating breast abnormalities detected during physical examinations or mammograms. USG aids in differentiating between benign and malignant lesions, providing real-time imaging and helping guide further diagnostic procedures.[1,2,3]

One of the key advantages of ultrasound is its ability to distinguish between fluid-filled cysts and solid masses, aiding in the characterization of breast abnormalities. Solid masses identified through mammography or physical examination often require further evaluation to determine their nature. USG assists in this process by offering detailed images, helping clinicians assess the size, shape, and characteristics of suspicious lesions.[4] Moreover, ultrasound plays a crucial role in specific cases where mammography may not be as effective, such as in younger women with dense breast tissue. Dense breasts can obscure abnormalities on mammograms, making ultrasound an essential complementary tool for detecting cancer in this demographic. Its use in combination with mammography enhances the overall sensitivity of breast cancer detection, especially in populations with dense breast tissue.However, while ultrasound is a valuable screening tool, its limitation lies in differentiating between benign and malignant solid masses definitively. This is where Core Biopsy emerges as an essential diagnostic procedure in the realm of breast cancer detection.[5,6] Core Biopsy is a minimally invasive procedure used to obtain tissue samples from suspicious breast lesions identified during imaging studies like mammography or ultrasound. It involves extracting small tissue cores using a hollow needle, providing accurate histological information for definitive diagnosis. This procedure is typically performed under local anesthesia and guidance from imaging techniques like ultrasound, ensuring precision and minimizing patient discomfort.[7,8]. The role of Core Biopsy in breast cancer screening cannot be overstated. It allows for a more definitive assessment of suspicious lesions, aiding in distinguishing between benign and malignant tumors with a high degree of accuracy. The extracted tissue samples undergo pathological analysis, providing detailed information about the nature and characteristics of the lesion, crucial for appropriate treatment planning.Furthermore, Core Biopsy significantly reduces the need for surgical excision of benign lesions. By accurately identifying benign masses, it alleviates unnecessary surgical procedures, thereby reducing patient anxiety and healthcare costs. Moreover, for confirmed malignant tumors, Core Biopsy results serve as the foundation for determining the cancer type, grade, and hormone receptor status, guiding personalized treatment strategies[9]. The integration of Ultrasonography and Core Biopsy has transformed the landscape of breast cancer diagnosis and management. Their combined use offers a comprehensive approach to screening, allowing for earlier detection, accurate diagnosis, and tailored treatment plans, ultimately improving patient outcomes.

Materials and Methods:

This prospective observational study, was carried out between June 2022 and December 2023 at The Private Chamber in Rangpur, Bangladesh. By the inclusion criteria, a total of fifty samples were included by purposive sampling. During the care processes, such as selecting a therapy and maintaining effective communication between the patient and the physician, the participants had finished their primary treatment, which consisted of surgery, radiation therapy, and/or chemotherapy. Inclusion Criteria: Patients over 18 years, Patient with palpable breast lesion. Exclusion Criteria: Patients below 18 years. The used checklist consists of four parts. The first part included socio-demographic data like age, occupation, and marital status. The second part included questions related to the duration of symptoms, and the presence of a positive family history. Different Ultrasonography findings and Core biopsy findings were observed in the third part. The data were entered into the Excel and SPSS 23. The significance level index was 0.05.

Results:

We highlighted the age range of our cases in Table-I. We identified a maximum of 14 patients (28%) between the ages of 28 and 37, 13 patients (26%) between the ages of 38 and 47, 11 patients (22%) between the ages of 48 and 57, 10 patients (20%) between the ages of 58 and 67, and only 1 patient (2%), between the ages of 18 and 27 and 68 and 77.

Table-I: Age distribution. (n=50)

Age	Frequency	Percentage (%)
18-27	1	2
28-37	14	28
38-47	13	26
48-57	11	22
58-67	10	20
68-77	1	2

The occupation of our cases is shown in Table-II. Out of the total number of cases, 45 (90%) were housewives, while the remaining 5 cases (10%) had other jobs.

Table-II: Occupation of the cases. (n=50)

Occupation	Frequency	Percentage (%)
Housewife	45	90
Others	5	10

In Table-III, it is observed that out of the total cases, 43 individuals (86%) were married, while just 7 patients (14%) were single.

Table-III: Marital status of cases. (n=50)

Marital status	Frequency	Percentage (%)
Married	43	86
Unmarried	7	14

The duration of symptoms is indicated in Table-IV. Out of the total number of patients, 22 cases, which accounts for 44% of the sample, had symptoms for a duration of 6 months to 1 year. 18 patients experienced symptoms for less than 6 months, while the remaining 10 cases (20%) had symptoms persisting for over 1 year.

Table-IV: Duration of symptoms

Duration	Frequency	Percentage (%)
<6 months	18	36
6 months -1 year	22	44
>1 year	10	20

Figure 1 revealed that out of the 50 patients, only 12 patients (24%) had a positive family history of cancer, whereas a majority of 38 cases (76%) did not have any positive family history of cancer.

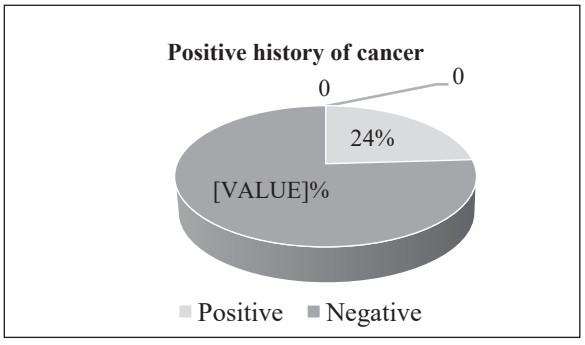

Figure-1: Family history of cancer

Table-V displays common ultrasonography results of several types of breast lesions. In this study, 26 cases (52%) had hypoechoic areas in USG, while 24 cases (48%) had mixed echogenicity. Only 22 cases (42%) had an unclear margin, while 29 (58%) had clear margins. The majority (44%) did not have any calcification in their report.

Table-V: Different Ultrasound findings of different types of breast lesions

USG findings	Frequency	Percentage (%)
Hypo-echo	26	52
Mixed-echo	24	48
Unclear margin	21	42
Clear margin	29	58
Calcification-absent	28	56
Calcification-present	22	44

Figure 2 revealed that 20 patients (40%) presented a high risk for malignancy determined by USG, while the bulk of 30 cases (60%) showed lower risk for malignancy.

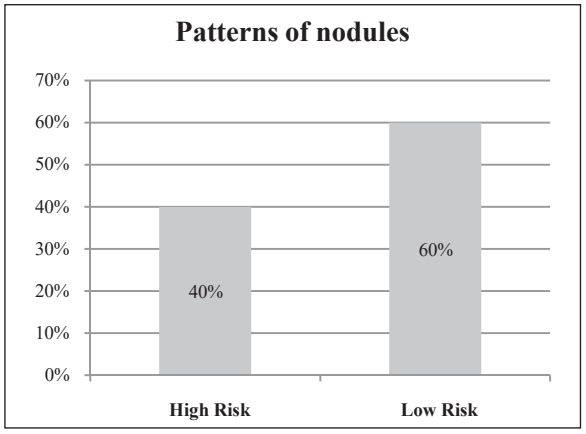

Figure 2: USG findings of breast lesions

Figure 3 shows core biopsy results of the patients where 15% had invasive ductal carcinoma, 10% had invasive lobular carcinoma. Chai squire test shows p<.05 which was significant.

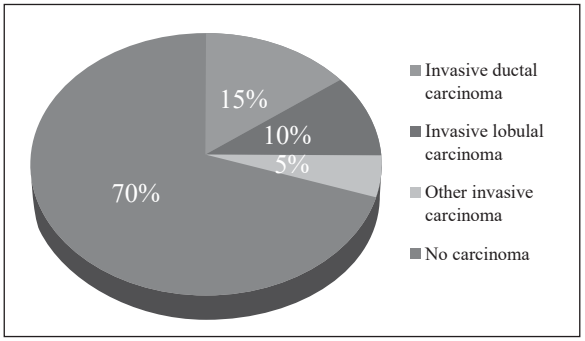

Figure-3: Core Biopsy findings of breast lesions

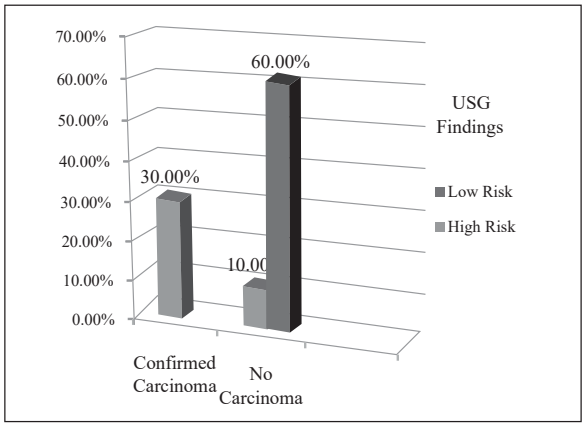

Figure-4: Bar diagram shows relation of ultrasonogram findings and core biopsy findings.

Out of 40% high risk USG nodules 30% were confirmed carcinoma by core biopsy.

Table-VI shows the correlation between USG findings indicating a higher risk for malignancy and the subsequent biopsy results is a crucial aspect to consider.

Table -VI: USG and Core Biopsy Findings

Chi-Square Tests					
	Value	**df**	**Asymptotic significant (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	32.143[a]	1	.000		
Continuity Correction[b]	28.671	1	.000		
Likelihood Ratio	38.593	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	31.500	1	.000		
N of Valid Cases	50				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.00
b. Computed only for a 2X 2 table

Discussion:

We observed a total of 14 patients, constituting 28% of the sample, whose ages ranged from 28 to 37 years. 13 patients, accounting for 26% of the total, were aged between 38 and 47. 11 patients (22% of the total), were aged between 48 and 57. 10 individuals (20%) were within the age range of 58 to 67, while just 1 patient (2%) is between the ages of 18 to 27 and 68 to 77.

Out of the total participants in our study, 45 individuals (90%) were housewives, whilst the remaining 5 cases (10%) were engaged in different occupations.

In our study, 43 individuals (86%) were married, while just 7 patients (14%) were single.

Among the entire patient population, 22 cases, or 44% of the sample, experienced symptoms lasting from 6 months to 1 year. 18 patients had symptoms lasting for less than 6 months, whilst the remaining 10 cases (20%) had symptoms that persisted for more than 1 year.

In our study, only 12 patients (24%) showed a positive familial predisposition to cancer, while the majority of 38 cases (76%) did not exhibit any such familial predisposition.

Typical ultrasonography findings for many types of breast abnormalities. Within this investigation, 26 cases (equivalent to 52% of the cases) exhibited hypoechoic regions in ultrasonography (USG), whereas 24 cases (equivalent to 48% of the cases) had a combination of echogenicity. Out of the total of 22 cases, 42% had an unclear margin, whereas the remaining 29 cases, accounting for 58%, had well-defined margins. 44% of the patients had no calcification in their report.

The findings from our study shed light on the distribution of risk levels for malignancy among the patients studied. It's noteworthy that 40% of the cases were identified as presenting a higher risk for

malignancy based on the USG evaluations. Conversely, the majority, accounting for 60% of the cases, exhibited lower risk levels. This distribution emphasizes the varying degrees of suspicion conveyed by ultrasound imaging in identifying potential malignancies within the studied cohort. Out of 40% high risk USG nodules 30% were confirmed carcinoma by core biopsy.

Moving on to the core biopsy results provide deeper insights into the nature of the identified lesions. Among the patients who underwent core biopsy, 15% were diagnosed with invasive ductal carcinoma, while 10% exhibited invasive lobular carcinoma. These biopsy findings elucidate the diversity in the types of cancer detected within the studied population. The presence of both invasive ductal and lobular carcinoma highlights the heterogeneous nature of breast cancer and the importance of precise histological analysis in diagnosis.

In comparison to existing studies, our findings suggest a similar trend in the prevalence of invasive ductal carcinoma, albeit with potential variations in percentages[10]. Additionally, the incidence of invasive lobular carcinoma in our study aligns with or deviates slightly from previously reported figures in other research. These comparisons underline the consistency or divergence in our results concerning the prevalence of different types of breast cancer lesions compared to findings in the literature.

Moreover, the correlation between USG findings indicating a higher risk for malignancy and the subsequent biopsy results is a crucial aspect to consider. The percentage of high-risk USG cases that indeed manifested as invasive carcinomas upon biopsy could serve as a metric to evaluate the predictive accuracy of ultrasound in identifying potential malignancies.

Conclusion:

While Ultrasonography (USG) exhibits promise as an initial indicator in breast cancer screening, the superiority of Core Biopsy in delivering more precise and definitive results is undeniable. The findings from USG serve as an initial step, offering a glimpse into the potential risk for malignancy, yet the accuracy achieved through core biopsy surpasses this preliminary assessment.

Moreover, considering the cost-effectiveness of USG techniques, they can serve as an initial screening procedure, especially in rural or resource-limited settings. The accessibility and affordability of ultrasound make it a valuable tool for identifying potential areas of concern, thereby initiating the diagnostic process.

However, for more accurate and conclusive screening, the necessity of core biopsy cannot be overstated. Its ability to provide detailed histological information about breast lesions ensures a higher level of accuracy in determining the presence and type of cancer. While more invasive and potentially costly, core biopsy stands as the gold standard for definitive diagnosis in breast cancer cases.

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