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The minimum personal data that are stored are:

- full name
- email address
- affiliation (department, and institution)
- country of residence

Optionally, the user can provide:

- salutation
- associated URL
- phone number
- reviewing interests
- mailing address
- ORCID
- Google Scholar
- profile picture

What do we do to keep that data secure?

We regularly backup our databases, and we use reliable cloud service providers (Amazon, Google Cloud, Linode) to ensure they are kept securely. Backups are regularly rotated and the old data is permanently deleted. We have a clear internal data handling policy, restricting access to the data and backups to key employees only. In case of a data breach, we will report the breach to the affected users, and to the press/journal contacts within 72 hours.

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2. When registering as an author and submitting an article or book

2.1 what data we collect

- When registering an account we ask you to log in and provide certain personal information (such as your name and email address), and there is the option to register using an ORCID which will pre-fill the registration form.
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- You are able to view, change and remove your data associated with your profile. Should you choose to completely delete your account, please contact us at support@ubiquitypress.com and we will follow up with your request as soon as possible.
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3. When registering as a reviewer

3.1 what data we collect

- To become a reviewer you must first register as a user on the website, and set your preference that you would like to be considered as a reviewer. No new personal data is collected when a registered user elects to become a reviewer.
- When registering an account we ask you to log in and provide certain personal information (such as your name and email address), and there is the option to register using an ORCID which will pre-fill the registration form.
- Reviewers can also be registered by editors who invite them to review a specific article. This requires the editor to provide the reviewer's First Name, Last Name, and Email address. Normally this will be done as part of the process of inviting you to review the article or book.
- On submitting a review, the reviewer includes a competing interest statement, they may answer questions about the quality of the article, and they will submit their recommendation.

3.2 why we collect the data

- The data entered is used to invite the reviewer to peer review the article or book, and to contact the reviewer during and the review process.
- If you submit a review then the details of your review, including your recommendation, your responses to any review form, your free-form responses, your competing interests statement, and any cover letter are recorded.

3.3 what we do (and don't do) with the data

- This data is not shared publicly and is only accessible by the Editor and system administrators of that journal or press.
- The data will only be used in connection with that journal or press.
- Data that is retained post final decision is kept to conform to publication ethics and best practice, to provide evidence of peer review, and to resolve any disputes relating to the peer review of the article or book.

- For journals or presses that publish the peer reviews, you will be asked to give consent to your review being published, and a subset of the data you have submitted will become part of the published record.

3.4 what to do if you want to get a copy of your data, or want your data to be removed

- If you would no longer like to be registered as a reviewer you can edit your profile and tick the box 'stop being a reviewer'. This will remove you from the reviewer database, however any existing reviews you may have carried out will remain.
- If you have been contacted by an editor to peer review an article this means that you have been registered in the system. If you would not like to be contacted for peer review you can reply to the email requesting that your data be deleted.

4. When being registered as a co-author

4.1 what data we collect

- Co-author data is entered by the submitting author. The submitting author will already have a user account. According to standard publishing practice, the submitting author is responsible for obtaining the consent of their co-authors to be included (including having their personal data included) in the article/book being submitted to the journal/press.
- The requested personal data for co-authors are at the bare minimum; first name, last name, institution, country, email address. This can

also include; ORCID ID, Title, Middle Name, Biographical Statement, Department, Twitter Handle, Linkedin Profile Name or ImpactStory ID.

4.2 why we collect the data

- Assuming that it is accepted for publication, this data forms part of the official published record in order for the provenance of the work to be established, and for the work to be correctly attributed.
- Author names, affiliations and emails are required for publication and will become part of the permanent cited record.

4.3 what we do (and don't do) with the data

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Head- Neck Cancer Burden in Bangladesh

Md. Abdus Sattar

Introduction:

Cancer is a dreadful name. It is not just a killer, it comprises a lot of human stories- which comprises with fear, cry, depression, financial crisis, love, care, deep sorrow and happy moments of cure.

Cancer is the first or second leading cause of premature death (i.e., at ages 30-69 years) in 134 of 183 countries, and it ranks third or fourth in an additional 45 countries.¹

Globally in 2020, every 6 deaths include 1 cancer patient and number of deaths by cancer was 1 crore. It may be increased to 1.5 crore by the next decade. Death of two-third cancer patients in the developing countries.²

In Bangladesh 114 person per lac has been suffering from various cancer. Approximately 20 lacs cancer patient in Bangladesh. Newly affected are 53 person per lac. 2 lacs affected in every year and about 1 lac died of cancer in every year. In this country 12% death due to cancer. Daily death about 273 in Bangladesh. According to study, there is a definite risk of it to be doubled by upcoming three decades.³

In human body, there are about 100 trillion cells. Uncontrolled and uncoordinated proliferation of cells makes cancer. About 200 different types of cancer may affect human being. 1 out of 2 people affected by cancer in his lifetime. Male are two times affected than female. 3 out of 5 ignore their symptoms of cancer.

There are at least 30 types of cancer that affects head and neck regions are called collectively Head- Neck Cancers.

Some common are as follows:

- Oral cavity cancer
- Laryngeal cancer
- Thyroid cancer
- Oropharyngeal cancer
- Tongue cancer
- Tonsillar cancer
- Nasopharyngeal Cancer
- Hypopharyngeal cancer
- Sinonasal cancer

- Parotid cancer
- Cancer of Minor Salivary gland
- Cancer involving ear
- Skin cancer involving Head and Neck Region
- Lymphoma involving Head and Neck Region

Head-Neck Cancer Burden:

There are 4 different types of head neck cancer out of top 10 cancer internationally. According to data, 33 head neck cancer patient out of 100 male cancer patient and 11-13 head neck cancer patient out of 100 female cancer patients. Head Neck cancer patients mostly affecting developing countries.

According to various statistics head-neck cancers are the leading cancer in Bangladesh. To understand the scenario some facts should be considered. In Bangladesh there is no complete cancer registry. For this reason, it is difficult to conclude accurately on highest burden of cancer type. There is a published report by National Institute of Cancer Researches and hospital (NICRH) (2015-2017) highest affected cancer was lung cancer (26.1%) in male and breast cancer (30.4%) in female and combinedly lung cancer 16.6%. In this report Head- Neck cancer components are shown separately. Top listed 10 cancer of male shows 4 are head- neck cancer. 2 out of 4 are fully categorized as head- neck cancer and rest 2 out of 4 are partly categorized as head- neck cancer. Again, Top listed 10 cancer of female shows 3 are head- neck cancer. 1 out of 3 are fully categorized as head- neck cancer and rest 2 out of 3 are partly categorized as head-neck cancer. So, summation of all component of head-neck cancer of this list will go to near highest.

Moreover, most of thyroid cancers are not included in this report. As because for thyroid cancer after surgery Radioactive Iodine Ablation therapy is the treatment of choice. Only few thyroid cancers are reported to NICRH for conventional radiotherapy and etc. International study shows almost half of the population harbors Thyroid disorders/ nodules. Almost 10% of thyroid nodule may affected by thyroid cancer. Differentiated Thyroid cancers are exclusively

treated by surgery and Radioactive Iodine Ablation therapy. Radioactive Iodine Ablation therapy is given by various institutes of nuclear medicine all over the country. So, Thyroid cancer patients are not reported to NICRH and not included their published report.

In a published report from National institute of nuclear medicine and applied sciences (NINMAS) shows about 2500 Thyroid cancer patients reported annually in all nuclear medicine Centre of Bangladesh. Again, all Thyroid cancer patient are not coming here as because all patient usually not required RAI therapy especially early differentiated thyroid cancer or not willing to take RAI Therapy in spite of offering and explaining about the necessity of it.

Very recently there is a 'Evidence from population-based cancer registry' report named "Distribution of Cancers in Bangladesh" published Epidemiology division of department of public health and informatics of BSMMU. The study was conducted from July 2023 to June 2024 at 4 unions of Hossainpur upazila, Kishoreganj. It aimed to find out the distribution of cancers among Bangladeshi population.

Sufferings of Head-Neck cancer patients in Bangladesh

- Sufferings of Head - Neck cancer patient in Bangladesh mostly due to 4 reasons
 - Advanced presentation
 - Insufficient treatment facilities
 - Absence of referral system
 - Absence of feasible, affordable, and cost-effective treatment

What Should we do?

Awareness builds up at all levels. Risk factor should be isolated and understandable to common population. Stop exposure from harmful risk factors. Cessation of all habits that may initiate cancer.

Preventive steps should be taken to avoid Head-Neck cancer. Educate the common population about Head-Neck cancer. Regular Screening program for early detection of Head-Neck Cancer. Early diagnosis may cure almost all head-neck cancers. Regular physician education is essential to keep them updated. Outcome of treatment regularly monitored and audited. Survived patients carefully and regularly followed up.

Some preventive measures are reflecting in the slogan of World Cancer Day.

"Close the care gap"-Slogan of World Cancer Day-2022-2024

'United by Unique'-United in our message, Unique in our stories-Slogan of World Cancer Day-2025-2027

Bangladesh with global partners in Head-Neck Cancer

Bangladesh is a member of International Federation of Head and Neck Oncologic Societies (IFHNOS) and Asian Head Neck Societies (AHNS). World Head Neck Cancer Day (July 27) are celebrating every year in Bangladesh together with 55 Head-Neck Societies, 51 Countries and UICC.

Conclusion:

Head Neck Cancer is one of the top-ranking cancers in Bangladesh and Globally. It should be appropriately addressed in policy making level. Treatment facilities should be increased. Manpower should be appropriately trained. Dedicated personnel are required to face the challenge of increased head-neck cancer burden. Awareness program should be observed comprehensively and continuously.

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Assessment of Pulmonary Function of Psoriatic Patients Receiving Methotrexate

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Keywords: Pulmonary Function, Psoriatic Patients, Duration of Treatment

Abstract:

Background: Psoriasis is associated with altered pulmonary function. Methotrexate affects the lung function status in psoriatic patients: effect of other antipsoriatic medication on lung function was not evaluated.

Objectives: To assess the Pulmonary Function Test among the Psoriatic Patients Receiving methotrexate with the Duration of Treatment.

Methods: This cross sectional study was carried out in the Department of Physiology of Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbag, Dhaka, from July 2012 to June 2013. A total number of 120 subjects were selected, among which 30 were apparently healthy subjects (control group-A) for comparison and 90 were diagnosed male Psoriatic patients (study group-B). Controls were selected from the community and the patients from the Indoor and Out Patient Department (OPD) of Dermatology and Venereology, BSMMU, Dhaka. Based on treatment, these study subjects were further divided into three groups consists of 30 male subjects in each group.

Results: The mean $\pm$ SE age were 33.5 $\pm$ 1.424, 34.5 $\pm$ 1.401, and 35.27 $\pm$ 1.44 and 34.8 $\pm$ 1.212 years in group A, B₁, B₂ and B₃ respectively and ranging from 25 to 45 years. All the values were almost similar and the differences among the groups were statistically non-significant. Therefore, all the groups were matched for age. The mean $\pm$ SE BMI were 23.557 $\pm$ 0.584, 23.089 $\pm$ 0.721, 23.986 $\pm$ 0.579 and 23.155 $\pm$ 0.595 years in group A, B₁, B₂ and B₃ respectively. In this study, all the groups (healthy and diseased) were matched for BMI, as the values were almost similar and the difference among the groups were statistically non-significant. In this study, all the control subjects (A) were with normal lung function tests (LFT). On the contrary, 19 (63.33%), 20 (66.67%) and 29 (96.67%) Psoriatic patients were with abnormal lung function tests in the experimental groups B₁, B₂ and B₃ respectively. In group B₁, restrictive disorder was found in 9 (30%) patients, small airway obstruction was in 0 (0%) patients and large airway obstruction in 20 (0%) patients. In group B₂, restrictive disorder was found in 10 (33.33%) patients, small airway obstruction was in 0 (0%) patients and large airway obstruction in 0 (0%) patients. In group B₃, restrictive disorder was found in 23 (76.67%) patients, small airway obstruction was in 0 (0%) patients and large airway obstruction in 0 (0%) patients. In this study, among those 90 Psoriatic patients 42 (46.67%) were diagnosed as restrictive disorder; where 12 Psoriatic patients were presented with different type of pulmonary symptoms and rest 30 were without any pulmonary complain. On the contrary, in the group B₂ FVC and FEV₁ were negatively correlated but FEV₁/FVC%, PEFR, FEF_{25-75%}, FEF_{25%}, FEF_{50%} and FEF_{75%} were positively correlated with the duration of therapy. Moreover, in group B₃, FVC, FEV₁, FEF_{50%} were negatively and FEV₁/FVC, PEFR, FEF_{25-75%}, FEF_{25%} and FEF_{75%} were positively correlated with the duration of therapy. However, most of these relationships (e.g. FEV₁/FVC, PEFR, FEF_{25-75%}, FEF_{25%} and FEF_{75%}) were not statistically significant, but FVC, FEV₁ were statistically significant in group B₁ and B₃.

Conclusion: From this cross sectional study it may be concluded that, the pulmonary Function Test among the Psoriatic Patients were with abnormal lung function tests in the experimental groups B₁, B₂ and B₃ respectively. However, most of these relationships (e.g. FEV₁/FVC, PEFR, FEF_{25-75%}, FEF_{25%} and FEF_{75%}) were not statistically significant, but FVC, FEV₁ were statistically significant in group B₁ and B₃.

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Introduction:

Psoriasis is a common chronic recurrent non-contagious inflammatory skin disease with a complex pathophysiology and a strong genetic background.^{1,2,3,4} Plaque psoriasis is the most common type, account for 80-90% of all cases of Psoriasis usually manifested as raised, well-demarcated erythematous, oval plaques with adherent silvery scale.^{5,6,7} In about 5 to 40% To cases of Psoriasis develops Psoriatic arthritis.⁸ Etiology of Psoriasis remains unknown; however, it has been linked to complex interactions between predisposing genes and the environment.⁹ The pathophysiology of Psoriasis is characterized by epidermal hyperproliferation, enhanced antigen presentation Th-1 cytokine production, T cell expansion and angiogenesis. These condition usually occurred by genetic pathways, common immune mechanisms and treatment related toxicities.⁹ Smoking and obesity were also found to be independent risk factors for the development of Psoriasis.¹⁰ In the recent years, Psoriasis has been recognized as a systemic disease associated with numerous multiorgan abnormalities and complication. In Psoriatic patients an increased risk of cardiovascular abnormalities, hypertension, dyslipidemia, atherosclerosis, type-2 diabetes mellitus, obesity, chronic obstructive pulmonary disease, cerebral stroke, osteoporosis, cancer and depression was noticed.^{11,12,13} Several studies showed Methotrexate induced pulmonary toxicity and this condition commonly presents within 24-32 weeks of taking the drug.^{14,15,16,17,18} McKenna and Burrows¹⁹ reported that pulmonary function tests deteriorated further despite stopping methotrexate for the few months though remains in asymptomatic condition. Pulmonary function tests are the most sensitive means of detecting any pulmonary involvement in any disease. Spirometry is probably the most important tool for screening of pulmonary disease and most frequently perform pulmonary function test.²⁰ Various ventilatory variables like FVC, FEV1, FEV1/FVC ratio, PEF, FEF 25-75% can be measured by Spirometry.^{21,22,23,24} Along with other organ involvement lungs were also affected in patients with Psoriasis. A multivariate logistic regression model demonstrated that Psoriasis was significantly associated with COPD, after controlling for confounders, including age, sex, socioeconomic status, smoking and obesity.²⁵

It has been suggested that COPD is an autoimmune disease with a chronic inflammatory state, similar to Rheumatoid arthritis or Psoriasis.^{26,27} Several investigator of different countries have suggested that systemic inflammation plays an important role in both Psoriasis and COPD.^{28,29} Inflammation Psoriasis results in a Th1 lymphocyte cytokine milieu, such as interleukin (IL)-1, IL-6, IL-8, and TNF- α , and signs of systemic inflammation, including increased C-reactive protein (CRP) levels and platelet activation.⁷ The elevation of interleukins and CRP was also noted in COPD and linked to the severity of the clinical presentation of both Psoriasis and COPD.^{29,30,31} There is increasing evidence that COPD is a complex systemic disease than just an airway and lung disease. Cachexia, skeletal muscle abnormalities, Hypertension, Diabetes, Coronary heart disease, pulmonary infection, cancer and pulmonary disease are the most common comorbidities that are associated with COPD.³² Inflammatory cytokines such as CRP, TNF- α , IL-6, IL-8 have been found to be aetiologically involved in both Psoriasis and COPD.^{26,27,32}

Materials and Methods:

Type of Study: Cross-sectional study

Place of Study: Department of Physiology, BSMMU, Dhaka, Bangladesh. Study Period: 1st July 2012 to 30st June 2013.

Ethical Issue: Protocol was approved by Institutional Review Board, BSMMU, Shahbag, Dhaka. Sample Size: A total number of one hundred and twenty (120) male subjects with age range from 25 to 45 years.

Grouping of the subjects:

Group A (Control Group): 30 apparently healthy male subjects.

Group B (Study Group): 90 diagnosed male patients with Psoriasis. On the basis of different types of treatment the study group was subdivided into-

- B₁** 30 diagnosed psoriatic patients receiving only topical therapy (e.g. Corticosteroid, Coal tar, Dithranol, Salicylic acid, etc.).
- B₂** 30 Psoriatic patients treated with PUVA therapy.
- B₃** 30 Psoriatic patients treated with Methotrexate therapy.

Inclusion criteria:

For both groups:

- Age: 25-45 years
- Sex: Male

For study groups:

- Psoriatic patients diagnosed by the physicians of Dermatology and Venereology.
- Psoriatic patients under treatment with Topical (e.g. Corticosteroid cream/ointment, Coal Tar, Dithranol, Tazarotene, Vitamin D, etc.) therapy, PUVA therapy and Methotrexate medication.

For control group:

Age, sex, socioeconomic structure matched apparently healthy male subjects.

Exclusion Criteria:

For both groups

- Other type of dermatological disorders.
- History of any type of smoking (Cigarettes, Hookah, Biri, Tobacco etc).
- Patients with acute or chronic lung & chest wall disease e.g. Pneumonia, Tuberculosis, Asthma, COPD, Malignancy etc.
- History
 - Any heart disease
 - Chronic liver diseases
 - Chronic renal failure (0.68-1.36mg/dl)[33]
 - Diabetes mellitus:

Fasting- 65-104mg/dl or 3.6-5.8mmol/L[33]2 hrs. after breakfast-<140mg/dl or <7.8mmol/L (WHO1999).
 - Other autoimmune diseases

All the diseases mentioned above were excluded by taking history except diabetes mellitus, chronic renal failure, which were diagnosed biochemically.

Site of sample collection: Controls were collected from the community and the Psoriatic patients from the indoor and Out Patient Department (OPD) of Dermatology and Venereology, BSMMU, Dhaka.

Study outline

On the first day of enrollment, the objectives, nature, purpose and potential risk of all the procedures used for the study were explained in detail to each subject, with a cordial attitude giving emphasis on the benefits he might obtain from this study. He was encouraged for voluntary participation & was allowed to withdraw himself from the study even after participation, whenever he felt uneasy. If he agreed to enroll in the study, an informed written consent was taken in a prescribed form. Detailed family

history, medical history and thorough physical examination of each patient were done and all the information was recorded in a standard questionnaire. Then all the patients were requested to attend the Department of Physiology of BSMMU, in fasting state at 8 am on the day of biochemical and Spirometric examination. On the day of examination, 5 ml of venous blood was collected for estimation of fasting serum glucose and serum creatinine. The blood sample was taken to the hematology laboratory as soon as possible and the subject was examined for the

- Height (in meter) and weight (in kg).
- Lung function variables by using a RMS computer based Spirometer, described by Clement Clark International.

Collection of blood sample

With all aseptic precaution, 5 ml of venous blood was drawn from the antecubital vein by a disposable plastic syringe and was transferred immediately into a dry, clean test tube with a gentle push after removing needle, to avoid hemolysis. The test tube was kept in slanting position till formation of clot. After centrifuging the clotted blood (at 3000 rpm for 10 minutes) the serum was separated and taken from the test tube into an eppendr of tube and was preserved in the refrigerator at -4°C in the laboratory. The serum level of glucose and creatinine was done by an autoanalyzer in the hematology laboratory of the Department of Physiology.

Laboratory investigations

- **Serum glucose:** Glucose Oxidase Phenol Amino Phenazone (GOD- PAP) method using reagents of Randox Laboratories Ltd. UK.
- **Serum Creatinine:** Picric acid method using reagents of Randox Laboratories Ltd. UK.

Test procedure for Spirometry

- Subject was asked to take rest sitting on a chair and remain calm and quiet for 5 minutes.
- The detailed procedure was explained to the subject to ensure his maximum cooperation.
- Mouthpiece of the Spirometer was cleaned with alcohol and cotton and then the mouthpiece was placed in between the lips.

- The subject was asked to hold the mouthpiece in his hand horizontally.
- To make good seal, the subject was asked to put the lips tightly around the outside of the mouthpiece.
- The switch of Spirometer was on and window (dialog box) was opened.
- Patient information form was filled up and saved.
- Subject was asked to inhale as deeply and rapidly as possible.
- Then he was asked to exhale as force fully as possible for possible longest period into the mouthpiece.
- The readings of measured, predicted, and percentage of predicted values of FVC, FEV₁, FEV₁/FVC%, PEFR, FEF₂₅₋₇₅%, FEF₂₅%, FEF₅₀% and FEF₇₅% was recorded from the Spirometer monitor.
- Three consecutive readings for each parameter were taken and the best value was noted.

Statistical Analysis

The results were expressed as mean of measured, predicted and percentage of predicted values with $\pm$ SE (Standard Error). The data were statistically analyzed by a computer with SPSS for windows version 16. Independent samples 't' test, ANOVA, Chi-square test and Pearson's correlation coefficient test were used as the tests of significance as applicable. In the interpretation of results, P value <0.05 was accepted as significant.

Results:

The mean $\pm$ SE age were 33.5 $\pm$ 1.424, 34.5 $\pm$ 1.401, and 35.27 $\pm$ 1.44 and 34.8 $\pm$ 1.212 years in group A, B₁, B₂ and B₃ respectively and ranging from 25 to 45 years. All the values were almost similar and the differences among the groups were statistically non-significant. Therefore, all the groups were matched for age. The mean $\pm$ SE BMI were 23.557 $\pm$ 0.584, 23.089 $\pm$ 0.721, 23.986 $\pm$ 0.579 and 23.155 $\pm$ 0.595 years in group A, B₁, B₂ and B₃ respectively. In this study, all the groups (healthy and diseased) were matched for BMI, as the values were almost similar and the differences among the groups were statistically non-significant.

Table I : Age and BMI in different groups (n=120)

Groups	n	Age (Year)	BMI(Kg/m ²)
A	30	33.5 $\pm$ 1.424 (25-45)	23.557 $\pm$ 0.584 (18.256-28.515)
B ₁	30	34.5 $\pm$ 1.401 (25-45)	23.089 $\pm$ 0.721 (17.527-31.53)
B ₂	30	35.27 $\pm$ 1.44 (25-45)	23.986 $\pm$ 0.579 (17.578-29.615)
B ₃	30	34.8 $\pm$ 1.212 (25-45)	23.155 $\pm$ 0.595 (17.968-31.163)

Data expressed as mean $\pm$ SE. Figures in parentheses indicate ranges. ߝOne Way ANOVA, o - Independent sample 't' test, Group A : Apparently healthy subjects (control group), Group B : Diagnosed Psoriatic patients (experimental group), B : Medication with only Topical therapy, B₁ : After medication with PUVA therapy, B₃:After medication with Methotrexate (MTX)therapy, ***: Significant (p $\leq$ 0.001), **: Significant (p $\leq$ 0.01), ns: Non significant, n: Number.

Table II: Frequency distribution of subjects by lung function tests (normal/abnormal LFT) in different groups

Groups	n	With normal LFT no. (%)	With abnormal LFT no. (%)
A	30	30 (100%)	0 (0%)
B ₁	30	11 (36.67%)	19 (63.33%)
B ₂	30	10 (33.33%)	20 (66.67%)
B ₃	30	1(3.33%)	29 (96.67%)

Cut point for abnormal lung function tests: FEV₁/FVC%: <70% of predicted, FEV : <80% of predicted, FVC: <80% of predicted, FEF₂₅₋₇₅%: <50% of predicted, PEFR: <70% of predicted, American Thoracic Society (ATS) 1991.

Frequency distribution of subjects by lung function tests (normal/abnormal LFT) in different groups: The results are shown inTable-2. In this study, all the control subjects (A) were with normal lung function tests (LFT). On the contrary, 19 (63.33%), 20 (66.67%) and 29(96.67%) Psoriatic patients were with abnormal lung function tests in the experimental groups B₁, B₂ and B₃ respectively.

Table III: Distribution of subjects by abnormal pulmonary function variables in different study groups (n=90)

Lung functionparameter	Group B (n=30)	Group B ₁ (n=30)	Group B ₃ (n=30)	Total B +B ₁ +B ₃ (n=90)
FVC	10(33.33%)	13(43.33%)	25(83.33%)	48(53.33%)
FEV ₁	9(30%)	10(33.33%)	24(80%)	43(47.78%)
FEV ₁ /FVC	0(0%)	0(0%)	0(0%)	0(0%)
PEFR	4(46.67%)	12(40%)	14(46.67%)	40(44.44%)
FEF ₂₅₋₇₅	0(0%)	0(0%)	0(0%)	0(0%)

Table-IV : Frequency distribution of Psoriatic patients by the type of pulmonary disorders in different study groups (n=90)

Groups	Large airway obstruction(LAO)	Small airway obstruction(LAO)	Restrictive disorder(RD)
B ₁ (n=30)	0 (0%)	0 (0%)	9 (30%)
B ₁ (n=30)	0 (0%)	0 (0%)	10 (33.33%)
B ₃ (n=30)	0 (0%)	0 (0%)	23 (76.67%)
Total=90(B ₁ +B ₁ +B ₃)	0 (0%)	0 (0%)	42(46.67%)

Relationships of different lung function variables with duration of therapy in different study groups:

The results are shown in Table-5. In this study, all the lung function variables were negatively correlated with the duration of therapy, in group B₁. On the contrary, in the group B₂ FVC and FEV₁ were negatively correlated but FEV₁/FVC%, PEFR, FEF₂₅₋₇₅%, FEF₂₅%, FEF₅₀% and FEF₇₅% were positively

correlated with the duration of therapy. Moreover, in group B₃, FVC, FEV₁, FEF₅₀% were negatively and FEV₁/FVC, PEFR, FEF₂₅₋₇₅%, FEF₂₅% and FEF₇₅% were positively correlated with the duration of therapy. However, most of these relationships (eg. FEV₁/FVC, PEFR, FEF₂₅₋₇₅%, FEF₂₅% and FEF₇₅%) were not statistically significant, but FVC, FEV₁, were statistically significant in group B₁ and B₃.

Table-V: Relationships of different lung function variables with the duration of therapy in different study groups (n=90)

Variables	Groups					
	B ₁		B ₂		B ₃	
	r value	p value	r value	p value	r value	p value
FVC	-0.541	0.002"	-0.320	0.085	-0.475	0.008"
FEV ₁	-0.517	0.003"	-0.261	0.164	-0.461	0.010"
FEV ₁ /FVC(%)	-0.161	0.395	0.113	0.554	0.023	0.905
PEFR	-0.247	0.189	0.001	0.997	0.069	0.716
FEF ₂₅₋₇₅ %	-0.158	0.405	0.045	0.812	0.218	0.247
FEF ₂₅ %	-0.377	0.040	0.001	0.998	0.027	0.887
FEF ₅₀ %	-0.218	0.248	0.250	0.183	-0.095	0.616
FEF ₇₅ %	-0.047	0.805	0.225	0.231	0.168	0.374

Discussion:

The present study has been undertaken to observe some aspects of Spirometric pulmonary function in diagnosed male psoriatic patients after Topical, PUVA, and Methotrexate therapy in order to evaluate their pulmonary function status. Therefore, pulmonary function were assessed by measuring FVC, FEV₁, FEV₁/FVC (%), PEFR, FEF_{25-75%}, FEF_{25%}, FEF_{50%} and FEF_{75%} with a spirometer. All these variables were also studied in apparently healthy age, BMI, socioeconomic status and occupation matched male subjects for comparison. In this study, values of lung function variables of healthy subjects were within normal limit and were almost similar to those reported by different investigators abroad. Again, both the groups (control and study) were comparable, as there was no significant difference in the confounding variables such as age, BMI, socioeconomic status and occupation, between two groups. In this study, 19(63.33%), 20(66.67%) and 29(96.67%) diagnosed Psoriatic patients after medication with only topical therapy, PUVA therapy and Methotrexate therapy respectively were with abnormal lung function test. On the other hand, none of the control subjects were with abnormal lung function tests. No similar observation was available for comparison. In this study, among the 90 Psoriatic patients after antipsoriatic only 42 (46.67%) were diagnosed with restrictive type of pulmonary disorder. However, among them 9(30%), 10(33.33%) and 23(76.67%) patients were treated by Topical therapy, PUVA therapy and Methotrexate therapy respectively. However, none of the patients of different study groups were diagnosed with any type of obstructive disorder, either small airway obstructive disorder or large airway obstructive disorder. In the present study, Pearson's correlation coefficient (r) test was performed to observe the relationships of all the lung function variables with duration of different drug therapy in patients with Psoriasis. In this study, all the lung function variables were negatively correlated with the duration of Topical therapy in Psoriatic patients. On the other hand, FVC and FEV₁ were negatively correlated but FEV₁/FVC %, PEFR, FEF_{25-75%}, FEF_{25%}, FEF_{50%}, and FEF_{75%} were positively correlated with the duration of PUVA therapy in Psoriatic patients and these relationship were not statistically significant (p>0.05). Moreover, FVC, FEV₁, FEF_{50%} were negatively but FEV₁/FVC %, PEFR, FEF_{25-75%}, FEF_{25%}, and FEF_{75%} were positively correlated with the

duration of Methotrexate therapy in Psoriatic patients and these relationship were not statistically significant. However, most of these relationships were not statistically significant (p>0.05) in the different study group. Only FVC and FEV₁, were statistically significant (p<0.01) in those Psoriatic patients taking Topical and

Methotrexate therapy. No research data was found to compare these relationships. The correlations of different lung function parameters with ESR level were analyzed by Pearson's correlation coefficient (r) tests in normal subjects (control) and also in rheumatoid arthritis female patients. In this study, in the patients of Rheumatoid Arthritis, all spirometric lung parameters like FVC, FEV₁, FEV₁/FVC, PEFR, FEF_{25-75%}, FEF_{25%}, FEF_{50%} and FEF_{75%} were negatively correlated with ESR level. These relationships were statistically significant but not in control group. These observations are in partially agree to those of Vergnenegre et al³⁴ Al-Assadi et al³⁵. They found significant negative correlation of FVC, FEV₁, FEV₁/FVC%, FEF_{25-75%} with ESR. However, in our country no published data are available to compare these findings. Patients with methotrexate induced lung toxicity usually demonstrate a restrictive pattern on pulmonary function tests with decreased carbon monoxide diffusing capacity and increased alveolar-arterial gradient with hypoxemia^{22,37,38}. Pulmonary fibrosis is characterized by fibroblast proliferation with minor signs of inflammation and extracellular matrix remodeling³⁹. Neutrophils are involved in pulmonary fibrosis and the increase in cytokines such as hepatocyte growth factor for type 2 alveolar cells by neutrophils can progress to the development of pulmonary fibrosis^{40,41}. The release of collagenase-2 and gelatinase B in neutrophils plays a key role in pulmonary fibrosis.

Conclusion:

From this cross sectional study it may be concluded that, the pulmonary Function Test among the Psoriatic Patients were with abnormal lung function tests in the experimental groups B₁, B₂ and B₃ respectively. However, most of these relationships (e.g. FEV₁/FVC, PEFR, FEF_{25-75%}, FEF_{25%} and FEF_{75%}) were not statistically significant, but FVC, FEV₁, were statistically significant in group B₁ and B₃.

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Assessment of Hearing Recovery in Patients Undergoing Inlay Tympanoplasty

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Abstract

Introduction: Tympanoplasty is a commonly performed surgical procedure aimed at repairing perforations of the tympanic membrane, primarily to restore hearing and prevent recurrent infections. Over the years, various modifications to the technique have been introduced to improve outcomes, particularly for patients with central perforations. This study searches the outcomes of a modified tympanoplasty technique in a cohort of 375 patients.

Methods: This retrospective case series evaluated the outcomes of a modified tympanoplasty technique in 375 patients (ages 10-60) with central perforations. Conducted from January 2010 to July 2016 at the National Institute of ENT, Tejgaon, Dhaka, Shaheed Suhrawardy Medical College Hospital, Dhaka, and various private hospitals equipped with micro ear surgery facilities, the study involved preoperative and postoperative audiological testing, clinical examinations, and radiological assessments. Data analysis was performed using SPSS with descriptive statistics to summarize demographics and surgical outcomes.

Results: In this study of 375 patients undergoing modified tympanoplasty, the largest group was aged 21-30 years (29.33%). A high success rate was observed for tympanic membrane closure, with 96% achieving closure. Most patients (73.6%) underwent tympanoplasty alone, while 26.4% had additional cortical mastoidectomy. The majority experienced mild hearing improvement (75% with 10 dB gain), and complications included otomycosis (69.7%) and graft failure (15.15%).

Conclusion: The Inlay technique produces early Healing of tympanic membrane perforation & is effective on adults as well as children. The technique modification introduced here reduced surgery time. Simple minimal scarring for all types of perforation in tubotympanic or COM of mucosal type & hence can be accepted as a routine procedure in day-to-day practice.

Introduction:

Hearing loss is a significant health concern globally, affecting millions and leading to social, emotional, and economic burdens. Tympanic membrane perforations are common causes of conductive hearing loss, often resulting from chronic otitis media (COM), trauma, or infections¹. Tympanoplasty, a surgical procedure designed to repair perforations and improve hearing, is a cornerstone in otologic surgery. Among various techniques, inlay tympanoplasty has gained interest due to its potential

for minimal invasiveness, reduced operative time, and favorable hearing outcomes^{2,3}. Evaluating hearing recovery in patients undergoing this procedure is critical for understanding its efficacy and optimizing patient care. COM, a chronic inflammatory condition of the middle ear and mastoid cavity, is a primary indication for tympanoplasty. Globally, its prevalence is higher in developing regions, with significant morbidity associated with recurrent infections and hearing impairment⁴.

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Successful management requires not only disease control but also effective restoration of hearing. While different tympanoplasty techniques, including underlay and overlay methods, have been explored, inlay tympanoplasty offers distinct advantages in specific clinical scenarios⁵. Inlay tympanoplasty, originally described by Nissen in the mid-20th century, differs fundamentally from other approaches in the placement of the graft. It involves positioning the graft medially within the perforation margin rather than over or under the remnant tympanic membrane⁶. This technique is associated with reduced epithelial migration and graft lateralization, complications more commonly encountered with overlay tympanoplasty. Furthermore, endoscopic-assisted inlay tympanoplasty has enhanced surgical precision, particularly in cases involving narrow external auditory canals⁷.

Studies comparing inlay and traditional tympanoplasty approaches suggest comparable, if not superior, outcomes in selected patients. Hearing recovery, the primary goal of tympanoplasty is influenced by multiple factors, including perforation size and location, middle ear status, and ossicular chain integrity^{8,9}. Inlay tympanoplasty, particularly effective for small to medium central perforations with intact ossicular chains, demonstrates favorable audiometric outcomes. Air-bone gap (ABG) closure, a key measure of surgical success, is frequently reported as satisfactory in patients undergoing inlay tympanoplasty¹⁰.

Graft material selection is a pivotal aspect of tympanoplasty. Autologous grafts, including temporalis fascia, tragal perichondrium, and fat, are commonly preferred due to their biocompatibility and availability¹¹. Innovations in synthetic graft materials have been explored, but long-term evidence regarding their durability and effectiveness remains mixed¹². Inlay tympanoplasty facilitates optimal graft placement with enhanced contact at the perforation margin, promoting healing and sound conduction. Patient factors, including age, comorbidities, and Eustachian tube function, significantly affect tympanoplasty outcomes. Pediatric patients present unique challenges due to anatomical differences and higher rates of middle ear dysfunction; however, inlay tympanoplasty has demonstrated promising results in this population¹³. In adults with stable middle ear conditions, the

technique offers high success rates with minimal recurrence of perforation. Nevertheless, large perforations, anterior perforations, and ossicular discontinuity are limitations where alternative techniques may be preferable¹⁴.

Methods:

This study was a retrospective case series conducted to evaluate the outcomes of a modified tympanoplasty technique in patients with central perforations, ranging from small to large and subtotal sizes. The primary goal of the surgery was to achieve a dry ear, an intact tympanic membrane, an aerated middle ear space, and improved hearing in all age groups.

The study was a retrospective case series, conducted over a period from January 2010 to July 2016. The sample consisted 375 patients, with an age range of 10 to 60 years. A convenience sampling technique was employed for patient selection. The study was conducted at the National Institute of ENT, Tejgaon, Dhaka, Shaheed Suhrawardy Medical College Hospital, Dhaka, and various private hospitals that are equipped with micro ear surgery facilities. Data collection included several steps. First, a detailed patient history was obtained, which included symptoms, prior treatments, and any relevant medical conditions. This was followed by a comprehensive clinical examination, focusing on the ear canal, tympanic membrane, and middle ear.

Audiological testing was conducted preoperatively to assess baseline hearing levels. Postoperative hearing tests were performed at 2 weeks, 12 weeks, and 24 weeks to evaluate hearing recovery. Additionally, radiological tests, including X-rays of both mastoids in Towne's view, were conducted to assess the mastoid and middle ear structures. Data analysis was performed using the SPSS statistical software (version 20.0). The analysis employed a descriptive statistical approach to summarize and interpret the data. Frequencies and percentages were used to describe the demographic characteristics of the patients, including age distribution and the distribution of postoperative outcomes, such as tympanic membrane closure and hearing gain.

Inclusion criteria:

- Tubotympanic variety chronic suppurative otitis media (CSOM)
- Small to large and subtotal perforations of the tympanic membrane

- Patients with written informed consent for participation in the study

Exclusion criteria:

- Attico-antral variety of CSOM (involving the attic and antrum of the middle ear)
- Severe to profound sensorineural hearing loss (SNHL)

Results:

Table 1: Age Distribution of the Participants (n=375)

Age	Number	Percentage
10-20	80	21.33
21-30	110	29.33
31-40	82	21.87
41-50	60	16.00
51-60	43	11.47

The largest group of participants falls within the 21-30 age range, comprising 110 individuals (29.33% of the total). This is followed by the 10-20 age group with 80 individuals (21.33%) and the 31-40 age group with 82 participants (21.87%). The 41-50 age group includes 60 participants (16.00%), while the smallest group is the 51-60 age range, consisting of 43 participants (11.47%).

Table II: Postoperative Tympanic Membrane Closure Outcomes (n=375)

Outcome	Number	Percentage
Tympanic membrane closure	360	96.00
Tympanic membrane failure	15	4.00

A significant majority of patients, 360 (96.00%), achieved successful tympanic membrane closure, indicating a high success rate for the procedure. In contrast, 15 patients (4.00%) experienced tympanic membrane failure, suggesting a relatively low incidence of complications related to graft failure or other postoperative issues.

Table III: Types of Mastoid Exploration Performed (n=375)

Procedure	Number	Percentage
Cortical mastoidectomy with tympanoplasty	99	26.4
Only tympanoplasty	276	73.6

A total of 99 patients (26.4%) underwent cortical mastoidectomy in conjunction with tympanoplasty, a procedure often indicated in cases of more extensive middle ear disease or cholesteatoma. The majority of patients, 276 (73.6%), only underwent tympanoplasty, suggesting that most cases did not require additional mastoid exploration.

Table IV: Postoperative Hearing Gain After 6 Weeks (n=375)

Hearing Gain (dB)	Number	Percentage
10	243	75.00
20	57	17.59
30	18	5.56
>30	6	1.85

The majority of patients, 243 (75.00%), experienced a hearing gain of 10 dB, indicating a significant proportion of individuals achieved mild to moderate improvement. A smaller group, 57 patients (17.59%), showed a 20 dB hearing gain, while 18 patients (5.56%) had a 30 dB improvement. Only 6 patients (1.85%) demonstrated a hearing gain of greater than 30 dB. These results suggest that the majority of patients experienced a notable improvement in hearing, with a small proportion showing exceptional recovery.

Table V: Postoperative Complications (n=375)

Complication	Number	Percentage
Graft failure	15	15.15
Otomycosis	69	69.70
Myringitis	15	15.15

Otomycosis, a fungal infection of the ear, was the most common complication, affecting 69 patients (69.70%). Both graft failure and myringitis occurred in 15 patients each (15.15%), representing less common but significant issues that can affect postoperative recovery.

Discussion:

The majority of participants in this study were young adults, with the largest group in the 21-30 age range, comprising 29.33% of the total participants. This is consistent with previous research suggesting that tympanoplasty is commonly performed in this age

group due to the higher prevalence of chronic otitis media and other middle ear diseases in younger adults¹⁵. The distribution of age groups highlights the importance of early intervention and the need for surgical treatment in patients within these age ranges to prevent long-term hearing impairment. Tympanic membrane closure is one of the key indicators of the success of tympanoplasty.

The study found that 96% of the patients achieved successful closure of the tympanic membrane, a result consistent with the findings of other studies, where success rates of tympanoplasty have ranged from 85% to 98%^{16,17}. This high success rate indicates that tympanoplasty is an effective procedure for achieving tympanic membrane closure in most cases. The low rate of tympanic membrane failure (4%) in this study reflects the importance of careful surgical technique, including proper graft selection and placement¹⁸. In terms of postoperative hearing gain, the majority of patients (75%) experienced a hearing gain of 10 dB, a result that is considered clinically significant for improving the quality of life¹⁹. The study also found that 17.59% of patients had a 20 dB hearing improvement, and 5.56% had a 30 dB improvement, which is consistent with previous reports on the range of hearing recovery after tympanoplasty^{14,17}. However, only a small proportion (1.85%) demonstrated a hearing gain greater than 30 dB. This suggests that while the majority of patients experience moderate improvement, substantial hearing restoration may be less common.

The factors influencing hearing recovery include the size of the perforation, the condition of the middle ear, and the presence of any underlying conditions such as cholesteatoma or otitis media with effusion²⁰. The results of this study underscore the importance of considering these factors when predicting hearing outcomes after tympanoplasty. The study found that the majority of patients (73.6%) underwent tympanoplasty alone, while 26.4% underwent cortical mastoidectomy combined with tympanoplasty. The higher proportion of patients receiving tympanoplasty alone is consistent with the findings of other studies that report tympanoplasty as the primary treatment for tympanic membrane perforations without extensive middle ear pathology²¹.

Cortical mastoidectomy is typically reserved for cases involving chronic otitis media or cholesteatoma, where the disease has spread to the mastoid²².

Postoperative complications, including graft failure, otomycosis, and myringitis, were also observed in this study. The most common complication was otomycosis, which affected 69.70% of the patients. Otomycosis is a fungal infection that can occur following tympanoplasty, particularly in patients with a history of recurrent ear infections²³. The high incidence of otomycosis in this study may reflect the humid environment within the ear canal post-surgery, which can promote fungal growth. The management of otomycosis typically involves antifungal treatment, and its recurrence may be prevented with improved postoperative care, including regular ear cleaning and drying²⁴.

Graft failure was observed in 15 patients (15.15%), while variable complication rates reported in a literature²⁵. Graft failure can occur due to several factors, including poor graft take, infection, or excessive tension on the graft during healing. This complication emphasizes the need for meticulous surgical technique and careful postoperative care to optimize healing and prevent graft failure. Myringitis, is an inflammation of the tympanic membrane. This condition is often associated with infection or irritation of the tympanic membrane post-surgery and can lead to discomfort and delayed healing²⁶.

Conclusion:

The Inlay technique produces early Healing of tympanic membrane perforation & is effective on adults as well as children. The technique modification introduced here reduced surgery time. Simple minimal scaring for all types of perforation in tubotympanic or COM of mucosal type & hence can be accepted as a routine procedure in day-to-day practice.

Recommendations:

Based on the findings of this study, it is recommended that tympanoplasty, particularly the modified technique used, should be considered a reliable surgical intervention for patients with tubotympanic variety chronic suppurative otitis media and central perforations. For optimal outcomes, it is essential to carefully select patients who do not have severe sensorineural hearing loss or attico-antral variety CSOM. Future studies with larger sample sizes and longer follow-up periods would help further validate the long-term efficacy of this surgical approach in improving both tympanic membrane closure and hearing recovery.

Conflict of interest: None declared

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Dysphonia: Gender based Study in a District level Hospital in Bangladesh

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Abstract

Background: Hoarseness of voice is one of the commonest symptoms in otolaryngological practice and it indicates diseases ranging from totally benign condition to sinister pathology like malignant disease. Thorough history and physical examination along with fiberoptic laryngoscopy and other special investigations may have to be performed to diagnose the cause of hoarseness.

Setting: Study was done in Pabna medical college. Patient was collected from its outpatient departments of ENT, Medicine and Gynaecology and Obstetrics.

Methods: This was a cross sectional study with purposive random sampling, which includes 112 patients. Duration of study was 2 years, from January 2020 to December 2021. The targeted study population was female patients with hoarse voice to find out the underlying cause.

Results: Among 112 patients, 73 were male and 39 were female. Age range was 4 years to 82 years. Among the female patients, 16 were housewives, 10 teachers, 6 singers.

Conclusion: Hoarseness of voice is just a symptom with a very diverse etiology. The etiological data varies in different geographical location and center to center, so every case should be carefully and thoroughly evaluated to know the early diagnosis of underlying pathology for prevention and accurate management.

Introduction

Phonation is the production and utterance of speech sounds. Phonation is also referred to as voicing, which is to express sounds like words or parts of words that have meaning. This can be the use of sound in language, music, and other forms of verbal communication. Any changes in voice may be referred as hoarseness of voice, broadly called 'Dysphonia' that impairs social and professional communication, is definitely an abnormal voice. The term hoarseness and dysphonia are often used interchangeably, although hoarseness is a symptom of altered voice quality and dysphonia is a diagnosis¹. Hoarseness is a coarse or rough quality of voice. In this article,

both terms will be used synonymously. Changes to the voice can occur suddenly or gradually over time. The voice can be described as hoarse, rough, raspy, strained, weak, breathy, or gravely. There may be voice breaks where it completely stops or cuts out. There may be pitch changes, either higher or lower for the patient². The patient may have a complete loss of voice for a period of time as well. Sometimes the patient will complain of pain with speaking or singing and difficulty projecting the voice. Most commonly, dysphonia is caused by an abnormality with the vocal cords but there can be other causes from problems with airflow from the lungs or abnormalities with the structures of the throat near the vocal cords³.

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Combined with other voice-related changes, it falls under the umbrella diagnosis of dysphonia. Hoarseness has a number of causes, ranging from simple inflammatory processes to less common psychiatric disorders to more serious systemic, neurologic, or cancerous conditions. Medication-induced hoarseness is not uncommon and should be considered⁴. The initial evaluation begins with a targeted history and physical examination, while also looking for signs of potential systemic aetiologies. Direct visualization of the larynx and vocal folds by fiberoptic laryngoscopy (FOL), commonly mislabeled as vocal cords, should be performed within three months if an etiology has not been determined or if conservative management has been ineffective^{4,5}. But now a days, this is done routinely for most of the voice cases if facility available. Patients who experience symptoms lasting longer than two weeks and who have risk factors for dysplasia (e.g., tobacco use, heavy alcohol use, hemoptysis) may require initial laryngoscopic evaluation by FOL⁵.

Hoarseness may be episodic or persistent. Persistent hoarseness needs wider evaluation. The diagnosis of hoarseness is based on clinical criteria that may be reported by the patient or his or her attendants, identified by the physician, or both⁶. Hoarseness may be accompanied by discomfort with speaking, increased phonatory effort, weak voice, and altered voice quality (e.g., shakiness, breathiness, raspiness). Evaluation is needed in patients with significant voice change, or limited voice change but significant other symptoms⁷.

Vocal professionals are classified by Koufman and Isaacson based on their voice use and risk.²

1. Level I (Elite vocal performers): Singers and actors are included in this group. Their career is at stake if slight vocal difficulty present.
2. Level II (Professional voice users): For whom even moderate vocal difficulty would hamper adequate job performance. Lecturers, teachers, politicians, public speakers, and telephone operators are at this level.
3. Level III (Nonvocal professionals): They can do their jobs with slight or moderate dysphonia. With severe difficulty they are in problems in performing their jobs.
4. Level IV (nonvocal/nonprofessionals): Include laborers, homemakers and clerk. They usually do not face any problem performing their work with dysphonia.

The evaluation should include critically and objectively listening to the patient's voice; characterizing the severity of voice change and other symptoms; and obtaining a medical history, including medication use. Quality of life may be affected because of communication problems (e.g., difficulty being heard) or decrements in physical, social, and emotional aspects of life. The input of the patient's attendant is important, especially for children and patients with cognitive impairment, because they may not recognize symptoms themselves⁸.

Methods:

This was a cross sectional non-randomized longitudinal study, conducted in between January 2021 to December 2022 with 1 year duration. All patients who came with complain of hoarseness of voice irrespective of age and sex. Then male and female patients were categorized to analyze the various components of their disease presentation. Patients were collected from Outpatient departments (OPD) of ENT, Medicine and Gynaecology and obstetrics. Demographic parameters and disease related factors were also analyzed. Total number of patients under study was 112. Postsurgical cases i.e. Thyroidectomy, tracheostomy, laryngectomy, and patients with accompanying emergency like respiratory distress and stridor and other critically ill patients were excluded from study.

History, physical examination including Indirect Laryngoscopy and other investigations like Fiberoptic Laryngoscopy findings were recorded in a prescribed form. Some children were not examined by Indirect Laryngoscopy due to inconvenience. Direct laryngoscopy was done in appropriate cases mainly for treatment purpose.

Results

Table 1: Age and gender distribution (n=112)

Age	Male	Female	Total
4-10	6 (5.36%)	2 (1.78%)	8 (7.14%)
11-20	9 (8.03%)	5 (4.46%)	14 (12.5%)
21-40	23 (20.53%)	16 (14.28%)	39 (34.82%)
41-60	22 (19.64%)	09 (8.03%)	31 (27.67%)
60 and above	13 (11.6%)	7 (6.25%)	20 (17.85%)
Total	73 (65.17%)	39 (34.82%)	112

Table II: Number of cases according to profession

Profession	Male (%)	Female	Total
Housewife	-	13 (11.6)	13 (11.6)
Laborer	8 (7.14)	2 (1.78)	10 (8.92)
Businessmen +office worker	11(9.82)	3 (2.67)	14 (12.5%)
Student	17(15.17)	4 (3.57)	21 (18.75)
Teacher	12 (10.7)	5 (4.46)	17 (15.53)
Singer	1(0.89)	5 (4.46)	6 (5.35)
Factory worker	12 (10.71)	2 (1.78)	14 (12.5)
Politician	3 (2.67)	1(0.89)	4 (3.57)
Police/ Army	2 (1.78)	0	2 (1.78)
Retired person	4 (3.57)	1 (0.89)	5 (4.46)
Healthcare provider	3 (2.67)	3 (2.67)	6 (5.35)
Total	73 (65.17)	39 (34.82)	112 (100)

Table III: Duration of hoarseness of voice (n=112)

Duration	Male	Female
<1 week	11 (9.82)	10 (8.92)
1 wk-1 month	10 (8.92)	8 (7.14)
1month-3 months	19 (16.96)	3 (2.67)
3months-6 months	16 (14.28)	7 (6.25)
6 month-1 year	12 (10.71)	7 (6.25)
>1 year	5 (4.46)	5(4.46)

Table IV: Presenting complaints of patients (n=112)

Presenting complaints	Male (%)	Female (%)	Total (%)
Change of voice	73 (65.17)	39 (34.82)	112 (100)
Fever	8 (7.14)	6 (5.35)	14 (12.5)
Cough	11 (9.82)	6 (5.35)	17 (15.17)
Sore throat	10 (8.92)	5 (4.46)	15 (13.39)
Heart burn	9 (8.03)	5 (4.46)	14 (12.5)
Weight loss	2 (1.78)	1 (0.89)	3 (2.67)
Painful speech	3 (2.67)	2 (1.78)	5 (4.46)
Dysphagia	4 (3.57)	2 (1.78)	6 (5.35)
Vomiting	4 (3.57)	2 (1.78)	6 (5.35)
Haemoptysis	1 (0.89)	2 (1.78)	3 (2.67)
Difficulty in breathing	9 (8.03)	2 (1.78)	11 (9.82)
Vocal fatigue	5 (4.46)	3 (2.67)	8 (7.14)
Odynophagia	5 (4.46)	3 (2.67)	8 (7.14)
URTI	10 (8.92)	5 (4.46)	15 (13.39)
Stridor	2 (1.78)	1 (0.89)	3 (2.67)
Palpable Neck gland	3 (2.67)	0	3 (2.67)
Foreign body sensation	5 (4.46)	9 (8.03)	14 (12.5)
Nasal voice	2 (1.78)	1 (0.89)	3 (2.67)
Sneezing	5 (4.46)	6 (5.35)	11(9.82)

*Some patients had more than one clinical feature

Table V: Diagnosis (n=112)

Diagnosis	Male (%)	Female (%)	Total (%)
Chronic laryngitis	24 (21.42%)	11 (9.82%)	40 (31.25)
Acute laryngitis	9 (8.03%)	8 (7.14%)	17 (15.17)
Functional Dysphonia	2 (1.78%)	4 (3.57%)	6 (5.35)
LPRD	7 (6.52%)	3 (2.67%)	10 (8.92)
Vocal cord nodule	2 (1.78%)	4 (3.57%)	6 (5.35)
Vocal cord Palsy	5 (4.46%)	2 (1.78%)	7 (6.25)
Carcinoma larynx	5 (4.46%)	1 (0.89%)	5 (4.46)
Carcinoma hypopharynx	2 (1.78%)	1 (0.89%)	1 (0.89)
Multiple papilloma larynx	3 (2.67%)	0	3 (2.67)
Vocal polyp	3 (2.67%)	1 (0.89%)	2 (1.78)
Vocal Oedema	3 (2.67%)	2 (1.78%)	5 (4.46)
Tuberculosis	1 (0.89%)	0	1 (0.89)
Laryngeal rhinosporidiosis	1 (0.89%)	0	1 (0.89)
Laryngeal trauma/Hanging	1 (0.89%)	1 (0.89%)	2 (1.78)
Abductor Palsy	1 (0.89)	1 (0.89%)	2 (1.78)
Hypothyroidism	1 (0.89%)	0	1 (0.89)
Parkinsons disease	1 (0.89%)	0	1 (0.89)
SLE	0 (0.89%)	1 (0.89%)	1 (0.89)
Lung Cancer	2 (1.78%)	0	2 (1.78)

*LPRD- Laryngopharyngeal reflux disease

Discussion

In the present series, the number of patients' with hoarseness of voice was 112, which is 0.84% of total OPD patients of department of ENT during the study period of 2 years, only 12 patients were referred from department of Medicine and department of Gynae and obstetrics. This is slightly higher than the study of Sambhu Baitha et al. They got the figure in Maharashtra, India 0.32 to 0.66% respectively for old and new cases.^{1,8}

In the present series, 65.17% patients were male and 34.82% were female which is almost same to the different series of world research. Here male female ratio is 1.87:1. Banjara et al studied 251 patients in Chattishgarh, India. And there, male: female ratio of 1.89:1 with male predominance was observed⁹. Series of Shamvu Baitha et al, showed slightly lower in female, ratio was 2:1. All these are because of similarity regarding environmental, cultural and personal and habit in the subcontinent¹⁰. In the series of Taous A and Hossain SMR (2017), got slightly higher

incidence in male (2.6:1)⁴. This picture is quite different from the later study. Female patient is increased due to more health care seeking by women in comparison to previous situation. These result was contradictory to the survey of Khan FA and Jawaaid I which showed number of cases was equal in male and female. Male dominated society may be the cause of large difference between gender facts in other studies. Study of Salah Uddin et al shown the male female ratio slightly closer, 1.49:1

Most of the aetiological factors of hoarseness of voice were present in young adult and middle aged people according to the most of the reports. But in this series it is slightly different from those surveys. It is because inclusion of the medical illness causing hoarseness, mainly collected from department of Medicine in the present series. Chronic laryngitis of professional voice user shows increasing age incidence including Ca larynx, Ca lung also added with this group. Baitha et al (2002) and found majority of patients (28.18% and) in the age group of 31 to 40 years.¹ Taous A et al

found largest group comprising 34% in 21-30 years age group in study of 2017.⁴

The study clearly states the most frequent laryngeal pathologies found in the older age group because cancers and vocal cord palsy due to different disease is more evident in those people. In some cases personal habit of smoking or ingestion of Paan Jarda Gul, alcohol affects the diseases. Smoking is not common culture for females in Bangladesh. So laryngeal cancer is far common cause of hoarseness in male than female. But other benign diseases are commoner in female, and it occurs at a slightly younger age group⁵.

This statement supports finding of the present study. Difference of incidence of male and female become narrowed in younger age group. In 21-40 years age group, male is 20.53% but female is 14.28%. Contrary to this, in older age group, 41-60 and above 60 years, marked male preponderance was found; other authors also mentioned the hoarseness as major complaint. Associated symptoms of these patients were dyspnea, dysphagia, throat pain and foreign body sensation.^{4,7} Symptoms of typical laryngopharyngeal reflux disease include dysphonia, mild dysphagia, chronic cough, excessive throat mucus, heart burn, vomiting and nonproductive chronic throat clearing.¹²

Duration of hoarseness was 7 days to more than 1 year. Most of the presenting complaints (61.35%) were seen within 3 months, most of them were male (35.50%), with few female patients (18.25%). Most of the patients, both male and female (8-10%) of acute laryngitis presented their symptoms like fever, sore throat, changed voice and dysphagia within one week.

About 8.92% patients had complaints of more than 1 year duration, equally in male and female. Batra et al (2004) found 59% patients within first five months of appearance of symptoms and 86% of patients were found to present within first year of appearance of symptoms.⁹ Baitha et al (2002) noted duration range from 1 day to 5 years and 50% patients had duration of hoarseness in month.⁴ Hoffman (2006) have noted 68.65% patients with duration of hoarseness of less than one year.¹³

Injudicious and excessive use of voice is injurious to vocal cord and follows formation of vocal masses. In the present study, people involved in active

educational job, student and teachers are majority victim of voice changes, specially most of the students were from Madrasah who recites religious contents with loud sound for long times, total number of student and teacher is 32 male (28.57%), and 9(8.03%) female. 13 (11.6%) patients were pure housewives. Businessmen and office workers specially who were involved in public dealing and used to talk for long duration developed dysphonia, among them 9.8% were male and 2.67% female, with total 12.5%. Total 6 (5.25%) patients were singer, among them, 5 (4.46%) were female. In a study by Ghosh et al (2001) majority of patients (29%) were housewives.¹⁰ Laborer constituted the single largest group of patients (36.36%) followed by housewives (21.81%) in another study.⁴

Al Jilani & Lefevre et al reported that professionals with the highest risk of having voice problems are singers, followed by consultants, teachers, lawyers, pastors, telemarketers, salespersons, and health professionals. An important point is that a professional voice user will seek medical help only if he or she is aware of its importance among other things.^{14,15} Ward EC et al (2002) concluded that teaching was a high-risk occupation for voice disorders with the possibility of significant work-related consequences.¹⁶

Boominathan et al (2008) surveyed 400 voice professionals (100 singers, 100 teachers, 100 politicians and 100 vendors) in India and reported that 86% of politicians and 74% of vendors had voice problems. Politicians and vendors had the highest point prevalence of voice problems when compared with that of teachers and singers. 59% of singers and 49% of teachers also reported to have voice problems.^{17,18}

In present study functional voice disorders (5.35%) comprised a small group, associated with a normal vocal fold morphology and movement. It includes muscle tension dysphonia, aphonia, and psychogenic dysphonia. Among them male were 1.78% and female 3.57% with 1:2 ratios. No pathological lesion was included in this group. But Pasikh et al accounted 51% of functional voice disorder, which included vocal nodule, polyps and granulomas under functional disorder, since this lesion have been shown to be secondary to vocal abuse/misuse. According to Aslam MJ et al (2006) functional voice disorders may account for up to 40% of the cases of dysphonia referred to a multidisciplinary voice clinic.^{22,23}

Chronic and acute laryngitis is the commonest (57 patients, 46.52%) lesions in the present study followed by Laryngopharyngeal reflux disease (LPRD). In these cases, male predominates clearly. Functional dysphonia and vocal cord nodule found commoner in female though number of cases were small. These findings are inconsistent with the study of Aziz et al.⁸ They got vocal cord nodule as most common lesion (11.95%) with M: F ratio 1:1.7. Vocal nodule was the commonest etiology in study by Birchall et al. with 43.3 and 56.7% in males and females respectively.⁷ In the study of Ila Upadhyay, vocal cord nodule was commonest lesion causing hoarseness of voice, 37.78%, and among them, female was affected more (26.66% and 11.11%) than male.⁸ Pfister DG et al. (2006) found most of the cases was functional (16.33%), and it was male predominant (68.29%)¹². In the study of Banjara, chronic laryngitis was (9.56%) and malignancy (9.56%) with equal incidence. In chronic laryngitis male predominance was seen with male to female ratio 3:1. Other two studies chronic laryngitis was commonest etiology comprising of 48% in each.^{4,7} Whereas studies of Hansa Banjara & Sambu et al. it was only 6% and 8% respectively.^{9,10}

Second most common pathology was LPRD in this study (8.92%) after chronic and acute laryngitis, and among them male was more common sufferer (6.52% male and 3.67% female). Laryngopharyngeal reflux disease (LPRD) refers to laryngopharyngeal and other associated respiratory organs mucosal inflammation, caused by a reflux of stomach contents into the esophagus (GERD). LPRD is considered to be a relatively new clinical entity with a vast number of clinical manifestations which are treated through different fields of medicine, often without a proper diagnosis. It is a sequela of GERD.^{24,25,26}

Vocal cord palsy was found in 6.25% patients, Male female ratio was 2.5:1. Two male patients had Lung cancer. Others had laryngeal or hypopharyngeal cancer. About 4.46% male had laryngeal cancer, and female was 0.89%. Male predominance was seen with M:F ratio 2.5:1. Incidence of other conditions was multiple papilloma larynx (all were child as the rule), vocal cord polyp, vocal cord oedema, laryngeal trauma, abductor palsy. Some other diseases i.e. laryngeal TB, Laryngeal Rhinosporidiosis, Hypothyroidism, Parkinson's Disease and SLE were found 1 case each. Last 3 cases were found in department of Medicine.

2 lung cancer cases were found, all were male. It was presented with left vocal cord palsy, cough and haemoptysis as major features. In the series of Milena SFC (1916), among 36 patients, 19 had vocal fatigue and 17 had hoarseness of voice.

Conclusion

Hoarseness of voice is just a symptom with a very diverse etiology. The etiological data varies in different geographical location and center to center, so every case should be carefully and thoroughly evaluated to know the early diagnosis of underlying pathology for prevention and accurate management.

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Exploring the Factors Contributing to Treatment Failure and Recurrence in Superficial Dermatophytosis

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Abstract

Background: Superficial dermatophytosis, commonly known as ringworm, is a fungal infection of the skin, hair, or nails caused by dermatophytes, primarily belonging to the genera *Trichophyton*, *Microsporum*, and *Epidermophyton*. Despite being a superficial infection, the rising incidence of treatment failure and recurrence has become a matter of concern in recent years.

Method: This prospective observational study was conducted at the Department of Dermatology and Venereology of Pabna Medical college Hospital, aimed to investigate the epidemiological factors associated with treatment failure and recurrent cases of superficial dermatophytosis. The study spanned from March 2022 to February 2023, involving 125 participants diagnosed with *Tinea corporis*, *Tinea cruris*, *Tinea facies*, or *Tinea pedis*. Factors such as excessive sweating, use of warm water, clothing habits, sharing practices, and topical corticosteroid application were analyzed.

Results: The most common age group affected was 21-30 years, with a male preponderance (1.6:1). Excessive sweating, wearing water-soaked garments, and sharing towels were prevalent among participants. After 4 weeks of treatment, 81.6% achieved complete cure, but 52.95% of these cases experienced a recurrence within the subsequent 4 weeks.

Conclusion: The study emphasizes the importance of linen (sharing towels) in the transmission of dermatophytosis and highlights the increased risk associated with a family history of the condition. Additionally, the injudicious use of topical steroids emerged as a significant factor contributing to treatment failure and recurrence.

Introduction

It is believed that around a billion individuals worldwide suffer from dermatomycoses, or fungal infections of the skin, hair, and nails.¹ Fungal skin disorders are incredibly widespread. The disease is characterized by an unprecedentedly high rate of transmission among family members and intimate contacts, and it now occurs regardless of climate variations, age, sex, educational attainment, or socioeconomic status.² Although superficial dermatophytosis was once thought to be purely

cosmetic, it has recently emerged as a serious public health issue. These infections are now to be viewed like other chronic and recurrent disorders because of its altered nature. The degree of discomfort caused by superficial dermatophytosis can have a negative impact on an individual's quality of life, even though it seldom results in mortality.^{2,3}

Dermatologists have observed that a large number of patients with persistently resistant dermatophytosis experience emotions of helplessness, guilt, and rage;

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a small percentage even show suicidal thoughts.⁴ When the disease (lesions) returns a few weeks (less than four weeks) after treatment is finished, dermatophytosis is deemed recurrent.^{5,6} However, even though they have received appropriate treatment, patients are deemed to have had the condition for more than six months to a year, with or without a recurrence.⁷ Various antifungal agents have been used for the treatment of these infections.

Most common systemic agents used are terbinafine, fluconazole, and itraconazole. Although there is a rising trend of patients who tend to relapse following cessation of antifungal therapy, the relapses have not been conclusively proven to be consequent to resistance. Recently, Sardana et al. concluded from their study that *in-vitro* resistance to antifungals is not common and should not be frequently labeled as a cause of treatment failure.⁸ The problem lies in the intricate host fungal interaction, and this should be the focus for research. Various factors implicated in recalcitrant dermatophytosis are-Host fungal immune response, Virulence potential of the infecting strain or species, Clinical type of dermatophytosis, Barrier defect, Local factors (heat, humidity, sweating, type of clothing), Pharmacological factors (quality of the drug, compliance, pharmacokinetics and absorption of the drug), and Reinfection from other sources. To this end the purpose of this study was to assess the factors related to treatment failure and recurrence of superficial dermatophytosis of the patients presenting to dermatology OPD of a tertiary care hospital of Bangladesh.

Methods

This study is a prospective observational investigation conducted at the Department of Dermatology and Venereology of Pabna Medical college Hospital, Pabna, Bangladesh. The study was done from March 2022 to February 2023, during the period research focused on patients exhibiting superficial dermatophytosis. The study population comprised individuals attending the specified medical facility within the designated timeframe and carrying a diagnosis of Tinea corporis, Tinea cruris, Tinea facies, or Tinea pedis, with or without a history of recurrence or treatment failure. A total of 130 participants were included in the study through a convenience sampling method. The inclusion criteria encompassed patients aged 18 years and above, of both sexes, diagnosed with superficial dermatophytosis.

Exclusion criteria comprised individuals who refused to participate and those exclusively presenting with

Tinea capitis or Tineaunguim, as their treatment regimens differed from the primary focus of the study. A detailed history was taken from each participants regarding the duration, treatment taken, topical corticosteroid application, treatment compliance, affected family members, type of clothing, sharing of cloths, towels, soaps and footwear, bath habits, frequency of changing cloths, contact with pets/cattle, intake of any immuno-suppressants, history of any other cutaneous or systemic disease. Appropriate physical examination and reviewing of medical records was done in every cases.

Treatment was given according to hospital protocol by registered physician or specialist dermatologist in OPD of Dermatology. Data were recorded in the form of Excel worksheet. After completion of data collection, they was fed into SPSS for processing analysis. This study was conducted after receiving ethical clearance from the local Ethical Review Committee.

Results

In this study, 150 patients with superficial dermatophytosis were screened for the eligibility. Among them 135 were found eligible. Informed consent was given by 130 eligible participants and finally 125 participants were included in the study after completion of 2 consecutive follow up at 4 and 8 week.

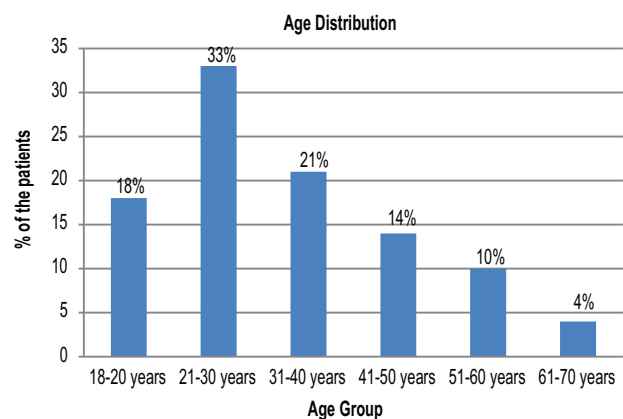


Figure 1: Graphical representation of age distribution

Age ranged between 18-70 years and the mean age was 34.4 ± 13.9 years. The most frequent age group was 21-30 years, having 32.9% of the patients, followed by 31-40 years (21.3%), 18-20 years (17.7%), 41-50 years (14.1%), 51-60 years (10%), and 61-70 years (4%). There was male preponderance with a male to female ratio of 1.6:1. Most of the patients (80.7%) reside in urban locality.

Table 1: Epidemiological factors related to treatment failure/recurrent superficial dermatophytosis

Factors	Frequency	Percentage
Excessive sweating	91	72.8
Use of warm water	61	48.8
Weekly frequency of washing clothes	7 (7-7)	
Wear synthetic cloths mostly	63	50.4
Wearing water-soaked garments	94	75.2
Tight clothing	65	52
Sharing cloths	26	20.8
Sharing towels	60	48
Sharing footwear	5	4.0
History of cooking food oneself	58	46.4
Average time (minutes) spent in kitchen	90 (60-180)	
Pets in home	9	7.2
Family history of tinea	71	56.8
Number of rooms in home	3 (2-4)	
Number of family members living in home	5 (3-6)	

Data were expressed as frequency and percentage or median and interquartile range

Excessive sweating was reported by 91 (72.8%) of the patients, 108 (86.4%) patients gave history of taking bath every day, about 48.8% patients reported to use hot water to get relief from itching. Frequently wearing tight garments was seen in 65 patients (52%). Sharing of clothes, towels, and footwear among close contacts or family members was habitual among 26 (20.8%), 60 (48%), and 5 (4%) of the patients. History of contact with animals such as dog/cats was seen to be present in in very few patients 9 (7.2%). History of similar complaint among family members or close contacts was seen in 71 (56.8%) of the patients.

Table II: Therapeutic response after completion of therapy

Time of assessment	Frequency	Percentage
1 st follow-up (4 weeks) (n=125)		
Cure	102	81.6
Treatment failure	23	18.4
2 nd follow-up (8 weeks) (n=102)		
Cure	48	47.05
Recurrence	54	52.95

After 4 weeks of treatment, out of 125 patients complete cure was observed in 102 (81.6%) of the

patients, and other 23 (18.4%) were labelled as treatment failure cases due to persistent of the lesions. Among the cured cases 54 (52.95%) have recurrent infection in next 4 weeks follow-up period.

In this study, out of 125 patients, complete cure was achieved by 48 (38.4%) of the patients. Other 77 (61.6%) cases were either treatment failure cases or recurrent cases (Figure 2)

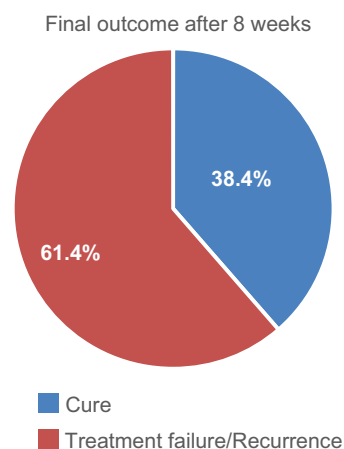
**Figure 2:** Final outcome of the studied patients after eight weeks of enrollment

Table III: Association between diagnostic modalities used and therapeutic responses

Diagnostic modalities	Therapeutic responses		P value
	Cure (n=48)	TF/Re(n=77)	
Clinical	44 (91.6)	62 (80.52)	0.063
Microscopy	2 (4.2)	9 (11.69)	
Culture	2 (4.2)	6(7.79)	

TF/Re: Treatment failure/Recurrence; Data were expressed as frequency and percentage *Chi-square test. There is no association of diagnostic modalities chosen for the therapeutic outcome.

Table IV : Association between treatment received and therapeutic responses

Treatment received	Therapeutic responses		P value
	Cure (n=48)	TF/Re(n=77)	
Terbinafine	14 (29.2)	30 (38.96)	0.130
Itraconazole	34 (70.8)	47 (61.04)	

TF/Re: Treatment failure/Recurrence; Data were expressed as frequency and percentage *Chi-square test.

There is no association between treatment regimen and therapeutic responses of the patients.

Discussion

The present study shows that the young people are most commonly affected. Patients aged between 18-70 years were included, and the mean age was 34.4 ± 13.9 years. The most frequent age group was 21-30 years, having 41 (32.8%) of the patients. The age distribution of the patients was similar to the previous studies conducted in Bangladesh and India which reported age group of 20-30 years followed by 30-40 years.^{3,9-13} The predisposition of infection among adults may be attributed to their greater physical activity, mobility, and perspiration that aids in the proliferation of the fungus. Previous studies reported the association of recurrent dermatophytosis with various risk factors such as occupation, family history of dermatophytosis, pre-existing comorbidity, excessive sweating, type of undergarments (tight fit), poor frequency of washing clothes, sharing of a towel/clothes, frequency of taking baths, and prior use of topical steroids.^{12,14} In the present study, in multivariate analysis, sharing towels, having family history of dermatophytosis, and history of using topical steroid in the past were significant risk factors. In a study of recurrent dermatophytosis, observed that

a high incidence of intra-familial tinea infections, misuse of corticosteroids containing topical antifungal preparations, poor compliance to treatment and poor personal hygiene were associated with recurrences and poor responses to treatment.²

A positive association has been found between chronic and chronic relapsing tinea and pre-existing diabetes mellitus, family history of tinea and personal history of cooking food. However, the study did not show that following variables increase the risk: wearing jeans, frequency of washing clothes (including undergarments, jeans, and towel), frequency of taking bath, history of excessive sweating, presence of children below 15 years in home, pets in home, crowding in home and BMI.¹³

Comorbid conditions such as diabetes can predispose an individual to immunosuppression, thereby promoting recurrence or persistence of infection.¹⁵ In the present study, there were 34 (13.7%) known cases of diabetes mellitus. However, when it comes to treatment failure and recurrent dermatophytosis infection, present study find only statistically significant association between the presence of diabetes mellitus and recurrent tinea infection ($p = 0.021$). In a study by Singh et al., 5.3% of cases had pre-existing diabetes.¹³ The authors found a positive association between diabetes mellitus and the risk of chronic or relapsing dermatophytosis. On the contrary, Kalekhan et al. did not find a significant difference in the presence of diabetes or any other concomitant illnesses among the case of chronic and/or recurrent infection and control.¹⁶

Excessive sweating was found in 124 (81%) participant and was found to be associated with treatment failure or recurrent cases in univariate analysis in the present study, but the association did not persist in regression analysis, after adjusting for other significant variables. The association of hyperhidrosis with the duration of disease was found to be statistically insignificant in the study of Jain et al.¹⁷ Sweating has been well established as a risk factor for increasing the prevalence of dermatophytosis. Sweating in conjunction with other factors, such as poor hygiene, might further increase the incidence of dermatophytosis. In a study by Ranganathan et al., the authors found that people who were engaged in occupations associated with increased sweating (58.9%), such as laborers, exhibited increased incidence rates of

dermatophytosis relative to those who were not engaged in such occupations.¹⁸ Tinea lesions were commonly seen to be present in areas prone for occlusion due to tight fitted clothes like the waistline, groin, or infra-mammary area.¹⁹

Frequently wearing tight garments was seen in 130 (52.2%) patients in the present study. However, the association of wearing tight-fitting clothes with the recurrence or treatment failure was not statistically significant in the current study. Similar to the tight-fitting clothes, wearing synthetic clothes were not associated with treatment failure or recurrent cases in the present study. A recent consensus statement formulated by the IADVL Taskforce against Recalcitrant Tinea (ITART) advises against the use of synthetic and tight clothing. The statement also discourages wearing bands, threads, drawstrings, and rings as they could carry fungus and add to persistence and recurrence of infection.¹⁸ Family history of dermatophytosis was revealed as a significant factor associated with treatment failure and recurrent infection. Patients with FH of dermatophytosis were 2.46 (95% CI: 1.34-4.51), times more likely to have treatment failure and recurrent infection than their counterpart. Similarly, sharing towel was an independent risk factor for treatment failure/recurrent dermatophyte infection (OR: 1.97, 95% CI: 1.07-3.64). Tinearubram survived <12 weeks on towel. Tinea mentagrophyte survived >25 weeks on towel. This fact highlights the increased risk of re-infection in family members sharing same towel and the importance of disinfection which could be best done by washing clothes and towel in hot water and drying in sunlight.²

Re-infection from the contacts or through fomites is a significant contributing factor for the increasing prevalence of chronic and recurrent forms of superficial dermatophytosis reported that family members of 72% of patients had dermatophytosis, the spouse being frequently affected.²⁰ In the present study, patients' past prescriptions by non-dermatologists were examined, and came across many instances of improper management. Use of topical steroids either alone or in combination with antibiotics and antifungals was frequent 172 (69.1%) in the present study. The association of use of topical steroids with treatment failure and recurrence was found statistically significant ($p < 0.001$) in multivariate analysis topical corticosteroid

prescription, whether alone or in combination with other components, was strongly discouraged by all the experts of the Indian Association of Dermatologists, Venereologists and Leprologists (IADVL) Taskforce against Recalcitrant Tinea (ITART).²⁰ The main limitation of the study was the absence of calculation of MIC in cases with failed cure and recurrent cases. However, Sardana et al. found that, MIC seen in the patients with treatment failure dermatophytosis were higher than western data, in vitro resistance to antifungals was not seen and probably may not be a cause of treatment failure.⁸

Possibly, treatment failure lies in the intricate host fungal interaction and virulence of species which help it to evade host immune response. It was not possible to consistently culture the agent responsible for the tinea in the present study and, hence, it was decided to focus more on clinico-epidemiology than microbiology. 44(35.2%) participants were treated by terbinafine and among them 14 (29.2%) participants were cured and 30 (38.96%) participants were treatment failure/recurrence. 81 (64.8%) participants were treated by itraconazole and among them 34 (70.8%) participants were cured and 47 (61.04%) participants were treatment failure/recurrence. There is no association between treatment regimen and therapeutic responses of the patients.

Limitations of the study

Sample size of the study was limited and in a single Centre. So, it will be difficult to generalize the findings for the whole country.

Conclusion

There may be some important epidemiological determinants for higher chances of treatment failure or recurrent dermatophytosis. Linen (sharing towel) may play an important role in the transmission of the infection. There may be higher chances of the treatment failure or recurrent infections in people with history of topical steroid abuse. Family history of dermatophytosis was a significant risk factor for treatment failure or recurrent dermatophytosis. Excessive sweating may favor fungal growth and colonization which ultimately contribute in treatment failure and recurrent dermatophytosis.

Recommendation

Management of the patients in the current scenario requires a longer duration of treatment with comprehensive care including general measures such

as counseling on lifestyle and full adherence to the treatment. Clothing should be loose fitting, of cotton or synthetic material that removes moisture away from the skin surface. Sharing garments and towels must be discouraged. Undergarments, socks, and cloths should be regularly washed and dried in the sun and ironed. Frequent changing of clothes should be advised

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Assessment of serum Calcium level of exclusively breastfed newborns and infants up to 6 months of age and its correlation with maternal serum Calcium

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Abstract

Background: Calcium is essential to maintain normal body homeostasis and breast milk is an important source of this nutrient in exclusively breast-fed infants. This study objective was to assess the serum calcium level of exclusively breast-fed newborns and babies upto 6 months of age and their mothers to find out a correlation between them.

Methods: A total 50 mother and baby pairs aging 0 to 6 months, exclusively breastfed, term and appropriate for gestational age, who came at vaccination center or outpatient department during the study period were randomly selected. Among the 50 mothers, 20 took regular calcium supplementation during pregnancy, 20 took calcium irregularly and the rest took no calcium at all. During lactation, 15 mothers were on regular calcium intake, 19 on irregular intake and 16 did not take any calcium after delivery. Total serum calcium and albumin level of the babies along with their mothers were measured and corrected serum calcium levels were calculated.

Result: Among the 50 babies, 35 (70%) had normal serum calcium level, 11 (22%) had mild hypocalcemia and 4 (8%) had moderate serum calcium level. So total 15 (30%) out of 50 babies had hypocalcemia. Of the 50 mothers, 42 (84%) had normal calcium level and the rest 8 (16%) had mild hypocalcemia. Among the 20 babies with mothers on regular antenatal calcium, 13 (65%) maintained normal serum calcium level, 5 (25%) developed mild hypocalcemia and 2 (10%) moderate hypocalcemia. Among the babies (20) whose mother took antenatal calcium irregularly, the result was exactly the same. 9 (90%) of the rest 10 babies whose mother took no calcium supplementation maintained normal serum calcium level while 1 (10%) developed mild hypocalcemia.

Conclusion: No significant statistical association was detected between maternal calcium supplementation during pregnancy & lactation and serum calcium level of exclusively breastfed newborns and infants up to 6 months of age.

Introduction:

Calcium is essential to maintain total body health.¹ It is the free, ionized calcium (Ca^{2+}) in the body fluids that is a vital second messenger and is necessary for blood coagulation, muscle contraction, and nerve function.²

Hypocalcemia is the reduction of total serum concentration after making an allowance for a variation in the simultaneously measured albumin concentration.³ During pregnancy and lactation, there

is a greater depletion of calcium from the mother and the intake needs to be increased. On an average, 10 mg per kg of body weight per day should be sufficient.¹ Intake of calcium is low in the general population of Bangladesh, with potential serious and persistent effects on public health. These effects are especially pertinent to young children and women of reproductive age, by virtue of increased physiologic needs, poorer access to dietary calcium sources, and

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a confluence of other local determinants of calcium status in these groups.⁴

Maternal deficiency of calcium may lead to hypocalcemia in the breastfeeding infants.⁵ The fetus must actively transport sufficient calcium across the placenta to meet the large demand of the rapidly mineralizing skeleton, whereas the neonate must quickly adjust to loss of placental calcium transport, while continuing to undergo rapid skeletal growth.⁶ To compensate for the calcium requirements of lactation, the maternal adaptations could, in theory, include increased intestinal absorption of calcium, renal conservation of calcium, and increased resorption of calcium from the skeleton. In fact, the studies reviewed in this section indicate that a temporary demineralization of the skeleton is the main mechanism by which lactating humans and animals meet these calcium requirements.⁶ Infants less than 6 months are reliant on their mothers for their daily calcium requirements. As such maternal deficiency of calcium may lead to hypocalcemia in the breastfeeding infants.⁶ Hypocalcemia is often asymptomatic in neonates and may present as lethargy, poor feeding, vomiting and abdominal distension which can mimic sepsis. Severe hypocalcemia may present with seizure.⁷

Serum calcium is present in two forms: the free (ionized) and the bound form. Only about 50% of circulating calcium is present in the physiologically free form. The rest is either bound to proteins (40%) or complexed (10%) with bicarbonate, citrate, and phosphate.^{5,8} Serum Calcium is maintained by several biochemical factors in the body. Three hormones are primarily concerned with the regulation of calcium homeostasis - parathyroid hormone secreted from the parathyroid glands, Vit D₃ (1,25 Dihydroxycholecalciferol), a steroid hormone formed from vitamin D, and Calcitonin, a calcium lowering hormone secreted in mammals by the parafollicular cells (C-cells) of the thyroid gland.²

Measurement of the total calcium alone may sometimes be misleading, since this measurement can change without alteration in the ionized calcium concentration. In hypoalbuminemia, although ionized calcium levels remain normal, total calcium levels decrease. Despite having a high prevalence of hypocalcemia among women of reproductive age

group and neonates and infants, there are few useful studies to find out the relationship between maternal serum calcium and baby's serum calcium. This study can be useful to sort out the relation and further evaluation can help us to prevent maternal hypocalcemia to protect their children from the complications of hypocalcemia.

Materials and Methods:

This study was conducted at the Paediatric outpatient department of Dhaka Shishu Hospital, Dhaka from February, 2019 through July, 2019. Total 50 mother and baby pairs who came at vaccination centre for vaccination or outpatient department for checkup were randomly selected. All of the babies enrolled were term and exclusively breastfed without having any significant complications. 21 babies were neonate and the rest 29 babies were in the age group of 1 month to 6 months of age. The total serum calcium and serum albumin levels of the mothers and the babies were assessed and corrected serum calcium levels were calculated for both groups. Then the correlation between serum calcium level of both mothers and babies were assessed. The equation used to measure corrected calcium in cases of hyperalbuminemia/hypoalbuminemia is as follows:

Corrected (Ca²⁺) in mg/dL = Measured total (Ca²⁺) in mg/dL + [0.8x{4.5 - (albumin in mg/dL)}]^{9,10,11}

or, Corrected total calcium (mmol/L) = Total Ca (mmol/L) + 0.02[40(g/L) - albumin(g/L)]¹²

Statistical analyses were carried out by using the Statistical Package for Social Science version 20.0 for Windows (SPSS Inc, Chicago, Illinois, USA). The mean values were calculated for continuous variables. Chi-square test was used to analyze the categorical variables, shown with cross tabulation. P values < 0.05 was considered as statistically significant. Pearson's correlation coefficient was used to study the statistical correlation.

Results:

The study included 50 baby-mother pairs. All the babies were term with appropriate for gestational age and exclusively breast-fed since birth. Mean maternal age was 25.34±5.4 SD years. Babies were divided into two groups- neonate and infants. Mean age of the neonates were 9.7±6.22 SD days and that of infants were 2.6±1.27 months.

Table 1. Socio-demographic factors Age distribution

Age distribution	Mean $\pm$ SD
Maternal age (n=50)	25.34 $\pm$ 5.4 years
Neonates (n=21)	9.7 $\pm$ 6.22 days
Infants (n=29)	2.6 $\pm$ 1.27 months
Sex distribution of the babies	
Male	31(62%)
Female	19(38%)
Socioeconomical status (Groups)	N =50
Lower class	0
Upper-lower class	21(42%)
Lower-middle class	17(34%)
Upper-middle class	12(24%)
Upper class	0
Maternal education	N=50
Illiterate	6(12%)
Primary	15(30%)
SSC	16(32%)
HSC	8(16%)
Graduate	5(10%)
Maternal nutritional status according to BMI	N=50
Underweight	10(20%)
Normal	25(50%)
Overweight	15(30%)
Obese	3(6%)

Among the 50 mothers, 20(40%) mothers took regular calcium supplements during pregnancy, 20(40%)

mothers had irregular calcium supplements and 10(20%) took no calcium supplements at all.

During lactation 15(30%) mothers were taking regular calcium supplements, 19(38%) mothers were taking irregular calcium supplements and 16(32%) mothers did not take any calcium after delivery.

Table III shows the mean serum total serum calcium and serum albumin level of both the babies and the mothers. Corrected serum calcium level was calculated for each from total serum calcium and serum albumin level for the study with the help of the equation mentioned at operational definition in methodology.

Table II : Distribution of maternal factors related to pregnancy and lactation- maternal antenatal checkup, calcium intake and mode of delivery

Maternal antenatal check up	N=50
Regular check-up	32(64%)
Irregular check up	17(34%)
No check up	1(2%)
Calcium intake during pregnancy	N=50
Regular intake	20(40%)
Irregular intake	20(40%)
No intake	10(20%)
Calcium intake during lactation	N=50
Regular intake	15(30%)
Irregular intake	19(38%)
No intake	16(32%)

Table III: Laboratory results; serum total calcium and serum albumin level of the babies and the mothers

Groups	Total serum calcium(mmol/L) Mean $\pm$ SD	Serum albumin(g/L) Mean $\pm$ SD
Mothers	2.27 $\pm$ 0.16 (2.11-2.43)	37 $\pm$ 4.47 (32.53-41.47)
Babies	2.23 $\pm$ 0.25 (2.48- 1.98)	37.57 $\pm$ 5.27 (32.3-42.84)

Table IV : Serum calcium distribution of the mothers and the babies.

Serum calcium level of the babies'	N	Min(mmol/L)	Max(mmol/L)	Mean $\pm$ SD
Normal Calcium level	35(70%)	2.2	2.9	2.4($\pm$ 0.17SD)
Mild hypocalcemia	11(22%)	1.9	2.1	2.04($\pm$ 0.08SD)
Moderate hypocalcemia	4(8%)	1.5	1.8	1.6($\pm$ 0.13SD)
Severe hypocalcemia	0			
Serum calcium level of the mothers	N	Min(mmol/L)	Max(mmol/L)	Mean $\pm$ SD
Normal Calcium level	42(84%)	2.20	2.70	2.37($\pm$ 0.15 SD)
Mild hypocalcemia	8(16%)	2.0	2.1	2.07($\pm$ 0.05 SD)
Moderate hypocalcemia	0			
Severe hypocalcemia	0			

The corrected serum calcium level was obtained from total serum calcium and serum albumin level. Among the 50 babies 35 (70%) had normal serum calcium level, 11(22%) babies had mild hypocalcemia and only 4(8%) babies had moderate hypocalcemia. Not a single baby had severe hypocalcemia. So, total 15(30%) out of 50 babies had hypocalcemia. Prevalence of hypocalcemia of the babies was 0.3.

Among the mothers 42(84%) mothers had normal serum calcium level and 8(16%) mothers had mild hypocalcemia. No one had moderate or severe hypocalcemia.

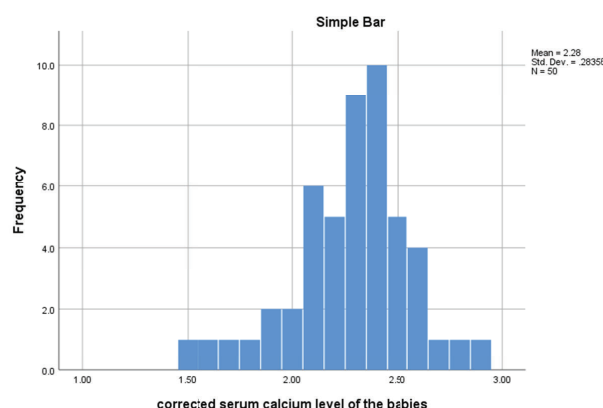


Fig .-1: Simple bar diagram showing corrected serum calcium distribution of the babies

The mean corrected serum calcium level of the babies was 2.28 mmol/L $\pm$ 0.28 SD.

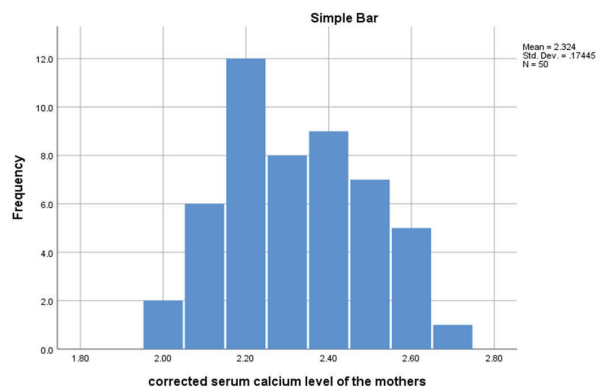


Fig2: Simple bar diagram showing corrected serum calcium level of the mothers.

The mean corrected serum calcium level of the mothers was 2.324 mmol/L $\pm$ 0.17 SD.

Nutritional status and educational qualification of the mothers were assessed for any correlation with the serum calcium level of the babies by chi square test. In all cases P value >0.05. so, no significant association was found among these variables.

ns : not significant

There is no relation of the socio-economic status of the families included in the study to serum calcium level of the babies. P value 0.304 (not significant)

Table V: Maternal calcium intake during pregnancy and lactation and it's relation to serum calcium status of the babies

During pregnancy n=50		Babies' S. Calcium level			P value
	Normal (n=35)	Mild hypocalcemia (n=11)	Moderate hypocalcemia (n=4)	Severe hypocalcemia (n=0)	
Regular (n=20)	13(37.14%)	5(45.45%)	2(50%)	0	0.639
Irregular (n=20)	13(37.14%)	5(45.45%)	2(50%)	0	
No intake(n=10)	9(25.71%)	1(9.09%)	0	0	
During lactation n=50		Babies' S. Calcium level			P value
	Normal (n=35)	Mild hypocalcemia (n=11)	Moderate hypocalcemia (n=4)	Severe hypocalcemia (n=0)	
Regular (n=15)	10(28.57%)	4(36.36%)	1(25%)	0	0.346
Irregular (n=19)	15(42.85%)	4(36.36%)	0	0	
No intake(n=16)	10(28.57%)	3(27.27%)	3(75% %)	0	

ns: not significant

Maternal calcium supplement intake during pregnancy and lactation were assessed for association with serum calcium level of the babies by chi square test. In both cases P value is more than 0.05. So no significant statistical association was detected among these variables.

Discussion:

The present study was conducted to find out the correlation between maternal serum calcium and serum calcium of exclusively breastfed baby up to 6 months of age. A total 50 mother and baby pairs were included. All the babies were born term. The total serum calcium and serum albumin levels of the mothers and babies were assessed and corrected serum calcium levels were calculated for both groups. Then the correlation between the groups was assessed. The result shows no correlation between maternal serum calcium and serum calcium level of their exclusively breastfed babies up to 6 months of age (Pearson's correlation coefficient, $r = -0.089$ and $p \text{ value} = 0.538$). The study statistically signifies that there is no correlation of serum calcium between the two study groups. This result is in unison with the study conducted by Jacqueline Lin National Kenyatta Hospital, Kenya in 2014. The study was conducted on 100 pairs of mothers and their babies. In that study no significant correlation was found between serum calcium level of the mothers and their babies ($p = 0.443$). Both term and preterm babies were included in that study⁵ while in our study, only term babies were included.

On the other hand, a study to find any association between maternal and neonatal hypocalcemia and found a significant association ($p = 0.013$) which does not support the present study⁹. The study was conducted in term neonates of Kenyatta hospital, Kenya in 2011. Total 121 mothers and their neonates were included in that study.³⁰ The study population was larger than the present study and only included neonates.^{10,13} The present study included both term neonates and exclusively breastfed infants but no association was found between serum calcium level of the babies and their mothers ($p > 0.05$). The study conducted by Jacqueline L⁴ in 2014 arises conflict with the study done by Kisiangani¹³ in same hospital in 2011. The study which took place in later period shows no association between serum calcium level of the babies and their mothers unlike the study done in 2011. It indicates an improvement of antenatal and neonatal care in this time period.

In India Neelam Deshpande and Lalit Patil⁷ in their study conducted at 2014 found that a statistically significant correlation exists between maternal ionic calcium and cord blood ionic calcium ($r = 0.86$), cord blood ionic calcium and baby's ionic calcium at 48 h of age ($r = 0.51$), maternal ionic calcium and baby's ionic calcium at 48 h of age ($r = 0.67$). This result does not support the present study. It included 500 population which is 10 folds higher than present study. But the direct correlation of serum calcium level of the babies and the mothers were not assessed in that study.⁷

A frank correlation was noted between the maternal serum calcium and serum calcium levels of the newborn ($R = 0.34$) in a study conducted in Pregnant Women and their Newborns in Sidi Bel Abbes Region, Algeria by Amina Imene Benali and Abbassia Demmouche in the year 2014. The result arises conflict with the present study as no correlation was found between maternal and babies' serum calcium level. The above-mentioned study was conducted on a large population of 900 pregnant women and their newborn babies.¹⁴ But the present study included both newborns and infants up to 6 months of age.

Beside maternal serum calcium some other factors were assessed to determine correlation with serum calcium level of the babies in the present study. These variables are maternal education, nutritional status, socio-economic condition, maternal intake of calcium supplements during pregnancy and lactation but no direct correlation with maternal serum calcium level was assessed. No significant correlation was found between these variables and serum calcium status of the babies. ($p > 0.05$). In another series assessed relation between serum calcium level of the babies and maternal dietary intake of calcium rich foods but no significant correlation between them was found in his study^{10,11}.

But the study conducted by Neelam Deshpande and Lalit Patil⁷ showed with calcium supplementation antenatally, the mean values for serum calcium of maternal blood, cord blood and baby's blood at 48 hours of age were higher than those without antenatal calcium supplementation which is non supportive to present study.⁷

There was a big series to find the effects of restricting milk intake in lactating mothers on selected nutrients, It was found that milk restriction compromised

calcium intake in lactating mothers.¹⁵ Milk intake was considered as calcium supplementation in that study. In the present study baby's serum calcium level was not affected by maternal calcium intake during pregnancy or lactation.

Welime KJ studied association between serum calcium level of the babies and maternal education but did not find any relation which supports the present study.¹³

Serum calcium level is maintained by other hormones and factors like Vitamin D₃, parathormone and calcitonin.² That's why it may not depend solely on maternal serum calcium. Though total body calcium content of the newborns and exclusively breastfed babies depend on maternal calcium status but they can maintain their own serum calcium level individually. Another explanation for insignificant correlation between serum calcium level of babies and their mothers may be the impact of regular antenatal checkup and providing calcium and other nutritional supplements during pregnancy and lactation which creates awareness among general population.

Conclusion:

In this study no correlation was found between maternal serum calcium level and serum calcium level of their exclusively breastfed baby up to 6 months of age. Though the study has some limitations like small sample size, conducting in a short period of time but It implies that the serum calcium level of the baby is not directly related to maternal serum calcium level though, they are totally dependent on their mothers for their source of calcium during fetal life and lactation period as well. So, it can be said that maternal serum calcium level does not have any predictive value for their babies' serum calcium.

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