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E-cigarettes: The Emerging Public Health Issue

Shakil M

An “electronic cigarettes (E-cigarettes)” or “vapes” is a type of electronic nicotine delivery system (ENDS) that uses battery-operated non-combustible tobacco products and is considered to be the latest technology available on the market. These products mainly consist of a cartridge and tank system for storage of liquid, a mouthpiece, a heating element, and a power source that heat and aerosolize an ‘e-liquid’. The aerosol is then inhaled by the user. The first commercialized e-cigarette product was launched in the US marketplace in 2007.¹⁻³

Because e-cigarettes are combustion-free there is a common and widely spread assumption that e-cigarette consumption or “vaping” is safer than conventional cigarette smoking.⁴ E-cigarettes were introduced as a smoking cessation aid for adults with an unfounded claim of a superior safety profile when compared to traditional tobacco cigarettes. The prevalence of electronic cigarette smoking varies across the WHO member countries ranging from 0.7% to 23.4%. Tobacco smoke undoubtedly remains world’s leading cause of preventable disease. Over the last decade, reducing cigarette consumption has become a Public Health goal, therefore prevention campaigns intensified and restrictions on their marketing and access escalated.⁵ E-cigarettes have raised the attention of medical and public health professionals due to its potential benefit and harm. The industry passionately advertises electronic cigarettes as an aid to conventional cigarette cessation. However, the evidence is still lacking regarding the effectiveness of electronic cigarettes as a cessation tool. Prior studies reported that electronic cigarette aerosols contain similar hazardous components as found in conventional cigarettes such as nickel, chromium, cadmium, tin, carbonyl compounds, volatile organic compounds and aluminum.^{6,7} E-cigarettes have been found to be associated with some health-related harms. Although advocated as an aid to smoking cessation, there is increasing evidence of harm not just to the respiratory system, but to all other organs in the body.^{8,9} It is predicted that the number of smokers worldwide will increase, and the risk of disease that will be caused is also of concern. Current Knowledge Regarding Vaping e-cigarettes or vaping is one of many ways to deliver nicotine “without” tobacco smoke but with boiling nicotine liquid. It has a common function with conventional smoking but with a

different technique. Conventional smoking works by burning tobacco. Meanwhile, e-cigarettes use a synthetic liquid converted to steam/vaporized. To date, there are three generations of e-cigarettes, cigar-like (1st generation), pen-like (2nd generation), and tank systems & mods (3rd generation). Liquid is the fuel for e-cigarettes. There are two types of liquid: freebase and salt nicotine.¹⁰

World Health Organization report, Global Tobacco Epidemic-2019, it has identified the e-cigarette as harmful for health. The health effects of exposure to e-cigarettes, especially of chronic exposure, are uncertain. However, e-cigarettes emit volatile carbonyls, reactive oxygen species, furans, and metals (nickel, lead, chromium), many of which are toxic to the lung.¹¹ Despite major concerns from public health authorities, e-cigarette smoking has gained great popularity and acceptance by customers especially the teenage, and the sale is rising exponentially every year. The global market for e-cigarettes was worth \$15.7 billion in 2018, according to data from Euromonitor International, and is projected to more than double to \$40 billion in 2023. Research by the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) in the USA has found that the use of electronic tobacco products among school-going teens increased by 78% in the last one year. The results of their research give us an indication of an alarming situation. Since Bangladesh’s culture is influenced by the western countries and it is much more especially observed among the young society.^{12,13}

Although e-cigarettes contain a lower nicotine level (0.025-0.77 mg/15 puffs) than conventional cigarettes (1.54-2.60 mg per cigarette), but few studies claim that it contains carcinogenic compound namely nitrosamines, carbonyls, polycyclic aromatic hydrocarbons. Additionally, studies also found a link between e-cigarettes with cardiovascular and lung disease. Physicians can support patients to quit smoking by providing accurate and unbiased information of e-cigarettes to make informed choices about their health and lifestyle.¹⁴

In the second round of Global Adult Tobacco Survey (GATS) in Bangladesh, it has been identified that about 6.4% of the population have heard about the e-cigarette aged between 15-24 years. In fact, owing to the perceived

negative impacts of e-cigarettes in other nations, the Bangladesh government proposed to ban e-cigarettes and vaping tobaccos in 2019. There is also a common perception in Bangladesh that using e-cigarettes helps in quitting smoking or that e-cigarette use won't lead to normal smoking in the future, both of which do not have any concrete scientific proof. However, it has been found that e-cigarettes did not necessarily aid in smoking cessation.¹⁵

E-cigarette smoking is a raising public health problem in Bangladesh. It is undoubtedly an alarming phenomenon that the young generation is adopting e-cigarette as a safer alternation of nicotine-based cigarette due to misconception of users and sellers. It undoubtedly gives us a terrible message that e-cigarettes have penetrated in our young generation. Whether it is moving in the right direction or not is a matter of research. Therefore, a more intense and comprehensive tobacco control effort is needed including the health education, promotion, taxation and awareness on e-cigarette smoking by public, private and other sectors to reduce the health cost burden in future.

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Association of Lower Manganese Level with Poor Glycaemic Control in Individuals with Disease Duration in Type 2 Diabetes Mellitus

Eva H¹, Akter QS², Alam MK³, Alam MS⁴

Abstract

Background: Manganese is an essential trace element which is required for the normal function of insulin and regulation of blood sugar levels. In type 2 diabetes mellitus, lower manganese level and poor glycaemic control are associated with development of diabetes related complications. **Objective:** To assess the serum manganese levels between well controlled and uncontrolled groups and compare these in different groups defined in terms of duration of type 2 diabetes mellitus. **Materials and Methods:** This cross-sectional study was done from July 2014 to June 2015 at the Department of Physiology at Dhaka Medical College in Dhaka. Fifty subjects with type 2 diabetes mellitus patients with age ranging from 40 to 55 years. Among them, 25 patients were considered as control group and 25 patients were considered as uncontrolled group for comparison. The patients with type 2 diabetes mellitus were selected from the Bangladesh Institute of Research for Diabetes Endocrine and Metabolic Disorders (BIRDEM) General Hospital in Dhaka on the basis of inclusion and exclusion criteria. The study parameter serum manganese (Mn) level was estimated by flame atomic absorption of spectrophotometer in spectrophotometric method estimated in the laboratory of the Department of Chemistry, Atomic Energy Centre at Dhaka. These correlations were analyzed by Pearson's correlation coefficient test. Patients with duration of type 2 diabetes mellitus were sub-divided into two groups: Group B₁ (diabetes mellitus for 1 to 5 years) and Group B₂ (diabetes mellitus for 6 to 10 years). For statistical analysis, unpaired Student's 't' test and Pearson's correlation coefficient test were applied. **Results:** This study showed that mean serum manganese level (9.04±0.13 ng/ml vs 10.02± 0.06 ng/ml) was significantly lower in the uncontrolled group in type 2 diabetes mellitus patients. On correlation analysis, serum manganese level showed negative correlation (r= - 0.028) with group B₁ which showed statistically no significant association and also showed negative correlation (r= - 0.483) with group B₂ which showed statistically significant association. **Conclusion:** The result of this study concluded that lower serum manganese level with poor glycemic control in type 2 diabetes mellitus patients, and it is associated with the early development of diabetes related complications. The concentration of serum manganese decreased with increased duration of diabetes mellitus.

Key words: Serum manganese, Type 2 diabetes mellitus.

Introduction

Diabetes mellitus (DM) is a metabolic disorder of carbohydrate, lipid and protein metabolism characterized by hyperglycemia which is affecting 425 million people worldwide. At present, about 7 million people have diabetes mellitus in Bangladesh and this number is rapidly increasing day by day that the number will rise to 13.7 million by 2045.^{1,2} Chronic hyperglycemia produces macrovascular complications like coronary artery disease,

peripheral arterial disease, stroke and microvascular complications like retinopathy, nephropathy, neuropathy.³ In most countries, diabetes with its complications are the major causes of early death and in every six seconds a person dies from diabetes². Manganese (Mn) is a trace element in our body, which plays an important role in fat and carbohydrate metabolism, calcium absorption and blood glucose regulation. It acts as a cofactor with superoxide dismutase enzyme and helps to remove free

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radicals.⁴ Manganese is required in small amount but essential for human health because of their diverse metabolic characteristics and functions.⁵ Some studies confirmed that patients with diabetes have disturbances in the metabolism of some trace element such as manganese.⁶ Diabetes causes increase urinary excretion and lower serum level of manganese.⁷ Many studies have reported lower serum Mn level in patients with type 2 diabetes mellitus compared to healthy subjects.^{7,8} Manganese deficiency increases oxidative stress in patients with type 2 diabetes mellitus and development of diabetes related complications.⁹ Type 2 diabetes mellitus with lower serum Mn level was less protected from oxidation of low density lipoprotein, cholesterol. These oxidation of LDL contributes to the development of intra arterial plaque that can lead to heart attack and stroke.¹⁰ A study was done on type 2 diabetic patients to investigate their serum Mn level. The results showed no significant difference in serum Mn level of diabetic patients as compare to the healthy subjects.¹¹ This study aimed to investigate serum manganese levels between well controlled and uncontrolled groups and compare these in different groups defined in terms of duration of type 2 diabetes mellitus.

Materials and Methods

This cross-sectional study was conducted at the Department of Physiology at Dhaka Medical College in Dhaka from July 2014 to June 2015. The protocol for this study was approved by the institutional Ethical Review Committees of Dhaka Medical College and the Bangladesh Diabetic Association. Fifty subjects with type 2 diabetes mellitus patients with age ranging from 40 to 55 years. Among them, 25 patients were considered as well as control group and 25 patients were considered as uncontrolled group for comparison. The patients with type 2 diabetes mellitus were selected from the Bangladesh Institute of Research for Diabetes Endocrine and Metabolic Disorders (BIRDEM) General Hospital in Dhaka on the basis of inclusion and exclusion criteria. After the subjects were chosen, the nature, goal, and benefit

of the study were explained in detail to each subject, and informed written consent was obtained. Before drawing blood, a thorough medical and family history was collected. The individuals' anthropometric measurements and blood pressure were taken. A data was used to keep track of everything. A disposable plastic syringe was used to collect 5 mL of venous blood from each subject's ante-cubital vein for estimate of biochemical assays. HbA_{1c}, FPG levels were estimated in the laboratory of the Department of Biochemistry, BIRDEM General Hospital, Dhaka. The study parameter serum manganese (Mn) level was estimated by using flame atomic absorption of spectrophotometer in spectrophotometric method in the laboratory of the Department of Chemistry, Atomic Energy Centre at Dhaka. These correlations were analyzed by Pearson's correlation coefficient test. Patients with duration of type 2 diabetes mellitus were sub-divided into two groups: Group B₁ (diabetes mellitus for 1 to 5 years) and Group B₂ (diabetes mellitus for 6 to 10 years). For statistical analysis, unpaired Student's 't' test, Chi square test and Pearson's correlation coefficient test were applied. P value < 0.05 was accepted as level of significance. Statistical analyses were performed by using a computer based statistical program SPSS Version 20.

Results

The present study had 14 males (56%) and 11 females (44%) with mean age of 47.98±3.98 years in controlled and 15 males (56%) and 10 females (44%) with mean age of 48.00±3.90 years in uncontrolled diabetes patients group. Systolic and diastolic blood pressures were normal limits in both groups, average BMI revealed "overweight" in uncontrolled group (Table I). The mean serum manganese level was 10.02±0.06 ng/ml in the controlled and 9.04±0.13 ng/ml in uncontrolled diabetes patients group (Table II). Serum manganese level showed negative correlation ($r = -0.028$) with group B₁ which showed statistically no significant association and also showed negative correlation ($r = -0.483$) with group B₂ which showed statistically significant association (Table III & Figure I).

Table I: General characteristics and serum manganese levels of the subjects in both groups (n=100)

Parameters	Controlled Diabetes Patients (n=25)	Uncontrolled Diabetes Patients (n=25)
Age (years)	47.98±3.98	48.00±3.90
Sex		
Male	14 (56%)	15 (60%)
Female	11 (44%)	10 (40%)
Body mass index (kg/m ²)	25.96±2.67	26.80±3.03
Systolic blood pressure (mmHg)	122.37±6.31	123.40±7.05
Diastolic blood pressure (mmHg)	77.30±5.70	79.70±5.19

Sex distribution has been shown in number and percentage. All other results are expressed as mean±SD. Unpaired Student's 't' test was performed to compare between groups. n = Number of subjects.

Table II: Study parameters of the subjects in both groups (n=50)

Parameters	Controlled Diabetes Patients (n=25)	Uncontrolled Diabetes Patients (n=25)
Fasting serum glucose (mmol/L)	8.05±0.60	12.06±1.28
HbA _{1c} (%)	7.05±0.49	11.8±1.60
Serum manganese (ng/ml)	10.02± 0.06	9.04±0.13

Results are expressed as mean±SD. Unpaired Student's 't' test was performed to compare between groups. n = Number of subjects.

Table III: Correlation of duration of diabetes with serum manganese level in study group (n=50)

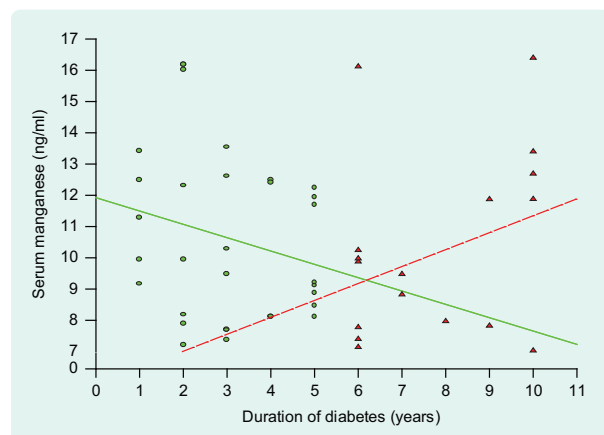
Parameters	Group B ₁ Diabetes for 1 5 years (n=32)		Group B ₂ Diabetes for 6 10 years (n=18)	
	r	p	r	p
Serum manganese	0.028	0.878 ^{ns}	-0.483	<0.05*

Pearson's correlation coefficient (r) test was performed to compare relationship between parameters. The test of significance was calculated and p value <0.05 was accepted as level of significance.

n = Number of subjects

ns = Not significant

* = Signifinant

**Figure I:** Correlation between duration of diabetes and serum manganese level in study groups (n=50)

Discussion

Diabetes mellitus prevails all over the world and also in Bangladesh. The association between deficiency of manganese and chronic hyperglycemia has recently received substantial attention in patients with type 2 diabetes mellitus. In this study, 50 patients with type 2 diabetes mellitus with age ranging from 40 to 55 years. Among them, 25 patients were considered as well as

control group and 25 patients were considered as uncontrolled group for comparison. In the study group, height and weight were measured to calculate their body mass index (BMI). Again, systolic and diastolic blood pressure was measured to assess the cardiovascular condition of type 2 diabetic adult subjects. Fasting serum glucose (FSG) level and HbA_{1c} level were also done to observe the glycemic status of the study subjects. Serum manganese (Mn) level was estimated to assess their levels. In this study, age and BMI of all the subjects in both groups were almost similar and statistically no sigtistically differences were observed between them. So, they were matched for age and BMI. In type 2 diabetic patients, there was 14 male and 11 female and in controlled group, there was 15 male and 10 female in uncontrolled group. The mean systolic and diastolic blood pressures were normal limits in both groups. In the present study, the mean serum manganese level was lower in type 2 diabetic patients than that of healthy adult subjects and the result was statistically significant ($p < 0.001$). Almost similar type of result was found by many researchers.^{8,10,12} On the other hand, no significant difference in serum manganese level was found in type 2 diabetic subjects.^{6,11} In the present study, these correlations were analyzed by Pearson's correlation coefficient (r) test. Patients with duration of type 2 diabetes

mellitus were sub-divided into two groups: Group B₁ (diabetes mellitus for 1 to 5 years) and Group B₂ (diabetes mellitus for 6 to 10 years). Serum manganese level showed negative correlation with group B₁ which showed statistically no significant association and also showed negative correlation with group B₂ which showed statistically significant association. Hyperglycemia is the most common symptom in type 2 diabetes mellitus and increases the osmotic pressure of kidney tubules that inhibits the reabsorption of water by the kidney, resulting polyuria. Due to this polyuria increased excretion of manganese occur in type 2 diabetic patients.¹³⁻¹⁶ As a result, in type 2 diabetes mellitus, reduced serum manganese levels increase the risk of diabetic complications such as heart attack and stroke.¹⁰

Conclusion

The result concludes that deficiency of manganese and chronic hyperglycemia and has increased proportionally with the duration of type 2 diabetes mellitus. It could be a predictor of poor glycemic control and is associated with the early development of diabetes related complications in patients with type 2 diabetes mellitus. The concentrations of serum manganese level decrease with the increased duration of type 2 diabetes mellitus.

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Conflict of Interest: None

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Outcome of Complicated Appendicitis in Pediatric Appendectomy in a Tertiary Care Hospital

Islam MF¹, Rahman MM², Aktar S³, Honey⁴

Abstract

Background: Appendicitis is one of the most frequent abdominal emergency in children all over the world. Emergency appendectomy performed to prevent complications like burst appendix, appendicular abscess and appendicular lump or gangrenous appendix. The diagnosis of acute appendicitis is quite challenging and often delayed in children due to lack of classic symptoms which may complicate the further course of the treatment. **Aims:** This study was done to see the outcome of complicated appendicitis in children. **Materials and methods:** A Retrospective study of 78 children who were diagnosed as complicated appendicitis and underwent appendectomy from June 2022 to May 2023. **Results:** Among complicated appendicitis whose appendectomy was done, most of them were in 11-13 years age group 38 (48.72), 51(65.38%) was boys and 2(34.61%) girls. In case of clinical presentation most common finding was right iliac fossa pain and tenderness 24 (30.8%) then followed by nausea/vomiting 22 (28.2%), periumbilical pain 19 (24.3%), fever 18 (23.1%) and palpable mass on RIF 3(3.8%). Peroperative findings of appendectomy patients was acute appendicitis 54(69.2%), perforation and abscess formation 14(17.95%), serious periappendicular inflammation in 6(7.7%), mass formation in 3(3.8%), gangrenous appendix in 1(1.3%) of cases. Postoperative complications was found in only 4(5.12%) cases. Regarding types of complicated wound infection was found as most common postoperative complications in 3(75%) and band adhesion in 1(25%). **Conclusion:** Without delay appendectomy should done when clinical diagnosis is confirmed otherwise the infectious complication of complicated appendicitis may increase the chance of morbidity as well as mortality in children.

Key words: Appendicitis; Children; Complicated appendicitis; Perforated appendix.

Introduction

Appendectomy for acute appendicitis is one of the most commonly performed surgical procedure in children.¹ Acute appendicitis is classified as simple appendicitis (uncomplicated/non-perforating) and complicated appendicitis. Appendicitis is complicated when there is evidence of a perforated or gangrenous appendix, an intra-abdominal abscess, or fecal peritonitis often resulting in a longer length of stay and greater rates of morbidity and mortality. The exact mechanisms of appendicitis are still obscure, various etiologies been identified, but luminal obstruction is considered the most critical factor, as it

triggers the inflammatory process.² Lymphoid hyperplasia and fecoliths are the most common causes of luminal obstruction.³ Emergency appendectomy performed to prevent complications like burst appendix, appendicular abscess and appendicular lump or gangrenous appendix. The diagnosis of acute appendicitis is quite challenging and often delayed in children due to lack of classic symptoms which may complicate the further course of the treatment. The aim of this study is to determine the frequency, clinical presentation, intra-operative findings, post-operative complications and the overall surgical outcome of complicated appendicitis in children in our hospital.

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Materials and methods

A Retrospective study of 78 children who were diagnosed as complicated appendicitis and underwent appendectomy from June 2022 to May 2023. We collected perioperative data and details of postoperative complications from patient files. Incomplete history and or operation note and patients age more than 17 years were excluded from this study. Ethical approval was obtained to conduct the study from the Institutional Ethical Review Committee. All data were recorded checked and coded manually then entered into computer. Statistical analysis was done by using SPSS version 25.

Results

Table I: Age & sex distribution who underwent appendectomy (n=78)

Gender Age (year)	Male (%)	Female (%)	Total
03-07	6 (7.69)	3 (3.85)	9 (11.54)
08-10	16 (20.51)	7 (8.97)	23 (29.49)
11-13	24 (30.77)	14 (17.95)	38 (48.72)
14-16	5 (6.41)	3 (3.85)	8 (10.26)
Total	51 (65.38)	27 (34.61)	78 (100)

Table II: Clinical presentation of complicated appendicitis (n=78)

Clinical presentation	Frequency	Percentage
Periumbilical pain	19	24.3
Right iliac fossa pain and tenderness	24	30.8
Nausea/vomiting	22	28.2
Fever	18	23.1
Palpable mass on RIF	3	3.8

Table III: Peroperative findings of appendectomy patients (n=78)

Types of appendicitis	Frequency	Percentage
Acute appendicitis	54	69.2
Perforated appendicitis & abscess	14	17.9
Serous periappendicular inflammation	6	7.7
Mass formation	3	3.8
Gangrenous appendicitis	1	1.3
Total	78	100

Table IV: Postoperative complications in case of complicated appendicitis. (n=78)

Postoperative complication	Frequency	Percentage
Yes	4	5.12
No	74	94.78
Total	78	100

Table V: Types of complications. (n=4)

Complications	Frequency	Percentage
Wound infection	3	74
Postoperative bands & adhesion	1	25
Total	4	100

Discussion

Appendectomy is one of the most common surgical emergency in all age. In our study most of the children were within 11-13 years, the youngest patient in our study was a 3 years old child. Bansal S et al. David G et al. reported that, the peak incidence at first decade of life and uncommon in children younger than 5 years.^{1,2} The lifetime risk of developing appendicitis is reported in all sex. In our study majority of children were boys i.e. 65%. Lal A et al. Chawda HK et al. , Sharma S et al. and Rabindranath D et al. found that 57%, 60.95%, 68.2% and 58.7% were male respectively.^{3,4,5,6} Appendicitis is complicated in the presence of perforation, gangrene, serious periappendicular inflammation, mass formation or intra-abdominal abscess. In the study of 392 patients by Pham XB et al. reported 46% complicated appendicitis at the time of operation.⁷ In case of clinical presentation most common finding was right iliac fossa pain and tenderness 24 (30.8%) then followed by nausea/vomiting 22 (28.2%), periumbilical pain 19 (24.3%), fever 18 (23.1%) and palpable mass on RIF 3(3.8%). Peroperative findings of appendectomy patients was acute appendicitis 54(69.2%), perforation and abscess formation 14(17.95%), serious periappendicular inflammation in 6(7.7%), mass formation in 3(3.8%), gangrenous appendix in 1(1.3%) of cases. Postoperative complications was found in only 4(5.12%) cases. Pramod T et al. showed that 51% postoperative complications where 20% was SSI.⁸ Regarding types of complicated wound infection was found as most common postoperative complications in 3(75%) and band adhesion in 1(25%). Conclusion: Without delay appendectomy should done when clinical diagnosis is confirmed otherwise the infectious complication of complicated appendicitis may increase the chance of morbidity as well as mortality in children.

Conclusion

Without delay appendectomy should done when clinical diagnosis is confirmed otherwise the infectious complication of complicated appendicitis may increase the chance of morbidity as well as mortality in children.

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The Association between Lumbar Spine X ray with Knee Pain

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Abstract

Background: The aim of this study was to correlate between radiographic measurement in lumbar spine and clinical information regarding knee joint pain. **Material and Methods:** In this cross sectional study total 100 adult subjects were selected in BIRDEM hospital referred to radiology department for lumbar spine X ray. Data for the present investigation were collected via an interviewer-administered questionnaire, which included questions on past medical history, drug history, pain area and also results of functional testing and X-ray imaging of the lumbar spine were collected. Analysis was carried out to determine any correlation between results of X-ray imaging of the lumbar spine and others collected data. The correlations among these variables and odds ratio were also analyzed. **Result:** The L3/L4, L4/L5, and L5/S1% disc height had a minimal AIC value with knee pain (-4.14, -4.3, -3.55, respectively), and odds ratio of knee pain were 3.6, 3.8, and 2.9, respectively. **Conclusion:** The L3/L4, L4/L5, and L5/S1% disc height showed a correlation with knee pain. It was suggested that these findings may provide additional basis to the concept that lumbar spinal lesion associates with knee pain clinically.

Keywords: Knee pain, Disc height, Lumbar spondylosis, Lumbar spine.

Introduction

Musculoskeletal conditions, such as lumbar spondylosis is major public health issues and important causes of physical impairment among the elderly populations of most developed countries.^{1,2} To evaluate lumbar spondylosis, plain radiograph is considered the gold standard as a method that is less-invasive, inexpensive, and convenient. On lumbar radiographic features, disc height is strongly correlated with disc degeneration classified from MR images.³ Furthermore, previous studies revealed that each lumbar disc level had differences in the symptoms and clinical course of patients.^{4,5,6} Thus, to examine lumbar radiographic factors associated with symptoms, each disc height should be assessed separately. To understand the essential characteristics of such multifaceted entities, statistical and mathematical tools are available to define the assessing conditions. The aim of this study was to observe the correlation between radiographic

measurements in lumbar spine and clinical information regarding knee pain.

Material and Methods

One hundred subjects (58 males and 42 females) with no evidence of spine or knee malignancy, were included into this study. Pregnant or breastfeeding women and those on exogenous hormone therapy were excluded from this study. The duration of this cross-sectional study from 1st June 2022 to 31st May 2023 was conducted in the radiology department of BIRDEM. All participants provided written informed consent, and the study was conducted with the approval of the appropriate ethical committees. For this purpose we recruited a total of 100 subjects, whose ages ranged from 30 to 90 years, referred to radiology department for lumbar spine X ray. Inclusion criteria were as followings: 1. Age ≥ 31 years, 2. Any 1 of the following 4 criteria- Complaints related to the legs or

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spine without disability in walking or leaving the home (outpatients), Complaints related to the legs and spine, and slight disabilities in walking and leaving the home (outpatients), a. Slight disability in walking due to locomotive organ disorders (users of long-term care services), b. Complaints related to the upper extremities without disability in walking or leaving the home (outpatients at orthopedic clinics), 3. Ability to answer the Geriatric Locomotive Function Scale-25 (GLFS-25) questionnaire without assistance, 4. Consent to radiographic examination, blood test, and function test. Exclusion criteria were as followings: 1. Inability to stand up from a chair or bed, 2. Disability in walking or locomotion because of neurological disease requiring admission treatment, 3. Severe pulmonary, renal, coronary, or hepatic disease, 4. Mental illness, 5. Past history of stroke within the preceding 6 months, 6. Past history of myocardial infarction within the preceding 6 months, 7. Past history of fracture of a lower extremity within the preceding 6 months, 8. Current treatment for acute trauma. Participants completed an interviewer-administered questionnaire consisting of few items, which included questions on living environment, past medical history, drug history, and pain area (back pain, buttock pain, thigh pain, knee pain). These data and findings were synthesized with other data using allocated identification numbers only for this study.

All participants underwent radiographic examination of the anteroposterior and lateral views of the lumbar spine, including intervertebral levels L1/L2 to L5/S1, was performed. Using lateral view of the standing lumbar spine, Lumbar-Spine Computer-Aided Diagnostic system provided the disc height of the L1/L2 to L5/S1, posterior wall height of each vertebra semi-automatically, and the

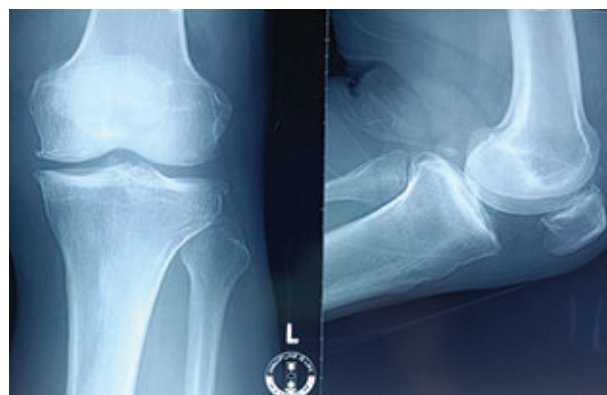


Figure I : 45 year old female AP & lateral X ray left knee shows degenerative change.

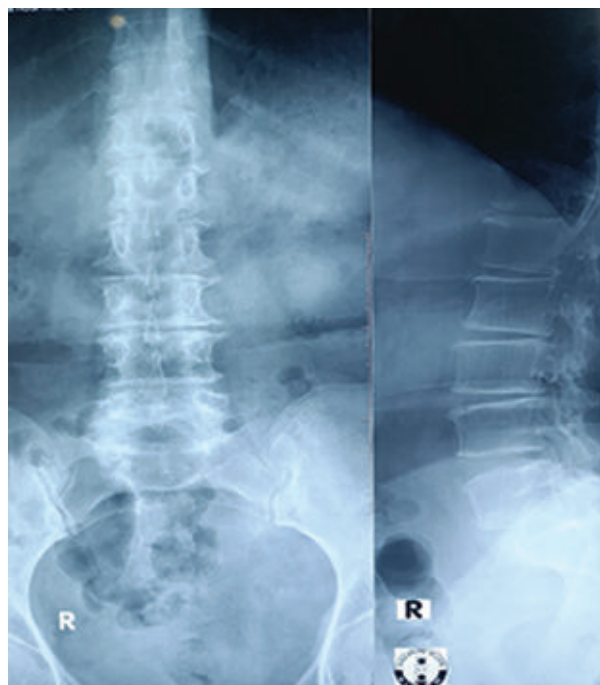


Figure II: Lumbar spine X ray AP & lateral show lumbar spondylosis.

results were confirmed that all the results were obtained correctly.

Statistical tools are available to understand the essential characteristics of multifaceted entities. Akaike Information Criterion (AIC) is a useful and excellent tool for analyzing latent structures within outcome measures.⁷ We used the AIC to select the best model from among each % disc height (five discs: L1/L2 to L5/S1) for objective variables. The following variables were included as explanatory variables; living environment, past medical history, drug history, and pain area (back pain, buttock pain, thigh pain, knee pain). The smaller the AIC value for a model, the more likely it is that the model fits the data best. The AIC value represents the amount of association between two items without latent confounding effects, and a negative AIC value indicates a stronger association between two items.^{8,9} Using a special program with R language, some continuous variables were converted into categorical variables.⁹ The results of analyses were shown for optimal sorting with CATDAP2 (Categorical Data Analysis Program 2) in all the double and triple combinations among examined data as a round robin to investigate their relationships.⁹ Values of $P < 0.05$ were considered to indicate statistical significance. As a next step, correlations

among these variables, cut-off point of each % disc height, and odds ratio were also analyzed. Cut-off values of % disc height for the item that has correlation with knee pain were analyzed using AIC.⁵ We made variables that divided into two categories by all of the sequential number of one decimal point order from minimal to maximum value of the each % disc height, and using CATDAP2 program that mentioned above, we analyzed the cut-off point that fit the best. Odds ratio were calculated with these cut-off values. Data analyses were performed using SPSS version 18 (SPSS Inc., Chicago, IL, USA).

Result

Table I shows out of the 100 subjects (58 males, 42 females), the youngest was 31 year old and the oldest was 90 year old (mean age $\pm$ SD = 55.32 $\pm$ 13.32 years). Table II shows selected characteristics of the participants including age, gender, pain area, functional tests and each % disc height. The results using AIC showed the L3/L4% disc height, L4/L5% disc height and L5/S1% disc height were strongly correlated with knee pain. L3/L4% disc height, L4/L5% disc height, and L5/S1% disc height also showed significant correlation with knee pain by Mann-Whitney test ($P < 0.001$). Cut-off values were shown as minimal AIC indicated when the presence or absence of knee pain was an objective variable. Cut-off values were 42% in L3/L4% disc height, 34% in L4/L5% disc height, and 35% in L5/S1% disc height, respectively). Odds ratio of knee pain in the above cases were 3.6 (95% confidence interval (CI): 1.7–7.3), 3.8 (95% CI: 2.6–6.3), and 2.9 (95% CI: 1.6–4.5), respectively.

Table I: Age and sex distribution of patients (n=100)

Age in group (years)	No of Male	No of female	Total
31-40	10	6	16
41-50	12	11	23
51-60	14	7	21
61-70	12	13	25
71-80	5	3	8
81-90	5	2	7

Table II: Characteristics of the study participants(n=100)

Measure	n=100	Percentage
Age (yr)	55.32	$\pm$ 13.32
Gender (females)	42	42
Back pain	40	40
Buttock pain	50	50
Thigh pain	44	44
Knee pain	85	85
One leg standing time (s)	18.5	$\pm$ 19.8
Grip strength (kg)	21.1	$\pm$ 6.87
One hundred stamping time test (s)		58.2
		$\pm$ 11.9
L3/L4% disc height* (%)	35.6	$\pm$ 21.9
L4/L5% disc height* (%)	36.4	$\pm$ 9.9
L5/S1% disc height* (%)	34.7	$\pm$ 11.3

The data are presented as the mean $\pm$ standard deviation or n (%). *% disc height = (disc height / L3 posterior wall height) $\times$ 100

Discussion

For better understanding of orthopedic problems in people, we conducted the present study and tried to investigate the relationship among pain characteristics, functional testing, physical activities, various parameter from radiographic examination, and social activities. The results revealed that the L3/L4, L4/L5, and L5/S1% disc heights had a significant relation to knee pain.

Recently, the concept “knee-spine syndrome” has been advocated.^{10,11} Tsuji, et al. stated that in elderly people, decreasing lumbar lordosis and sacral inclination lead to increasing thigh muscle tension and knee flexion while standing, and this increases lumbar back pain and patellofemoral joint pain.¹⁰ On the other hand, Murata, et al. reported that the symptoms from the lumbar spine may be caused by degenerated change in the knee from the analysis of radiological examination.¹² Moreover, Sarwahi, et al. showed from the study of gait analysis of flat back patients, loss of lumbar lordosis causes anterior displacement of center of gravity, which creates instability and increases the work of gait.¹³ For elderly people, the ability to compensate is limited by the development of disc degeneration, decreased muscle strength, and decreased overall joint flexibility, it changed the parameters during walking and standing; the hip and knee flexion increased during stance; hip and knee extensor moments were decreased with vertical ground reaction force showing slower rate of loading; reduced peak values; and flattening of normal loading response. Certain gait changes seen in patients with flat back are similar to those

seen in patients with osteoarthritis of the knee joint.¹³ In our study, it was figured out that decreasing L3/L4, L4/L5 & L5/S1 disc height strongly correlated with knee pain. Focusing on L3/L4, L4/L5 & L5/S1 disc height might be helpful to investigate the pathology of knee-spine syndrome. Further study should be performed to clarify the cause of these localizations in lumbar spine associating with knee pain. Fogel and Esses stated that the symptoms of midlumbar spinal stenosis, radiculopathy or neurogenic claudication, may be similar to the pain of an arthritic hip or knee.¹⁴ Hirabayashi F, et al. and Kortelainen P reported among 17 patients, 4 were misdiagnosed elsewhere and received conservative treatment for hip and/or knee joint disease.^{15,16} To think about the results from our study that decreasing L3/L4, L4/L5 & L5/S1 disc height, with knee pain significantly, we cannot deny that the patients with the knee-spine syndrome include patients caused the knee pain due to radiculopathy associated disc degeneration much more than we expected.

This study has several limitations. First, because we analysed merely the baseline data for this study, this study was a cross-sectional study. To analyze the cause-result relationship between knee pain and decreasing of lumbar disc height.

Conclusion

We found L3/L4, L4/L5 & L5/S1 disc height had a relation to knee to the concept that lumbar spinal lesion associates with knee pain clinically. We should continue comprehensive analyses for such important issues as back pain in the elderly.

Conflict of interest: Nothing to declare.

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Outcome of Treatment of Unstable Intertrochanteric Fracture by Proximal Femoral Nail (PFN)

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Abstract

Introduction: Proximal Femoral Nail (PFN) is a surgical technique used to treat unstable intertrochanteric fractures, which are fractures that occur in the upper portion of the thigh bone (femur). The procedure involves using a nail-like device that is inserted into the femur and secured in place with screws to stabilize the fracture and promote healing. It is a commonly used treatment option for this type of fracture and can lead to good outcomes in most cases. The aim of the study was to observe the outcome of unstable Intertrochanteric fracture by Proximal Femoral Nail (PFN). **Material & Methods:** This prospective observational study was conducted at the Department of Orthopedics, Combined Military Hospital (CMH), Cumilla Cantonment, Bangladesh. The study duration was 2 years, from July 2018 to June 2020. A total of 34 cases were included in this study according to availability of the patients and considering inclusion and exclusion criteria. **Results:** The participants age range was 16-90, with a mean of 56.91 ± 17.76 . Most (35.29%) were 61-75 years old. 61.76% were female and 38.24% were male. 50% were housewives, 14.71% ex-service holders, 14.71% service holders, 11.76% businessmen, 5.88% students, and 2.94% farmers. The leading cause of injury was falls on slippery ground (55.88%), followed by motor vehicle injuries (44.12%). 70.59% of injuries occurred on the right side and 29.41% on the left. 76% had Kyle Type III fractures, 24% had type IV. 85.29% had closed reduction, 14.71% had open reduction. The mean duration of injury to operation was 15.59 days and the mean hospital stay was 19.15 days. 70.59% had no complications and 55.88% reported no pain at last follow-up. 58.82% had a good Harris hip score and 58.82% had excellent outcomes by final follow-up. **Conclusion:** The majority of patients in this study were in the 61-75 age range and female, with the most common cause of injury being falls on slippery ground. The most common fracture type was Kyle type III, with a major portion of cases requiring closed reduction. The rate of complications was relatively low, and the functional outcomes were acceptable and comparable to other studies. The duration of injury to operation and hospital stay were slightly longer than other studies, likely due to the busy nature of the study location. Overall, the Proximal Femoral Nail is a safe and effective treatment option for unstable proximal femoral fractures. **Keywords:-** Intertrochanteric Fracture, Proximal Femoral Nail (PFN), CMH.

Introduction:

Intertrochanteric fractures are common among the geriatric population and are caused by a fall or high-energy trauma.¹ The goal of treatment is to restore

function with a low rate of surgical and medical complications. One common treatment option is the use of a Proximal Femoral Nail (PFN), a surgical method that provides stability and support to the affected bone

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while it heals. Studies have shown that the use of PFN has a high union rate and successful healing of fractures.^{2,3} Additionally, it is considered less invasive compared to traditional methods, such as open reduction and internal fixation (ORIF). The primary goal of treatment is early mobility to prevent complications associated with immobilization.⁴ To provide a rapid and safe bone healing process with good functional restoration, anatomical fracture reduction is the major objective for adequate fracture treatment in mostly elderly patients with intertrochanteric femur fractures.⁵ The best treatment option for unstable intertrochanteric fractures is still a matter of debate. Management includes both non-operative and operative techniques. Non-operative treatment is indicated in non-ambulatory patients and those at high risk of perioperative mortality.⁶ But it is associated with various complications such as pneumonia, urinary tract infection, decubitus ulcer, and DVT. Dynamic hip screws are the most commonly used extramedullary devices for the treatment of hip fractures,⁷ but sliding hip screw is not ideal for unstable intertrochanteric fractures.^{8,9} Intramedullary nails include Gamma nail, Smith & nephew nail, proximal femoral nail etc; they are indicated in both stable and unstable fractures and have a lower implant failure rate and no dissection at the fracture site.¹⁰ The proximal femoral nail (PFN) is an intramedullary implant designed by the Arbeitsgemeinschaft für Osteosynthesefragen (AO) in 1997, that offers many advantages over other intramedullary devices.¹¹ It has an anti-rotation screw, an undreamed implantation technique, and the possibility of a static or dynamic distal bolting device, which all make it a better option for unstable intertrochanteric fractures.^{2,3} In Bangladesh, the incidence of unstable intertrochanteric fractures has become more common with increasing life expectancy and motor vehicle injury. However, the steep learning curve and technically ambitious implantation of PFN still lead surgeons to choose extramedullary devices. PFN offers biomechanical modifications compared to existing systems, such as high rotational stability of the head and neck fragments and the possibility of static or dynamic distal locking.⁵ It functions as an internal splint that allows secondary fracture healing, provides angular stability with greater degree of adjustment compared with angled blade plate and offers the same variability while avoiding excessive bone removal. The PFN also has been

shown to prevent the fractures of the femoral shaft by having a smaller distal shaft diameter which reduces the stress concentrations at the tip.¹⁰ The present study aimed to evaluate the outcome of fixation of unstable intertrochanteric fractures with PFN in a Bangladeshi demographic setting. The results of this study can provide valuable insights into the effectiveness of using PFN for the treatment of unstable intertrochanteric fractures in a Bangladeshi population.

Material and Methods:

This prospective observational study was conducted at the Department of Orthopedics, Combined Military Hospital (CMH), Cumilla Cantonment, Bangladesh. The study duration was 2 years, from July 2018 to June 2020. Total 34 cases were included in study considering inclusion and exclusion criteria. The study evaluated the outcome of fixation of unstable intertrochanteric fractures of the femur using a pre-tested structured questionnaire containing history, clinical examination, laboratory investigations, pre-operative, perioperative, post-operative complications and post-operative follow up findings. Follow-up was conducted for at least 6 months for each participant. The data was processed and analyzed using Microsoft Excel 2010, with categorical data expressed as frequency and percentage, and quantitative data presented as mean and standard deviation. The study had institutional approval from the Institutional Review Board (IRB) and all patient data and information were collected with written consent. Participation was voluntary and confidentiality was assured and maintained.

Inclusion Criteria

- Patients >18 years of age
- Injury on either or both sides
- Only closed fractures
- Unstable intertrochanteric fracture of the femur of any pattern
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Open contaminated fractures
- Patient below 18 years of age
- Multiple fractures and poly-trauma
- Patient who cannot follow up at least for 6 months
- Pathological fracture.

Results:

The age range of the participants was between 16 and 90, with a mean age of 56.91 ± 17.76 , and a majority of participants (35.29%) being from the age group of 61-75 years. The majority of the participants (61.76%) were female, while 38.24% were male. In terms of occupation, 50% of the participants were housewives, 14.71% were ex-service holders, 14.71% were service holders, 11.76% were businessmen, 5.88% were students, and 2.94% were farmers. The leading cause of injury was falls on slippery ground (55.88%), followed by motor vehicle injuries (44.12%). The majority of the injuries occurred on the right side (70.59%), while 29.41% occurred on the left side. [Table I] About 76% of the participants had Kyle Type III fractures, while 24% had type IV fractures. Majority of the participants (58.82%) had excellent outcomes, and 23.53% had a good outcome. 14.71% had a fair outcome, while only 1 patient had a poor outcome by the final follow-up. The majority of patients (85.29%) had their fractures reduced through an close method, while the remaining 14.71% had open reductions. The mean duration of injury to operation was 15.59 days, with a standard deviation of 5.19 days. The patients stayed in the hospital for an average of 19.15 days, with a standard deviation of 5.19 days. The duration of hospital stay was distributed as follows: 8 patients (23.53%) stayed between 10-14 days, 10 patients (29.41%) stayed between 15-19 days, 8 patients (23.53%) stayed between 20-24 days, and 8 patients (23.53%) stayed between 25-29 days. [Table II]. Out of 34 patients, 24 patients (70.59%) did not have

any complications during their treatment. 6 (17.65%) out of 34 patients experienced wound infection, 4 (11.76%) out of 34 patients experienced pulmonary infection, 1 (2.94%) out of 34 patients developed a bed sore, and 1 (2.94%) out of 34 patients developed DVT (deep vein thrombosis). At the last follow-up, 19 participants (55.88%) reported no pain, 13 participants (38.24%) reported slight pain, 1 participant (2.94%) reported mild pain, and 1 participant (2.94%) reported moderate pain. The Table V shows that the majority of the participants (58.82%) had a score between 90 and 100, indicating good function. A small number of participants (14.71%) had a score between 60 and 74, indicating moderate function. Only 2.94% of the participants had a score below 60, indicating poor function. The mean Harris hip score for the participants was 87.68, with a standard deviation of 16.89.

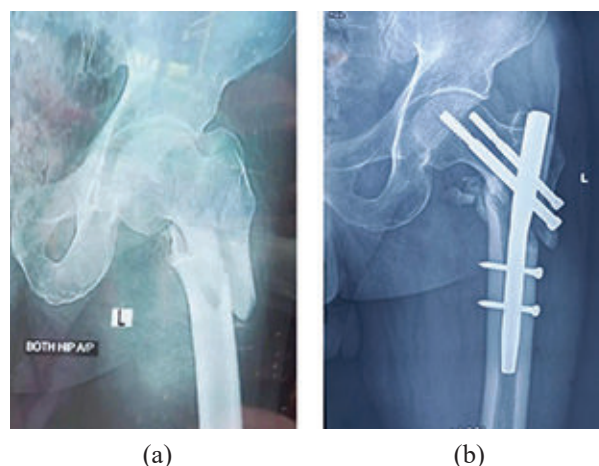


Figure II: (a) Pre-operative X-ray shows intertrochanteric fracture. (b) Post-operative X-ray shows intertrochanteric fracture fixed by PFN.

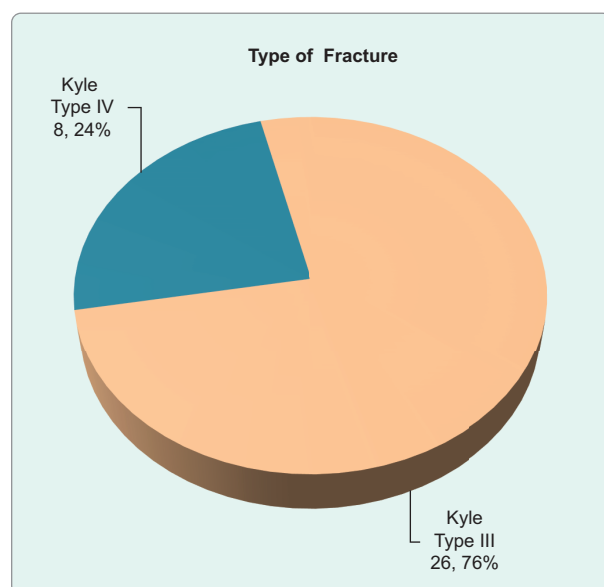


Figure I: Distribution of participants by type of fracture.

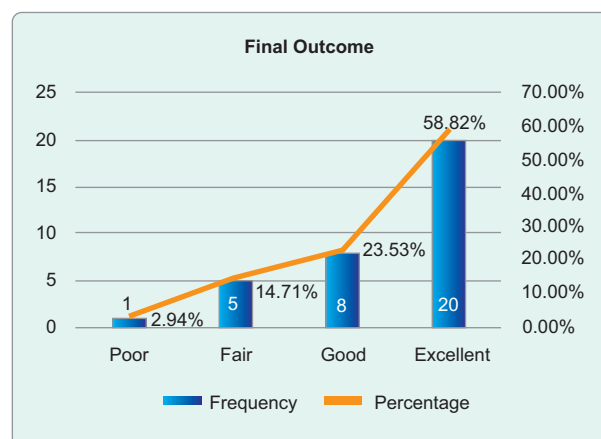


Figure III: Distribution of participants by final out come

Table I: Distribution of participants by baseline characteristics.

Baseline Characteristics	Frequency	Percentage
Age		
16-30	3	8.82%
31-45	8	23.53%
46-60	7	20.59%
61-75	12	35.29%
76-90	4	11.76%
Mean±SD		56.91±17.76
Gender		
Male	13	38.24%
Female	21	61.76%
Occupation		
Housewife	17	50.00%
Ex-Service Holder	5	14.71%
Service Holder	5	14.71%
Businessmen	4	11.76%
Student	2	5.88%
Farmer	1	2.94%
Cause of Injury		
Motor Vehicle Injury	15	44.12%
Fall on slippery ground	19	55.88%
Side of Injury		
Right	24	70.59%
Left	10	29.41%

Table II: Distribution of participants by Fracture management related characteristics

Baseline	Frequency	Percentage
Method of Reduction		
Close	29	85.29%
Open	5	14.71%
Duration of Injury to operation in days		
6-10	7	20.59%
11-15	8	23.53%
16-20	10	29.41%
21-25	9	26.47%
Mean±SD		15.59±5.19
Duration of Hospital Stay in days		
10-14	8	23.53%
15-19	10	29.41%
20-24	8	23.53%
25-29	8	23.53%
Mean±SD		19.15±5.19

Table III: Distribution of cases according to post-operative complications (n=34).

Complication	Frequency	Percentage
No complication	24	70.59%
Wound infection	6	17.65%
Pulmonary infection	4	11.76%
Bed sore	1	2.94%
DVT	1	2.94%

Table IV: Distribution of Patients according to pain status at final follow-up (n=34)

Pain at last follow up	Frequency	Percentage
No pain	19	55.88%
Slight pain	13	38.24%
Mild pain	1	2.94%
Moderate pain	1	2.94%

Table V: Distribution of cases according to HHS at final follow-up (n=34).

Harris hip score	Frequency	Percentage
<60	1	2.94%
60-74	5	14.71%
75-89	8	23.53%
90-100	20	58.82%
Mean±SD		87.68±16.89

Discussion

The Proximal Femoral Nail (PFN) is a device used to treat unstable proximal femoral fractures. It is inserted through the greater trochanter and uses a single proximal interlocking screw for fixation and compression. The intramedullary position of the device is closer to the center of gravity and more reliable in resisting high forces across the medial calcar. In this study, the highest number of patients (35.29%) were in the 61-75 years age group, with a mean age of 56.91±17.76 years. The majority of patients were female (62%) and the most common cause of injury was fall on slippery ground (56%). This finding was somewhat different from other studies, where the mean age of participants were over 70 years.^{3,12} This decreased age of incidence of occurring intertrochanteric is mainly due to the increasing incidence of road traffic and motor vehicle accidents leading to younger patients having these type of fractures. The increased female prevalence in our study was mainly due to females being more susceptible to osteoporotic fractures, leading to an overall increase in the incidence of fractures. This was similar to the findings

of other studies as well.^{13,14} Like our study, motor vehicle accidents and fall from heights are the most common causes of injury observed in multiple other studies as well.^{3,14} The most occurred fracture was Kyle type III (76%, n=26). The remaining 8 (24%) fractures were Kyle type IV. According to the AO classification, these fractures coincide with 31-A2.3 and 31-A3 fractures. The type of fractures in the present study coincided with those of Yassari et al.¹⁴ Among the 34 cases, only 5 (15%) fractures can be reduced by open method. This was different from the findings of Boldin et al., who only had 9% open reductions.¹⁵ As the learning and practice of PFN technique improves, the rate of open reduction is estimated to reduce. The mean duration of injury to operation was 15.59 ± 5.19 days, ranging from 6 days to 25 days. This delay was significantly higher compared to other studies with an average of 3-5 days of delay.¹⁴ However, as the study place is an extremely busy tertiary center, this delay is unfortunate but understandable. The mean duration of hospital stay was 19.15 ± 5.19 days, ranging from 10 days to 29 days. Most of the cases stayed in the hospital between 15 to 19 days (29.41%, n=10). No complication occurred in 24 (70.59%) cases. Wound infection was the most common complication, found in 6 (17.65%) cases. Four patients had pulmonary infection, 1 (2.94%) had bed sore, and 1 (2.94%) had DVT. There was no technical complication like wrong screw length in the present study. The incidence of complications in our study was similar to the findings of other comparable studies.^{3,14} In this present series, a total of 6 (17.64%) cases had systemic complications. There was no instance of femur shaft fracture. At the last follow-up after operation, 19 (55.88%) cases had no pain, 13 (38.24%) cases complained of slight pain. Among the rest 2 cases, 1 (2.94%) had mild pain and 1 (2.94%) had moderate pain at the last follow-up. This was relatively better compared to a few other studies that reported cases of severe pain.^{3,14} The functional statuses of the cases were measured according to Harris hip score.¹⁶ The mean HHS at the last follow-up was 87.68 ± 16.89 , ranging from 33 to 100. Of the 34 cases, 20 (58.82%) had a HHS between 90 to 100, 8 (23.53%) had a HHS between 75 to 89, 5 (14.71%) had a HHS between 60 to 74, and the remaining 1 (2.94%) had a HHS less than 60. This distribution of HHS was similar to the findings of comparable studies.^{17,18} After the last follow-up, the final outcome was assessed using the HHS tool. Of the 34 cases, 20 (59%) were excellent, 8 (23%) were good, 5 (15%) were fair, and the remaining 1 (3%) was poor. The functional results were acceptable and comparable with the results of other studies.^{3,19}

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 majority of patients in this study were in the 61-75 age range and female, with the most common cause of injury being falls on slippery ground. The most common fracture type was Kyle type III, with a major portion of cases requiring closed reduction. The rate of complications was relatively low, and the functional outcomes were acceptable and comparable to other studies. The duration of injury to operation and hospital stay were slightly longer than other studies, likely due to the busy nature of the study location. Over all, the Proximal Femoral Nail is a safe and effective treatment option for unstable proximal femoral fractures.

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Approach of Delivery of Women among Intricated Pregnancy in Combined Military Hospital, Savar

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Abstract

Background: Every year huge number of women died from pregnancy or childbirth-related intricacies that are preventable in Bangladesh. In developing countries, a lot of pregnant women did not get proper maternal healthcare facilities due to poverty and lack of education. Cause of maternal death was due to three delays, like in decision making to seek care, reaching care and receiving care. Correct decision at the proper time concerning approach of delivery has a straight influence on healthy consequence of pregnancy over and above the maternal comfort. **Objectives:** To find out the approach of delivery of women among intricated pregnancy in Combined Military Hospital, Savar. **Materials and Methods:** This cross-sectional observational study was conducted at obstetrics and gynecology department of Combined Military Hospital Savar from October 2022 to March 2023. Sample size was 230. Data were collected by face to face interview with semi structured questionnaires. Data processing and analysis were completed by means of SPSS version 23. **Results:** Amongst the participants about 65.2% had intricacies and about 34.8% had no intricacies during delivery. Most of the of participants 56% were in 31-40 years age group, 90.7% belonged Muslims, 64.7% were SSC passed and 92.7% were house wife. Among the intricacies pregnancy, 86.4% delivered through caesarean section and 13.6% delivered by normal vaginal delivery. Among the women with pregnancy intricacies, 24.6% had a history of pregnancy-induced hypertension (PIH), 7.8% had a history of pre-eclampsia (PET), 9.9% had a history of gestational diabetes mellitus (GDM), and 16.5% experienced eclampsia. Among the women with intricated pregnancies, approximately 50% had no complications during delivery. However, 5.3% experienced malpresentation, 8.7% developed prolonged labor, 4.7% had a history of obstructed labor, and 14% developed postpartum eclampsia. Among the women with intricated pregnancies, 82.7% had no complications after delivery, 6.7% complained excessive hemorrhage, 6% complained convulsion, 4.7% complained for retained placenta. **Conclusion:** Women consuming prenatal difficulties had significant association with cesarean section. Never the less every one pregnancy remains at danger but primary recognition of difficulties, appropriate transfer and judicious intercession can save breathes of numerous women throughout the procedure of child birth. **Keywords:** Intricated pregnancy, Prenatal Care, Primary recognition, Appropriate intercession.

Introduction

There is a significant reduction in maternal deaths over the past decades in several countries, particularly in the developing world, but we did not unable to meet the target yet. Although the global maternal mortality rate has decreased by 44% since 1990, with 830 women still dying each day from pregnancy and childbirth-related complications. UNFPA estimated that 303,000 women died from these pregnancy related complication in 2015.¹

There are several reason for maternal mortality like medical and social reasons. The most common causes include postpartum bleeding, unsafe abortion, hypertensive disorders during pregnancy, postpartum infections and obstructed labor, blood clots and pre-existing conditions.^{2,3,4} Bangladesh has made significant progress in reducing maternal mortality from 434 per 100,000 live births in 2000 to 173 per 100,000 live births in 2017.⁵ However, significant disparities persist in

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access to maternal and child healthcare.⁶ The lack of access to healthcare facilities, low utilization of prenatal care, and delays in decision-making by pregnant women and their families in seeking childbirth care contribute to the social factors of maternal mortality in Bangladesh.⁷⁻⁸ Antenatal care (ANC) has long been recognized as a crucial service for ensuring safe motherhood and is a vital component of both pregnant mothers and newborns.⁹ The latest maternal mortality survey in Bangladesh found only 37% of pregnant women attending at least four antenatal care (ANC) visits.¹⁰ Maternal and childbirth care provided in different healthcare facilities. At each stage, timely intervention and quality care are essential. The Three-Delay Model was developed to identify the causes of delays in obstetric care. According to this model, adverse outcomes from obstetric intricacies arise due to three types of delays: delay in seeking care, delay in reaching care, and delay in receiving care.¹¹ Delays in receiving proper care can arise due to a shortage of trained healthcare providers, inadequate medical supplies, and a lack of urgency or awareness in recognizing emergencies.¹² The Three-Delay Model highlights the numerous complex socioeconomic and cultural factors that can contribute to maternal mortality.¹⁰ Significant progress has been made since the United Nations included maternal mortality reduction as part of the Millennium Development Goals (MDGs) in 2000.¹³ The United Nations has recently introduced the Sustainable Development Goals (SDGs), with the third SDG aiming to reduce the global maternal mortality rate (MMR) to fewer than 70 per 100,000 live births by 2030.¹⁴ The WHO has also established a global strategy and goal to eliminate preventable maternal mortality.⁸ Therefore, this study examines the mode of childbirth among women who experienced the intricacies during pregnancy in a tertiary hospital setting in Bangladesh. The findings can help inform initiatives aimed at reducing delays in accessing emergency obstetric care and decreasing maternal mortality and morbidity rates in the country.

Materials and Methods

This cross-sectional observational study was conducted at the Obstetrics and Gynecology department of Combined Military Hospital Savar from October 2022 to March 2023. Sample size was 230. Data were collected by face to face interview with semi structured questionnaires. Data processing and analyses were completed by means of SPSS version 23. Ethical clearance was taken from concern Ethical Committee.

Results

Table I: Distribution of respondents according to intricacies pregnancy (n=230)

Intricacies pregnancy	Frequency (n)	Percentage (%)
Yes	150	65.2
No	80	34.8
Total	230	100.0

Table II: Distribution of respondents by Socio-demographic characteristics (n=150)

Socio-demographic characteristics	Frequency (n)	Percent (%)
Age Group (years)	20-30	15.3
	31-40	56
	41 and above	28.7
Religion	Muslim	90.7
	Hindu	4.7
	Others	4.6
Education	Below class viii	15.3
	SSC	64.7
	HSC	15.3
	≥Graduation	4.7
Occupation	House Wife	92.7
	Svc	7.3
Family Type	Nuclear	40.0
	Joint	60.0

Table III: Distribution of respondents having intricated pregnancy by ANC pattern (n=150)

ANC pattern	Frequency (n)	Percent (%)
Regular	108	72.0
Irregular	22	14.7
occasionally	12	8.0
None	8	5.3
Total	150	100.0

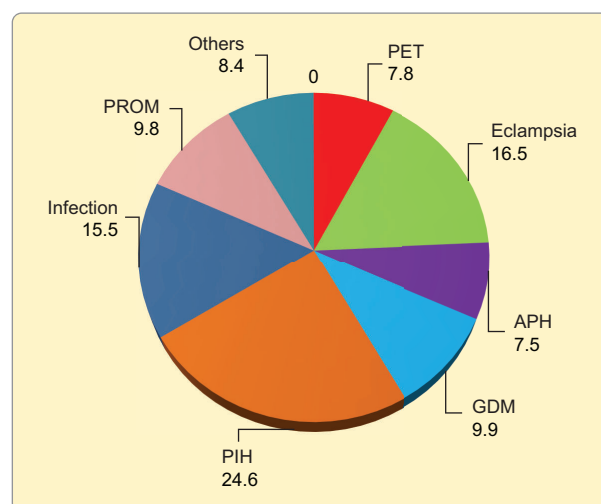


Figure I: Distribution of respondents by types of intricate pregnancy (n=150)

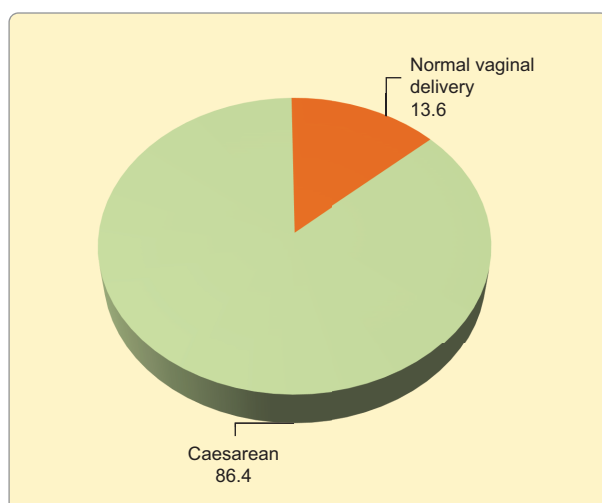


Figure II: Distribution of mode of delivery among intricated pregnancy (n-150)

Table IV: Distribution of respondents having intricated pregnancy by complication during delivery (n-150)

Complication during delivery	Frequency (n)	Percent (%)
No complication	75	50.0
Malpresentation	8	5.3
Prolonged labor	13	8.7
Obstructed labor	7	4.7
Eclampsia	21	14.0
Other	26	17.3
Total	150	100.0

Table V: Distribution of respondents having intricated pregnancy by complication after delivery (n-150)

Complication after delivery	Frequency (n)	Percent (%)
No complication	124	82.7
Excessive hemorrhage	10	6.7
Convulsion	9	6.0
Retained placenta	7	4.7
Total	150	100.0

Discussion

In this study, approximately 65.2% of participants experienced intricacies during delivery, while 34.8% had no intricacies during delivery. Since the study was conducted in a secondary-level hospital in the Savar area, most participants were referred from other locations. Among the women with pregnancy intricacies, 24.6% had

a history of pregnancy-induced hypertension (PIH), 7.8% had a history of pre-eclampsia (PET), 9.9% had a history of gestational diabetes mellitus (GDM), and 16.5% experienced eclampsia. According to Chanda SK et al. pregnancy-induced hypertension (PIH), preeclampsia, or toxemia affects approximately 5% to 10% of all pregnant women in Africa and America.¹⁵ Since that article focused on a developed country, the reported rate is slightly lower compared to the findings of this study. In this study, around 86.4% of participants underwent cesarean section, while only 13.6% had a normal vaginal delivery. The high proportion of cesarean sections was due to a significant number of participants having a history of prenatal intricacies. Additionally, many were referred from other hospitals after unsuccessful attempts at normal vaginal delivery, and some cesareans were performed due to failed trials at the study location. Some studies have found that premature rupture of membranes (PROM) is associated with a high rate of cesarean sections.¹⁶⁻¹⁹ The mode of delivery in those studies was also similar to the findings of this study. Among women with intricated pregnancies, approximately 50% had no complications during delivery. However, 5.3% experienced malpresentation, 8.7% developed prolonged labor, 4.7% had a history of obstructed labor, and 14% developed postpartum eclampsia. An article reported that approximately 5%-6% of pregnant women with preeclampsia may progress to eclampsia.²⁰ Since the article was published in a developed country; the reported frequency is lower than that observed in this study. Among women with intricated pregnancies, 82.7% had no complications after delivery, while 6.7% experienced excessive hemorrhage, 6.0% developed convulsions, and 4.6% had retained placenta. An article reported in 2016 similar findings to this study.²¹ Among women with pregnancy intricacies, approximately 86.4% delivered by cesarean section, while only 13.6% had a normal vaginal delivery. A study reported that in cases of pregnancy intricacies such as gestational diabetes mellitus (GDM) and others, the cesarean section rate was 81.1%, while normal vaginal delivery (NVD) occurred in only 19.6% of cases.²² The cesarean section rate in this study is closely comparable to the findings of that study. Among the women with intricated pregnancies, 82.7% had no complications after delivery, 6.7% complained excessive hemorrhage, 6% complained convulsion, 4.7% complained for retained placenta.

Conclusion

Women expire all over the world owing to wide spread series of difficulties throughout pregnancy and child birth.

Never the less, every single pregnancy remains at danger but primary recognition of high-risk cases could be accomplished correctly. Maximum of these difficulties and opposing consequence associated to pregnancy might be diminished the contrary consequence by quick and appropriate interference. Approach of delivery has straight inspiration on maternal life and comfort and similarly neonatal. In this respect Emergency Obstetric Care is countless importance to except mother and child.

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INSTRUCTION TO AUTHORS

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Conditions for submission of manuscript

- All manuscripts are subject to peer review.
- Manuscripts are received with the explicit understanding that they are not under simultaneous consideration by any other publication.
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- Ethical aspect of the study will be very carefully considered at the time of assessment of the manuscript.
- Any manuscript that includes any table, illustration or photographs that have been published earlier should accompany a letter of permission for republication from the author(s) of the publication and editor/publisher of the Journal where it was published earlier
- Permission of the patients and/or their families to reproduce photographs of the patients where identity is not disguised should be sent with the manuscript. Otherwise the identity will be blackened out.

Preparation of manuscript: Criteria

Information provided in the manuscript are important and likely to be of interest to an international readership.

Preparation

- Manuscript should be written in English and typed on one side of A4 (290 x 210cm) size white bond paper
- Typing font shall be Arial of 12 size. Double spacing should be used throughout
- Margin should be 5 cm for the header and 2.5 cm for the remainder
- Style should be that of modified Vancouver
- Each of the following section should begin on separate page:
 - a. Title page
 - b. Summary/abstract
 - c. Text
 - d. Acknowledgement
 - e. References
 - f. Tables and legends
- Pages should be numbered consecutively at the upper right-hand corner of each page beginning with the title page.

Title Page

The title page should contain:

- Title of the article (should be concise, informative and self-explanatory)
- Name of all authors with their designation and institutional affiliation
- Name of the department and institute where the work was carried out
- Name of the corresponding author with contact address, mobile number and email address
- Sources of support in the form of grants, equipment, drugs or all of these
- Word counts of abstract
- The number of tables
- The number of figures

Abstract

- All articles must have a structured abstract.
- It should not exceed 200 words and should state the purpose, basic procedures, main findings and principal conclusions of the study.

Text

The text should be divided into sections with the following headings: Introduction, Materials and Methods, Results, and Discussion.

Introduction

The purpose(s) of the study should be clearly stated. Summarize the rationale for the study or observation. Give strictly pertinent references only, and do not review the subject extensively.

Materials and methods

It should include the place of the study, period, the subjects (number and type), the treatment or intervention and the type of statistical analysis.

Results

Present results of your study in logical sequence in the text, tables and illustrations. Do not repeat in the text all data in the tables or illustrations or both. Emphasize or summarize only important observations.

Tables

During preparation of tables following principles should be followed:

- Tables should be simple, self-explanatory and should supplement, not duplicate the text
- Each table should have a title and typed in double space in separate sheet
- They should be numbered consecutively with roman numerical in order of text. Page number should be in the upper right corner
- If abbreviations are to be used, they should be explained in footnotes

Illustration

- All illustration must be numbered consecutively in Arabic numerals as they appear in the text
- Submit print photograph of each illustration along with its electronic file
- Figure number, title of manuscript, name of corresponding author should be written on a sticky label affixed on the back of each photograph

- Scanned picture, graph, chart with title and figure number should be printed on separate page and should be inserted in the CD along with text

Legend

- Must be typed in a separate sheet of paper.
- Photomicrographs should indicate the magnification, internal scale and the method of staining.

Units

- All scientific units should be expressed in System International (SI) units

Discussion

Emphasize the new and important aspects of the study and conclusions that follow from them. Highlight the important/major findings first, then highlight the less-important findings. Do not repeat in detail data or other material given in priority and alluding to work that has not been completed. State new hypotheses when warranted, but clearly label them as such. Recommendations, when appropriate, may be included.

References

The Vancouver system of reference should be used. In the text, reference should be cited using superscripted and numerical. The references should be numbered and listed in order of appearance in the text. Reference to unpublished data and personal communication should not appear in the list but should be cited in the text only (e.g Smith A, 2000, unpublished data). Use 'et al' after three authors where number of authors is more than six.

Acknowledgements

Individuals, organizations or bodies may be acknowledged in the article and may include:

- Name (or a list) of funding bodies.
- Name of the organization(s) and individual(s) with their consent.

Manuscript submission

Manuscript should be submitted to the Executive Editor and must be accompanied by a covering letter and following inclusions:

- A statement regarding the type of article being submitted
- A statement that the work has not been published or submitted for publication elsewhere
- A statement that the manuscript has been read approved and signed by all authors

- A statement of financial or other relationships that might lead to a conflict of interests
- A letter from the head of the institution where the work has been carried out stating that the work has been carried out in that institute and there is no objection to its publication in this journal
- If the article is a whole or part of the dissertation or thesis submitted for degree or fellowship, it should be mentioned in detail and in this case the name of the investigator and guide must be specifically mentioned
- The authors have followed the official secret act. Submissions must be in triplicates with three sets of illustrations

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Online submission shall only be accepted for author submitting paper from outside of Bangladesh. Papers should be prepared following instructions mentioned and shall be submitted to address of the journal as Microsoft word attached file. The email shall include letter mentioning that the work has been carried out in an institute that has no objection to its publication in this journal and that the work has not been published or submitted for publication elsewhere.

Editing and peer review

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member of the Editorial Board. Manuscripts containing materials without sufficient scientific value and/or a priority issue, or not fulfilling the requirement for publication may be rejected or it may be sent back to the author(s) for resubmission with necessary modifications to suit one of the submission categories. Manuscripts fulfilling the requirements and found suitable for consideration are sent for peer review by the subject editors. Submissions found suitable for publication by the reviewer, may need revision/ modifications before being finally accepted. Editorial Board finally seats together and decides upon the publish ability of the reviewed and revised/modified submission. Proof of accepted manuscript may be sent to the authors and should be corrected and returned to the editorial office within one week. No addition to the manuscript at this stage will be accepted. All accepted manuscripts are edited according to the Journal's style.

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Example of Title Page

The title of the article :

A. Author's names and institutional affiliations:

B. The name of the department(s) and institution(s) to which the work should be attributed:

C. Disclaimers any:

D. Corresponding author: The name:

Mailing address:

Telephone:

E-mail address:

E. The name and address of the author to whom requests for reprints should be addressed:

F. Source(s) of support in the form of grants, equipment, drugs, or all of these-

G. A running head:

H. Word counts of abstract:

I. The number of tables:

J. The number of figures:

Disclosure of Contribution of Authors

Corresponding author

As principal investigator Dr

had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design

Acquisition of data

Analysis and interpretation of data

Drafting of the manuscript.....

Critical revision of the manuscript for important intellectual content

Statistical analysis

Administrative, technical, or material support

Supervision.....

Covering Letter for Article Submission

Date

To
The Editor
Journal of Army Medical College Cumilla (JAMCCu)

Sub: **Submission of manuscript**

Dear Sir,

We are submitting our manuscript titled

.....

by.....1.....

2.....3.....

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We therefore hope that you would be kind enough to consider our manuscript for publication to your journal as original/review article/ letter to editor/short communication

Thanks and best regards

1.x

2.x

3.x

