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Content	Page
Editorial	
The Doctor-patient relationship <i>Mohammad Jubaidul Kabir</i>	03
Original Article	
Comparative study of efficacy and safety of Adapalene- Benzoyl peroxide combination gel and Adapalene only gel in the treatment of Acne Vulgaris <i>Md. Abul Kalam, Md. Kamrul Islam, Md. Shah Zaman</i>	06
Frequency of Fungal Species Between Diabetic and Non-Diabetic Patients <i>Sharmin Sultana, Md. Qamrul Hassan Jaigirdar</i>	12
Observation of Dental Disease Prevalence Among Bangladeshi Adults <i>Md. Mukhlachur Rahman, Fouad Al Hasanat, Md. Harun-Ur-Rashid, Sanjana, Md. Abdul Gaffer, Tasnia Habib Sinthy</i>	18
Pattern of Injuries in Patients Attended to the Emergency Department of Ashiyan Medical College Hospital <i>Mohammad Jamal Abu Nasser, Tarafder Habibullah, Ashok Kumar Sarker, Abdullah Al Faruq, Md. Asaduzzaman Nur, Md. Mashukur Rahman Chisty</i>	25
Case Report	
Aggressive intracerebral tuberculoma with acute demyelinating encephalomyelitis (ADEM) found in a 40-year-old lady: A Case Report <i>Mohammad Saifullah Patwary, Nusrat Shoaib, Muhammad Abdul Wasee</i>	31
Instructions for Authors	36



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Content	Page
Editorial	
The Doctor-patient relationship <i>Mohammad Jubaidul Kabir</i>	01
Original Article	
Comparative study of efficacy and safety of Adapalene- Benzoyl peroxide combination gel and Adapalene only gel in the treatment of Acne Vulgaris <i>Md. Abul Kalam, Md.Kamrul Islam, Md.Shah Zaman</i>	06
Frequency of Fungal Species Between Diabetic and Non-Diabetic Patients <i>Sharmin Sultana, Md. Qamrul Hassan Jaigirdar</i>	12
Observation of Dental Disease Prevalence Among Bangladeshi Adults <i>Md. Mukhlachur Rahman, Fouad Al Hasanat, Md. Harun-Ur-Rashid, Sanjana, Md.Abdul Gaffer, Tasnia Habib Sinthy</i>	18
Pattern of Injuries in Patients Attended to the Emergency Department of Ashiyan Medical College Hospital <i>Mohammad Jamal Abu Nasser, Tarafder Habibullah, Ashok Kumar Sarker, Abdullah Al Faruq, Md. Asaduzzaman Nur, Md. Mashukur Rahman Chisty</i>	25
Case Report	
Aggressive intracerebral tuberculoma with acute demyelinating encephalomyelitis (ADEM) found in a 40-year-old lady: A Case Report <i>Mohammad Saifullah Patwary, Nusrat Shoaib, Muhammad Abdul Wasee</i>	31
Instructions for Authors	36

THE DOCTOR-PATIENT RELATIONSHIP

Mohammad Jubaidul Kabir

Introduction

“Why do doctors so often make mistakes? Because they are not sufficiently individual in their diagnoses or their treatment. They class a sick man under some given department of their nosology, whereas every invalid is really a special case, an unique example.”

This quote (Amiel, 1889), taken from Henri-Frédéric Amiel’s journal (a 19th Century Swiss philosopher), epitomises the crisis physicians face in a society impacted by globalisation and a target-orientated business one could call medicine. The doctor-patient relationship forms a fundamental component of the practice of medicine. It establishes the foundation for a physician to utilise his or her knowledge to make a diagnosis and treatment plan. Throughout medical school and beyond, epidemiology is taught with a generalisation of a given population to understand incidence, distribution and control of diseases. However, this fails to address the individual and how a disease can manifest itself in many diverse ways, affecting the patient physiologically and psychologically.

The doctor-patient relationship has changed throughout time, and is currently being redefined so that both the doctor and patient have a role in treatment decisions. However, individual perspectives and cultural differences across the world mean that the doctor-patient relationships can alter. There are 4 main models of the doctor-patient relationship; the paternalistic model, the informative model, the interpretive model, and the deliberative model

(Emanuel and Emanuel, 1992). As well as the various models, different aspects of the doctor-patient relationship have been identified which includes but is not limited to; confidentiality and informed consent, shared decision making, physician superiority/ conversational dominance, conflict of interest, transitional care, and finally, other involved individuals. The General Medical Council (GMC) has published advice to doctors in order to ensure that doctors are aware of the standards expected of them (GMC, 2013). The British Medical association (BMA) also provides career advice and support to any physician regarding key issues (BMA, 2017).

Each model of the doctor-patient relationship and the various aspects of it have come under continuous scrutiny, as various incidents have questioned the ethical limits. The doctor-patient relationship has changed throughout history, dating back from the more mythical approach of the Ancient Egyptians to the technological approach a doctor faces now.

In 1992, Ezekiel Emanuel and his ex-spouse, Linda Emanuel, formulated four models of the doctor-patient relationship, the paternalistic model, the informative model, the interpretive model, and the deliberative model (See figure 2). The paternalistic model limits patient participation. In one extreme, the physician commandingly informs the patient of when the intervention will begin. However, the paternalistic model is more commonly seen as a doctor presenting a patient with specific information that will encourage the patient to consent. It is warranted during

emergencies where time taken to obtain consent can do more harm. The informative model, is where the doctor informs the patient of all the relevant information and allows the patient to select which intervention he or she wants. The doctor is also required to inform patients of their disease state and therefore, the diagnostic and therapeutic interventions, the nature of these and the risks and benefits. The purpose of this model is that the patient is known to know their own values, however, they lack the facts and the doctor is able to provide these so that the patient can exercise control. The interpretive model takes the informative models slightly further by eliciting the patients' values and helping the patient select the available interventions. This model is akin to a counsellor's role, where information is provided, values are exposed and medical interventions are selected. These three models fail to address one's own health related values that are specific to the clinical situation. Therefore, the deliberative model, which is analogous to a teacher or friend, allows the physician to engage in a dialogue on what course of action would be best (Emanuel and Emanuel, 1992).

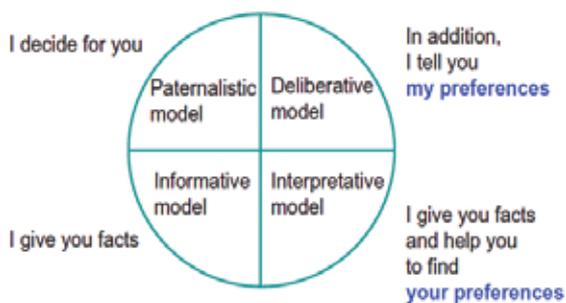


Figure 2: (Reach, 2017) The four models as described by Ezekiel Emanuel and Lina Emanuel
 A fifth model, the instrumental model, is where the patient's values are completely disregarded for the greater good of society. Although this is rarely seen, an example would be the Tuskegee syphilis experiment, which ran from 1932 to

1972. It involved almost 400 African-American men with latent syphilis. The purpose of the experiment was to see if syphilis affected black men in a different way to white men. Despite the discovery of penicillin and it being known as a simple cure for syphilis, it was never offered. This experiment altered societies opinion on unethical and racist experiments, and it is this reason why the instrumental model is rarely seen today (CDC, 2017).

Current flaws

The doctor-patient relationship, despite having various models and different approaches, still has many difficulties. Medical practice still varies across the world and approaches by doctors often clashes with patient expectations. Healthcare in general hopes to improve health outcomes, yet it has come to question how much of a role a doctor plays in a technological environment. The term e-patient is being thrown around more and more, as patients seek information and help through easily accessible online forums and websites.

Conclusion

Societies, institutes and individuals are completely reliant on doctors to survive and have a functioning civilisation. History has seen medicine being based on religion, culture, magic and superstitions. Magic and religion has slowly replaced by logic, intuition, education and psychology. The future of the doctor-patient relationship is difficult to predict, yet technological advances, increased utilisation of social media and an increase in the use of artificial intelligence could have a huge impact. Patients could become more independent and not need doctors, or rely on doctors to get some human interaction during anxious times, which machines cannot supply. Doctors see thousands

of patients in their lifetime and are taught how diseases affect millions, it is as a result of this that it is easy for doctors to forget that each patient is their own individual with their own values, expectations and rights.

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COMPARATIVE STUDY OF EFFICACY AND SAFETY OF ADAPALENE-BENZOYL PEROXIDE COMBINATION GEL AND ADAPALENE ONLY GEL IN THE TREATMENT OF ACNE VULGARIS.

Md. Abul Kalam¹, Md. Kamrul Islam², Md. Shah Zaman³

ABSTRACT

Background: Acne is a common dermatological disorder of teen age group. There are different modalities of topical and systemic treatments are available. A fixed-dose combination gel with adapalene 0.1% and benzoyl peroxide (BPO) 2.5% is a newer option for the once-daily treatment of acne. **Objective:** To evaluate the efficacy and safety of adapalene 0.1% and BPO 2.5% fixed dose combination gel (adapalene-BPO) compare to the Adapalene(0.1%) monotherapy for the treatment of acne. **Methods:** This study, a parallel-group, randomized open clinical trial was carried out for a period of 12 months. Total sixty patients of mild to moderate Acne were randomly enrolled into two equal groups (group A and B). Group-A were treated with Adapalene- BPO combined gel for 12 weeks, and group-B were treated with only Adapalene gel for 12 weeks. Evaluation criteria included success rate (subjects “clear” or “almost clear”), lesion count, cutaneous tolerability, and adverse events. **Results:** The fixed-dose combination gel of adapalene and BPO was significantly more effective than Adapalene monotherapy, with significant differences in total lesion counts observed as early as 4 weeks of treatment. Adverse event frequency and cutaneous tolerability profile for adapalene-BPO were similar to Adapalene monotherapy. **Conclusions:** The fixed-dose combination of adapalene and BPO provides significantly greater efficacy for the treatment of mild to moderate acne vulgaris compare to Adapalene monotherapy and no significant difference of safety profile.

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Introduction:

Acne vulgaris is a chronic disease of the pilosebaceous unit. Usually occur at puberty but can also be seen in adult age. A multifactorial pathophysiology including sebaceous gland hyperplasia with seborrhea, altered follicular growth and differentiation, Propionibacterium acnes proliferation, and inflammation.¹ Most cases of acne consist of comedones, papules, pustules, and nodules. Although the course of acne may be self-limiting, but sometime pitted or hypertrophic scar may persist for lifelong.² Lesions of acne vulgaris can be divided into four grades- 1, 2, 3, and 4. Grade 1 consists of comedones and occasional papules. Grade 2 consists of papules, comedones and few pustules. Grade 3 consists of predominant pustules, nodules, and abscesses. Grade 4 consists of mainly cysts, abscesses, and widespread scarring.³ Due to its multi-factorial pathogenesis, combination therapy such as a topical retinoid and an antimicrobial, is recommended for the management of the disease.^{4,5} Drugs used for Grades 1 and 2 (mild-to-moderate case) of acne vulgaris are topical comedolytics, antibacterials, and retinoids as monotherapy or combination therapy. Grades 3 and 4 (severe cases) of acne vulgaris require systemic antibacterials along with topical agents.⁶ Benzoyl peroxide is a potent topical antibacterial agent, acts through oxidation and formation of free radicals causing a reduction of P. acnes. It also has comedolytic property and mild anti-inflammatory actions. It is usually used alone or in combination with other topical anti-acne medications.³ Adapalene is a topical retinoid. It is a receptor- selective naphthoic acid derivative with anti- inflammatory, comedolytic, and anti-comedogenic properties.⁶ It is recognized as an effective topical retinoid with a favorable

tolerability profile and is therefore a rational selection for combination therapy with an antimicrobial agent.⁸

A fixed-dose combination gel with adapalene 0.1% and benzoyl peroxide 2.5% has been developed. This study is planned to compare the effects and side effects of Adapalene alone and in combination with BPO in the treatment of mild to moderate acne vulgaris and to determine whether or not they have a synergistic effect.

Materials and methods

This randomized open clinical study was carried out in the department of dermatology and venereology of Tairunnesa memorial medical college Hospital, Tongi, Gazipur, Bangladesh from October, 2022 to September, 2023. Total 60 patients with clinically diagnosed acne vulgaris was taken. Data were collected in the structured questionnaire and informed written consent was taken from all selected patient. Patients between 12 and 35 years of age with mild to moderate facial acne vulgaris, assessed using the Investigator Global Assessment Scale with a minimum of 10 inflammatory lesions, 10 to 100 non-inflammatory lesions, and no more than one nodule or cyst on the face, were included in this study. Exclusion criteria were: patients suffering from nodulo-cystic acne, pregnant women and lactating mother, patient taking any medication for acne, persons having hypersensitivity to adapalene and benzoyl peroxide and patients with other dermatologic conditions interfering with the treatment of acne vulgaris.

A total number of sixty patients were primarily selected and randomly divided into two equal group (group-A and group-B). Group A was given adapalene(0.1%) and benzoyl peroxide (2.5%) combination gel once daily in the evening

for 12 week. Group B was given Adapalene gel in the evening for same duration. Patients were clinically assessed at baseline and at week 4, 8 and 12. The primary efficacy variables were success rate (the percentage of subjects rated “clear” or “almost clear” on the investigator’s global assessment scale [IGA] of acne severity) and percentage of lesion reduction from baseline (total, inflammatory, and noninflammatory). Safety and tolerability were assessed through evaluations of local facial tolerability and adverse events. At each visit, the investigator rated , scaling, erythema, dryness, burning , pruritus on a scale ranging from 0 (none) to 3 (severe). Adverse events were evaluated at each visit. Data were analyzed using SPSS 16 (χ^2 -test and exact Fisher test). P values less than 0.05 were considered significant.

Result.

Total 60 patients were diagnosed with mild to moderate grade of acne vulgaris and fulfilled the inclusion and exclusion criteria were included in this study. Demographical distribution of patients Shown in table 1. The mean age of presentation in our study was 21.17 ± 3.28 years. Mean age of onset of acne was 17.63 ± 3.07 years. Female predominance was observed 43(71.7%), on comparison to male 17(28.3%). Male: female ratio was 1:2.52. Majority of the patients were students (75%). 19(31.7%) were married and 41(69.3%) were unmarried. 85% patients had oily and 15% had dry skin type. Face was the common site in all the patients, followed by back and chest. Most of the females had regular menstruation (67%) out of that 28.3% female had worsening of acne before menses and 7.2% had worsening of acne after menses.

Mean score for open comedone, closed comedone, papule and pustule was identical between two groups at base line ($p > 0.05$).

Significantly better reduction of acne score for open comedone, closed comedone, papule, pustule and total acne score was noticed at 2nd and 3rd follow up ($p < 0.005$) in the group A than the group B. Percent reduction of acne severity from base line to final follow up was 94.76% in group A and 83.42% in group B and it was statistically significant between two group ($p = 0.001$); table 2.

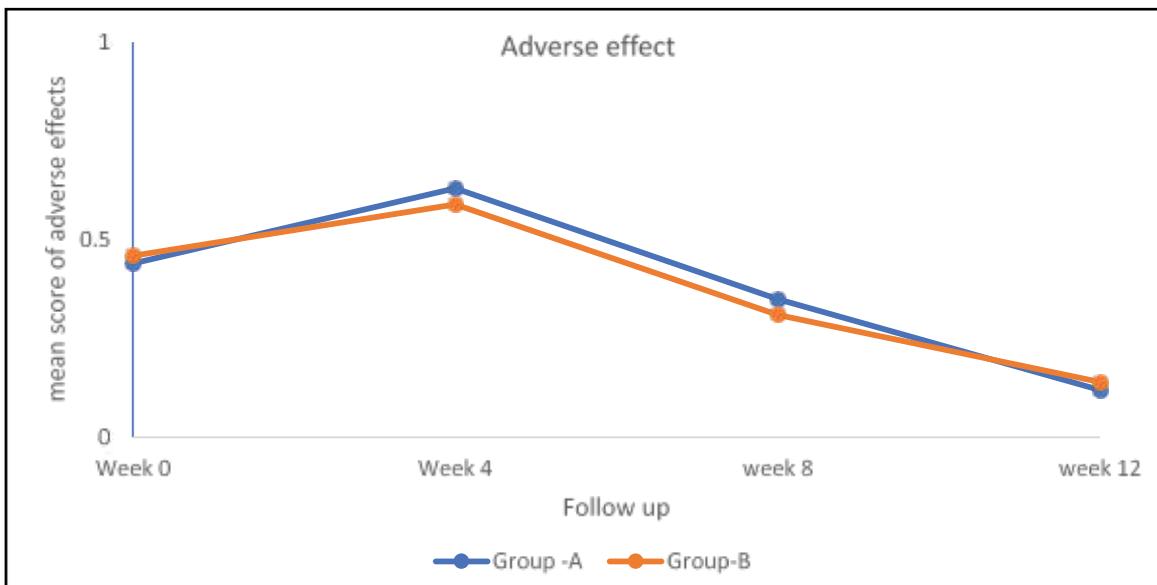
So, in our study of Adapalene 0.1% and Benzoyl peroxide 2.5% and combination achieved better response than the application of 0.1% Adapalene monotherapy. Safety score for scaling, erythema, burning, dryness and pruritus were not significantly differ between two groups ($P > 0.05$) Figure-1. These reactions diminished with the continuation of the treatment.

Table 1: Demographic distribution of patient

Parameters	N (%)
Total patient	60
Male : Female ratio	1: 2.25
Mean age of presentation	21.17 ± 3.28 years
Mean age of onset	17.63 ± 3.07 years
Married	19(31.7%)
Unmarried	41(69.3%)
Student	45(75%)

Table 2: Efficacy of treatment

Follow up	Group-A (combination) (mean lesion counts)	Group-B (monotherapy) (mean lesion count)	P value
Baseline (0 week)	33.56 ± 5.30	32.56 ± 3.86	0.450
4 th week	32.56 ± 3.86	25.0 ± 3.27	0.188
8 th week	12.0 ± 3.22	16.16 ± 4.04	<0.001
12 th week	1.76 ± 1.27	5.40 ± 1.68	<0.001
Reduction from baseline To 3 rd follow up	94.76%	83.42%	0.001

Figure-1: Time course of adverse effects

Discussion

The incidence and severity of acne peaks at 40% in 14-17-year-old girls and at 35% in boys aged 16-19 years. Despite its spontaneous regression in most patients, acne persists in 10% of those patients over the age of 25 years.⁹ Treatment of acne with combination therapy is widely prescribed as a highly effective treatment approach for this complex and chronic disease.^{10,11} Currently, there are relatively few anti-acne fixed-dose combination products and none of them containing a topical retinoid with BPO. The fixed-dose combination of adapalene 0.1% and BPO 2.5% for the treatment of acne combines two agents with different modes of action to address multiple pathophysiological factors of acne. BP is frequently used in combination therapies for acne vulgaris. Especially in combination with topical tetracycline and erythromycin, successful results have been obtained in many studies and furthermore, the reduction of antibiotic resistance was shown with BP combinations.¹²

Han dojo used topical 5% BP gel and retinoic acid cream in combination and alone; he reported that the combination therapy was superior.¹³

Results of previous studies with combination therapy were mixed. Some study reports combination therapy is superior to monotherapy of either drugs; and others report no significant difference between combination therapy and monotherapy with either drugs.

In our study, combination of topical adapalene 0.1% and benzoyl peroxide 2.5% gel was found to be more efficacious in comparison to topical Adapalene 0.1% gel monotherapy in facial acne, what is in accordance with previous studies. Adarsh Gowda et al in a comparative study of clinical efficacy and side effects of Adapalene 0.1% gel and Benzoyl peroxide 2.5% gel as monotherapies and Combination therapy in facial acne in Indian perspective shown similar result as combination therapy is superior to monotherapy.¹⁴

Gold L et al in a North American study of adapalene-benzoyl peroxide combination gel in the treatment of acne was reported that: in a large clinical trial, the fixed dose combination gel had shown superiority in efficacy compared with adapalene and benzoyl peroxide monotherapies, with an early onset of efficacy and a good safety profile.¹⁵

In a study done by Babaeinejad et al on efficacy, safety, and tolerability of adapalene and BPO in the treatment of mild acne vulgaris, the fixed-dose combination of adapalene and BPO was found to be safe, well tolerated, and significantly more efficacious for the treatment of acne vulgaris and with faster onset of action compared to adapalene and BPO monotherapy.¹⁶

In another study by Korkut et al reported that adapalene gel and benzoyl peroxide lotion are effective and safe in the treatment of acne vulgaris and that the combination of these two remedies has no superiority over single drug therapy with either adapalene or benzoyl peroxide. This was also an open-label, prospective study but unlike our study, they used 5% benzoyl peroxide lotion.¹⁷

Our study results are also comparable with those observed in other previous clinical studies that demonstrated a favorable benefit-risk profile for adapalene-BPO combination therapy.¹⁸⁻²⁰

Majority of patients in both groups experienced mild irritation. Mean tolerability scores, based on erythema, scaling, dryness, and stinging/burning, peaked at the first follow up and declined thereafter, similarly in both groups. Earlier studies have shown that adapalene can be added to other therapies without significantly increasing skin irritation.²¹

Conclusion:

In conclusion, the findings of this study permit to conclude that, once daily fixed-dose combination of adapalene 0.1% and 2.5% BPO gel is safe and effective for the treatment of mild to moderate acne vulgaris. Combination therapy is more effective and faster onset of action compared to Adapalene monotherapy, with no significant difference of adverse effect profile.

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FREQUENCY OF FUNGAL SPECIES BETWEEN DIABETIC AND NON-DIABETIC PATIENTS

Sharmin Sultana¹, Md. Qamrul Hassan Jaigirdar²

ABSTRACT

Onychomycosis is a common nail problem in our country. Diabetic patients are more prone to develop onychomycosis. Various types of fungi are the causative agents of nail infections. This study was designed to find out the pattern of onychomycosis among diabetic and non-diabetic patients attending the out patient Department of Dermatology and Venereology and Endocrinology of Bangabandhu Sheikh Mujib Medical University Hospital, Bangladesh. Clinically diagnosed patients of onychomycosis with diabetic or non-diabetic were included purposively in this study. Scraping or clipping from infected nail materials were processed for microscopy and culture in Sabouraud's dextrose agar media and Dermatophyte test media. Clinical features, microscopic examination results and culture interpretations were recorded and compared in two groups. A total of 87 clinically diagnosed patients of onychomycosis were included in this study. Out of 87 patients of onychomycosis, 54 patients were diabetic and 33 patients were non-diabetic. *Trichophyton rubrum*, and *Trichophyton mentagrophytes* were found in 24(44.44%) and 19(35.18%) diabetic patients. *Candida albicans* and non-*albicans candida* species were found in 1(1.85%) and 2(3.70%) diabetic patients. On the other hand, *Trichophyton rubrum*, and *Trichophyton mentagrophytes* were found in 1(3.03%) and 2(6.06%) non-diabetic patients. *Candida albicans* and non-*albicans candida* species were found in 8(24.24%) and 8(24.24%) non-diabetic patients. Growth of fungus was found in 46(85.19%) diabetic patients which was significant ($p=0.004$) compared to that found in 19(57.58%) non-diabetic patients. No growth was found in 8(14.81%) diabetic and in 14(42.42%) non-diabetic patients. Dermatophytes were more found in diabetic patients and *Candida albicans* and non-*albicans Candida spp.* were more found in non-diabetic patients. So, the pattern of onychomycosis was different in diabetics compared to non-diabetics. Further study may be done with large number of sample to determine more accurate pattern of onychomycosis among diabetics.

Key words: Onychomycosis, Diabetic and Non-diabetic patients, Species of fungus.

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Introduction:

Diabetes is a disease of multiple complications. Long standing diabetes can lead to permanent and irreversible functional changes in body cells and thus lead to various complications.¹ The high concentration of glucose in the epidermis of diabetics is an ideal environment for saprophytic organisms like the *Candida*.² Fungal skin infections are commonly seen in diabetic patients.³

There is high incidence of candida species (91.5%) to be responsible for onychomycosis in diabetic patients. There can be some factors involved in candida spp. being the major causative agent of onychomycosis in diabetic patients in our region.⁴ Dermatophytes were main agents causing onychomycosis in India.⁵

Superficial fungal infections are common skin diseases, affecting millions of people worldwide.⁶ The main group of fungi causing infection of skin and its appendages are dermatophytes, *Candida* and *Malassezia*. They cause dermal inflammation with intense itching and cosmetic problems as well.⁷ Fungal nail infections increase the susceptibility of patients to other serious complications. In diabetic patients, onychomycosis can open the door to secondary bacterial infections promoting foot ulcers and gangrene. Onychomycosis can also trigger recurrent cellulitis and thrombophlebitis. In addition to these significant health problems, the substantial psychosocial consequences of onychomycosis alone justify serious management.⁸

Several clinical variations of onychomycosis can develop: distal subungual, proximal subungual, white superficial, and endonyx. Distal subungual onychomycosis (DSO) is the most prevalent type of fungal nail infection, occurring in 75% to

85% of cases. This variation of onychomycosis occurs between the distal underside of the nail plate and the nail bed, and is most often caused by the dermatophyte *T. rubrum*. Fungal pathogens enter the distal nail bed epidermis from the sole of the foot and toe webs through the hyponychium or the lateral nail fold.⁹ In fact, most cases of onychomycosis are associated with dermatophyte infection of the feet (tinea pedis).¹⁰

Onychomycosis among diabetic patients has been reported in some studies to be of high prevalence. A study aimed to investigate the prevalence of onychomycosis among diabetic patients at a Danish University Hospital. Clinical and mycological examinations were performed on type 1 and 2 diabetic patients from in- and out-patient clinics. A total of 271 patients were enrolled, 72% males, mean age 61.3 years, 26% of the patients had diabetes type 1. The prevalence of toe nail onychomycosis (positive culture and/or microscopy) was 22% (n=59) of which 55 cases were caused by dermatophytes (93%) and 4 cases by yeasts (7%). A correlation was found between onychomycosis and age ($p=0.02$) and severity of nail changes ($p<0.001$), respectively. However, no significant correlation was found to gender, type of diabetes, lower extremity arterial disease, neuropathy, toe amputation or edema. Onychomycosis occurred with a high prevalence in diabetic patients, especially among older patients and those with severe nail changes.¹¹

When considering the nature of the fungal pathogens, dermatophytes predominated largely over yeast and non-dermatophytic moulds, both in diabetic and non-diabetic patients predominant species.¹¹ Yeasts were isolated in two thirds of the cases of onychomycosis, mainly from fingernails. *Candida albicans*, *C. parapsilosis* or

both were the most prevalent species. Dermatophytes were found in 18.8% of the samples, especially from toenails. *Trichophyton rubrum* was the predominant species.¹²

The agents of mold onychomycosis, in order of frequency, were *Aspergillus niger* (7), *Acremonium* spp. (6), *Fusarium* spp. (6), *Ulocladium* spp. (4), sterile mycelia (2), *Alternaria* spp. (1), *Aspergillus flavus* (1), *Aspergillus fumigatus* (1), *Aspergillus terreus* (1), *Cladosporium* spp. (1), *Paecilomyces* spp. (1), *Scopulariopsis* spp. (1) and *Trichoderma* spp. (Hilmioglu-Polat *et al.*, 2005). Amongst dermatophytes, *T. rubrum* was found to be commonest etiological agent (57.6%) followed by *T. mentagrophytes*. Amongst the non-dermatophyte mould (NDM), *Aspergillus* spp. was the most prevalent species followed by *Alternaria* spp, *Curvularia* spp. and *Fusarium* spp. (Veer *et al.*, 2007). In Germany 2004, 78 patients with onychomycosis (non-diabetic) were examined. Out of which 37 had positive cultures particularly for the dermatophyte-*Trichophyton rubrum*.¹³

Materials and Methods

It was a cross sectional explorative study. The study period was from July 2012 to June 2013. A total of 87 patients with suspected onychomycosis of nail who attended out patient Department of Dermatology and Venereology and the Department of Endocrinology of BSMMU were enrolled in the study. The clinical assessment of participants were conducted and it consisted of a brief interview, clinical examination and collection of specimens for mycological studies. The specimens, obtained from clinically abnormal nails were cleaned with 70% alcohol. The collected samples were screened for presence of fungal elements by treating with an aqueous solution 20% KOH. After putting a cover slip

over the material, the slide was left for at least one hour in petri dishes, together with a damp piece of filter paper Low power magnification (x 10 objective) was adequate for the detection of fungal hyphae in KOH preparation, but a high power (x 40 objective) was often required to confirm their presence. All the specimen (independent of the KOH test) were cultured in screw -capped test tube containing Sabouraud's dextrose agar with supplements (cycloheximide, chlortetracycline and gentamicin) and Dermatophyte test medium for primary isolation of fungus. All the tube containing SDA media with supplements and DTM with were incubated at room temperature. The inoculated tube were examined at every alternate day from the day of inoculation .DTM tubes were observed for 14 days and SDA tubes were observed for 4 weeks. The tubes which did not show any evidence of growth after that particular time, were considered negative and discarded.

To determine the exact species of fungus urease test and hair perforation test were also performed. Data were analyzed with statistical tools and with SPSS program. Statistical significance was set at 5% level and confidence interval at 95% level.

Results

This was a cross sectional explorative study. 87 clinically suspected onychomycosis patients were selected from the OPD of Dermatology and Venereology and from the OPD of Endocrinology in Bangabandhu Sheikh Mujib Medical University. The period of the study was from July 2012 to June 2013. Table-1 showed that growth of fungus in diabetics was found in 46(85.19%) cases and the growth of fungus in non-diabetics was found in 19(57.58%) cases. No growth was found in 8(14.81%) diabetic patients and 14(42.42%) in non-diabetic patients. Table-2 showed that in diabetic patients dermatophytes

are 43(79.62%) and in non-diabetic 3(9.09%). Here p value is 0.035 which is significant. In diabetic Yeast are 2(3.70%) and in non-diabetic patients 8(24.24%). Here p value is 0.205 which is not significant. In diabetic Candida are 1 (1.85%) and in non-diabetic patients 8(24.24%). In diabetic no growth are 8(14.81%) and in non-diabetic patients 14(42.42%). Here p value is 0.150 which is not significant. All p value are measured by Z-test. Table-3: showed that frequency of *Trichophyton rubrum* was 24(44.44%), *Trichophyton mentagrophyte* was 19(35.18%), *Candida albicans* was 1(1.85%), other than candida albicans (candida spp.) was 2(3.70%) and no growth was 8(14.81%) in diabetic patients. The frequency of *Trichophyton rubrum* was 1(3.03%), *Trichophyton mentagrophyte* was 2(6.06%),

Candida albicans was 8(24.24%), other than non-albican *Candida* spp. was 8(24.24%) and no growth was 14(42.42%) in non-diabetic patients.

Table-1: Presence of growth of fungus among diabetic and non-diabetic patients

Growth of fungus	Diabetic	Non-Diabetic
	(n=54)	(n=33)
	No. (%)	No. (%)
Growth present	46(85.19%)	19(57.58%)
No growth	8(14.81%)	14(42.42%)
Total	54(100.0%)	33(100.0%)

P value measured by chi-square test

Chi-square (χ^2)=8.26, p=0.004 (significant) compared between diabetic and non-diabetic groups.

Table-2: Presence of dermatophyte, yeast and candida among diabetic and non-diabetic patients

Study population	Dermatophyte		Non-albican <i>Candida</i> spp.		<i>Candida albicans</i>		No growth	
	No	%	No	%	No	%	No	%
Diabetic (n=54)	43	79.62	2	3.70	1	1.85	8	14.81
Non diabetic (n=33)	3	9.09	8	24.24	8	24.24	14	42.42
Z- test	p = 0.035 ^s Z = 1.973		p = 0.205 ^{ns} Z = 1.267				p = 0.150 ^{ns} Z = 1.439	

p value measured by Z test

s = Significant

ns = Not significant

Table 3: Frequency of fungal species isolated from diabetic and non-diabetic patients

Species	Frequency in diabetic (n=54)	Frequency in non-diabetic (n=33)
	No. (%)	No. (%)
<i>Trichophyton rubrum</i>	24(44.44%)	1(3.03%)
<i>Trichophyton mentagrophyte</i>	19(35.18%)	2(6.06%)
<i>Candida albicans</i>	1(1.85%)	8(24.24%)
Non-albican <i>Candida</i> spp.	2(3.70%)	8(24.24%)
No growth	8(14.81%)	14(42.42%)

Discussion

In this study it was seen that presence of growth of fungus was higher 46(85.19%) and significant ($p=0.004$) among diabetic patients compared to non-diabetics. Similarly Qureshi (2012) showed that out of 59 diabetic patients 54(91.5%) of the patients were found to have presence of growth of fungus causing onychomycosis.

Velez et al (1997)¹² in University Hospital Reina Sofia, Cordoba, Spain conducted a study on 20,004 patients to see pattern of infection. They showed that yeasts isolated in two thirds of the cases of onychomycosis mainly from fingernails. *Candida albicans* and *C. parapsilosis* or both were the most prevalent species. Dermatophytes were found in 18.8% of the samples, especially from toe nails. But Hilmioglu-Polat et al (2005)¹⁴ showed that as agents of onychomycosis molds were detected in 33(9%), dermatophytes in 175 (48%), yeasts in 150(41%), and mixed (two different fungi) in 8(2%) patients. and this results correlate with my study which showed that dermatophytes were the most common isolate (46 among 87 onychomycosis patients) than candida (9 among 87 onychomycosis patients). My study also showed that prevalence of dermatophyte in diabetics was significant ($p=0.004$) compared to that in non-diabetic patients.

This study showed that *Trichophyton rubrum* was the most frequent 24(44.44%) species in diabetic patients. Similarly Velez et al (1997)¹² revealed that *Trichophyton rubrum* was the predominant species. Pierard et al (2005)¹¹ showed that *Trichophyton rubrum* was the predominant species in non-diabetic cases.

Dermatophytes especially *Trichophyton rubrum* were the etiological agents of onychomycosis most widely found in our study being responsible for 24(44.44%) diabetic cases. *Candida albicans*

and non-albican candida spp. were mostly found in 8(24.24%) and 8(24.24%) non-diabetic cases. This can be attributed to the fact that epidemiology of onychomycosis varies from one geographical region to other. Moreover, smaller sample size of diabetics in this study might be a factor for paucity of candida as causative agent. Although not usually life threatening, onychomycosis can be a source of significant pain and discomfort. It can also pose significant risk for patients, their family and others in contact with them. Onychomycosis can no longer be considered a simple cosmetic nuisance confined to the nails. It is a significant and important disease which can generate many physical, physiological and occupational problems, considerably impairing patient quality of life. So fungal cultures are of paramount importance in all suspected cases of onychomycosis because the antifungal agent with appropriate spectrum of activity can only be used if the underlying fungal pathogen is identified correctly.¹⁵

Fungal nail infections increase the susceptibility of patients to other serious complications. In diabetic patients, onychomycosis can open the door to secondary bacterial infections promoting foot ulcers and gangrene⁶. Onychomycosis can also trigger recurrent cellulitis and thrombophlebitis.¹⁶ In addition to these significant health problems, the substantial psychosocial consequences of onychomycosis alone justify serious management.

This study confirmed that diabetic patients are at a high risk of having or contracting onychomycosis. These findings reinforce the importance of attending to infections in diabetics to reduce the associated morbidity. Managing onychomycosis in diabetics may require systemic antifungal treatment, physical measures and patient education.¹⁷

Conclusion

Frequency of fungal species is different among diabetic and non diabetic patients. Rate of culture confirmed onychomycosis was more common in diabetic patients.

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OBSERVATION OF DENTAL DISEASE PREVALENCE AMONG BANGLADESHI ADULTS

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ABSTRACT

Introduction: Oral health is a crucial aspect of overall well-being, yet it often receives limited attention in public health policies, especially in developing countries. This study aimed to assess the prevalence and nature of dental diseases among the adult population in Dhaka, Bangladesh, to inform targeted oral health interventions. **Methods:** This cross-sectional study was conducted in various private clinics in Dhaka from January to June 2017. A total of 200 adult patients were selected through convenience sampling. Data collection involved structured questionnaires and clinical examinations, focusing on demographic information and the prevalence of various dental conditions. Statistical analysis was performed using descriptive statistics and chi-square tests. **Result:** The study population predominantly consisted of middle-aged adults, with the highest representation in the 41-50 age group (28.00%) and a higher proportion of males (60.00%). The most common dental conditions identified were multiple dental problems (84.00%), gingivitis (48.00%), and dental caries (44.00%). Other conditions included fractured teeth (16.00%) and retained deciduous teeth (5.00%). **Conclusion:** The high prevalence of multiple dental problems, particularly among middle-aged adults, highlights the need for comprehensive dental care strategies in Bangladesh. These findings underscore the importance of developing targeted oral health interventions, focusing on preventive care, awareness, and accessibility to dental services.

Keywords: Oral health, Dental diseases, Adult population, Bangladesh, Cross-sectional study, Public health

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Introduction:

Oral health, a key component of overall health and well-being, is often overlooked in the global health discourse despite its significant impact on individuals and societies. Globally, oral diseases, including dental caries, periodontal diseases, and oral cancers, pose a substantial health burden.^{1,2} Dental caries, in particular, is the most prevalent condition worldwide, affecting nearly half of the global population.³ This high prevalence underscores the need for comprehensive oral health strategies and policies, especially in low- and middle-income countries where access to dental care is often limited.⁴ In Bangladesh, oral health presents unique challenges and opportunities. The country's oral health profile is shaped by a myriad of factors including cultural practices, dietary habits, socioeconomic status, and the structure of the healthcare system. Despite the growing recognition of oral health as a public health issue, it remains a relatively under-prioritized area in the national health agenda. The general state of oral health in Bangladesh reflects not only the lack of access to care but also a low level of awareness about oral health and hygiene practices among the population.⁵ The global burden of dental diseases is a stark reminder of the disparities in oral health care and outcomes. While developed countries have made significant strides in reducing the prevalence of dental diseases, developing countries like Bangladesh continue to struggle with high rates of untreated dental conditions. This disparity is not just a matter of healthcare access but also reflects differences in public health policies, resource allocation, and health education.² The adult population in Bangladesh presents a unique case for studying dental disease prevalence. Adults often bear the cumulative effects of lifelong oral health

practices and are more likely to suffer from chronic dental conditions that have been left untreated over the years.⁶⁻⁸ However, there is a notable gap in research focusing on this demographic. Although many studies have focused on the pediatric population and oral health among them, there is a scarcity of studies focusing on the adult demographic. Understanding the prevalence and determinants of dental diseases in adults is crucial for developing targeted interventions and policies. This study aims to bridge this gap by providing comprehensive data on the prevalence and factors associated with dental diseases in Bangladeshi adults. The potential impact of this study on public health strategies and policy-making in Bangladesh is significant. Oral health is intricately linked to overall health, with emerging evidence suggesting connections between oral and systemic diseases, such as cardiovascular disease and diabetes. The findings of this study could inform public health strategies, shaping policy-making in Bangladesh. By identifying the prevalence and factors associated with dental diseases in adults, this research could guide the allocation of healthcare resources, development of targeted awareness campaigns, and formulation of policies aimed at improving oral healthcare access and quality. Furthermore, the study's insights could contribute to the design of preventive strategies, focusing on modifiable risk factors such as dietary habits, tobacco use, and oral hygiene practices.⁹ In conclusion, this study aims to fill a critical gap in the understanding of dental disease prevalence among Bangladeshi adults. By providing comprehensive data on the prevalence and determinants of dental diseases in this population, the study will offer valuable insights for healthcare providers, policymakers, and

public health practitioners. The findings will not only contribute to the global body of knowledge on oral health but also serve as a foundation for future research and interventions aimed at improving oral health outcomes in Bangladesh.

Methods

This cross-sectional study was conducted to observe the prevalence of dental diseases among adults in Dhaka, Bangladesh. The study spanned six months, from January 2017 to June 2017, and was carried out in various private clinics across the city. A total of 200 patients were included in the study through a convenience sampling method. The inclusion criteria were adults aged 18 years and above, who visited the selected clinics for dental check-ups or treatment during the study period. Patients with systemic diseases that could significantly affect oral health, such as diabetes or cardiovascular diseases, were excluded to maintain the specificity of the study towards primary dental conditions. Upon their visit to the clinics, patients were informed about the study and its objectives. Written informed consent was obtained from each participant before inclusion in the study. The ethical considerations of the study were in compliance with the Helsinki Declaration, and the study protocol was approved by an Institutional Review Board.

Data collection was conducted through a structured questionnaire and clinical examination. The questionnaire, designed in the local language (Bengali), included questions about demographic information (age, gender, education, occupation), oral hygiene practices (frequency of brushing, use of dental floss, mouthwash), dietary habits, tobacco use, and previous dental history. The clinical examination was performed by experienced dentists and included an assessment of dental caries, periodontal status, and other common dental conditions. Standard diagnostic

criteria were used to ensure consistency in clinical assessments across different clinics. Statistical analysis was performed using SPSS software (version 22.0). Descriptive statistics were used to summarize the demographic characteristics and oral hygiene practices of the study population. The prevalence of dental diseases was calculated as a percentage of the total sample. Chi-square tests were used to examine the association between dental disease prevalence and various demographic and behavioral factors. A p-value of less than 0.05 was considered statistically significant.

Results

Table 1: Age distribution of the participants (n=200)

Age	n	%
≤20	17	8.50%
21-30	31	15.50%
31-40	38	19.00%
41-50	56	28.00%
51-60	32	16.00%
61-70	26	13.00%

The age distribution of the 200 participants in this study varied, reflecting a broad representation of the adult population in Dhaka. The age group with the highest representation was 41-50 years, comprising 28.00% (n=56) of the total participants. This was followed by the 31-40 years age group, which accounted for 19.00% (n=38) of the participants. Individuals aged 51-60 years made up 16.00% (n=32) of the sample, while those in the 21-30 years age bracket constituted 15.50% (n=31). Participants aged 61-70 years represented 13.00% (n=26) of the study population. The least represented age group was those aged 20 years or younger, accounting for 8.50% (n=17) of the participants.

Table 2: Gender distribution of the participants (n=200)

Gender	n	%
Male	120	60.00%
Female	80	40.00%

In terms of gender distribution among the 200 participants, males were more predominant in this study. Male participants constituted 60.00% (n=120) of the total sample, while female participants accounted for 40.00% (n=80).

Table 3: Prevalence of different dental conditions among the participants (n=200)

Dental Conditions	n	%
Dental Caries	88	44.00%
Filling for Caries	16	8.00%
Gingivitis	96	48.00%
Retained deciduous teeth	10	5.00%
Fractured teeth	32	16.00%
Multiple problems	168	84.00%

The study revealed a diverse range of dental conditions among the 200 participants. The most prevalent condition was multiple dental problems, observed in 84.00% (n=168) of the participants, indicating a high incidence of co-occurring dental issues in the sample. Gingivitis was the next most common condition, affecting 48.00% (n=96) of the participants. This was closely followed by dental caries, with 44.00% (n=88) of the participants exhibiting this condition. Other dental conditions observed included fractured teeth, which were present in 16.00% (n=32) of the participants. Dental fillings for caries were noted in 8.00% (n=16) of the sample, suggesting a level of intervention in dental decay among the participants. Retained deciduous teeth were the least common condition, identified in 5.00% (n=10) of the participants.

Discussion

The demographic profile of our study participants, predominantly from the 41-50 age group (28.00%) and with a higher representation of males (60.00%), provides essential insights into the oral health landscape of Dhaka's adult population. This age distribution, with a notable concentration in the middle-aged bracket, suggests a period in life where the cumulative effects of oral health practices and lifestyle choices become more apparent. The predominance of this age group aligns with global observations, where middle age often marks a transition to increased risk for chronic dental conditions. Studies have shown that this age group is more likely to exhibit signs of wear and tear, such as gingival recession and periodontal diseases, which could contribute to the higher prevalence of dental issues observed.¹⁰⁻¹² The gender distribution, with a higher proportion of male participants, raises questions about gender-specific health-seeking behaviors and access to dental care. This male predominance in dental health studies is not universally observed; in some regions, females are more proactive in seeking dental care.^{13,14} The observed gender disparity in our study could reflect cultural, socioeconomic, or occupational factors that influence health-seeking behavior in Bangladesh. The prevalence of multiple dental problems in a significant majority of the study population (84.00%) is a critical finding that underscores the complex and interrelated nature of oral health issues. This observation aligns with Rashid's emphasis on the multifaceted dental health challenges faced by older adults, particularly those with systemic health issues and medication-induced oral health problems.¹⁵ The co-occurrence of various dental conditions in a single individual suggests a compounded burden of oral diseases, which may

be exacerbated by factors such as socioeconomic constraints, limited access to dental care, and cultural attitudes towards oral health. Gingivitis, affecting nearly half of the participants (48.00%), highlights the widespread nature of periodontal diseases. This finding is consistent with the global burden of oral diseases, as noted in the scoping review by Rad *et al.*, which reported high prevalence rates of gingivitis among refugees.¹⁶ The high incidence of gingivitis in our study could be attributed to inadequate oral hygiene practices, a common challenge in developing countries like Bangladesh. This underscores the need for public health interventions focusing on oral hygiene education and preventive care. The prevalence of dental caries in our study (44.00%) mirrors the global scenario, where dental caries remains a major public health concern.^{17,18} The significant presence of dental caries in our study population highlights the urgent need for enhanced preventive strategies, including community-based fluoride programs and public health campaigns to raise awareness about oral hygiene. The occurrence of fractured teeth (16.00%) and retained deciduous teeth (5.00%) in our study population points towards potential neglect in seeking timely dental care and the necessity for early intervention. These findings align with the research by Lam *et al.*, which discussed the impact of systemic diseases and medication use on oral health, further complicating the dental care needs of adults.¹⁹ The presence of fractured teeth could indicate trauma or advanced dental decay, while retained deciduous teeth might suggest developmental issues or delayed dental care. The high incidence of multiple dental problems in our study is a critical observation that calls for a holistic approach to oral health care. It suggests that dental health issues in adults are not

isolated but are often interrelated, requiring comprehensive treatment strategies. This is supported by Cooper's study,⁵ which explored the determinants of dental health in the Honduran population, emphasizing the influence of demographic and behavioral factors on oral health. In conclusion, our study highlights the pressing need for targeted oral health interventions in Bangladesh, focusing on preventive care, awareness programs, and access to comprehensive dental services. The similarities between our findings and global trends in oral health underscore the universal nature of these challenges and the importance of collaborative efforts in addressing them. The study's insights into the prevalence and nature of dental conditions among adults in Dhaka can inform policy makers and healthcare providers, guiding them in the development of effective strategies to improve oral health outcomes in this population.

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

Conclusion

The high incidence of gingivitis and dental caries aligns with global oral health concerns, underscoring the need for improved preventive and treatment strategies. The findings emphasize the complexity of oral health issues, necessitating holistic and tailored approaches to dental care in Bangladesh. The study underscores the importance of targeted oral health interventions, focusing on preventive care, awareness, and access to dental services. These insights are crucial for policymakers and healthcare providers to develop effective strategies for improving oral health outcomes in urban adult

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**PATTERN OF INJURIES IN PATIENTS ATTENDED TO THE EMERGENCY
DEPARTMENT OF ASHIYAN MEDICAL COLLEGE HOSPITAL**

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ABSTRACT

Background: Traumatic injuries represent a significant and growing disease burden in the developing world, and now represent one of the leading causes of death in economically active adults. Modern civilization and the sharp rise in living standards have led to dramatic changes in trauma pattern in Dhaka. This study aimed to describe the different patterns of injuries of patients attending the Emergency Department of Ashiyan Medical College Hospital which is located near the Purbachal 300 feet Express Highway, Dhaka. **Methods:** A total number of 1352 patients were enrolled in the study. This was a retrospective study which was done in Ashiyan Medical College Hospital during one year duration from August 2020 to July 2021. A pre-organized data sheet was prepared for each patient containing about sociodemographics, trauma data, place of occurrence, cause of injury and results. **Results:** In the study 1352 injured patients were enrolled. Among them male were 1105(81.73%) and female were 247(18.26%). Male-Female ratio was 4.47:1. Their mean age was 25.3 ± 16.8 years (Range 1-80). Most 44.23% (598 out of 1352) of the patients were at age of 19-29 years. More than half (61.16%) of the patients were from urban areas. Of the patients, 22.04% had blunt trauma caused hit by any object or person, road traffic accident (45.11%), whereas stabbing was the common cause for penetrating trauma (3.10%), fire arm injury (0.29%) and minor injuries (15.38%). In our study, most of cause of injury was RTA which is usually occurs at street and transportation. Among 1352 patient 784(57.98%) injured at street or on transportation. Others place of injury were at home (07.02%), occupational area (14.94%), educational institute (3.99%), sports zone (9.02%) and commercial center (7.02%). **Conclusion:** Road traffic accidents are increasing and it mainly affects to young and adult age groups. Effective measures need to implement to minimize road traffic accidents and to reduce social burden in many low- and middle income countries.

Key words: Trauma, Injury, Emergency, Saudi Arabia, Road traffic accidents.

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Introduction:

The World Health Organization define injury as the damage caused by the acute transfer of energy, whether physical, thermal and chemical or radiant that exceeds the physiological threshold of the body. Injury is related to many diverse causes and social activities, such as transport, work, violence, recreation, sports and the home situation.¹

Injuries are among the most prominent public health problems in the world, as well as being a leading cause of mortality particularly among children and young adults. It is important to know the types of injuries because injuries are an important public health concern, and remain a growing problem in some countries.²

The nature of injuries and violence varies considerably according to age, sex, region and income group.³

Injuries are classified as intentional or unintentional. Unintentional injuries include injuries related to traffic, occupational and work-related firearms, drowning and falls. Intentional injuries include interpersonal violence and homicide.⁴

Injury caused by the application of physical force can be divided into two main groups: blunt force and sharp force. There are a number of other types of injury caused by non-physical forces, which can be thermal, chemical, electrical or electromagnetic.⁵

Five of the top 15 causes of mortality in adults aged 15 to 29 years now result from injuries.⁶ Globally, about 16 000 people die from injury every day and about 5.8 million people die every year.⁷

Injuries from road traffic accidents is the third most common cause of disability worldwide and the second most common cause in the developing world.⁸ World widely, about 1.2 million people are killed in road crashes each year and almost 50 million are injured.⁹

Domestic accidents are worldwide public health problems. In some European countries, accidents at home kill more people than road accidents, in spite of strict safety regulations and laws regarding buildings and living areas. Cuts are the most frequent accident type, followed by falls and burns.¹⁰

Occupational injuries show a significant decrease in the developed countries over the past 20 years, but the incidence of these injuries is still high in the developing world.¹¹

Traumatic deaths caused by firearm are not restricted to any region. Since 1945, 22 million people have been killed and three times as many injured during war or violent conflict.¹² Mortality due to trauma is only the tip of the iceberg, as compared with millions of people requiring hospital treatment for trauma. According to World Health Report 2002, 13 trauma accounts for 12.2% of total burden of disease.

The present study was conducted to describe the different pattern of trauma in patients attending the Emergency Department of Ashiyan Medical College Hospital which is located near the Purbachal 300 feet Express Highway, Dhaka.

Materials and methods

This was a retrospective study which was done in Ashiyan Medical College Hospital during one year duration from August 2020 to July 2021. All the casualties, who presented to Emergency

Department irrespective of age, sex and religion due to RTA and other injuries, were included in this study. Excluded from the study were patients with poisoning, burns or electrocution.

The clinical data were collected through a pre-organized data sheet for each patient. The socio-demographic data included data regarding age, sex, residence, but injury data included the cause of injury and place of occurrence.

All of the included patients were subjected to clinical examination on arrival to the emergency department for assessment of vital signs (measurement of heart rate, blood pressure, respiratory rate and temperature), general examination, examination of the injured part, and whole-body examination so as to detect any unrecognized injuries.

Results

In the study 1352 injured patients were enrolled. Among them male were 1105(81.73%) and female were 247(18.26%). Male-Female ratio was 4.47:1. Their mean age was 25.3 ± 16.8 years (Range 1-80). Most 44.23% (598 out of 1352) of the patients were at age of 19-29 years. More than half (61.16%) of the patients were from urban areas where 38.83% from rural area (Table I). Of the patients, 22.04% had blunt trauma caused hit by any object or person, road traffic accident (45.11%), whereas stabbing was the common cause for penetrating trauma (3.10%) fire arm injury (0.29%) and minor injuries (15.38%) (Table II). In our study, most of cause of injury was RTA which are usually occurs at street and transportation. Among 1352 patient 784 (57.98%) injured at street or on transportation. Others place of injury were at home (07.02%), occupational area (14.94%), educational institute (3.99%), sports zone (9.02%) and commercial center (7.02%).

Table 1: Demographic characteristics of the patients (n-1352)

Years (Age)	Numbers	Percentage (%)
0-18	132	9.76
19-29	598	44.23
30-49	385	28.47
50-60	156	11.53
> 60	81	5.99
Sex*		
Male	1105	81.73
Female	247	18.26
Residence		
Urban	827	61.16
Rural	525	38.83

*Ratio- M:F = 4.47:1

Table 2: Causes of injury of the patients (n-1352)

Types of injury	Number	Percentage (%)
Blunt	298	22.04
RTA	610	45.11
Cut injury	190	14.05
Penetrating	42	3.10
Fire arm	4	0.29
Minor injury	208	15.38

Table 3: Place of occurrence of injury

	Number	Percentage (%)
Street/transport	784	57.98
Domestic	95	07.02
Occupational area	202	14.94
Educational institute	54	3.99
Sports zone	122	9.02
Commercial center	95	7.02

Discussion

Trauma is a leading cause of disability and preventable death. It occurs frequently in the people at age of 15-40 years, with a global mortality rate of 10%. For every trauma death, several patients are left permanently disabled and represent a major economic burden for society. Injuries accounted for 17% of the total disease burden in adults aged 15-59 years in 2001, thus figuring among the ten leading causes of burden of disease worldwide.¹⁴

The present study aimed to describe the pattern of different injuries in trauma patients attending the Emergency Department of Ashiyan Medical College Hospital. Analysis of the socio-demographic characteristics of our patients showed that most of them were young people (44.23% of the patients were between 19 to 29 years) which are consistent with other study such as Mohsina Akter *et al*¹⁵ who reported a rate of 42.12% of patient were between this age group. Unlike many chronic diseases that occur later in one's life, trauma has a disproportionate impact on young and middle-aged people.¹⁶ Male gender predominated in trauma patients (81.73%) in the present study. Male predominance also observed by many authors.^{6,7,17,18} This is due the fact that male are more involved in outdoor activities than female. It is possible to suggest that males are more liable to trauma and hence they constitute the majority of that kind of studies.^{19,20}

In our study, most patients (61.16%) were from urban areas which are consisting with other studies.^{15,21} The urban development and modern civilization in Dhaka resulting from the sharp rise in the establishment of many roads has contributed to increased number of road traffic accidents and hence the occurrence of the injuries.

RTA is often preventable, and the technology and knowledge to achieve success in this area exist.²² Our study shows in 45.11% victims, injury caused by RTA. Among the other causes of injury, 22.04% were blunt trauma, 15.39% were minor injury and cut injuries were 14.05%. Very small amount of patient were presented with penetrating (3.10%) and fire arm injury (0.29%). In 2010, Mohsina *et al*¹⁵ studied the injury patterns in patients attending in Emergency Department of East west Medical College Hospital, Dhaka. In 1273 patients treated at the department, 42.49% had RTA, 20.97% had blunt trauma, 16.34% had minor injury, 04.48% had penetrating sharp injury and only 0.31% had firearms injury. These percentages for the different causes of injury are similar to ours. However, the rates of RTA a little higher in present study. This may be due to Ashiyan medical College Hospital located near the Purbachal 300 feet Express Highway, Dhaka. which was under construction. This was a RTA prone area because different type's vehicles were run this highway with different speed, the road was not smooth everywhere, the peoples of this area had no adequate knowledge about traffic rules and regulations and there were no traffic signals.

In our study, the street and transportation were the most common place of injury which was 57.98%. Other places of occurrence were at home (07.02%), occupational area (14.94%), educational institute (3.99%), sports zone (9.02%) and commercial center (7.02%). These are consistent with other study.¹⁵

Limitations

This study has given the bird's eye view of various problems; this study is not a true representation of epidemiology of problems in our country, it is restricted to one institute only in Dhaka city.

Conclusion

Trauma is a major health problem, especially in the young population in our country. Road traffic accidents are more frequent than cut and penetrating trauma. Appropriate interventions to reduce the occurrences of injuries should be instituted by the local authorities and other responsible body. There is also a need to educate the community members particularly risk groups on how to prevent injuries specially RTA.

Recommendations

This study is of short duration and mainly hospital based. It is necessary to do study of long duration and as well community based to generalize these data.

Conflict of interest

The authors declare that there are no conflicts of interest relevant to the content of the article.

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AGGRESSIVE INTRACEREBRAL TUBERCULOMA WITH ACUTE DEMYELINATING ENCEPHALOMYELITIS (ADEM) FOUND IN A 40-YEAR-OLD LADY: A CASE REPORTMohammad Saifullah Patwary¹, Nusrat Shoaib², Muhammad Abdul Wasee³**ABSTRACT**

The incidence of central nervous system tuberculosis is a rare entity that accounts about 1% of all tuberculosis and remains a major health problem in developing countries. We report a case of 40-year-old lady who presented herself with a three-week history of vomiting, seizure and unconsciousness. Brain magnetic resonance imaging performed on the admission day revealed numerous conglomerated as well as discrete ovoid lesions of variable size in cerebrum (predominantly periventricular location), corpus callosum, brainstem & both middle Cerebellar peduncles, demyelinating lesions. Suggestive of ventriculitis (involving occipital horn & body of both lateral ventricles), a large lesion measuring (4.3* 3.5cm) involving the left thalamus with extensive perilesional edema producing enlargement of third ventricle, midline shifting and obstructive hydrocephalus.

Key words: Central nervous system, Tuberculoma, Cerebral, Cerebeller, MRI.

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Introduction

The prevalence of Central nervous system tuberculoma is a rare entity that accounts for about 1% of all tuberculosis (TB) and remains a serious global public health problem in the world especially in developing countries. It is a severe form of Intracranial granulomatous caused by the hematogenous spread of Mycobacterium tuberculosis infection from the primary site to the

brain parenchyma, ventricle, and meninges.^{1,2} and carries significant mortality and morbidity.³ Cerebral TB can arise anywhere in the brain, but usually areas with abundant blood supply. In recent years, the incidence rate of intracranial tuberculoma has increased gradually due to the increase of extra-cranial tuberculoma patients. However, due to its atypical clinical manifestations,

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it is easy to be misdiagnosed before surgery; therefore it has received the attention of neurosurgeons.⁴ However early detection of central nervous system tuberculoma is very important which can allow for conservative therapeutic interventions and management strategies.

Case report

A 40-year-old lady presented with 6-week history of throbbing and generalized headache and high-grade continuous fever. From the history of the patient, as recorded reveal that two weeks before presentation she developed an altered level of consciousness which was initially confusion and irrational behaviour. She lapsed into unconsciousness a week before presentation. She had lost a considerable amount of weight during the 2 weeks before presentation; however, there was no history of breathlessness, chest pain or night sweating. She had no renal, cardiac or gastro-intestinal symptoms. There was no personal or family history of hypertension, diabetes mellitus or sickle cell disease. She had no history of risk factors for retroviral illness. She had been treated in various private hospitals with no clinical improvement. On admission the patient was chronically ill-looking, cachectic, pale and febrile (temperature of 38.5°C). The neurological examination revealed an unconscious lady with GCS of 4/15 (E1V2M1) with neck stiffness but Kernig's and Brudzinski's signs were absent.

There was anisocoria with a left pupil diameter of 4 mm and a right pupil diameter of 2 mm, and both were unreactive to light. The brain stem reflexes were present but motor examination showed global loss of muscle bulk with spastic quadriparesis (power grade 2 globally). Chest examination showed tachypnoea (respiratory rate of 22 cycles per minute) and widespread transmitted sounds in the chest. Other aspects of physical examination were normal.

Initial investigations showed an ESR of 100 mm/hour (Westergren method). The CSF analysis showed CSF protein of 87 mg/dl and CSF glucose of 70 mg/dl. RBG was 106 mg/dl and the CSF to RBG ratio was greater than 0.5. CSF showed numerous red blood cells per high-power field and less than five white blood cells (WBCs) per high-power field. The serum electrolyte, urea and creatinine showed mild azotaemia with urea of 12.1 mmol/l and creatinine of 127 μ mol/l while other electrolyte parameters were within normal ranges. Retroviral screening, performed on two occasions, was negative. The haemogram revealed a packed cell volume of 39% and WBC count was 11,000/mm³ with neutrophilia. A brain MRI scan showed features in keeping with obstructive hydrocephalus. There was enhancement around the periventricular regions with sulcal effacement (Figure 1).

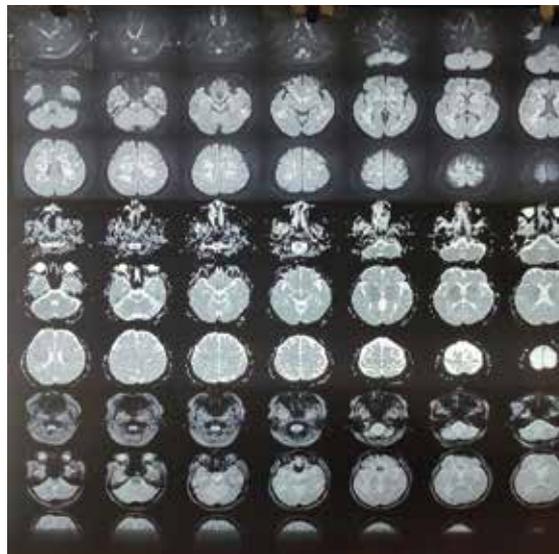


Figure 1: Brain MRI scans showing numerous Tuberculomas of variable size in cerebrum, cerebellum, corpus callosum and brainstem.

Discussion

TBM begins as a primary infection of the lungs (through inhalation) or rarely following the ingestion of infected milk.⁵ The bacteria may

spread over several weeks to infect the regional lymph nodes from where bacteraemia may occur, and by haematogenous spread they invade the meninges or the brain parenchyma forming the Rich focus where they remain dormant for many years. With aging or the development of immunosuppression the Rich focus may be re-activated in the central nervous system causing meningitis, meningoencephalitis or cerebral tuberculoma, depending on the initial site of the Rich focus in the brain.

In TBM there is formation of gelatinous exudates which settle at the base of the brain causing central nervous pathologies via cerebral vasculitis (causing infarction or haemorrhage), blockage of CSF pathways (hydrocephalus) and entrapment of cranial nerves. The early symptoms of TBM are usually constitutional, for example fever (low or high grade), malaise, headache, anorexia and recent weight loss. Later the patient become unconscious and present with alteration in the level of consciousness (confusion to frank coma). The patient was found also present with hemiparesis, aphasia, multiple cranial nerve palsies, visual loss and seizures (focal or generalized) or with choreiform limb movement disorders. Usually the late symptoms develop with the onset of complications. The history of onset of illness is usually greater than 3 weeks and in a study among Nigerian patients, the mean duration of illness before presentation was 3.7 weeks. Other unusual presentations such as generalized myoclonus, rigidity, hic-coughs, retention of urine, gait ataxia and hearing impairment were documented in some patients.⁴ Investigations that may help in the diagnosis of TBM include full blood count and ESR, which may typically show leucopenia and/or normal WBC count, but leukocytosis and neutrophilia have been reported in some patients with TBM. There may be anaemia with elevated

ESR (as in all of the cases reported). Electrolyte urea and creatinine may show hyponatraemia due to development of the syndrome of inappropriate antidiuretic hormone secretion (SIADH) in about 45% of cases. In about 10% of patients the urinalysis may show WBCs without significant bacteriuria, that is, sterile pyuria.⁶ CSF was clear in 64%, turbid in 30% and xanthochromic in 8% while spontaneous clotting occurred in 4% of patients.⁴ CSF cell count may range from 30 to 1000 WBC/mm³, usually a mixture of lymphocytes and neutrophils, and predominantly polymorph nuclear pleocytosis occurs in 15% of patients. CSF glucose is usually lower than normal in 85% of cases while CSF protein may be increased, ranging from 60 mg/dl to 1 g/dl.⁷ A study documented normal protein in about 6% of patients, and acid-fast bacilli may be isolated from the CSF in 5% to 30% of patients.⁴

The tuberculin skin test may be negative in some patients with co-morbid immunosuppressive illness, but immunocompetent patients usually produce positive reactions to the tuberculin test. Electroencephalographic studies often show diffused slowing, but in cases of cerebral infarction there may be focal slowing. Neuroimaging analysis using brain CT scan with contrast, or magnetic resonance imaging with gadolinium, is generally abnormal showing meningeal enhancement consistent with meningeal inflammation. Areas of infarction and haemorrhage may also be seen in cases of TBM, while patients with late complications may show hydrocephalus (as in both of the cases reported here). Neuroimaging may also show the presence of intracerebral tuberculoma. Meningeal calcification may be obvious on skull X-ray while chest X-ray may show pneumonic process, adenopathy, fibronodular changes, cavitations and pleural effusion if there is associated tuberculous involvement of the lungs. Brain biopsy

may be performed at surgery in selected patients and specimens subjected to histopathological studies, Ziehl Niel-son stain, fungal studies and culture. The patient should also be screened for immunodeficiency states such as retroviral illness, diabetes mellitus and so on. The unusual clinical and laboratory features such as the presence of high-grade pyrexia (in our cases), the presence of normal CSF protein, normal CSF glucose and presence of normal CSF microscopy culture and sensitivity may lead to misdiagnosis or late diagnosis of TBM with the attendant high rate of morbidity and mortality.

Multiple drug treatment is required in the management of TBM and the drugs should adequately cross the blood-CSF barrier to achieve a therapeutic concentration in the CSF. The first-line drugs are isoniazid, rifampicin, pyrazinamide, streptomycin and ethambutol while second line anti-TB drugs that could be used include ofloxacin, ciprofloxacin, capreomycin, kanamycin, cycloserine, amikacin, clofazimine and rifabutin. About 50% of TBM patients may die and 15% may survive with permanent neurological deficit, while 35% may achieve a full clinical recovery or have minimal sequelae.⁹

The clinical stage at the time of presentation is the single most important predictor of clinical outcome, and two recent studies have shown that age, stage of disease, presence of cranial nerve deficit, presence of SIADH, abnormality of electroencephalography, abnormality of motor-evoked potentials and low GCS were associated with poor clinical outcome.¹⁰

The treatment duration is for 9 to 12 months but this could be extended to 18 to 24 months if there is poor treatment response. If multidrug resistance occurs, second-line drugs should be used. In an Egyptian study, drug resistance in CSF *M. tuberculosis* was low.⁸ resistance to isoniazid was

10%, ethambutol was 7%, and rifampicin was 3%; no CSF isolate was multidrug resistant in that study. The incidence of CSF multidrug resistance is higher in children, young adults, patients in developing countries and patients infected with HIV.

The adjunctive therapies include intravenous steroids, for example dexamethasone and oral steroids (prednisolone), usually given in the first 1 to 2 months of therapy to relieve the features of raised intracranial pressure while patients with hydrocephalus will benefit from surgical intervention (ventriculo-peritoneal or ventriculo-atrial shunt procedure).



Pic 1: Physiotherapy, using Luna EMG Robotic machine.

EMG-triggered rehabilitation robots dedicated to fully engage in training performed especially at the beginning of the rehabilitation process without the constant help of a physiotherapist. Rehabilitation robots reduce the therapist's involvement and reduce his physical load, involvement and reduce his physical load, ensuring constant and repetitive training. These benefits have a significant impact on the performance of the physiotherapist's work in terms of the quality-of-care services.¹¹

According to available statistics, about 50% of TBM patients may die and 15% may survive with permanent neurological deficit, while 35% may achieve a full clinical recovery or have minimal sequelae.

The clinical stage at the time of presentation is the single most important predictor of clinical outcome, and two recent studies have shown that age, stage of disease, presence of cranial nerve deficit, presence of SIADH, abnormality of electroencephalography, abnormality of motor-evoked potentials and low GCS were associated with poor clinical outcome.¹⁰

Conclusion

Late presentation of TBM is not rare in our environment. The presence of fever, headaches, recurrent seizures lasting more than 2 to 3 weeks, poor response to conventional antibiotics and the presence of focal neurological signs such as hemiplegia, aphasia and multiple cranial nerve palsies should raise suspicions of TBM in a patient who has the symptoms and signs of meningeal irritation. Also, the CSF findings may be atypical, and the presence of obstructive hydrocephalus may convincingly raise the suspicion of the attending physician for TBM.

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