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PRINCIPLE-ORIENTED AND INFORMATION-ORIENTED ANATOMY IN LEARNING AND TEACHING

Farida Yeasmin

Medical education aims to gain knowledge, skills, and attitudes, or what we know, do, or feel. Medical science has a vast syllabus in a short period. Anatomy is an integral part of the undergraduate medical curricula, and is often considered by the students as a difficult subject. The textbooks and other learning materials on this subject contain quite a large volume of information that sometimes seems to be unrelated to each other. It is challenging for students to cope with a large amount of information within time. This leads many students, and even some teachers, to approach the subject as something to be grasped through rote memorization without proper understanding. But if a student only tries to memorize information without understanding of the topic s(he) cannot correlate them, when necessary, with each other or with their functional and clinical implications. Discussing about the better learning on Neuroanatomy, Lara suggested that learning broad principles, rather than focusing on details, will lead to higher acceptance and retention of information.[1]

Here 'principle' represents a general idea derived or inferred from specific instances or occurrences.[2] It is also defined as a rule or law concerning a natural phenomenon or behavior of a system.[3] In a more elaborate definition, 'principle' is an elementary assumption, concept, doctrine, maxim, or position generally held to be fundamental or true for a body of knowledge, conduct, procedure, or system of reasoning and used as a basis for production and action.[4] Easily 'principle' means from which others are derived.

The term 'information' is described as fact, data, or instructions in any medium or from.[5]

For example, a student examining the brain found that a section through its frontal lobe shows an outer grey matter and an inner white matter. A section through the temporal lobe also shows an outer grey matter and an inner white matter. Now these two' information' on two different brain regions represent a single 'principle'- the cerebrum is composed of an outer grey matter and inner white matter. If a student develops a general understanding of the 'principle' s(he) will be able to use it whenever s(he) is faced with the question of the composition of the cerebrum. Histologically the stomach, duodenum, small intestine, large intestine, and rectum all have four layers, from inwards to outwards: mucosa, submucosa, muscle layer, and serosa/adventitia. This is separate 'information' about separate regions of our gut tube. But if we use a single 'principle' the whole GIT has histologically four layers, from inwards to outwards: mucosa, submucosa, muscle layer, and serosa/adventitia. This will be more effective and easier to memorize. Other paired 'information' are i) the root values of the superior gluteal nerve are L5, S1, S2 and ii) the root values of the inferior gluteal nerve are L5, S1. These two information can represent a single 'principle' that one spinal nerve usually contributes to more than one peripheral nerve.

The first three of "the 20 rules of formulating knowledge in learning" have been described as: 1) do not learn if you do not understand 2) learn before you memorize 3) build upon the basis.[6]

Teachers have to convince students that though they sometimes prefer to make a shortcut to learning Anatomy by memorizing features, understanding 'principles' would allow them to comprehend more elements in shorter times and retain them longer. Norman and Schmidt also advocated in favor of teaching the basic principles of biomedical science, often with examples of their application.[7] It may suggested that thinkers, curriculum planners, and teachers of Bangladesh should be proactive in dealing with the issue of optimum use of 'principles' in teaching-learning and assessment in Anatomy and also in other subjects of medical science.

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STUDY OF SERUM IRON BETWEEN THE PATIENTS OF TYPE 2 DIABETES MELLITUS WITH HYPOTHYROIDISM AND WITHOUT HYPOTHYROIDISM ATTENDING IN TERTIARY CARE HOSPITAL IN BANGLADESH

KF Nusrat[1], MS Hossain[2], Chowdhury J[3]

ABSTRACT

Background: Type 2 diabetes mellitus and hypothyroidism are the two most common endocrine disorders in clinical practice. Several studies showed a high occurrence of alteration of serum iron among the patients of type 2 diabetes mellitus with and without hypothyroidism. This alteration causes a significant influence for developing future complications. **Objective:** To evaluate the alteration of serum iron (μmol/L), among the patients of type 2 diabetes mellitus with hypothyroidism and without hypothyroidism. **Methods:** Hence this context, a cross sectional study was done in the department of Biochemistry, BIRDEM (an urban tertiary care hospital), Dhaka, during the period of January 2021 to December 2021. A total 100 subjects were selected according to the selection criteria. Among them 50 T2DM with hypothyroidism (Group I), 50 T2DM without hypothyroidism (Group II). Fasting blood glucose (mmol/L), HbA_1C(%), serum iron (μmol/L), FT4 (pmol/L), TSH (μU/ml) were measured by glucose oxidase, high performance liquid chromatography, ferene, and Chemiluminescent Microparticle Immuno Assay (CMIA) respectively and compared statistically to observe the variations among the study subjects. For statistical analysis appropriate statistical tests (Independent t-test, Pearson correlation coefficient) were used. **Results:** Mean$\pm$SD value of FBG (mmol/L) and HbA1c (%) was measured and both were significantly higher ($p<0.001$) in Group II (type 2 diabetes mellitus without hypothyroidism) in comparison with Group I (type 2 diabetes mellitus with hypothyroidism) .Significantly higher ($p<0.001$) mean value of S.iron (μmol/L) was found in Group II than Group I. Furthermore, this study showed a strong positive correlation ($r=0.490$, $p<0.001$) of HbA1C with serum iron. **Conclusion :** This study suggest an important role of serum iron in

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metabolic derangement in the patients of type 2 diabetes mellitus with and without hypothyroidism. It is necessary to provide regular screening for alteration of serum iron. Early diagnosis and treatment will help to avoid complications and reduce comorbidity.

Key words: ……

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Introduction:

Diabetes mellitus (DM), which affects 439 million people worldwide, is one of the most common endocrine disorder (Alsolami et al., 2018).[1] As a result of urbanization and associated lifestyle changes, the global prevalence of diabetes is quickly increasing. Over the last three decades, the number of people with DM has more than doubled globally (Chen et al., 2011).[2] Type 2 DM (T2DM), once thought to be a metabolic disorder only affecting adults, is now affecting not only young adults but also adolescents and children. Aside from overweight and obesity, genetic and epigenetic factors, and other factors (sedentary behavior, hypertension, smoking, abnormal lipids), a number of novel factors have been identified to be independently associated with the risk of T2DM, including sleeping disorders, depression, and antidepressant medication use (Chen et al.,2011).[2] Hypothyroidism is also a common endocrinological disorders. The incidence rises with age, and females have a higher prevalence than males. Primary gland failure or insufficient thyroid gland stimulation by the brain or pituitary gland can cause hypothyroidism (Gaitonde et al.,2012).[3] Hypothyroidism affects 0.2 to 0.6 percent of patients with diabetes, depending on their age and gender (Maskey et al., 2015).[4] Thyroid disease affects women more than men, particularly during reproductive years (Refaat, 2015).[5] A complicated interdependent connection characterizes the relationship between T2DM and hypothyroidism. T2DM patients had a higher rate of retinopathy, nephropathy, cardio vascular disease, and subclinical hypothyroidism. Hypothyroidism is a common problem among T2DM. Thyroid stimulating hormone (TSH) secreted by the anterior pituitary gland regulates the production of thyroxin (T4) and tri-iodothyronine (T3). Normal glucose metabolism requires thyroid hormones. Thyroid hormone secretion, whether excessive or insufficient, can disrupt glucose homeostasis. Thyroid disease not only creates havoc on metabolic control, but also on diabetes management diabetes patients should have their thyroid function checked (Afrin et al., 2017).[6] Thyroid function testing is required for T2DM patients at the time of diagnosis (Talwalkar et al.,2019).[7] Patients with hypothyroidism and DM have been found to have a variety of abnormalities. Thyroid hormones are important for maintaining insulin level and normal blood glucose levels and counter-regulatory hormones such as epinephrine. Reduced T3 levels have been observed in patients with poorly controlled diabetes, as well as impaired serum TSH response to thyrotropin releasing hormone. stimulation (Talwalkar et al., 2019).[7]

Many enzymes contain iron, including thyroid per oxidase (TPO), which is involved in the first two steps of thyroid hormone production. T3 and T4 levels in the blood may be considerably reduced by nutritional iron shortage. Iron may play a role in the progression of peripheral diabetic neuropathy (PDN). Heme and nonheme iron-containing enzymes both require iron as a cofactor. It plays a role in oxygen binding and transport, oxygen metabolism, DNA synthesis, cell proliferation differentiation and gene regulation. Iron is also a pro-oxidant that causes oxidative stress by causing the production of reactive oxygen species (ROS). As a result, systemic oxidative stress promotes tissue damage and raises the risk of T2DM. (Paeschke et al., 2019).[8]

The goal of our study is to find out any association of serum iron and glycemic status among type 2 DM with hypothyroidism by measuring serum iron, fasting blood glucose, HbA1C, FT3, FT4, TSH. The results of the study compare type 2 diabetes mellitus without hypothyroidism. We aimed to evaluate the association between serum iron concentration and the complication of type 2 DM with hypothyroidism.

Materials and methods

This study was designed as a cross sectional analytical study. It was conducted over the period of 1 year (January 2021- December 2021). The total number study population were 100. All of them were treated on an outpatient basis in BIRDEM General Hospital who had came for regular check up. Among them 50 diagnosed type 2 diabetes mellitus with hypothyroidism (Group I) and 50 diagnosed type 2 diabetes mellitus without hypothyroidism (GroupII) .History of any acute or chronic complication like cardiac diseases, renal diseases, liver diseases. Any recent acute infection such as fever, Novel Corona virus, malabsorption, chronic diarrhoea, steatorrhoea, sepsis, alcoholism. Endocrine disorder except T2DM and hypothyroisism e.g. T1DM, hyperthyroidism, solitary nodule in thyroid, toxic multinodular goiter, thyroid carcinoma, Pregnant and lactating women were excluded from the study by history, clinical examination and relevant laboratory investigation. Structured questionnaire was prepared for this purpose, which included all the variables of interest. With all aseptic precautions, at first 10ml blood sample was collected from study subjects after an overnight fasting of 8-12 hours. Then among this sample 3ml blood was delivered Na fluride containing sugar tube for estimation of fasting blood glucose. 5 ml blood was delivered plain test tube (red cap) for iron profile (serum iron, serum ferritin, TIBC), serum magnesium, FT3, FT4, TSH. 2 ml blood was delivered EDTA (Ethylene diamine tetra aceticacid) containing tube (lavender/purple cap) for HbA1C. Plasma or serum will be separated after centrifugation. Then plasma or serum was used. If preservation is needed we could store the sample at 2-80C 5 days in refrigerator. But for storing more than 8 days it was kept at-200C. Serum iron, glycemic status (FBG, HbA1C), FT3, FT4, TSH was measured in blood sample by using appropriate method. Fasting blood glucose-Hexokinase method, HbA1C-High performance liquid chromatography (HPLC), Serum Iron-Ferene method, FT3-CMIA (Chemiluminescence microparticle immunoassay), FT4- CMIA, TSH-CMIA. Statistical analysis was performed with help of SPSS 26 version. Descriptive statistics presented as mean+SD score for normally distributed data and median. Continuous data were compared by using parametric test (independent

samples t- test, Pearson correlation coefficient, multiple logistic regression test). Statistical test considered significant at the level of < 5% and considered as test of significance when $p < 0.05$.

Results

Association of serum iron among the type 2 diabetes mellitus with and without hypothyroidism.

Table-I: Demographic characteristics of the participants.

Variables		Group-I	Group-II
		DM with Hypothyroidism (n=50), n(%)	**DM without hypothyroidism (n=50), n(%)**
Gender	Male	22(44.0)	22(44.0)
	Female	28(56.0)	28(56.0)
Education Status	Primary	4(8.0)	4(8.0)
	SSC	2(4.0)	2(4.0)
	HSC	25(50.0)	25(50.0)
	Graduate	19(38.0)	19(38.0)
Social Status	Rich	10(20.0)	10(20.0)
	Upper Middle Class	19(38.0)	19(38.0)
	Middle Class	21(42.0)	21(42.0)
	Poor	0(0.0)	0(0.0)
Residence Status	Rural	18(36.0)	18(36.0)
	Urban	32(64.0)	32(64.0)
Exercise Status	Regular	28(56.0)	28(56.0)
	Irregular	22(44.0)	22(44.0)

This study was a case control study which was conducted in the department of Biochemistry of BIRDEM general hospital from January 2021 to December 2021. In our study we have taken 100 study subjects, among them 50 diabetes mellitus with hypothyroidism (Group- I) and 50 Diabetes mellitus without hypothyroidism (Group- II) which were shown in Table I.

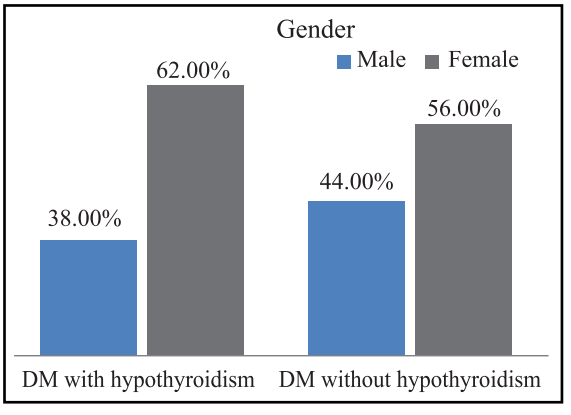

Figure-2: Gender distribution in study subjects.

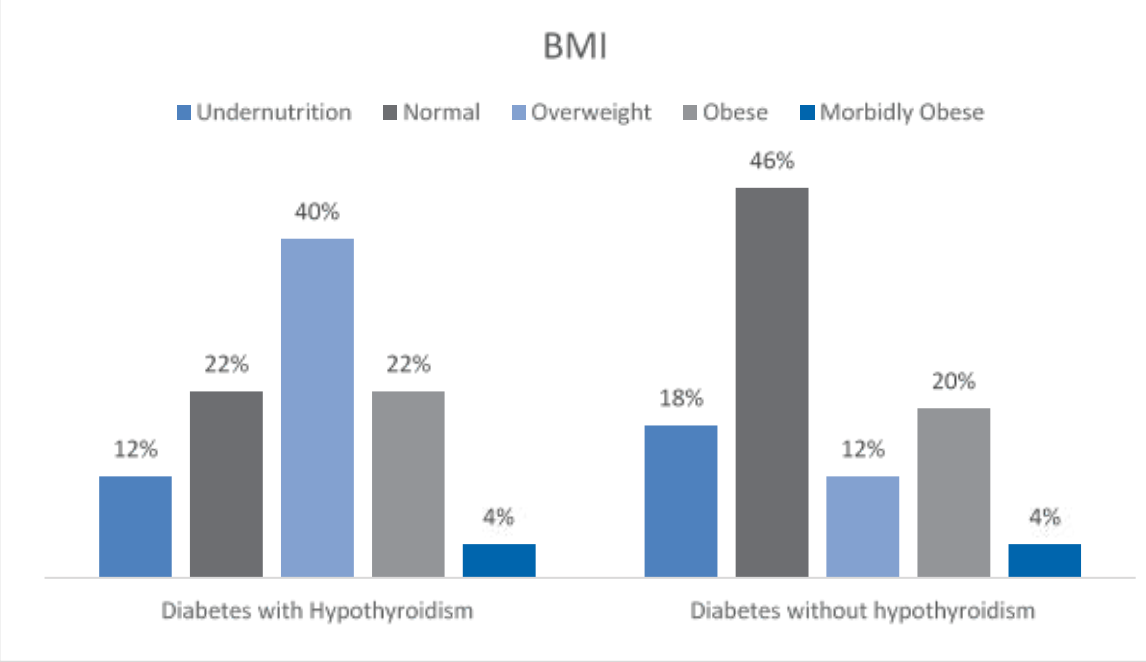

Figure- 7: BMI of study subjects.

Among DM with Hypothyroidism patients 12% under nutrition, 22% normal, 40% overweight, 22% obese, 4% morbidly obese. Among DM without hypothyroidism patients 18% under nutrition, 46% normal, 12% overweight, 20% obese, 4% morbidly obese.

Table-II: Independent-samples t-tests were conducted to compare the FBG, HbA1C, serum iron(Fe), FT4, TSH between Group I (T2DM with Hypothyroidism) and Group II (T2DM without Hypothyroidism). All of the t-tests were significant.

Variables	Group I (n=50) Mean± SD	Group II (n=50) Mean± SD	*p* value
FBG(mmol/L)	9.78±4.05	16.44±12.24	0.040*
HbA_1C(%)	8.15±1.82	9.50±3.45.52	0.016**
Fe(µmol/L)	5.15±3.30	36.71±19.34	<0.001***
$FT_{4(pmol/L)}$	8.28±2.02	17.13±4.72	<0.001***
TSH µU/ml	12.86±6.39	3.58±2.18	<0.001***

Group I: DM with hypothyroidism

Group II: DM without hypothyroidism

Statistical analysis was done by Independent t-test to compare among groups. Values are expressed as the mean±SD.

*=significant.*p<0.05,**p<0.01,***p<0.001

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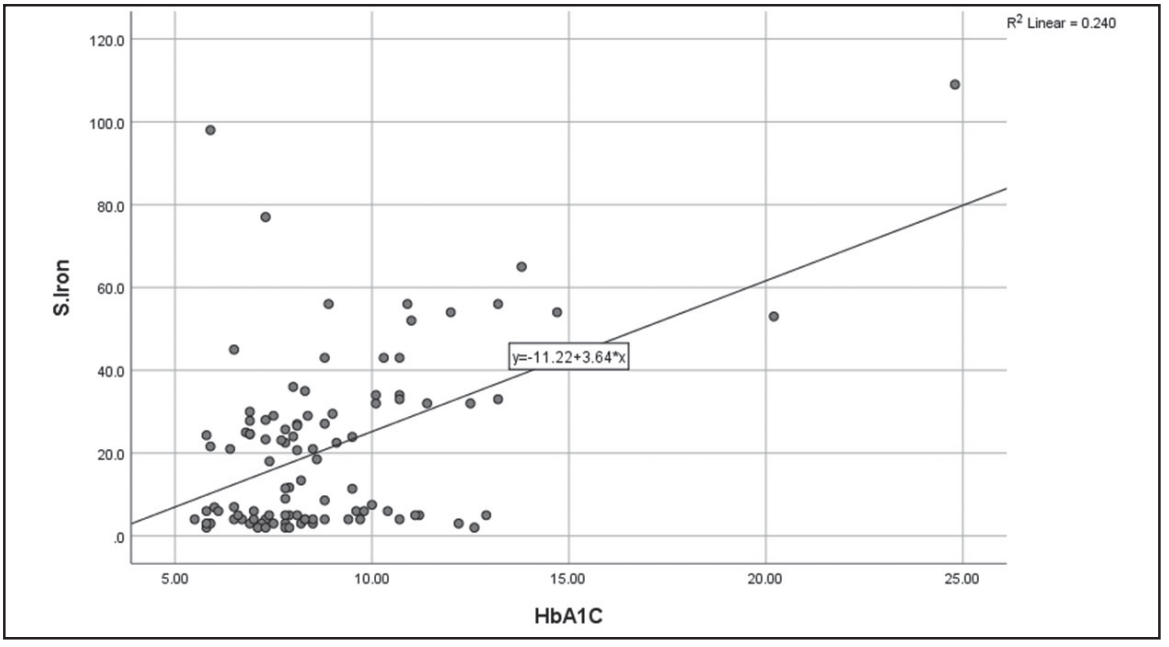
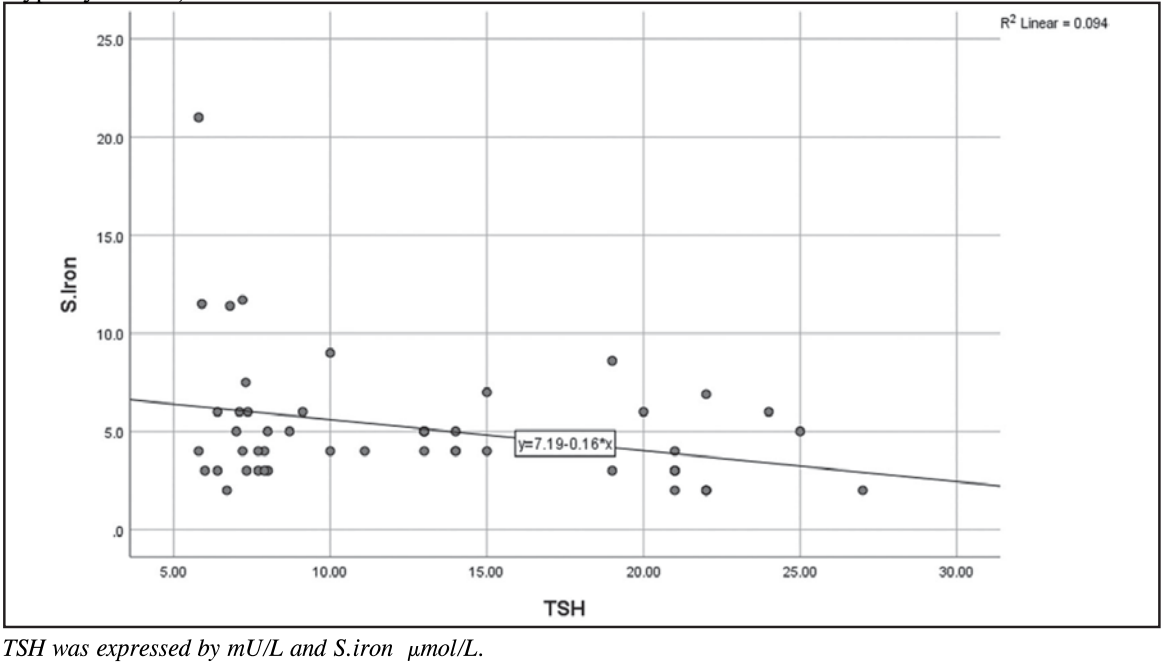
Table shows the comparison of FBG, HbA1C, serum iron, FT4, TSH of both group of study population. The study found that TSH were significantly higher in T2DM with Hypothyroidism. It showed that FBS, HbA1C, serum iron, FT4 were significantly higher in T2DM without Hypothyroidism.



HbA1c was expressed by percentage (%) and S.iron µmol/L .

Figure- 8: Correlation of hemoglobin A1c with serum iron in study population.

Scatter plot shows a positive correlation between HbA1c and S.iron in study population. (T2DM without Hypothyroidism).



TSH was expressed by mU/L and S.iron µmol/L.

Figure- 12: Correlation of TSH with serum iron in study population.

Scatter plot shows a Negative correlation between HbA1c and TSH in study population.(T2DM with Hypothyroidism).

Discussion

This cross sectional study was done on type 2 Diabetes mellitus with and without hypothyroidism in the department of Biochemistry, BIRDEM, Dhaka, during the period of January 2021 to December 2021. A total 100 subjects were selected according to the selection criteria. Among them 50 T2DM with hypothyroidism (Group I), 50 T2DM without hypothyroidism (Group II), Fasting blood glucose (mmol/L), HbA1C(%), serum iron(μmol/L), FT4 (pmol/L), TSH (μU/ml) were measured and compared statistically to observe the variations among the study subjects. According to gender distribution we found that female was predominant than male. The female study subjects were 62% in Group I and 56% in Group II. This result is consistent with other reports like Saeed et al., 2019[9], Wang et al., 2018[10]. They found hypothyroidism and diabetes mellitus were significantly higher in female participants. In this study majority of the participants were educated. Educated participants are 78% in Group I and 58% in Group II. They were financially solvent. The financially stable participants were 66% in Group I and 58% in Group II. Wang et al., 2018[10] disagree with this results. According to residence status majority of the participants were from urban area. 78% study subjects in Group I and 64% in Group II. As all the cases were collected from a tertiary care hospital, situated in the center of capital city (Dhaka). 64% participants in Group I and 54% participants in Group II had the history of regular physical exercise.

In this study BMI (kg/m2) of Group 1 study subjects. Twenty patients (40.0%) were in the range of overweight category, 17 patients (34%) were in normal weight category, 13 patients (26%) were obese. In Group II majority patients were in the range of normal weight category 32(64%), 6 patients (12%) were in overweight category, 12 patients (24%) were obese. It also showed the mean value of BMI of the participants Group I was 27. 10(kg/m2) and Group II was 24.44(kg/m2). Mean BMI is higher in Diabetes with Hypothyroidism patients.

In this study there were a comparison of FBG, HbA1C, serum iron, FT4, TSH of both Group of study population. In this study the mean Fasting blood glucose (mmol/L) in Group I and Group II were 9.78±4.05 and 16.44±12.24 respectively. It was also revealed that fasting blood glucose was significantly higher in Group II than Group I. Other previous study done by Rajendran Jayanthi, Abu Raghavan srinivavan et al,.[11] also showed the similar findings.

Mean±SD value of HbA1c (%) was measured and it was significantly higher in Group II (9.50±3.45) in comparison with Group I (8.15±1.82). This finding was in concordance with Bennett et al,.[12]

Decreased glucose absorption from the gastrointestinal tract, as well as prolonged peripheral glucose accumulation, changes in the gluconeogenesis mechanism, decreased hepatic glucose output, and a significant decrease in glucose disposal account for hypothyroidism. Thyroid hormones control glucose metabolism as well as insulin secretion pathways. There is a decrease in glucose-induced insulin production by pancreatic beta cells in hypothyroidism.

Significantly higher ($p<0.001$) mean value of S. Fe (μmol/L) was found in Group II (36.71±19.34) than Group I(5.15±3.30). Iron, an essential micro mineral for human, it is recently recognized that increased body iron stores are associated with the development of glucose intolerance, T2DM and insulin

syndrome. Serum iron conc. was higher in patients with T2DM. Elevated iron stores may induce diabetes through a variety of mechanisms; including oxidative damage to pancreatic beta cells and interference with insulin's ability to production suppress hepatic glucose.

Our study showed a strong positive correlation ($r=0.490$, $p<0.001$) of HbA1c with serum iron. Positive correlation between serum iron and HbA1c indicates hyperglycemia causing increased glycation of hemogolobin and increased release of iron from hemoglobin. This study showed a negative correlation between TSH and serum iron. Iron deficiency can lead to a defect in thyroid hormone synthesis and can contribute to the development of hypothyroidism.

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EVALUATION OF SERUM FERRITIN IN PREGNANCY INDUCED HYPERTENSION

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ABSTRACT

Background: Pregnancy induced hypertension (PIH) is one of the complications of pregnancy which affects both mother and fetus. Hyperferritinemia can increase the risk of hypertension in pregnant women. Objective: To evaluate serum ferritin in pregnancy induced hypertension. **Material and methods:** A total of 129 pregnant women, comprising of 77 PIH and 52 normotensive after 20 weeks of pregnancy were enrolled in this case control study. Fasting serum ferritin was measured by IMMULITE chemiluminescent immunometric assay. **Results:** There were no significant difference in age, gestational weeks and parity in between control and PIH groups but mean SBP, DBP and MBP were significantly increased in PIH group. Mean serum ferritin level were significantly ($p < 0.001$) higher in PIH compared to control group. Statistical analysis was done by using SPSS software. Data were expressed as mean$\pm$SD for parametric values and median (range) for non-parametric values. p value of < 0.05 was considered as significant. **Conclusion:** The result of the study concluded that serum ferritin level is significantly higher in PIH than the control group.

Key words: Pregnancy induced hypertension, Serum ferritin, Hyperferritinemia

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Introduction:

Hypertension develops after 20 weeks of pregnancy with previously normal blood pressure regarded as pregnancy induced hypertension (PIH).[1] According to American College of Obstetricians and Gynecologists (ACOG) the diagnostic criteria of PIH is blood pressure (BP) ≥ 140/90 mm of Hg or rise of systolic BP ≥ 30 mm of Hg and rise of diastolic BP ≥ 15 mm of Hg with or without proteinuria. Globally, at least 10% of pregnancies are complicated by PIH.[2] PIH affects multiple system including coagulation pathways and significantly enhances the perinatal morbidity and mortality of both mother and newborn.[3]

Ferritin is one of the key proteins that regulates iron homeostasis. It is a well known clinical biomarker to assess total iron status of the body.[4] Ferritin is also an indicator of systemic inflammation as an acute phase reactant.[5] Systemic inflammation is associated with arterial stiffness and serum ferritin has shown association with arterial stiffness, incidence of myocardial infarction and development of hypertension.[6] Several studies suggested that hyperferritinemia is associated with metabolic syndrome[7] and hypertension[8]. Some other researchers revealed that hyperferritinemia promotes oxidative stress which leads to inflammation, endothelial damage and subsequently rising the blood pressure.[9]

There is evidence that serum ferritin level is positively associated with blood pressure[10] and increased serum ferritin predicts the development of hypertension.[11] Again, a comparative study was done in pregnancy induced hypertension and normotensive primigravida mothers which revealed that serum ferritin increases in PIH mother and has significant positive correlation with systolic blood pressure.[12] Some researcher observed that serum ferritin and iron levels increased in preeclampsia & eclampsia which induce pro-oxidant stimulating lipid peroxidase activity and endothelial cell damage.[13] Some other suggested that raised serum ferritin level plays pathogenic role in development of preeclampsia.[14] Based on this background, the purpose of the study was to evaluate serum ferritin in early stage of pregnancy induced hypertension for better management of these group of patient.

Materials and Methods

This case control study was conducted from January 2006 to January 2007. The total study populations were 129 who were collected from the inpatient department of Obstetrics and Gynecology, BIRDEM, Dhaka Medical College Hospital (DMCH) and Bangabandhu Sheikh Mujib Medical University (BSMMU) hospital. Among them 77 pregnant women with PIH were selected as case and 52 age-matched healthy pregnant women were selected as controls after 20 weeks of pregnancy.

Inclusion criteria:

Pregnant women with preeclampsia (PE) and gestational hypertension (GH) were included.

GH was defined as hypertension without proteinuria.[15]

- Hypertension was defined following the criteria of the American College of Obstetricians and Gynecologists (ACOG):

  Blood pressure (BP) ≥ 140/90 mm of Hg or rise of systolic BP ≥ 30 mm of Hg and rise of diastolic BP (point of muffling i.e. point IV) ≥ 15 mm of Hg.

2. PE was diagnosed by hypertension and proteinuria.
   - Hypertension was defined as per criteria described above for GH.
   - Proteinuria16 is defined as- o 24 hours urine collection where a total protein excretion is 300 mg or more; or

     Two random clean-catch midstream or catheter urine specimens collected at least 4 hours apart with 2+ or more on reagent strip test.

Exclusion criteria:

Subjects suffering from chronic hypertension, liver disease, renal disease, connective tissue disease and pregnancy with acute and chronic diseases were excluded from this study.

Data collection procedure:

Informed written consent was taken from each participant after explaining the objectives, benefits and procedure of the study. Participants were requested to fast overnight (8-10 hours). Then detailed history was taken and thorough physical examination, anthropometric measurements were done and information was documented in a preformed standard data sheet. Then under aseptic precaution, 2 cc of venous blood sample was collected to analyze serum ferritin level. Fasting serum ferritin was measured by IMMULITE chemiluminescent immunometric assay.

Statistical analysis:

For analyzing data SPSS software was used. Data were expressed as mean±SD for parametric values and median (range) for non-parametric values. Statistical analysis were done by using independent t-test to compare means and Mann-Whitney U test for skewed data. p value of <0.05 was considered as significant.

Results

The median (range) age in (years) of the study groups were 25(18-37) and 25(18-37) in control and PIH respectively. There were no significant difference of age, gestational weeks and parity between PIH and control group (Table-I).

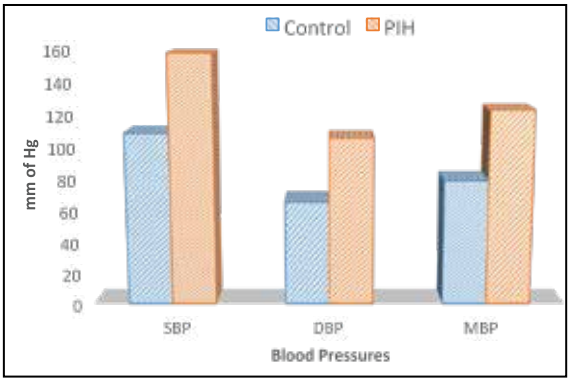
Table I: General characteristics of study subjects

Parameters	PIH (n=77)	Control (n=52)	*p* value
Age (Years)	25 (18-37)	25 (18-37)	0.212
Gestational weeks	33 (22-39)	33 (27-40)	0.193
Parity	2 (1-6)	2 (1-6)	0.708

Data are presented as mean±SD for parametric value and median (range) for non-parametric value. n=Number of subject. $p<0.05$ are considered as statistically significant.

All the participants had mean SBP (156.95±14.59 mmHg) and (108.06±6.26 mmHg), DBP (105.3±10.49 mmHg) and (65.38±5.53 mmHg), MBP (122.54±10.98 mmHg) and (78.91±5.78 mmHg) respectively, in the PIH and control group. There were significant difference ($p<0.001$) of SBP, DBP and MBP between PIH group and control group (Figure-1).

Figure-1: Blood pressures among the study subjects



SBP=systolic blood pressure, DBP=diastolic blood pressure, MBP=mean blood Pressure, PIH=pregnancy induced hypertension group.

Serum ferritin level were significantly ($p < 0.001$) higher in PIH than control group (Table-II).

Table II: Serum Ferritin level of the study subjects

Groups	Serum Ferritin (ngm/ml)	*p* value
PIH (n=77)	63.04 (9.6-180)	<0.001
Control (n=52)	18.75 (4.1-67.7)	

Results are expressed as median (range); Mann Whitney U test was done as a test of significance.

Discussion

This study revealed that maternal age, gestational weeks and parity between PIH and control group were almost similar and showed no statistically significant difference among the groups. There was also no significant difference in the physical examination but SBP, DBP and MBP is statistically significant between the groups. Similar types of observation were made by some other researchers of different countries.[12]

In the present study, serum ferritin was significantly higher in the PIH compared to control group. Similar results were reported by some previous studies.[12] Raman and his co-workers.[17] showed that serum ferritin was elevated slightly in PIH and significantly in eclampsia as compared to controls.

Current concepts of the genesis of preeclampsia include endothelial dysfunction and oxidative stress.[18,19] The factors that lead to endothelial dysfunction have not been determined with certainty, but the evidence points to poor placentation in these group of patints.[20] The effect of poor placentation is to leave the uteroplacental spiral arteries smaller than normal from the second half of the pregnancy. The obstructive lesion of the spiral arteries, called acute atherosis, leads to placental ischemia and malperfused placenta is a likely site for the production of reactive oxygen species such as superoxide and hydrogen peroxide.[21] But neither of these is reactive enough to initiate cellular damage directly. However, in the presence of catalytic amounts of transition metal ions, particularly iron and copper, these reactive species can generate the highly reactive hydroxyl radical by Fenton chemistry. This radical can initiate the process of lipid peroxidation, which if uncontrolled, may result in endothelial cell damage[22,23] leading to vasoconstriction, hypertension, and loss of the usual pregnancy associated refractoriness to pressor effects of angiotensin II, increased platelet aggregation and proteinuria.[24] It is presumed that blood-born chemical agents arising from the ischemic placenta are the cause of the generalized endothelial damage that gives rise to the symptoms of hypertension, proteinuria and sudden edema characteristic of this condition.[25] Iron rises in the ischemic placenta by destruction of the red blood cells from thrombotic, necrotic and hemorrhagic areas.[14]

Normally both iron and ferritin level decreases with advancing gestation due to hemodilution and depletion of iron stores to meet the increasing needs of the growing conceptus.[26] In developing countries, the depletion is much higher due to a high prevalence of iron deficiency anemia. Few studies showed highly elevated levels of serum iron and ferritin in eclampsia and PIH despite relatively lesser changes in the mean hemoglobin levels. Similar increase in serum iron and ferritin have been reported earlier in severe PIH.[27]

Serum ferritin concentration is increased in PIH as a result of release of tissue ferritin and change of ferrokinatics.[28] Subclinical hepatic damage is known to occur in PIH and eclampsia and is reflected by elevated liver enzymes.[29] The hepatic damage may result in the leakage of ferritin into circulation resulting in hyperferritinemia. That becomes more severe in eclampsia due to acute damage. It is possible that hyperferritinemia seen in eclampsia may in addition to hypovolemia and hemoconcentration be related to placental damage resulting in release of placental ferritin in the circulation.[30] Increased serum ferritin was the result of hemolysis, hepatocellular injury, and intravascular volume contraction leading to hemoconcentration.[31]

Conclusion

From this study it can be concluded that serum ferritin is significantly higher in pregnant women with PIH than the healthy pregnant women. Hyperferritinemia causes vascular oxidative stress that leads to increased vascular resistance and endothelial damage subsequently causes vasoconstriction and atherosclerosis resulting in hypertension. Therefore, serum ferritin level can be an early predictor of PIH.

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COMPARATIVE STUDY OF BREAST SCREENING BEFORE & AFTER WORKSHOP ON BREAST CANCER AWARENESS AMONG DOCTORS OF TMMCH

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ABSTRACT

A comparative method was utilized to determine the understanding and practice of breast cancer screening among participants prior to the workshop and after the workshop. An instructor led the participants comprising of doctors from different departments, over the systematic questionnaire aimed at determining their level of comprehension regarding cancer screening techniques, and understanding the process involved in early detection and the significance of early detection in the prevention of cancer. After the workshop which comprised of the most recent guidelines, diagnostic methods, and treatment options available, the instructor administered a post workshop questionnaire to the respondents to determine the expected change in the overall awareness and self-reported practices of participants. The responses were scrutinized to estimate the variations in awareness, screening practices, and barriers encountered towards the early detection of the disease. This research study justifies the need of emphasizing Continuous Medical Education and Professional Development as effective strategies geared towards empowering the health care providers with the skills and competencies to facilitate early detection of breast cancer to patients, thereby improving the overall patient outcomes.

Keywords: Breast Cancer, Breast Screening, Awareness Workshop, Medical Education, Comparative Study

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Introduction:

Breast cancer is perhaps one of the most recurrence and deadliest diseases that affect women around the world with their numbers increasing in both developed and developing countries. It begins to develop in the breast tissue and can metastasize to different regions of the body if not found and acted upon within a reasonable duration. Even though there has been improvement in treatment options and comprehensive survival, breast cancer is still one of the most concerning health issues worldwide. Trend analysis of breast cancer indicates a rise by 50-100% in the incidence of breast cancer in last 20 years.[1] Globally, 2.3 million new cases and 670,000 deaths from female breast cancer occurred in 2022.[2] Breast cancer is a global health concern and a leading cause of morbidity and mortality among women.[3] Despite progress in treatment improving survival rates, it is crucial to try and prevent the disease from developing. There are a number of evidence-based approaches that can decrease the chance of developing breast cancer, including lifestyle changes, self brest examination, non invasive procedure such as mammogram and surgical procedures for high-risk patients. One of them is self breast examination (SBE).) Breast self-examination (BSE) has been identified as the only realistic approach in early detection of breast cancer in developing nations[3].

Breast Self-Examination (BSE) plays a significant role in early detection and hence extra lifetime for prevention and treatment of breast cancer.[4] Breast screening improves chances of survival and lessens the need of invasive treatment.[5] On the other hand mammogram can also be use to detect breast cancer in the earliest event. the mortality rate ratio associated with the patient who being invited to screening was 0.72 indicating a 28% lower risk of death from breast cancer in women who were invited for screening compared with women who were not invited.[6] In our study we will measure changes in breast screening practices among physicians at TMMCH before and after participating in a breast cancer awareness workshop. It hopes to assess the effectiveness of such educational interventions in enhancing early detection through the evaluation of knowledge, attitude, and practice changes.

Method & Materials

All materials related to the topic was made using sources including World Health Organization website, New England Journal of Medicine, Medline & Google scholar searches for few days. Relevant necessary documents, systematic reviews, research articles focusing on practice of breast self-examination were included in this study paper. We made standard questionnaire and gave them to the doctors of TMMCH & asked them to give those answer before and after the workshop. This study is a qualitative study. Keyword used in this study is Breast Cancer, Breast Screening, and Awareness Workshop.

Statistics

All the results are visually demonstrated in the various graphs & diagrams properly below,

Fig. 1: Participants have idea about breast screening (N = 125)

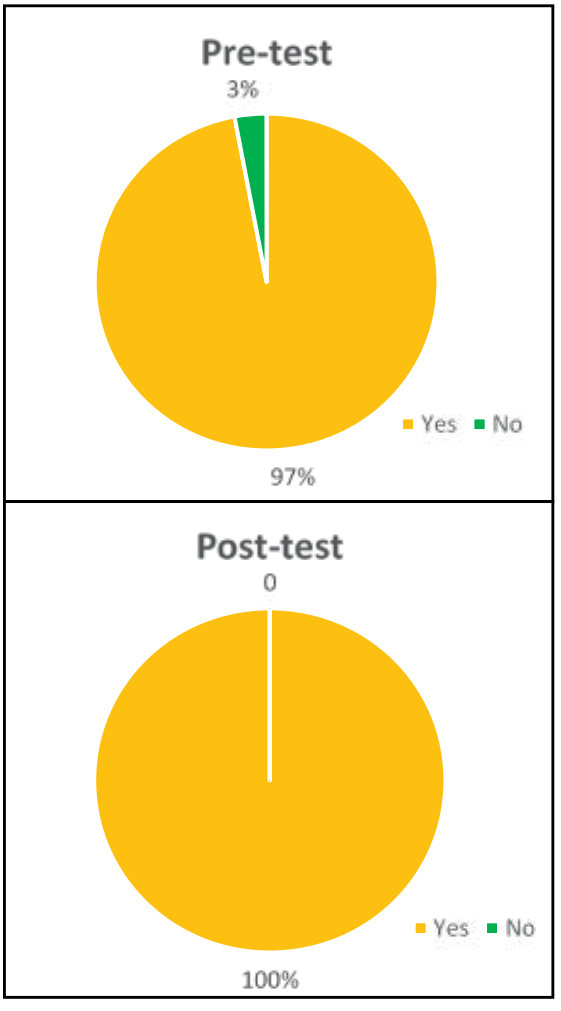


Fig. 2: Breast screening can detect breast cancer among (N = 125)

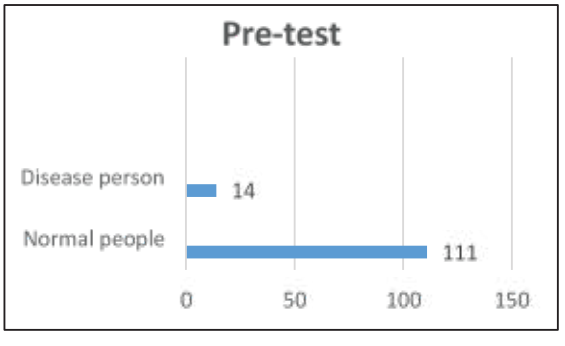


Fig. 3: Participants have idea about breast screening (N = 125)

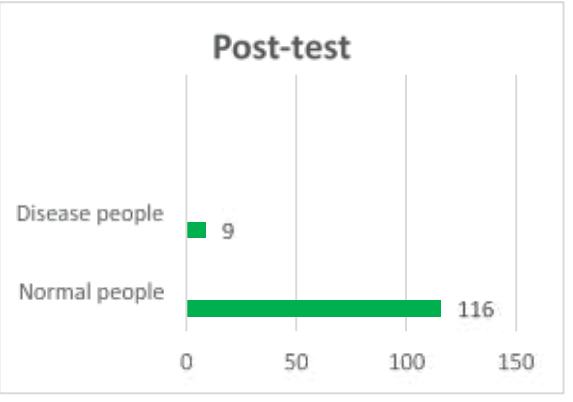


Fig. 3: Tools for breast screening are (N = 125)

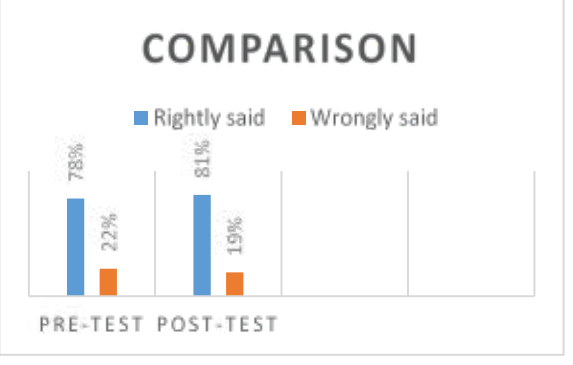
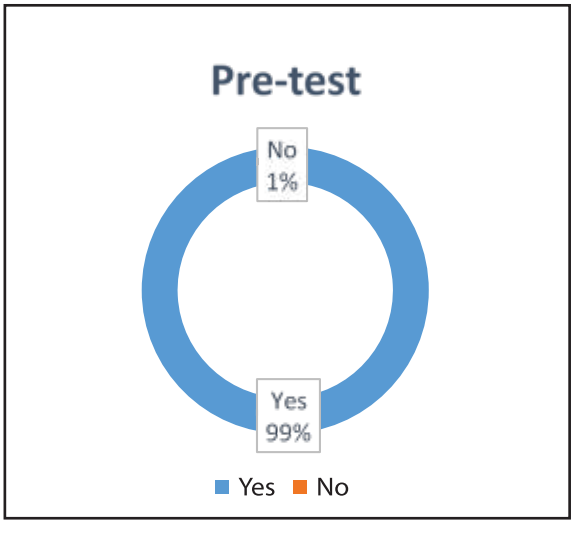


Fig. 4: Participants have any idea about self-breast examination (N = 125)



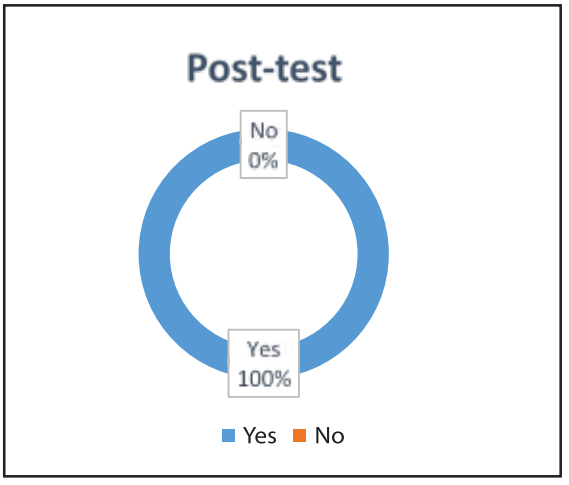
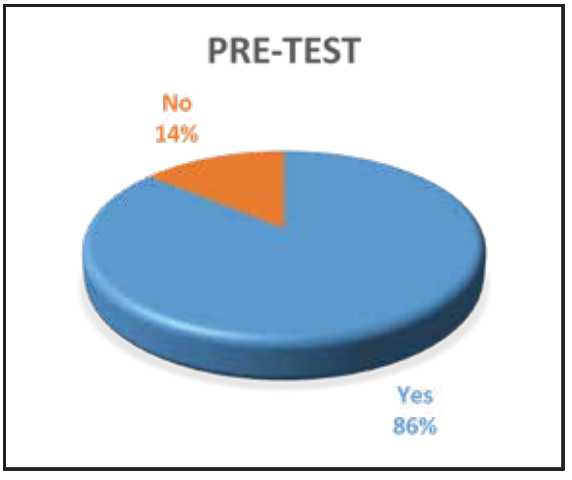


Fig. 5: Breast self-examination is a screening tool for diagnosis of breast cancer (N = 125)



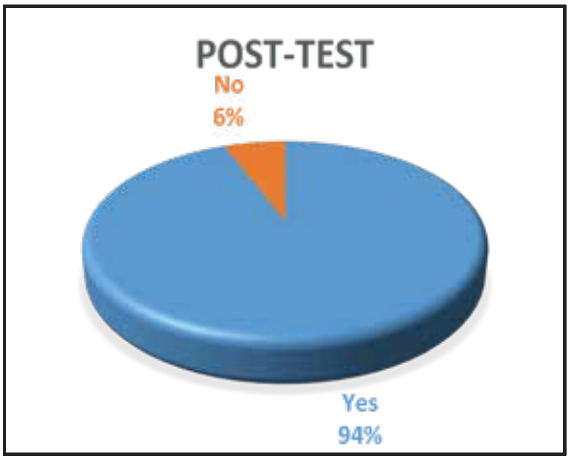
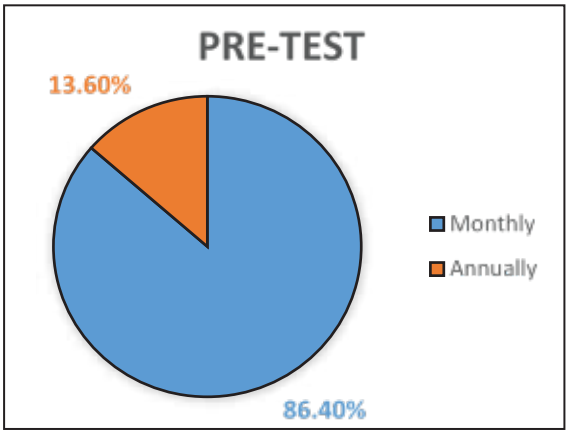


Fig. 6: Breast self-examination is a screening tool for diagnosis of breast cancer (N = 125)



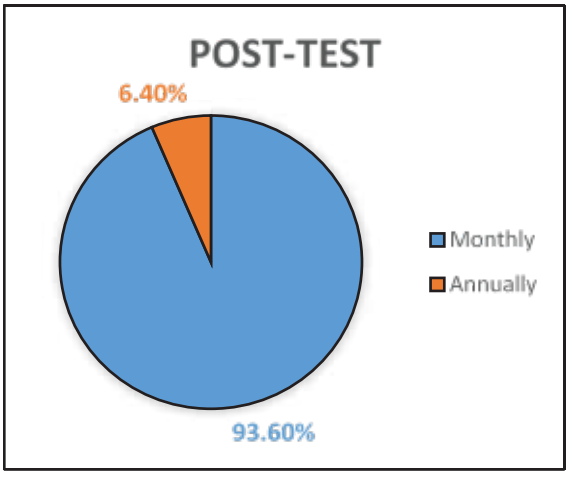
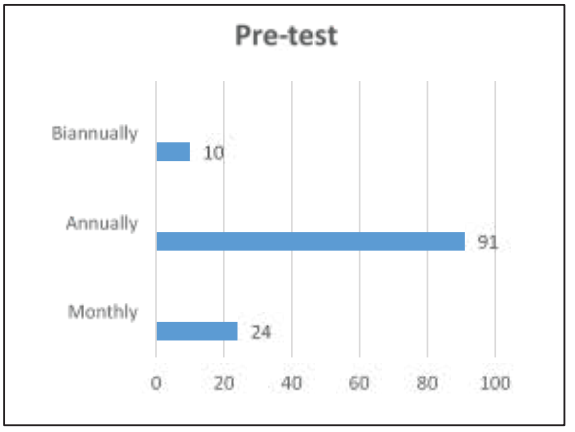


Fig. 7: Screening frequency of mammogram (N = 125)



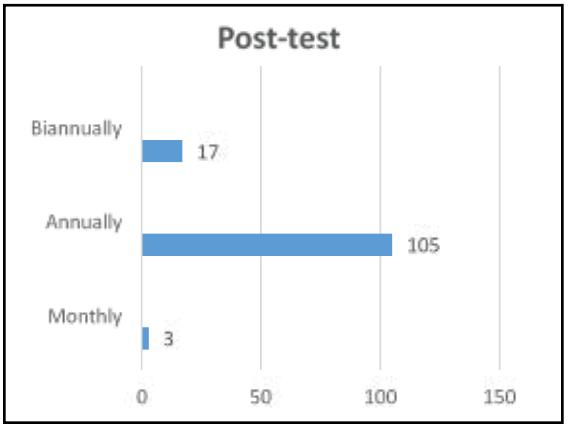
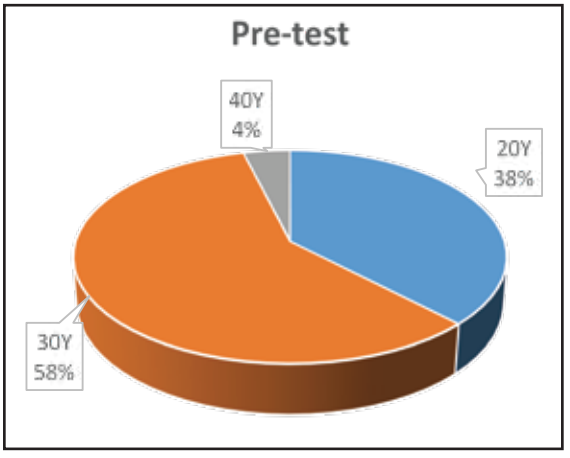


Fig. 8: Starting age of self-breast examination (N = 125)



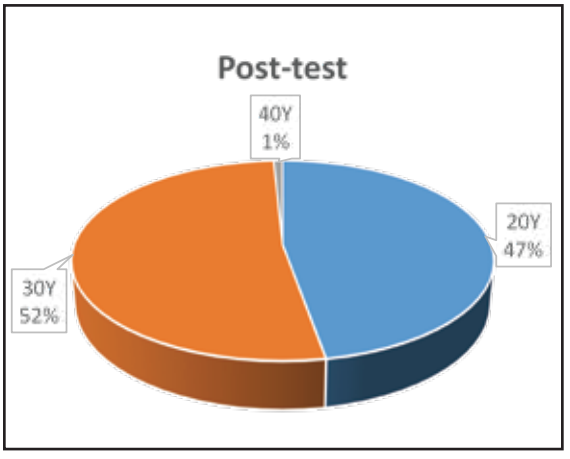
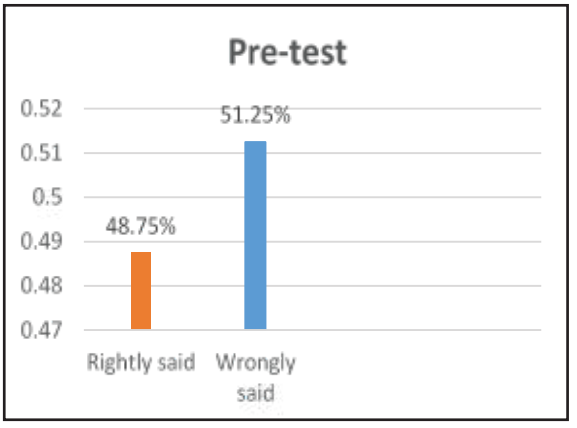


Fig. 9: Risk factors for breast cancer (N = 125)



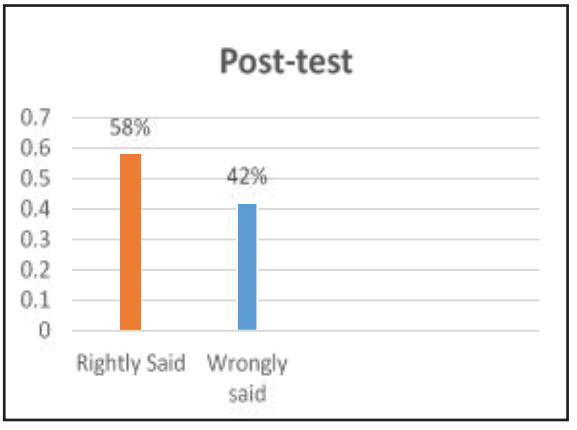


Fig. 10: Risk factors for breast cancer–regarding family history (N = 125)

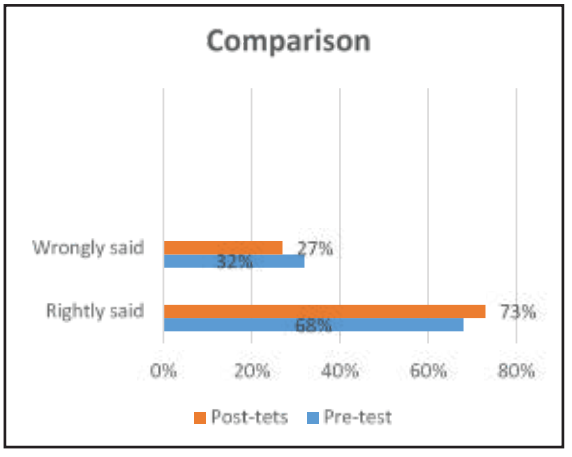
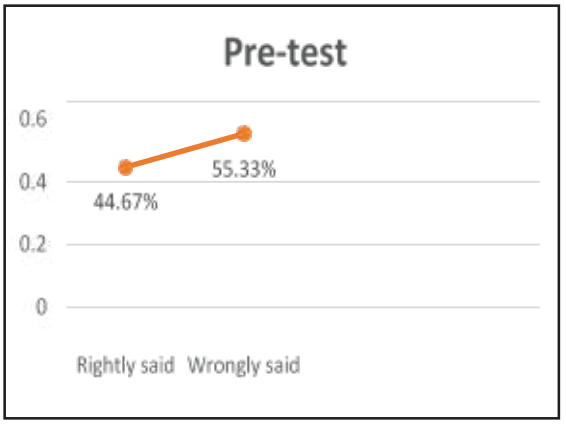


Fig. 11: Risk factors for breast cancer-related to reproductive history (N = 125)



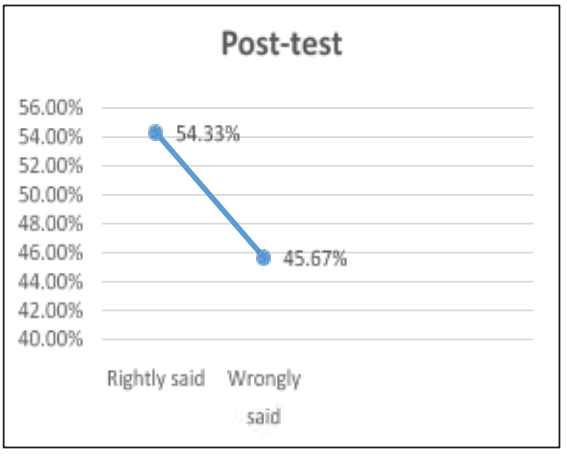


Fig. 12: Symptoms of breast cancer (N = 125)

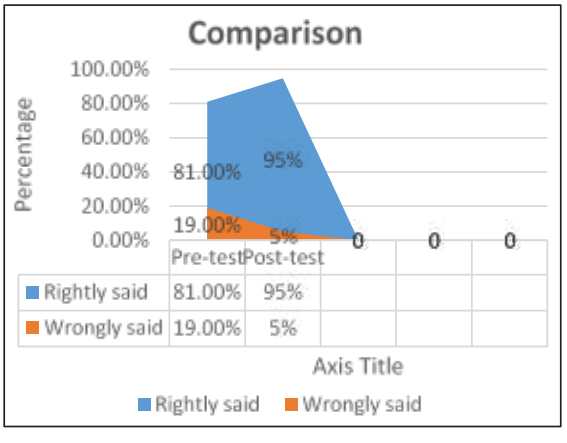


Fig. 13: Advantages of breast self-examination (N = 125)

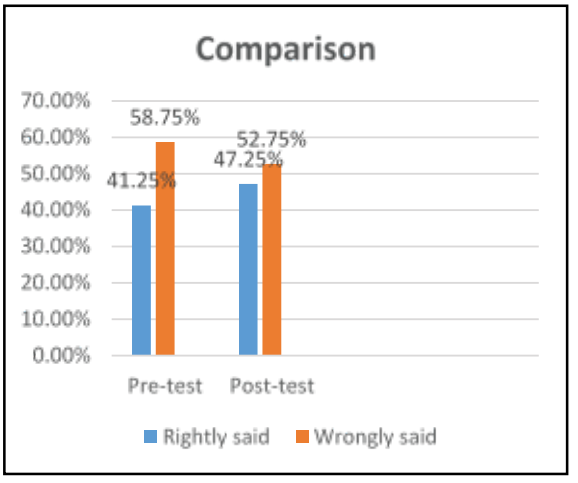


Fig. 14: Breast self-examination can detect breast cancer (N = 125)

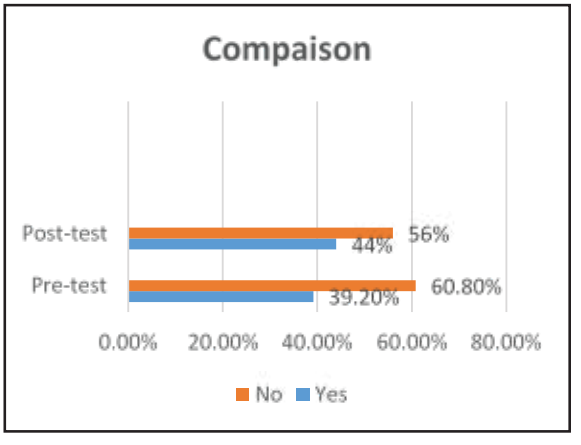


Fig. 15: Breast cancer deaths prevented by screening (N = 125)

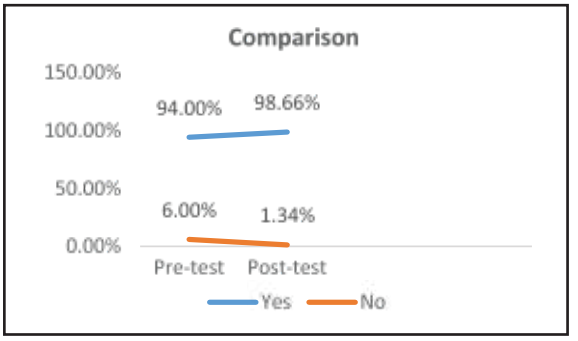


Fig. 16: Breast cancer deaths prevented by screening (N = 125)

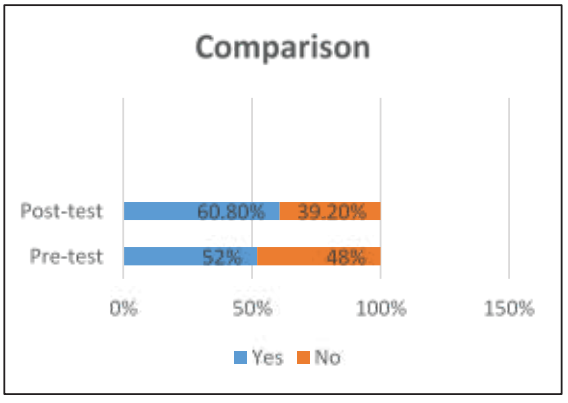


Fig. 17: Life expectancy-life years gained by screening (N = 125)

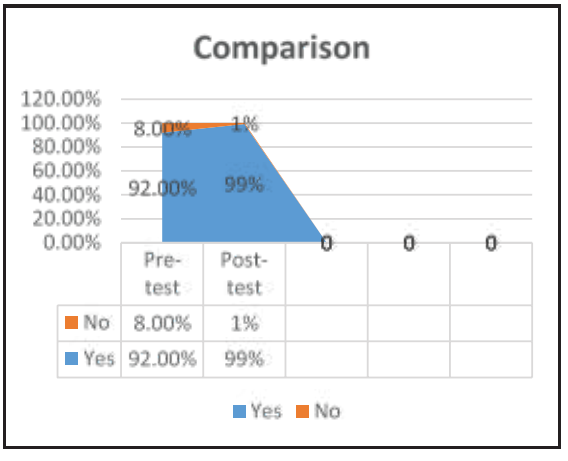
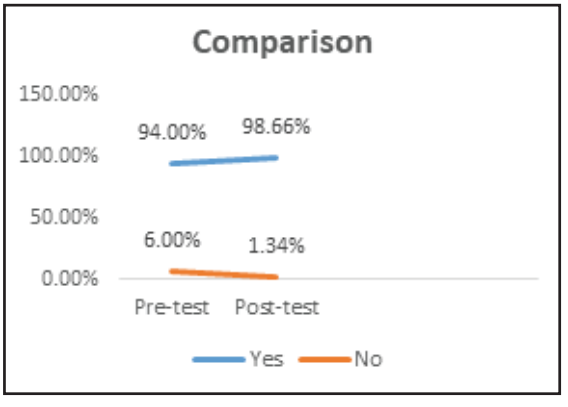


Fig. 18: High risk person for developing breast cancer? (N = 125)



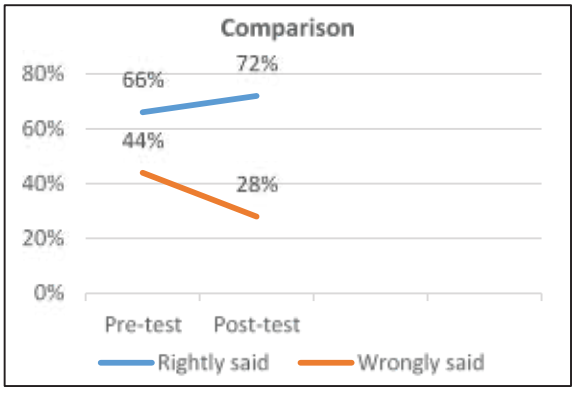


Fig. 19: Screening frequency of CBE (N = 125)

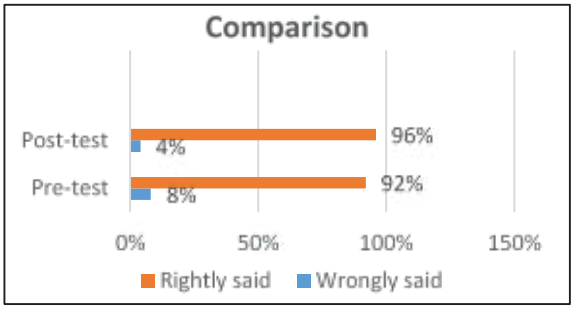
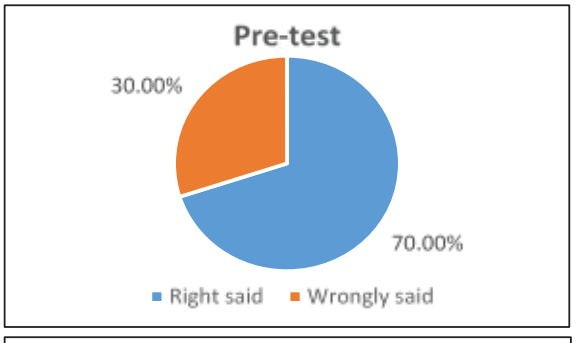
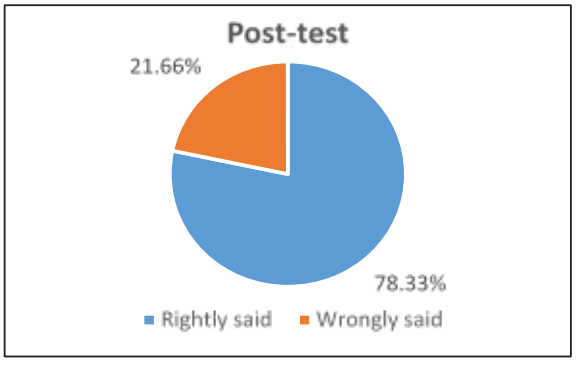


Fig. 20: Gene responsible for breast cancer? (N = 125)





Result & Discussion

The demographic details of the participating doctors from TMMCH were recorded, excluding age, gender, years of experience, and specialization. Various types of graphs and charts were used to present the data visually. Regarding the question about knowledge of breast screening (Yes, No), 97% doctors were aware of it & 3% were not aware of it. But after the workshop all the doctors were aware of it. When asked which group of people breast cancer screening can detect disease in (Disease person Normal people), 111 doctors answered "normal people," and 14 answered "diseased people" during the pre-test session. After the workshop, this result varied, with 116 doctors answering "normal people" and 9 answering "diseased people." When asked about the tools used for breast screening (SBE,Clinical breast examination, Ultrasonogram, Mammography, MRI, CT Scan, PET Scan), 78% of doctors correctly identified them in the pre-workshop evaluation, which increased to 81% after the workshop. Initially, 22% of doctors provided incorrect answers, but this decreased to 19% post-workshop. Regarding the topic of self-breast examination-SBE (Yes, No), 99.2% of doctors stated that they had knowledge about it, while only 0.2% said they had no prior knowledge, before workshop but after the workshop 100% doctors had knowledge about it. When asked whether BSE is a screening tool for diagnosing breast cancer (Yes, No), 86% of doctors answered "yes," while 14% answered "no" in the pre-workshop period. After the workshop, 94% answered "yes," and 6% answered "no." When asked about the recommended screening frequency of SBE (Monthly, Annually) during the pre-workshop period, 86.40% of doctors correctly answered "monthly," while 13.60% incorrectly answered "annually." After the workshop, the correct response rate slightly increased to 93.60%, while the incorrect response rate decreased to 6.40%. On the question of mammogram screening frequency (Monthly, Annually, Biannually), 93.6% of doctors initially answered "monthly," 4.4% answered "annually" (which is the correct answer), and 1.8% answered "biannually." After the workshop, there was an improvement, with 6.2% answering "annually" (correct), 92.8% answering "monthly," and 1% answering "biannually." When asked about the recommended starting age for self-breast examination (20 years, 30 years, 40 years), 37.6% correctly answered 20 years (the correct answer), 58.4% answered 30 years, and 4% answered 40 years during the pre-workshop period. After the workshop, 47.2% correctly answered 20 years (an increase), 52% answered 30 years, and 0.8% answered 40 years. Regarding knowledge of breast cancer risk factors (Advanced age, Family history breast cancer, BRCA1 & BRCA2 gene positive, Adult weight loss, Sedentery life style), 48.75% of doctors provided correct answers, while 51.25% provided incorrect answers. After the workshop, there was an improvement, with 58% answering correctly and 42% incorrectly. When asked about family history as a risk factor for breast cancer (First degree relative [maternal side], First degree relative [paternal side], Family history of ovarian cancer in women less than 50), 68% answered correctly, and 32% answered incorrectly. After the workshop, correct responses increased to 73%, while incorrect responses decreased to 27%. For breast cancer risk factors related to reproductive

history (Late age at menarche, Early age at menopause, Late age at first pregnancy, Use of HRT), 44.67% answered correctly, while 55.33% answered incorrectly. After the workshop, the correct response rate increased to 54.33%, while the incorrect response rate decreased to 45.67%. When asked about the symptoms of breast cancer (Lump in the breast, Ulceration over the breast, Nipple discharge, Change in the breast size, nipple or areola, Lump in the axilla, Pain in the breast or pain over the lump), 81% of doctors answered correctly, and 19% answered incorrectly. After the workshop, the correct response rate increased to 95%, while the incorrect response rate decreased to 5%. When asked about the advantages of breast self-examination (Simple and non invasive test, Complex test, Lump can be palpated, Some cancer can be detected, Increase anxiety), 41.25% of doctors answered correctly, while 58.75% answered incorrectly. After the workshop, the correct response rate increased to 47.25%, and the incorrect response rate decreased to 52.75%. On the question of whether breast self-examination can detect cancer (Yes, No), 39.2% of doctors answered correctly, while 60.8% answered incorrectly. After the workshop, the correct response rate increased to 44%, and the incorrect response rate decreased to 56%. When asked whether breast cancer screening can prevent death (Yes, No), 94% of doctors answered correctly, while 6% answered incorrectly. After the workshop, the results become 98.6% for the correct answer & 1.34% for the wrong answer. Regarding quality-adjusted life-years gained by screening (Yes, No), 52% of doctors answered correctly, while 48% answered incorrectly. After the workshop, the correct response rate increased to 60.8%, and the incorrect response rate decreased to 39.2%. When asked about life expectancy or life-years gained by screening (Yes, No), 92% of doctors answered correctly, while 8% answered incorrectly. After the workshop, the correct response rate increased to 99%, while the incorrect response rate decreased to 1%. On the question of identifying high-risk individuals for developing breast cancer (BRCA1 & BRCA2 gene positive, H/O received radiotherapy in chest, Early menarche), 66% answered correctly, while 44% answered incorrectly. After the workshop, correct responses increased to 72%, while incorrect responses decreased to 28%. Regarding the screening frequency of clinical breast examination-CBE (Monthly, Annually, 3 yearly, 4 yearly), 92% of doctors answered correctly, while 8% answered incorrectly. After the workshop, the correct response rate increased to 96%, while the incorrect response rate decreased to 4%. When asked about the genes responsible for breast cancer (BRCA1, BRCA3, BRCA2, p53), 70% answered correctly, while 30% answered incorrectly. After the workshop, the correct response rate decreased to 78.33%, while the incorrect response rate increased to 21.67%. There are few study that shows similar effectiveness to our study. Research done by Salem et el., (1970) found that there are positive correlation present between nursing work experience and their practice in BSE as working nurses. Studies like these can enhance the knowledge regarding BSE among nurses and other medical professionals1. Another study done by Taşçı et el., (2010) revealed that educational programs aimed at increasing older women's knowledge level of BSE are required and nurses, as medical professionals meeting women in various environments, can play a key role in increasing women's awareness about breast health.[4]

Conclusion

The comparative study on breast cancer screening practices before and after the awareness workshop among doctors at TMMCH shows how effective were the targeted educational interventions. Of the findings, changes in doctors' knowledge, attitudes, and practices about breast cancer screening following the workshop can be observed. With increased awareness, there is improved compliance with recommended screening guidelines, better early detection efforts, and increased patient education. It is recommended that there are continuous medical education programs in the future to fill the gaps in knowledge and ensure early detection of breast cancer to improve patient outcomes. Future studies should examine the long-term retention of knowledge and its impact on patient care.

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LARGER SIDE PORT FOR CAPSULORHEXIS IN SMALL INCISION CATARACT SURGERY (SICS) WITH POSTERIOR CHAMBER INTRA OCULAR LENS (PC IOL) IMPLANTATION IS SAFE, MAINTAINS CONSTANT ANTERIOR CHAMBER DEPTH AND DOES NOT AFFECT REFRACTIVE STATUS OF THE EYE.

Khaleda Nazneen Bari[1], Shariful Haque[2], Md. Monwarul Azim[3], KM Reza-Ul-Haq[4]

ABSTRACT

Background & Objectives: Capsulorhexis is an important step for a good Small Incision Cataract Surgery (SICS) .Continous Curvilinear Capsulorhexis (CCC) technique was the anterior capsulotomy approach of choice. Depending on the liquidity of lens material, liquid cortex was aspirated using a 26 gauge needle before Capsulorhexis or through a small CCC through the main incision can be done but as the viscoelastic material comes out easily through the wound with the resultant shallow A/C & convex crystalline lens surface, the Capsulorhexis may cause radial tear of the anterior capsule. Moreover the work of capsulorhexis & rotation of cystotome through the wound at 12 O' Clock is difficult. Side pore Capsulorrhexis overcomes this problem as it maintains constant deep A/C and also introduction of & rotation of cystotome become easy. It may help in aspiration of cortical matter at 12 O' clock. As the side pore in SICS is slightly larger it can compensate the astigmatism created by incision at 12 O' clock. Here the side pore is sealed by hydration of the wound. **Method & Materials:** 20 eyes (10 pairs of eyes of some cataract affected patients) were done SICS with side pore Capsulorhexis. Study wasconducted from 1st July 2021 to 31st Desember 2021. All patients were ranged from of 55 to 65 years of age and had age related cataract with grade 2 to 4, all operations was done under LA by at 12o clock Position. Two side pores were made at nasal and temporal side. These side pores were slightly larger than the usual one. Capsulorhexis was done through right side pore, SICS was done as usual and the eye was closed. **Results:** All patients have minimal AC reaction (+), no corneal striation, visual acuity unaided 6/18 to 6/9 with pinhole 6/9 to 6/6 after 1st week. After 8th weeks all have corrected vision 6/6, and N5. **Conclusion:** Extra side pore can be made for Capsulorhexis in SICS which helps in doing successful Capsulrrhexis by maintaining constant AC depth without causing any bad effect to the cornea or vision and the incidence of astigmatism (Minus lens at 90^{O})

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Introduction

Capsulorhexis which is Continuous Curvilinear Capsulorhexis (CCC) technique is better than capsulotomy as by this method incidence of tear of posterior capsule is less because of the smooth, regular and stable capsular margin without any tag of capsule in SICS surgery which may be captured by the aspiration canula during irrigation and wash of the cortical matter of lens and may cause accidental posterior capsule rupture.[1] Capsulorhexis through the main wound can be done but sometimes capsule may tear rapidly as the gel comes out rapidly and repeatedly through the wound & depth of A/C becomes shallow soon and A/C dept cannot be maintained during capsulorhexis which is more important for good surgical outcome. Introduction of cystotome through the wound at 120 clock is also difficult. Rotation of cystotome is also difficult through this wound. Side port capsulorhexis overcomes these problems as it maintains constant deep A/C plus introduction and rotation of cystotome become easy. It may help in aspiration of cortical matter at 120 clock. As there are two side port in this Small Incision Cataract Surgery (SICS), it neutralizes the induced refractive error (due to side port).

Method & Materials

This prospective observational study was carried out in the Department of Ophthalmology, Delta Medical College, & Hospital, from 1st July 2021 to 31st December 2021 on 20 cataract patients aged between 55 to 65 years. Patients of cataract attended in the Ophthalmology outdoor, Delta Medical College & Hospital, Dhaka. Subject with associated with cataract treatment in the past 6 months ,current vision therapy or orthoptics, ocular cause of reduced visual acuity(e.g. corneal opacity, pathological myopia), prior intraocular or refractive surgery were excluded from this study. After selection of subject (insert a coma) the purpose and procedure of study were explained to each subject with a cordial attitude giving emphasis of the benefit they would obtain from the study. Detailed history were taken from all the selected patients and they underwent detail ophthalmic examination by slit lamp bio microscope and indirect ophthalmoscope. Visual acuity were assessed by Log MAR (elaborate) chart at a 6 meter testing distance and cover test were conducted with patient fixing both near and distance targets. Posterior segment examined after dilatation of pupil with midriatic topical agent by indirect ophthalmoscope, Volk lens.

20 (cataract-affected eyes of patients) was selected for SICS with side pore capsulorhexis, Polymethyl Meth Acryl (PMMA) Intraocular Lens (IOL) in (a) capsular bag. The study was conducted in all patients having age related cataract with grade 1 to 3 nucleus. Informed consent was taken from all patients. IOL power was calculated by biometry & IOL was selected with desired refraction -0.4 to -0.5D. All operations were done under L/A by the same surgeon.

Procedure

All patients were draped as usual after giving peribulbar block. The scleral tunnel was made to enter into A/C. After introduction of viscoelastic two side pores were made, one on right side and another on the left side and was made slightly larger than conventional size. The anterior capsule of the lens was stained with trypan blue

dye 0.035 (50 % dilution of 0.06% dye) (Auroblue, Aurolabs, India) under the OVD using the painting technique.[2,3] After capsular staining, Visco are injected again to replace the dye stained viscoelastic for enhanced visibility as well as to flattened the anterior capsule of lens. The anterior capsule is punctured in the center to aspirate the liquefied cortex and decompress the anterior chamber. Then capsulorhexis was done through the side pore on the right side. SICS was done as usual. Irrigation & Aspiration (I/A) was done to washout cortical matter. But in eyes where the cortical matter was at 120 clock (positions) had to be removed by enlarging the side pore on the right side. Alcon PMMA single piece IOL was implanted in all eyes. Washing of viscoelastic substance was done by I/A cannula. Injection vancomycin 0.1 ml was given into anterior chamber. Eye was made closed with eye pad. Eye pad was removed on the 1st POD. Dexamethasone eye drop was installed two hourly for two weeks & then 6 hourly for one month. Patients were followed up after 2 weeks & 8 weeks. Follow-up was done up-to attainment of 0.3 Log MAR unit or stable vision for four consecutive visit.

Results:

All patients had very minimum A/C reaction (+or++), no corneal striation; negligible conjunctival congestion, visual acuity unaided 6/18 to 6/9 & with pinhole 6/9 to 6/6 & N5. Postoperatively 3 eyes (5.77%) had corneal oedema (striate keratopathy) and 1 eye (1.9%) had fibrin in anterior chamber. Five eyes (9.61%) had more than 2+ cells and flare at 2nd weeks. All responded) well to intensive topical and subconjunctival steroids. Results are displayed with tables and figures.

Distribution of best corrected visual acuity during follow-up periods

Table-1: Distribution of best corrected visual acuity in Log MAR unit of the study subjects.

Follow-up periods	BCVA (Log MAR unit)	T value/p value
Baseline	0.70±0.15 (SD)	……
1st day	0.55±0.13 (SD)	12.476/000[s]
5th day	0.49±0.09 (SD)	13.405/000[s]
7th day	0.37±0.11(SD)	14.845/000[s]

S=significant

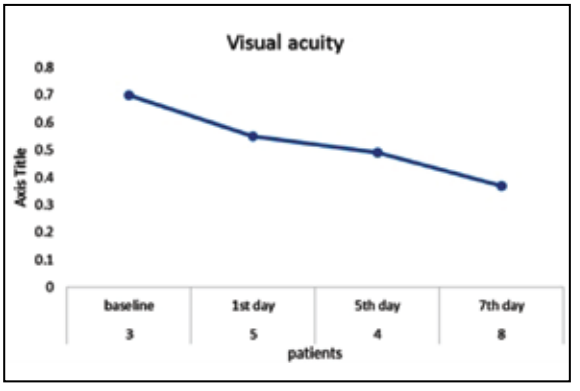

Figure-I: Line chart showing distribution of best corrected visual acuity in Log MAR unit of study subjects

Table-1 and figure-1 shows the distribution of best corrected visual acuity in Log MAR unit of the study subjects in baseline and follow-up periods. Mean best-corrected visual acuity in Log MAR unit was 0.70±0.15 (SD). It was 0.55±0.13 (SD), 0.49±0.09 (SD) and 0.37±0.11(SD) in 1stday, 5thday and 7th day respectively

Distribution of mean best corrected visual acuity during follow-up periods according to number of patients

Table-2: distribution of best corrected visual acuity in different follow-up periods according to (the) number of patients.

Follow-up periods (Patients)	Baseline	After 1 month	t value/ p value	After 3 months	t value/ p value	After 6 months	t value/ p value
05	0.70+_0.16	0.55+_0.13	8.854/0.000[s]	0.48+_0.11	6.1/0.000[s]	0.33+_0.10	11.0/ < 0.001[s]
07	0.67+_0.13	0.55+_0.13	8.316/0.000[s]	0.49+_0.09	10.6/0.000[s]	0.36+_0.10	24.383/ <0.001[s]
08	0.78+_0.17	0.57+_0.16	9.101/0.000[s]	0.50+_0.10	9.027/0.000[s]	0.41+_0.17	12.899/ <0.001[s]

S=significant, p value obtained by paired t test

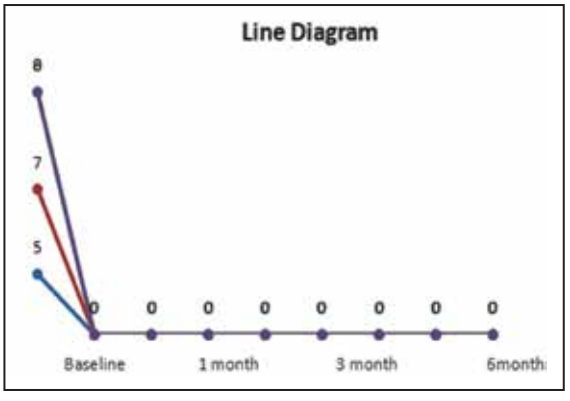

Figure-II : shows the distribution of best corrected visual acuity according to number of patients.

Table-2 and figure- II shows the distribution of best corrected visual acuity according to number of patients. Mean corrected visual acuity of 5 patients , baseline,1 month, 3 months, 6 months period were 0.70+_0.16, 0.55+_0.13, 0.48+_0.11, 0.33+_0.10 respectively. In 7 patients it was 0.67+_0.13, 0.55+_0.13, 0.49+_0.09, 0.36+_0.10 respectively and in 8 patients it was 0.78+_0.17, 0.57+_0.16, 0.50+_0.10, 0.41+_0.1 respectively.

Discussion:

Performing a CCC in eyes with intumescent cataract presents a significant challenge to cataract surgeons because of poor visualization of the anterior capsule as a result of absence of red reflex. This is further complicated by lens milk extrusion upon puncture of the anterior capsule and high intra lenticular pressure. There was no endopthalmitis. In (In) two cases the final visual acuity was worse than 20/200 because of preexisting posterior segment pathology

Moreover, intumescent cataracts are usually associated with increased and higher than usual posterior vitreous pressure making capsulorhexis more challenging.[4] The astigmatism in 10 eyes with single piece IOL was less as the wound size was 3.2 to 3.5 mm and astigmatism was -1.12 D on the first day & -.77 D after 6 weeks. Extra side pore in SICS does not affect much on astigmatism there was no opacity on the cornea due to side pore.

Conclusion:

Extra side pore can done for capsulorhexis in SICS which help in doing successful capsulorhexis by maintaining desirable A/C depth without causing adverse effect on refraction and any harmful effect to the cornea.

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A CASE OF DEATH DUE TO SUICIDAL POISON

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ABSTRACT

Cases of poisoning both fatal and non fatal are encountered in all parts of the world. Though the mode of poisoning varies in different countries, for example, Death from suicidal poisoning by narcotic drugs, medicines and solvents are common in the Western World as are poisoning by insecticides and other agricultural poisons common in this part of the globe.

Key words: Poisoning, Death

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Introduction

Poison is in everything, and no thing is without poison. The dosage makes it either a poison or a remedy. These words are attributed to Paracelsus (1493-1541), the Renaissance scholar and physician. The words are undoubtedly true, even for common substances, such as salt or water, which under appropriate conditions can be poisonous. Modern medicines, useful and therapeutic in the prescribed doses, can be lethal when taken in excess; witness the number of suicides by overdose of sleeping pills. But these examples are not what is usually meant by poison. Poisons are agents that bring about the destruction of life when taken in small quantities. Further, if they are undetectable by their taste, smell, or colour their attractiveness as poisons is enhanced.[1]

A substance which is harmless in small quantities may act as poison and cause death when taken in large amount and bacterial toxins are not regarded as poisons in ordinary sense of term. Poisoning is most commonly accidental but a large number of suicidal or in many cases, suicidal gestures. Homicide by poison is now relatively rare in advanced countries, due to the ease of detection but is more common in developing countries where public awareness and

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availability of diagnostic method is less. Suicidal poisoning is now easily the most common method of self destruction in advanced countries due to the ease with which toxic drugs can be obtained.[1,2]

Case Report

The history was taken from the Father of the deceased. Md Mohsin 38 years old male, S/O Bolo Mia, muslim from P/S- Langolkot, Dist- Comilla, A/P- Chandana Chaurasta, Joydebpur, Gazipur- Dhaka.

As per information supplied by his father that the victim was in monetary problem. After repeated asking he admitted that he was taken the poison which was bought for insecticides. The guardian called in a local physician referred the case to DMCH for proper management. He was admitted in bed no: 4, ward no: 34/B and emergency resuscitative measures were adopted but failed. He died on 27/10/18 at 01:30 AM in DMCH, Dhaka. It was police case and sent for postmortem to DMC Morgue. The case was filed at Shahabag Thana UD case No: 31/18 dated 27/10/18. Police handed over the dead body at 17:45 PM on 27/12/18 by CT no: 11220 Md Ramjan Ali. The body was received at 11:30 AM on 28/12/2018 and Post mortem was done at 11:30 AM on 28/12/2018.

Autopsy:

Autopsy of the body of the victim was held on 28-12-18 at 10.15hrs in the mortuary of Dhaka Medical College, Dhaka. The body was brought by police constable and was identified by the police constable and the elder brother of deceased.

External examination:

The body of the deceased was dressed in lungi and sando gangi. he was nourished, healthy young man with fair complexion. His length was 5 feet 6 inches.

He had black scalp hair of 2 inches in length.

There was blood stained froth in mouth and the nostrils.

Post mortem staining was deep in back of the body hand and leg.

Rigor mortis was present in the whole body.

Face was cyanosed and congested.

The lips, fingers and toes were cyanosed.

Peculiar smell of organo-phosphorus compound was found.

There were 14 teeth in each jaw.

The nose and ears were healthy.

There was no injury to external genital organ and anus.

There were no injury marks and tattoo marks in the body.

Internal examination:

The scalp was healthy and there found no injury

Skull was healthy. There found no fracture in the skull.

Brain was congested. Meninges was healthy and congested.

Soft tissues and the blood vessels of the neck were healthy.

The larynx, trachea and bronchi were congested and containing frothy hemorrhage exudates.

There was no injury to thyroid gland, thyroid cartilage and hyoid bone.

Both lungs were congested and oedematous.

Great vessels, coronary arteries and muscles of and valves of the heart were healthy and full.

Oesophagus was congested.

Stomach was congested and contained blood stained liquid with a peculiar smell of organo-phosphorous compound.

Small intestine was congested and partially distended with gas.

The large intestine was congested and contained fecal matter.

Liver was congested. The gall bladder was healthy and contained bile. Bile duct was patent.

Spleen was small and congested.

The pancreas was slightly congested.

Both the kidneys were congested. Capsules removed easily. Right kidney weighted 115gms.

The suprarenal glands were normal. .

Urinary bladder contained 50ml of high colored urine.

Viscera were sent to chemical examination department for chemical analysis.

Primary opinion:

The cause of death was kept pending till the receipt of chemical examination report.

Investigation:

Following viscera were preserved and sent to the forensic toxicology laboratory to detect poisons:

1. Whole stomach with its contents and upper 30 cm of small intestine with its contents- result reveals presence of organo-phosphorus compound and wall of the stomach and intestine were congested and edematous.
2. Small portion (500gm) liver and half of the each kidney- result reveals that liver and kidneys were congested and edematous.
3. Blood 15 cc and urine 20 cc were preserved and sent for chemical examination-The result reveals no presence of alcohol.

Final opinion:

Considering the postmortem examination findings and chemical analysis reports (for evidence of poison) I am of the opinion that death was due asphyxia as a result of ingestion of organo phosphorus compound which was ante mortem.

Discussion :

The following points are required to be considered in this case-

1. The cause and mechanism of death.
2. The circumstances of death.
3. The fatality related with poisoning.
4. Nature of death.
5. Studies about agrochemical poisoning.

The cause and mechanism of death:

As there were feature of asphyxia found, it is most likely that death is caused by paralysis of respiratory muscle, respiratory arrest due to failure of respiratory center or intense broncho-constriction.

Acetylcholine is hydrolyzed by cholinesterase present in plasma and on the membranes and within the cytoplasm of many cells. Organo-phosphorus compound readily react cholinesterase and inactivate it by phosphorylating

the enzyme, at the myoneural junctions and the synapses of the ganglions some of them remain permanently inactivated. As a result there is increased activity of the acetylcholine at the site of action. So a muscarinic and CNS effect may result. Serious effects are paralysis of respiratory muscles, bronchosparm, profuse broncheal secretions, coma and death.[1]

Circumstances of death:

In this case the victim was unmarried young man of 22 years. He quarrels with his family members and become emotional and could not understand the consequence of taking organo-phosphorus compound ingestion. On the other hand poison was present in their house for agricultural use and the age bearing the deceased was emotional. So the victim in this case had a definite provocative attitude to destroy herself.

Fatalities related with poison:

Inhaled in gaseous form has the very rapid onset of action, then injected into the blood vessels, intramuscular subcutaneous intradermal injection. Next in order of rapidity of action, application into the wound, to a serous surface, into stomach, into natural orifices, lastly to unbroken skin. When taken by mouth various factors influence the absorption of poison. These are quantity and quality of food present in the stomach, diseases of the stomach including pyloric stenosis, gastrojejunostomy, condition of the body, sleep intoxication, unconsciousness etc.[3]

Fatal dose of organo-phosphorus (Malathion) is 1 gm orally. Fatal period is 1-24 hours. But in nonfatal cases, acute effects lasts for 6-30 inch which disappears in 2-3 days, sometimes persists for 2 weeks. Complete recovery occurs in 2-3 months.[4] In this case the deceased died within 8 hours after ingestion of organo-phosphorus compound.

Nature of death:

Chemical examiners report reveals organo-phosphorous compound present in stomach and intestinal contents. As a homicidal poison organo-phosphorus does not favor as it have a peculiar smell moreover there is no injury to body which may go in favor of homicide by forceful ingestion.[5] Due to peculiar smell and circumstances of poisoning it does not favor as accidental poisoning. In this case the deceased had a definite provocative attitude to destroy his life and the poison was available in his room, so it favors the suicidal poisoning.

Whether Suicidal, Homicidal or Accidental Poisoning

The chemical analysis report reveals presence of Organ phosphorous compound poisoning in all the visceras. This means that the poison had gone into the stomach and the patient had survived a sufficient time for the poison to be absorbed into the system and go into the circulation, to be able to be deposited in the liver and kidneys. The medico legal significance of this is that, it excludes the possibility of postmortem poisoning.

The absence of any detectable physical injuries excludes the possibility of forceful ingestion of the poison by any other person, i.e. homicidal poisoning.

Accidental poisoning with these types of poisons may take place while spraying such poisons on the field or ingestion of such poisons as medicines by mistake. The strong offensive

odour of such poisons easily distinguishes them as not to be medicine. Upon analysis of the history obtained, the possibility of accidental poison is easily ruled out in this case and hence the only probability remains suicidal poisoning.

Conclusion

Much caution has to be taken in the handling of known poisons. Precautionary measures have to be taken in the handling of unknown poisons or suspected poisons and chemicals. One has to be very careful that poisons are always kept out of reach of children to prevent accidental poisoning or from emotionally unstable individuals who have a suicidal tendency, to prevent their suicidal poisoning.

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