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Does Epidemic of Mpox is a Threat for Bangladesh?

*Ahmed N¹

Monkeypox is a viral disease originated from animals currently named as Mpox. The rash of Mpox infection is similar to the rash of small pox. Monkeypox virus is an orthopox virus that is in the same genus as variola and vaccinia virus.¹ Virulence of the virus from central Africa is more than the virulence from West Africa. There are few clades of the virus. In 2022 outbreak more mutations occurred and which increases the possibility of human adaptation.²

Monkey pox virus was first isolated in Denmark in late 1950 in laboratory monkeys.³ Up to 1970 the virus was only found in different animals including zoo animals and in human monkeypox virus was first identified as a cause of disease in 1970.¹

Mpox have generally occurred in Central and West Africa before 2003, in 2003 first outbreak of Mpox occurred in the united states.⁴ In May 2022 a global multi-country outbreak was recognized; this outbreak was associated with person-to-person transmission and involved thousands of individuals in dozens of countries.⁵ In July 2024 cases of mpox also detected in Burundi, Rwanda and Uganda and was probably due to travel.⁶ WHO second time declared mpox as a medical emergency on middle of the august 2024 and probably this was related with outbreak in DRC in the beginning of 2023.⁷ In between 1970 and 1980 all of these cases occurred in the rain forests of West and Central Africa among individuals exposed to small forest animals (eg, rodents, squirrels, and monkeys).¹ In 2022, the WHO reported that mpox was endemic in several African countries including Benin, Cameroon, the Central African Republic, the DRC, Gabon, Ghana (identified in animals only), Ivory Coast, Liberia, Nigeria, the Republic of the Congo, Sierra Leone, and South Sudan. From January to May 2022, most suspected cases of mpox occurred in the DRC, with 1284 cases and 58 deaths reported.⁸

The first cases of mpox in this outbreak were identified in the United Kingdom in mid-May 2022

and these were not associated with recent travel to an endemic area or close contact with a person known to have mpox.⁹ Nontravel-related cases of mpox were subsequently reported in other parts of Europe¹⁰. reported several suspected cases around this time.¹¹ In the United States, the first mpox case was also reported in May 2022.¹² Genome sequencing results from virus recovered from this patient displayed similarities to other published genomes in this outbreak from Europe and are related to the mpox outbreak in Nigeria that occurred from 2017 to 2018.¹ Thousands of confirmed mpox/Ortho poxvirus cases in dozens of countries were subsequently reported. At the outbreak peak in the second week of August 2022, there were 1000 cases per day worldwide. By contrast, in 2024, 646 new laboratory-confirmed cases of mpox were reported during the entire month of May.¹³

Prior to the 2022 global outbreak, several sporadic cases of mpox have been reported after travel to endemic areas.¹⁴ Between 2018 and 2021, seven cases of mpox were diagnosed in the United Kingdom; four cases were related to travel from endemic countries, two cases resulted from household transmission from one of the index cases, and one case occurred in a health care worker who acquired infection nosocomially.¹⁵ Several cases of travel-related mpox due to clade 1 virus have been associated with the outbreak in Central and Eastern Africa that started in 2023. Cases have been identified in Canada, Germany, India, Kenya, Sweden, Thailand, the United Kingdom, Zambia, and Zimbabwe. In the United States, the first case of mpox due to clade 1 virus was diagnosed in November 2024.¹⁶

MPXV can be acquired through contact with an infected animal's bodily fluids or through a bite. It can also be acquired through preparation of bushmeat.¹

In Africa, evidence of MPXV infection has been found in many types of animals, including rope squirrels, tree squirrels, Gambian pouched rats, dormice, and different species of monkeys.¹⁷ Monkeys and humans are incidental hosts; the reservoir remains unknown but is likely to be rodents.¹⁸

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Spread of MPXV is thought to occur primarily through direct contact with infectious sores, scabs, or body fluids.¹⁹ As such, mpox can spread during activities that include close, personal contact with an infected individual.¹ Transmission may be facilitated by touching infectious material and then the facial mucous membranes or any breach in the skin of the recipient.¹

Transmission can occur through contact with materials or fomites that have become contaminated with infected material in the household or patient care environment, such as clothing or linens contaminated with infectious material from body fluids or sore.²⁰ Transmission via needlestick injury is also possible during collection of cutaneous lesions samples.²¹

Transmission of Mpox from one person to another person is less. Person to person transmission with in the house can vary.¹ In a study of 528 mpox cases from multiple countries, 0.8 percent were likely due to nonsexual close contact, and 0.6 percent were due to household contact.²² Similarly, in another study of 181 cases from Spain, 3 percent of infections resulted from household contact.²³ Transmission of Mpox in congregate living is possible but few controversial reports are there. The risk of MPXV transmission in well-resourced health care settings is low.²⁴ In 2022 outbreak none of health care personnel became infected who were exposed to patients with mpox²⁵.

Historically, a person is considered infectious from the onset of clinical manifestations until all skin lesions have scabbed over and re-epithelialization has occurred¹. During the multi-country outbreak that began in 2022, several studies evaluated viral shedding, and estimated viral loads appear higher in skin lesions than at other sites.²⁶ The duration of viral shedding can vary.²⁷ Viral shedding and the period of infectiousness determine isolation duration and contact definitions.¹

Monkeypox has an average incubation period of 6 to 13 days where the person does not have symptoms. A person is not contagious during this period.²⁸

WHO Director-General declares mpox outbreak a public health emergency of international concern in August 2024. At present there is no known case of mpox in Bangladesh or the neighboring country India.

Since WHO declares mpox as an international emergency few questions are arising regarding prevention of entry of mpox in those countries which countries are currently free from the disease specially Bangladesh and declaration of WHO is also

an alert signal for the concerned professionals.

First and most important question is does mpox is an international threat like Covid 19 pandemic? With the preceding question another most important question for Bangladesh is, does epidemic outbreak of mpox is a threat for Bangladesh? If epidemic outbreak of mpox is considered a threat for Bangladesh what to do? But before conclusive discussion few things regarding mpox should be reviewed.

Mpox is a zoonotic disease and the natural reservoir for mpox virus is unknown! But it is thought to be small mammals in Africa's rainforest such as Dormice, Gambian pouched rats. Rope squirrels and Sun squirrels. Mpox can spread from these rodents to other animals including other small mammals and non-human primates like Monkeys.

Mpox can be transmitted from rodents to human through direct contact, bites, scratches with infected rodents such as during hunting, trapping or preparing animal, contaminated meat and surfaces also can transmit virus. On the other hand, human to human transmission of mpox can occur through close contact, like skin-to-skin contact such as touching especially sexual contact and mouth to mouth contact during kissing. Face to face contact includes talking or breathing close to someone who has mpox. Respiratory droplets also can transmit mpox but requires prolonged exposure with the diseased person without face mask. Fomites include contaminated objects like clothing and linen also can transmit mpox.

Previously thought that humans are not contagious during incubation period but, recently there is very few evidence of transmission of mpox four days prior to the development of sign and symptoms.

Considering all the facts regarding mpox it is evident that entry and control of mpox epidemic in Bangladesh and any other country is not so much difficult. Mpox is not an airborne disease this is another very important point regarding the control of mpox transmission and epidemic.

Bangladesh government already taken one step for the control of mpox entry into Bangladesh. Airport authority is measurement the body temperature of each person coming from outside. But only this step is not sufficient to control mpox entry into Bangladesh. With the measurement of body temperature few other steps must be taken.

1. Preparation of a list of the countries where mpox is identified.
2. Restriction of travelling to those countries where mpox is identified.

3. Persons arriving from the countries where mpox is detected whether the person has got raised temperature or not should be quarantined for at least 13 days.
4. Strict restriction of import of rodents and monkeys from other countries.
5. Creation of awareness among the peoples regarding mpox specially the mode of transmission of the disease

The suggested precautions if followed properly is sufficient to prevent the entry of mpox in Bangladesh from outside. But if mpox case is identified despite taking all the precaution then strict quarantine of that person for at least 25 days must be ensured. All the clothes and anything used by the person during the period of quarantine must be destroyed.

Mpox is not an air born disease like Covid 19. Direct contact especially sexual contact of any type is the main way responsible for the transmission of mpox. Respiratory droplet transmission requires prolonged close exposure with the diseased person which can be easily prevented by wearing face mask. Considering all the facts it is very much clear that there is no chance of entry and epidemic outbreak of mpox in Bangladesh. So, no need to panic if we follow the suggested precautions correctly and sincerely.

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Parasympathetic Nerve Function by Heart Rate Response to Valsalva Maneuver in Lactating Mothers

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Abstract:

Background: Lactation are a significant impact on women cardiac autonomic control and various cardiometabolic changes which occurs during lactation that influence women health.

Objectives: To assess the Parasympathetic nerve function by heart rate response to Valsalva Maneuver in healthy lactating mothers.

Materials & Methods: This cross-sectional analytical study was conducted from July 2022 to June 2023 in the Department of Physiology, Rangpur Medical College, Rangpur. After obtaining permission, a total 100 subjects who were met the inclusion criteria was enrolled in the study after briefing them objectives of the study. Among them 50 were healthy Lactating mothers (Group-A) and 50 were healthy non-lactating mothers (Group-B). The evaluation of parasympathetic nerve functions in selected individuals was done by performing heart rate response to Valsalva Maneuver. The individuals were selected from Breast feeding or lactating corner and Out patient Department of Paediatrics. For statistical analysis by unpaired 't' test was performed by computer-based software SPSS-25.0 version for windows.

Results: Heart rate response to Valsalva Maneuver test was significantly lower ($p < 0.001$) in lactating mothers.

Conclusion: The study thus concluded that decrease heart rate response to Valsalva maneuver test in lactating mothers indicate parasympathetic disfunction.

Keywords: Lactating mothers, Non-lactating mothers, Valsalva maneuver, Parasympathetic nerve function.

Introduction:

Lactation is the secretion of milk from the mammary glands and the period of time that a mother lactate

her child. The pregnancy and lactation process naturally occurs with sexually mature female.¹ Lactation results in a number of physiological adaptations which exert direct effects on maternal health, some of which may confer both short and long term advantages on lactating mothers.² It is ascertain that the association of lactation with later health derives from healthier lifestyle in mother who choose to breast feeding. The frequency of feeding also is an important factor for determining breast feeding effect of maternal autonomic nervous system functions. Various cardiometabolic changes that occurs during lactation that influence women health.³ Lactation have significant effects on mother and child. Lactation that affects maternal parasympathetic nervous system functions.⁴ A recent investigation reported a greater vagal modulation of cardiac function in lactating mothers but relatively increased sympathetic and decreased vagal tone in non-lactating mothers.⁵

Lactation in early postpartum period causes a more rapid return of the uterus to its prepregnant state through the actions of oxytocin. Lactation may early post partum period causes more rapid return to pre

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pregnancy weight. Lactation delays the return of ovulation and significantly reduces fertility during the period of lactational amenorrhoea.⁶ There are many short and long term health benefits of lactation. Short term benefits of lactation included decreased blood pressure, more positive moods, pregnancy associated weight loss, and fertility control.^{7,8} Long term benefits of lactation reduces risk of certain cancers, cardiovascular diseases, hypercholesterolemia, type2 diabetes Mellitus.^{9,10} Lactating mothers have stronger cardiac vagal tone modulation, reduced blood pressure, and reduced heart rate reactivity than non- lactating mothers.

Lactating mothers have prolonged higher quality sleep patterns than non-lactating mothers.¹¹ One study reported that greater stress of a person experiences the greater the risk of several illness, increased stress is associated with increased risk of some disease. Lactation decreases daily life stress. Lactation that enhance both physical and psychological health, possibly through a reduction in physical and psychological response to stress.^{12,13}

Several test are used for evaluation of cardiovascular reflexes triggered by performing specific provocative maneuvers.¹⁴ A commonly used parasympathetic nerve function test is Valsalva maneuver. Valsalva maneuver is the performance of forced expiration against a closed glottis. Performing the Valsalva maneuver causes an increase in intrathoracic pressure, leading to reduction in preload of heart.¹⁵ Cardiovascular changes occurs during and after the maneuver due to baroreflex and other compensatory reflex mechanisms that are initiated by decrease preload. Moreover, there is lack of adequate information regarding parasympathetic function status in lactating mother of our country. Present study has been designed to assess the changes of cardiovascular parasympathetic function status in lactating mothers. These parasympathetic tests are helps in early detection and quantification of degree of loss of autonomic function and prevent further complication.

Materials & Methods:

This is cross sectional analytic study was conducted in department of Physiology, Rangpur Medical College Rangpur from July 2022 to June 2023. A total number of 100 individuals, which are apparently healthy lactating and non-lactating mothers and their age ranged from 20-30 years were included in this study. Sample of lactating mothers are collected from Breast feeding or Lactating corner

and Out Patient Department of Paediatrics Rangpur Medical College, Rangpur. Before perform the parasympathetic nerve function test and collection of sample all the subjects are briefed about the objective of study. Informed written consent of the study subjects was taken in easy understandable Bengali phase. All information was recorded in a preformed questionnaire after taking history and through clinical examination. All the subjects were divided into two groups among them 50 are lactating mothers as group A and 50 are non-lactating mothers as group B. They were matched with age, BMI and socioeconomic condition. Study was carried out with prior protocol approved by thesis protocol review committee and ethical committee of Rangpur Medical College. History of diabetes mellitus, History of hypertension, cardiac disease, psychiatric disorder (depression), history of taking neurotoxic drug, history of taking sympathomimetic drugs, history of taking oral contraceptive pills, obesity and overweight, renal disease, pregnancy were taken as exclusion criteria. From the previous night up to the examination, they were not undergoing any physical or mental stress and not to take any sedatives or any drugs affecting central nervous system. Then the parasympathetic nerve function parameter was assessed by using ECG machine. Valsalva maneuver was conducted in a comfortable environment in the department of physiology laboratory from 9.00am – 2.30pm.

Resting heart rate: The subjects were asked to take rest for 10 minutes in supine position and resting heart rate was recorded in supine position and expressed as beats /min. Three reading are taken and the average of three was taken as the resting heart rate.

Heart rate response to valsalva maneuver:

The test was performed by asking the subjects to sit quietly and then to blow into a rubber tube connected to a sphygmomanometer to keep the mercury up to a height 40 mm of Hg by continuous blowing and the level maintained at the mark for 15 seconds while a continuous electrocardiogram was recorded. Record for 30 seconds more, after this maneuver with patient sitting and strip ECG recording. Repeat twice and average the ratio from the 3 Valsalva attempts were taken to calculate Valsalva ratio. **Valsalva ratio:** Ratio of longest R-R interval within 20 beats of ending maneuver to shortest interval during maneuver, measure with a ruler from electrocardiogram trace. Normal: ≥ 1.21 , Borderline: 1.11-1.20, Abnormal: ≤ 1.10 .

Result:

The mean $\pm$ SD of age are 24.04 $\pm$ 2.35 years in group A and 23.92 $\pm$ 2.52 in group B. The mean $\pm$ SD of height was 157.64 $\pm$ 8.62 in group A and 162.20 $\pm$ 7.89 in group B. The mean $\pm$ SD of weight was 51.24 $\pm$ 4.85 in group A and 52.30 $\pm$ 5.76 in group B. The mean $\pm$ SD of BMI was 20.77 $\pm$ 1.10 in group A and 21.25 $\pm$ 1.14 group B. The age, height, weight and BMI were statistically non-significant ($p > 0.05$) between the groups (Table-I).

Table-I: The mean $\pm$ SD of age, height, weight and body mass index of the study subjects of in group A and group B.

Variable	Mean $\pm$ SD		p-value
	Group A (n=50)	Group B (n=50)	
Age-years	24.04 $\pm$ 2.35	23.92 $\pm$ 2.52	0.806 ^{NS}
Height-m2	157.64 $\pm$ 8.62	162.20 $\pm$ 7.89	0.418 ^{NS}
Weight-kg	51.24 $\pm$ 4.85	52.30 $\pm$ 5.76	0.972 ^{NS}
BMI-kg/m2	20.77 $\pm$ 1.10	21.25 $\pm$ 1.14	0.943 ^{NS}

Data were expressed as mean $\pm$ SD.

unpaired 't' test was done.

Group A: 50 Apparently healthy lactating mothers.

Group B: 50 Apparently healthy non-lactating mothers.

N= number of subjects

p value ≤ 0.05 was taken as level of significance.

SD=Standard deviation

NS= $p > 0.05$

The mean $\pm$ SD resting heart rate were in group A 62.640 $\pm$ 8.724 beats/min and 71.740 $\pm$ 4.198 beats/min in group B. The mean resting heart rate were significantly lower ($p < 0.001$) in group A than group B (Table-II).

Table-II: The mean $\pm$ SD of resting heart rate of the study subjects in Group A and Group B.

Variable	Mean $\pm$ SD		p-value
	Group A (n=50)	Group B (n=50)	
Resting heart rate	62.640 $\pm$ 8.724	71.740 $\pm$ 4.198	0.000***

Data were expressed as mean $\pm$ SD.

unpaired 't' test was done.

Group A: 50 Apparently healthy lactating mothers.

Group B: 50 Apparently healthy non-lactating mothers.

N= number of subjects

P value ≤ 0.05 was taken as level of significance.

SD=Standard deviation

***= $p < 0.001$

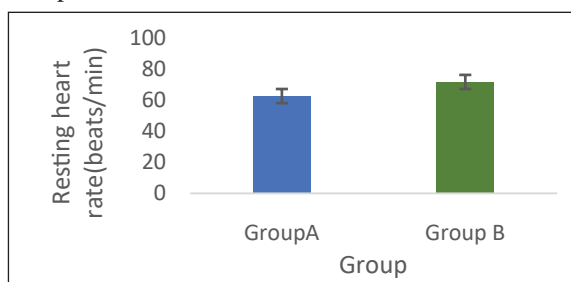


Figure-1: Bar diagram showing mean ($\pm$ SD) resting heart rate in group A and B Vertical line indicate standard deviation

The mean $\pm$ SD Valsava ratio were in group A 1.4679 $\pm$ 0.41380 beat/min and 1.7286 $\pm$ 1.4393 in group B. The mean Valsava ratio were significantly lower ($p < 0.001$) in group A than group B (Table-III).

Table-III: Showing mean $\pm$ SD of Valsava ratio of the study subjects in Group A and Group B.

Variable	Mean $\pm$ SD		p-value
	Group A (n=50)	Group B (n=50)	
Valsava ratio	1.4679 $\pm$ 0.41380	1.7286 $\pm$ 1.4393	0.000***

Data were expressed as mean $\pm$ SD.

unpaired 't' test was done.

Group A: 50 Apparently healthy lactating mothers.

Group B: 50 Apparently healthy non-lactating mothers.

N= number of subjects

p value ≤ 0.05 was taken as level of significance.

SD=Standard deviation

***= $p < 0.001$

Normal value of Heart rate response to Valsava maneuver:1.21

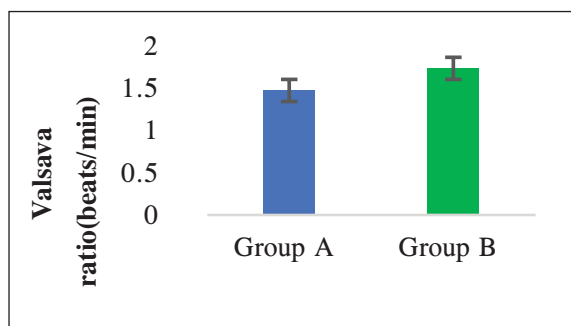


Figure 2: Bar diagram showing mean ($\pm$ SD) heart rate response to Valsalva maneuver in group A and B. Vertical line indicate standard deviation

Discussion:

The present study was carried out to observe the changes in heart rate response to Valsalva maneuver test between apparently healthy lactating mothers and non-lactating mothers. In lactating mothers heart rate response to Valsalva test was significantly lower ($p < 0.001$) when compared to non-lactating mothers. This finding is consistent with that of some other investigators.^{3,16,17} In contrast some other researchers did not find any significant difference in heart rate response to Valsalva maneuver in lactating mothers and non-lactating mothers.¹⁸

Parasympathetic nerve function changes in lactating mothers may be mediated by both central and peripheral effects of oxytocin, a hormone released by suckling stimulation. Several investigations point towards a role of central oxytocinergic neurons in higher level control of cardiovascular function through parasympathetic pathways. Lactation alters the central oxytocinergic activity, including nuclei involved in cardiovascular regulation, that shift the autonomic nervous system balance towards increased parasympathetic nervous system activity.¹⁹

To summarize the main findings of this study, Mothers who breast fed exclusively showed greater levels of parasympathetic cardiac modulation and slower heart rate response to Valsalva maneuver throughout the period of lactation. The lower heart rate response to Valsalva maneuver is due to higher cardiac vagal modulation in lactating mothers. This findings contrasts with Altemus et.al.

From this above discussion it may be concluded that significantly lower heart rate response to Valsava maneuver in lactating mothers, indicate decreased parasympathetic activity may be due to defect in parasympathetic nerve activation. In this study exclusive breast feeding was associated with the parasympathetic effects and that is mediated by stimulation of vagus nerve and decrease heart rate.

Conclusion:

From the outcome of the present study suggested that with the help of simple, noninvasive test, heart response to Valsalva maneuver provide diagnostic information about early subclinical parasympathetic disfunction and is a useful tool to monitor the efficacy of therapeutic and lifestyle modification. As our study was cross sectional and limited in sample size. We recommend studying this test in a larger population may be diagnosis of autonomic nerve alteration and can be used to prevent further complication.

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Pattern and Outcome of Patients Admitted to the Medicine Department of a Private Medical College Hospital in Bangladesh

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Abstract:

Background: Understanding the pattern of diseases and outcomes of patients admitted to medicine departments is essential for healthcare planning in Bangladesh, which is experiencing an epidemiological transition with a dual burden of communicable and non-communicable diseases.

Objective: To analyze the demographic characteristics, disease patterns, and outcomes of patients admitted to a private medical college hospital in Bangladesh.

Materials & Methods: This retrospective observational study was conducted at Rangpur Community Medical College & Hospital, Rangpur, Bangladesh, from January 2025 to December 2025. Medical records of 1369 admitted patients were reviewed. Data on demographics, diagnosis, system involvement, outcome, and hospital stay duration were collected and analyzed using SPSS version 23.0.

Results: Patients aged ≥ 48 years predominated (60.3%), with male (70.3%) and Muslim (90.4%) majorities. Cardiovascular diseases were most common (20.7%), followed by infectious (19.9%), gastrointestinal (16.1%), respiratory (14.5%), and nervous system disorders (13.7%). Females had significantly higher UTI ($p=0.004$) and iron deficiency anemia ($p=0.032$). Diabetes ($p=0.066$) and hypothyroidism ($p=0.079$) showed strong trends toward female predominance. Non-communicable diseases predominated (60.3% vs. 39.7%). Communicable diseases peaked in ≤ 15 years (83.3%); non-communicable diseases dominated ≥ 48 years (67.4%). Discharge rate was 88.5%; 3.0% died. Mortality was highest in nervous (4.8%) and respiratory diseases (4.0%). Mean stay: 6.2 ± 3.8 days.

Conclusion: This study demonstrates a predominance of non-communicable diseases, particularly cardiovascular conditions, with significant age and gender variations in disease patterns, providing valuable insights for healthcare planning in Bangladesh.

Keywords: Cardiovascular diseases, Communicable diseases, Disease pattern, Hospital outcome, non-communicable diseases, Private hospital

Introduction:

Bangladesh is currently navigating a profound epidemiological transition, characterized by a shifting disease burden from communicable to

non-communicable conditions.^{1,2} This transition, driven by rapid urbanization, changing lifestyle patterns, an aging population, and environmental factors, has created a dual disease burden that significantly challenges the country's healthcare infrastructure³. According to the latest National Non-communicable Disease Risk Factor Survey conducted in 2021-2022, non-communicable diseases now account for approximately 70% of all deaths in Bangladesh, with one in four adults suffering from hypertension, one in twelve from diabetes, and one in nine from obesity.^{1,4} These figures represent a substantial increase from the 2018 survey, when hypertension prevalence was 21%, diabetes 8.3%, and obesity 25.9%.^{1,4} The epidemiological landscape in Bangladesh reflects a classic pattern of health transition observed in many low- and middle-income countries.⁵ While communicable diseases such as tuberculosis,

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hepatitis, and malaria continue to pose public health challenges, the rising tide of non-communicable diseases, including cardiovascular conditions, stroke, diabetes, and chronic respiratory diseases, has transformed hospital admission patterns.^{6,7} Cardiovascular diseases alone are estimated to cause 30% of total deaths in the country, making them the leading contributor to mortality.⁶ Furthermore, conditions like stroke have emerged as major causes of adult morbidity and long-term disability, placing substantial demands on acute care services and rehabilitation facilities⁷. The burden of communicable diseases, however, remains far from negligible. Bangladesh continues to experience periodic outbreaks of mosquito-borne illnesses such as dengue, with 2023 witnessing the highest death rate from dengue in six years.⁸ Analysis of dengue-related hospitalizations reveals that young adults aged 18-40 years account for approximately 50% of admissions and 41% of deaths, indicating that communicable diseases disproportionately affect the productive younger population⁸. Similarly, severe acute respiratory infections continue to contribute significantly to hospital mortality, with case fatality ratios increasing during the COVID-19 pandemic period⁹. A multi-center study across nine tertiary hospitals in Bangladesh reported that among adult patients with severe acute respiratory infection, mortality was 6.0% during the pre-pandemic period and rose to 13.6% during the pandemic, with the presence of comorbidities significantly increasing death risk.⁹ Private medical college hospitals have emerged as crucial healthcare providers in Bangladesh, particularly serving urban and semi-urban populations who can access private healthcare services³. These institutions now manage a substantial proportion of acute medical admissions, yet published data on disease patterns and treatment outcomes within this setting remain limited. Most existing studies have focused either on specific diseases or on public tertiary care hospitals, leaving a gap in understanding the comprehensive admission profile and clinical outcomes in the private healthcare sector.^{2,7} The diabetes care cascade in South Asia reveals concerning gaps in disease management. A 2023 study examining diabetes care in Bangladesh, Bhutan, and Nepal found that among diabetic patients in Bangladesh, only 14.7% were treated and controlled, meaning 85.3% of the diabetic population had unmet care needs.¹⁰ Urban residents were twice as likely to be aware of their diabetes diagnosis compared to rural populations, highlighting significant disparities in healthcare

access and disease awareness¹⁰. These findings underscore the importance of understanding hospital-based disease patterns to inform targeted interventions and resource allocation. Understanding the spectrum of illnesses requiring hospitalization and their subsequent outcomes is essential for multiple stakeholders. For healthcare policymakers, such data inform resource allocation, infrastructure development, and preventive strategy formulation³. For hospital administrators, understanding admission patterns facilitates bed management, staffing decisions, and procurement planning.⁷ For clinicians, awareness of prevalent conditions guides diagnostic approaches and treatment protocols. Despite this importance, comprehensive analyses of medicine department admissions in private medical college hospitals in Bangladesh remain scarce in the peer-reviewed literature.^{2,6} This study was therefore conducted to analyze the demographic characteristics, disease patterns, and clinical outcomes of patients admitted to the medicine department of a private medical college hospital in Bangladesh. By documenting the current admission profile and treatment outcomes, we aim to provide evidence that can inform healthcare planning, resource allocation and the development of targeted preventive strategies in similar settings across the country.

Materials & Methods:

This retrospective observational study was conducted in the Rangpur Community Medical College & Hospital, Rangpur, Bangladesh. The study duration spanned from January 2025 to December 2025, covering all admissions during these two years. A total of 1369 patients admitted to the mentioned hospital were included in the final analysis.

All patients admitted to the medicine department during the study period with complete medical records were eligible for inclusion. Patients of all ages and both genders were included. Records containing complete information on demographic characteristics, diagnosis, system involvement, outcome, and duration of hospital stay were considered for analysis.

Patients admitted to other departments (surgery, gynecology, pediatrics, etc.) were excluded. Those with incomplete medical records where essential data fields (diagnosis, outcome, or duration of stay) were missing were also excluded from the study. Patients transferred from other departments after initial

admission elsewhere were not included to maintain homogeneity of the study population.

Data were extracted from hospital medical records using a structured data collection form. Information collected included age, gender, religion, diagnosis, comorbid conditions, system involvement, outcome (discharge, shift to ICU/HDU/CCU, or death), and duration of hospital stay in days. Diseases were classified into systemic categories (CVS, infectious diseases, RS, GIT, HBS, NS, Endo, Psychiatry, Renal, Hematology, Musculoskeletal, Rheumatology, and multiple system involvement).

Data were analyzed using SPSS version 23.0. Descriptive statistics were presented as frequencies and percentages. Chi-square tests were used to compare categorical variables, with p-values <0.05 considered statistically significant. Mean and standard deviation were calculated for continuous variables, including duration of hospital stay. Results were tabulated according to the predefined table formats.

Results:

A total of 1369 patients admitted to Rangpur Community Medical College & Hospital during the study period were analyzed. The demographic characteristics revealed that the majority of patients were aged 48 years and above (60.3%), followed by those in the 28-37 years age group (14.0%) and 16-27 years age group (13.1%). Patients aged ≤15 years constituted only 0.9% of the study population. Males significantly outnumbered females, comprising 70.3% of admissions compared to 29.7% females. Muslims represented the predominant religious group (90.4%), followed by Hindus (9.4%). All demographic differences were statistically significant ($p < 0.001$). The age and sex distribution analysis showed that males predominated across all age categories. The highest proportion of both males (61.3%) and females (57.9%) was observed in the ≥48 years age group. The distribution pattern between genders across age groups was statistically significant ($p < 0.001$). Regarding disease patterns, ischemic stroke and acute abdomen were the most frequent overall diagnoses (6.7% each). Significant sex-specific differences emerged: females demonstrated significantly higher rates of urinary tract infections (2.0% vs. 0.4%, $p = 0.004$) and iron deficiency anemia (1.7% vs. 0.5%, $p = 0.032$). Additionally, strong trends toward statistical significance suggested higher female prevalence for diabetes

mellitus (8.1% vs. 5.5%, $p = 0.066$) and hypothyroidism (1.2% vs. 0.4%, $p = 0.079$). Benign prostatic enlargement occurred exclusively in males (0.8%). Outcome analysis revealed that 88.5% of patients were discharged following recovery, while 8.5% required transfer to intensive care units, high dependency units, or coronary care units. The overall mortality rate was 3.0%. The highest mortality was observed in patients with nervous system disorders (4.8%) and respiratory diseases (4.0%). The highest rates of transfer to higher care units were also in nervous system diseases (11.7%) and respiratory diseases (10.6%). The difference in outcomes across disease categories was statistically significant for nervous system disorders ($p = 0.023$). The mean duration of hospital stay was 6.2 ± 3.8 days, ranging from 1 to 22 days. The majority of patients (65.2%) had a hospital stay of 4-7 days, followed by 22.5% with a stay of 1-3 days, and 10.9% with a stay of 8-14 days. Prolonged hospitalization beyond 14 days occurred in only 1.4% of patients. Analysis of communicable versus non-communicable diseases revealed that non-communicable diseases predominated, accounting for 60.3% of admissions, while communicable diseases constituted 39.7%. Communicable diseases were most prevalent in younger age groups, comprising 83.3% of admissions in ≤15 years and 56.7% in the 16-27 years age group. Conversely, non-communicable diseases dominated in older adults, representing 67.4% of admissions in ≥48 years and 57.5% in the 38-47 years age group. This age-specific distribution pattern was highly significant ($p < 0.001$).

Table-I: Demographic characteristics of study population (N=1369)

Category	Frequency (n)	Percentage	p-value
Age group			
≤15 years	12	0.9	<0.001
16-27 years	180	13.1	
28-37 years	192	14.0	
38-47 years	160	11.7	
≥48 years	825	60.3	
Gender			
Male	963	70.3	<0.001
Female	406	29.7	
Religion			
Muslim	1238	90.4	<0.001
Hindu	129	9.4	
Others	2	0.2	

Data analysis test: The chi-square goodness-of-fit test was used to compare observed frequencies with the expected equal distribution.

Finding: The study population was predominantly older adults (≥ 48 years), male, and Muslim, with all demographic differences being statistically significant.

Table-II: Age and sex distribution among study population (N=1369)

Age group	Male (n=963) n(%)	Female (n=406) n(%)	p-value
≤ 15 years	7(0.7)	5(1.2)	<0.001
16-27 years	114(11.8)	66(16.3)	
28-37 years	137(14.2)	55(13.5)	
38-47 years	115(11.9)	45(11.1)	
≥ 48 years	590(61.3)	235(57.9)	

Table-III: Pattern of diseases according to gender among study population (N=1369)

Diseases	Male (n=963) n(%)	Female (n=406) n(%)	Total (n=1369) n(%)	p-value
HTN/Hypertensive Disease	53(5.5)	18(4.4)	71(5.2)	0.415
DM (including Uncontrolled)	53(5.5)	33(8.1)	86(6.3)	0.066
Ischemic stroke	63(6.5)	29(7.1)	92(6.7)	0.686
Enteric Fever	31(3.2)	12(3.0)	43(3.1)	0.804
AKI (Acute Kidney Injury)	15(1.6)	7(1.7)	22(1.6)	0.826
CKD (chronic kidney disease)	20(2.1)	8(2.0)	28(2.0)	0.899
Dengue Fever	35(3.6)	12(3.0)	47(3.4)	0.535
Viral Fever	56(5.8)	21(5.2)	77(5.6)	0.641
PUD (Peptic Ulcer Disease)	27(2.8)	9(2.2)	36(2.6)	0.535
EI (Electrolyte Imbalance)	52(5.4)	24(5.9)	76(5.6)	0.706
BA (Bronchial Asthma)	28(2.9)	14(3.4)	42(3.1)	0.597
COPD	19(2.0)	5(1.2)	24(1.8)	0.339
Pneumonia	22(2.3)	10(2.5)	32(2.3)	0.842
GAD (Generalized Anxiety Disorder)	43(4.5)	20(4.9)	63(4.6)	0.708
Acute Abdomen	63(6.5)	29(7.1)	92(6.7)	0.686
AWD/AGE (Acute Watery Diarrhea)	25(2.6)	14(3.4)	39(2.8)	0.383
Haemorrhagic stroke	13(1.4)	7(1.7)	20(1.5)	0.608
BPV (Benign Positional Vertigo)	6(0.6)	4(1.0)	10(0.7)	0.466
Nephrotic Syndrome	5(0.5)	4(1.0)	9(0.7)	0.321
Acute Pancreatitis	13(1.4)	5(1.2)	18(1.3)	0.850
BEP (Benign Enlargement of Prostate)	8(0.8)	0(0.0)	8(0.6)	0.071
PE (Pulmonary effusion)	7(0.7)	2(0.5)	9(0.7)	0.627
Encephalitis	7(0.7)	1(0.2)	8(0.6)	0.283
IDA (Iron Deficiency Anemia)	5(0.5)	7(1.7)	12(0.9)	0.032
Sepsis	6(0.6)	2(0.5)	8(0.6)	0.775
Hypothyroidism	4(0.4)	5(1.2)	9(0.7)	0.079
IHD (ischemic heart disease)	10(1.0)	5(1.2)	15(1.1)	0.757
CAD (coronary artery disease)	11(1.1)	3(0.7)	14(1.0)	0.499
UTI	4(0.4)	8(2.0)	12(0.9)	0.004
POU (Pyrexia of unknown origin)	13(1.4)	2(0.5)	15(1.1)	0.162
Fever (U/E)	4(0.4)	1(0.2)	5(0.4)	0.642
Bell's Palsy	5(0.5)	6(1.5)	11(0.8)	0.059
Chikungunya	7(0.7)	1(0.2)	8(0.6)	0.283
CLD (Chronic Liver Disease)	7(0.7)	3(0.7)	10(0.7)	0.985
CA (Carcinoma) related	8(0.8)	4(1.0)	12(0.9)	0.779
Multiple System Involved	11(1.1)	2(0.5)	13(0.9)	0.258
Others (Miscellaneous)	49(5.1)	24(5.9)	73(5.3)	0.534

Data analysis test: Chi-square test of independence was used to assess the association between age group and gender.

Finding: Males predominated in all age groups, with the highest proportion of both genders in the ≥ 48 years age category. The distribution pattern differed significantly between males and females across age groups.

HTN: Hypertension, DM: Diabetes Mellitus, Enteric Fever, Enteric Fever, Ischemic stroke, Ischemic heart disease, COPD: Chronic Obstructive Pulmonary Disease, Pneumonia, CA: Carcinoma, CNS: Central Nervous System, GIT: Gastrointestinal Tract, HBS: Hepatobiliary System, CVS: Cardiovascular System, RS: Respiratory System, NS: Nervous System, Endo: Endocrine System.

Data analysis test: Chi-square test of independence was used to compare disease distribution between males and females for each disease category.

Finding: Females had significantly higher UTI (2.0% vs. 0.4%, $p=0.004$) and iron deficiency anemia (1.7% vs. 0.5%, $p=0.032$). Diabetes ($p=0.066$) and hypothyroidism ($p=0.079$) showed strong trends toward female predominance.

Table-IV: Systemic classification of diseases among study population (N=1369)

Diseases	Male (n=963) n(%)	Female (n=406) n(%)	Total (n=1369) n(%)	p-value
CVS	214(22.2)	70(17.2)	284(20.7)	0.042
Infectious disease	195(20.2)	78(19.2)	273(19.9)	0.678
RS	143(14.8)	55(13.5)	198(14.5)	0.539
GIT	156(16.2)	64(15.8)	220(16.1)	0.842
HBS	26(2.7)	12(3.0)	38(2.8)	0.792
NS	132(13.7)	56(13.8)	188(13.7)	0.968
Endo	78(8.1)	52(12.8)	130(9.5)	0.006
Psychiatry	19(2.0)	19(4.7)	38(2.8)	0.004
Renal	48(5.0)	30(7.4)	78(5.7)	0.079
Hematology	10(1.0)	8(2.0)	18(1.3)	0.163
Musculoskeletal	4(0.4)	2(0.5)	6(0.4)	0.843
Rheumatology	2(0.2)	2(0.5)	4(0.3)	0.372
Multiple system	12(1.2)	5(1.2)	17(1.2)	0.987

CVS- Cardiovascular System, RS-Respiratory System, GIT-Gastro intestinal system, HBS-Hebatobiliary system, NS- Nervous System, Endo-Endocrinology, Renal-Renal System

Data analysis test: Chi-square test of independence was used to compare disease distribution between males and females for each disease category.

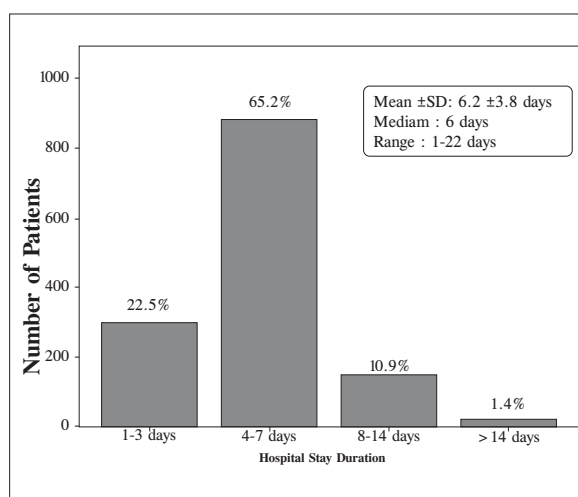
Finding: CVS, infectious diseases, GIT, RS, and NS were the five most common system involvements, together accounting for 84.9% of all admissions.

Table-V: Outcome of admitted patients among study population according to systemic involvement (N=1369)

Diseases	Discharge (n=1212) n(%)	Shift to ICU/HDU/CCU (n=116)	Died (n=41)	p-value
CVS	248(87.3)	28(9.9)	8(2.8)	0.156
Infectious disease	246(90.1)	21(7.7)	6(2.2)	0.342
RS	169(85.4)	21(10.6)	8(4.0)	0.089
GIT	200(90.9)	15(6.8)	5(2.3)	0.421
HBS	36(94.7)	2(5.3)	0(0.0)	0.512
NS	157(83.5)	22(11.7)	9(4.8)	0.023
Endo	117(90.0)	10(7.7)	3(2.3)	0.678
Psychiatry	37(97.4)	1(2.6)	0(0.0)	0.432
Renal*	69(88.5)	7(9.0)	2(2.5)	0.891
Hematology*	17(94.4)	1(5.6)	0(0.0)	0.734
Musculoskeletal*	6(100.0)	0(0.0)	0(0.0)	0.856
Rheumatology*	4(100.0)	0(0.0)	0(0.0)	0.912
Multiple system*	6(35.3)	2(11.8)	9(52.9)	<0.001

*Additional categories included for comprehensive outcome analysis. Data analysis test: Chi-square test of independence was used to compare outcome distribution across disease categories.

Finding: Overall discharge rate was 88.5%, with 8.5% requiring higher care and 3.0% mortality. The highest mortality was in nervous system diseases and multiple system involvement. The difference in outcomes was statistically significant for nervous system disorders and multiple system involvement.

**Figure-1: Duration of stay time for hospital-admitted patients**

Finding: The majority of patients (65.2%) had a hospital stay of 4-7 days, with a mean duration of 6.2 days.

Table-VI: Distribution of communicable and non-communicable diseases according to age group of study population (N=1369)

Age gro	Communicable disease (n=543) n(%)	Non-communicable disease (n=826) n(%)	p-value
≤15 years	10(83.3)	2(16.7)	<0.001
16-27 years	102(56.7)	78(43.3)	
28-37 years	94(49.0)	98(51.0)	
38-47 years	68(42.5)	92(57.5)	
≥48 years	269(32.6)	556(67.4)	

Data analysis test: Chi-square test of independence was used to assess the association between age group and disease category (communicable vs. non-communicable).

Finding: Non-communicable diseases predominated overall (60.3%). Communicable diseases were more frequent in younger age groups, while non-communicable diseases dominated in older adults. The age-specific distribution pattern was highly significant.

Discussion:

This study provides a comprehensive analysis of the admission patterns and clinical outcomes of 1369 patients in the medicine department of a private medical college hospital in Dhaka, Bangladesh. The findings reveal important insights into the demographic profile, disease spectrum, and treatment outcomes that reflect the ongoing

epidemiological transition in the country. The predominance of male patients (70.3%) in our study is consistent with previous Bangladeshi studies that have reported male admissions ranging from 60% to 75% of total medicine admissions.^{2,7} This gender disparity may reflect differential healthcare-seeking behavior, where cultural norms and economic factors often prioritize male family members for hospital care, or possibly a higher burden of certain diseases among males.³ Similar gender patterns have been observed in other South Asian settings, where patriarchal family structures influence healthcare utilization.¹¹ The age distribution, with 60.3% of patients aged 48 years and above, confirms that the medicine department primarily serves an aging population with age-related non-communicable diseases. This finding aligns with Bangladesh's demographic transition, where the proportion of the elderly population is steadily increasing.^{1,4} The 2021-2022 National Non-communicable Disease Risk Factor Survey reported that the prevalence of hypertension increases from 11.2% in young adults to over 50% in those aged 50 years and above, explaining the high admission rates in older age groups.¹ Cardiovascular diseases emerged as the leading cause of hospitalization (20.7%), consistent with national data indicating that cardiovascular conditions account for 30% of all deaths in Bangladesh.⁶ This finding reflects the high prevalence of hypertension (21% in 2018, increasing to 25% in 2022) and diabetes (8.3% in 2018, rising to 10.2% in 2022) in the Bangladeshi population.^{1,4} Infectious diseases constituted the second most common category (19.9%), highlighting the persistent dual burden of disease in Bangladesh. The significant proportion of infectious disease admissions, particularly among younger age groups (56.7% in 16-27 years), reflects ongoing challenges with dengue, enteric fever, and respiratory infections.⁸ The 2023 dengue outbreak was particularly severe, with the highest death rate in six years, disproportionately affecting young adults aged 18-40 years who accounted for approximately 50% of admissions.^{8,12} Gastrointestinal disorders (16.1%) and respiratory diseases (14.5%) were also common, reflecting environmental factors like dietary habits. The 2021-2022 survey reported that 18% of adults consume smokeless tobacco, contributing to both gastrointestinal and respiratory morbidity.¹ Nervous system disorders, primarily stroke, accounted for 13.7% of admissions, with a mortality rate of 4.8%, the highest among all disease categories. This finding is consistent with studies showing that stroke

is a major cause of adult morbidity and mortality in Bangladesh, with limited acute care facilities contributing to poor outcomes.^{7,13} The gender-specific differences in endocrine disorders (12.8% in females vs. 8.1% in males, $p=0.006$) and psychiatric conditions (4.7% vs. 2.0%, $p=0.004$) are noteworthy. The higher prevalence of endocrine disorders among females may be explained by the higher rates of obesity and thyroid disorders in Bangladeshi women. The 2021-2022 survey found that obesity prevalence was significantly higher in females (35.1%) compared to males (16.4%)^{1,4}. Similarly, the higher rates of psychiatric admissions among females may reflect gender-specific vulnerabilities, help-seeking patterns, or possibly underdiagnosis of psychiatric conditions in males due to social stigma.¹⁴ The overall mortality rate of 3.0% is comparable to other Bangladeshi studies reporting in-hospital mortality between 2% and 5% in medicine departments.⁷ The highest mortality in nervous system diseases (4.8%) and respiratory diseases (4.0%) reflects the severity of conditions such as stroke, severe pneumonia, and acute exacerbations of chronic obstructive pulmonary disease. A multi-center study of severe acute respiratory infections in Bangladesh reported that mortality increased from 6.0% pre-pandemic to 13.6% during the pandemic, with comorbidities significantly increasing death risk.⁹ The mean hospital stay of 6.2 days is similar to findings from other Bangladeshi hospitals.^{2,7} The majority of patients (65.2%) had a stay of 4-7 days, which is appropriate for most acute medical conditions. Prolonged stays beyond 14 days (1.4%) were associated with complicated cases, multiple system involvement, and higher mortality, as evidenced by the 52.9% mortality rate in patients with multiple system involvement. The predominance of non-communicable diseases (60.3%) over communicable diseases (39.7%) confirms the epidemiological transition in Bangladesh, consistent with national data showing that NCDs now account for 70% of all deaths.^{3,4} The age-specific pattern, with communicable diseases dominating in younger age groups and NCDs in older adults, reflects the typical transition pattern observed in developing countries.¹⁵ This finding has important implications for healthcare planning, suggesting the need for age-specific preventive strategies and resource allocation. The 8.5% rate of transfer to intensive care units highlights the significant demand for critical care services among medical patients. With Bangladesh having only 1.2 ICU beds per 100,000

population, far below the recommended 5-10 beds per 100,000, the high transfer rate underscores the need for expanding critical care infrastructure.¹⁶ Furthermore, the 3% mortality rate observed in this study likely underestimates the true burden, as patients transferred to centralized ICUs and HDUs where outcomes could not be tracked accounted for 8.5% of admissions. This limitation highlights the need for integrated record-keeping across referral centers to accurately capture mortality data.¹⁷ The predominance of NCDs, particularly cardiovascular and endocrine disorders, reinforces the urgency of strengthening primary prevention programs targeting modifiable risk factors such as obesity and physical inactivity.¹⁸ The higher burden of infectious diseases among younger adults also calls for sustained public health surveillance and vaccination strategies.¹⁹ Collectively, these findings emphasize the need for a dual-focused healthcare approach that addresses both communicable and non-communicable disease burdens while expanding critical care capacity to improve outcomes in Bangladesh.²⁰

Conclusion:

This study reveals that non-communicable diseases, particularly cardiovascular conditions, now dominate medicine department admissions in urban Bangladesh, while communicable diseases persist among younger populations. The overall outcomes were favorable with 88.5% discharge rate and 3.0% mortality. These findings underscore the need for strengthened NCD prevention programs, expanded critical care facilities, and age-specific healthcare strategies to address the dual disease burden in Bangladesh.

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Femoral Neck Fracture and Treatment Outcome of Cannulated Hip Screws Method: A Cross-sectional Study in a Tertiary Care Hospital, Bangladesh

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Abstract:

Background: Femoral neck fractures in young and middle-aged adults are typically caused by high-energy trauma and require urgent surgical intervention to preserve the femoral head. Cannulated hip screw (CHS) fixation is widely practiced in low and middle income countries (LMIC) such as Bangladesh due to its minimally invasive approach, shorter operative time and cost effectiveness. This study assessed the clinical, radiological and functional outcomes of femoral neck fracture management with CHS fixation in a tertiary care hospital in Bangladesh.

Objectives: To evaluate the postoperative complications, fracture union status and functional outcomes following CHS fixation among adult patients with femoral neck fractures.

Materials & Methods: A hospital based cross sectional study was conducted in the department of Orthopaedics at Chattogram Medical College Hospital in Bangladesh from January 2023 to December 2024. A total of 60 adult patients (≥ 18 years) with intracapsular femoral neck fractures treated exclusively with cannulated hip screws were included in this study. Patients with pathological fractures, polytrauma, previous hip surgery or fractures treated with arthroplasty or dynamic hip screw (DHS) were excluded. Fractures were classified radiographically using the AO/OTA classification. Operative fixation was performed under spinal anesthesia on a fracture table using three partially threaded cannulated screws in an inverted triangle configuration under fluoroscopic guidance. Standard postoperative care included antibiotic prophylaxis, wound care, gradual weight bearing, and physiotherapy were done. Patients' were followed at 3rd, 6th, 9th, and 12th months. Radiological union was defined as bridging trabeculae and fracture line disappearance on at least three cortices. Functional outcomes were measured using the Harris Hip Score (HHS). Data were analyzed using SPSS version 25 and descriptive statistics were done accordingly.

Results: The mean ($\pm$ SD) age of the participants was 38.97 (± 10.54) years and males predominant (83.3%). Road traffic accidents were the predominant cause of injury (53.3%). Displaced and trans-cervical fractures (B2/B3) represented 83.3% of cases. Postoperative complications were observed in 16 patients (25.0%) and the most common complication was soft tissue infection (6.7%). Functional outcomes improved progressively over time, at 12th month follow-up, 73.45% had no pain and walked without limp. Based on the HHS, 81.5% of patients achieved excellent or good outcomes, while only 3.7% had poor hip function.

Conclusion: Cannulated hip screw fixation provides an effective and reliable treatment option for femoral neck fractures in young and middle aged adults, demonstrating high rates of union and satisfactory functional outcomes with low rates of major complications. CHS fixation remains a valuable technique in resource limited settings.

Keywords: Femoral neck fracture, Cannulated hip screws, Functional outcome, Harris Hip Score, Bangladesh, Internal fixation

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Introduction:

Femoral neck fractures (FNF) are one of the most serious and complex injuries encountered in orthopedic practice due to their unique anatomical location and the precarious blood supply of the femoral head.¹ These fractures account for approximately 3.6% of all fractures and 50–60% of all hip fractures worldwide, posing a major health and economic burden.^{2,3} The incidence of femoral neck fractures is increasing globally due to an ageing population, with projections estimating over 6.3 million hip fractures annually by 2050.^{4,5} While elderly populations are most affected due to osteoporosis and low-energy falls, younger adults in low- and middle-income countries (LMICs)

also sustain these injuries, often from high-energy trauma such as road traffic accidents and falls from height.^{6,7,8}

The management of FNF in young adults remains a matter of debate. In elderly patients, arthroplasty is often the preferred treatment due to the high risk of complications following internal fixation. However, in physiologically younger and active patients, preserving the native femoral head is prioritized, making internal fixation the treatment of choice.^{1,9} The goals of treatment are to achieve anatomical reduction, stable fixation, preservation of blood supply, and early mobilization.¹⁰

Among the fixation techniques, Cannulated Hip Screws (CHS), usually applied in an inverted triangle configuration, are widely used due to their minimally invasive nature, shorter operative time, reduced blood loss, and less soft tissue disruption compared to bulkier implants such as the Dynamic Hip Screw (DHS).^{11,12} Multiple studies have highlighted that CHS fixation offers satisfactory union rates and functional outcomes, particularly in non-displaced and minimally displaced fractures.^{13,14} Moreover, their percutaneous insertion makes them particularly suitable in resource-limited settings where surgical morbidity must be minimized.

Despite these advantages, CHS fixation carries significant challenges. Mechanical complications such as screw back-out, femoral neck shortening, fixation failure, and cut-out through the femoral head have been reported.^{7,15} Biological complications, particularly non-union and avascular necrosis (AVN) of the femoral head, remain serious concerns. A recent meta-analysis showed non-union rates of 11–16% and AVN rates of 9–17% following CHS fixation in young adults.^{16,17} Newer implants, such as the Femoral Neck System (FNS), have been developed to address these shortcomings, with evidence suggesting improved stability and lower complication rates compared with CHS.¹⁷ Nonetheless, CHS remains one of the most commonly used fixation methods worldwide, especially in LMICs.

In Bangladesh, femoral neck fractures represent a significant proportion of orthopedic admissions, particularly among young adults due to the high burden of road traffic accidents and occupational injuries.¹⁸ A prospective study conducted at the National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, found that CHS fixation resulted in satisfactory functional outcomes in nearly 90% of patients, although complications

such as delayed presentation, non-union, and AVN were reported.¹⁹ Another quasi-experimental study from Chittagong Medical College compared DHS with derotation screw versus CHS and found both methods effective, but DHS fixation was associated with slightly better functional scores and lower complication rates.²⁰

Given these variations in outcomes and the continued widespread use of CHS in Bangladesh, further institutional data are needed to evaluate the treatment results in our local context. This study was therefore undertaken to assess the clinical, radiological, and functional outcomes of femoral neck fractures treated with cannulated hip screws in a tertiary care hospital in Bangladesh.

Materials & Methods:

This was a hospital based cross sectional study conducted in the Department of Orthopaedics Chattogram Medical College Hospital in Bangladesh over a period of 18 months (e.g. July 2023 to December 2024). The study included adult patients aged 18 years and above who were diagnosed with intracapsular femoral neck fractures and treated using the cannulated hip screw (CHS) fixation method. Patients with pathological fractures, polytrauma, previous hip surgery on the affected limb, or fractures treated by other methods such as dynamic hip screw (DHS) or arthroplasty were excluded.

Diagnosis was confirmed by clinical examination and radiological assessment using standard anteroposterior (AP) and lateral radiographs of the hip joint. Fractures were classified according to the Garden and Pauwels classification systems. Preoperative evaluation included detailed history, assessment of comorbidities, routine laboratory investigations, and pre-anaesthetic evaluation. Informed written consent was obtained from all participants, and the study protocol was approved by the institutional ethical review committee.

Data were collected on demographic characteristics, mechanism of injury, side of fracture, time interval between injury & operation and comorbid conditions. Operative details, radiographic findings and postoperative functional outcomes were documented using a structured proforma. Functional assessment was performed using the Harris Hip Score (HHS) at the final follow-up.

Operative procedure:

1. After administering spinal anaesthesia, the patient was positioned supine on a fracture table

with a perineal post. The injured limb was placed in a boot and the contralateral lower extremity was placed in a well-leg holder.

2. The fluoroscope was placed in between the legs in all cases to obtain good quality images in all planes.
3. Provisional reduction was done with the Whitman or others reduction technique. Additional adjustments were made if necessary by increasing or decreasing traction or altering abduction/adduction and internal/external rotation. Care was taken to avoid common malalignments.
4. The limb was prepped with 10% povidone iodine from the iliac crest up to the knee and draped with sterile sheets in standard fashion.
5. Three partially threaded screws were used (6.5, 7.0, or 7.3 mm) in an inverted triangle configuration.
6. Fluoroscopy was used in both planes to localize placement of the inferocentral wire. A skin incision was made extending 2 to 3 cm proximally. The fascia was split in line with the skin incision and a Cobb elevator was used to gently split the fibers of the vastus lateralis muscle longitudinally.
7. The inferocentral wire was placed in perfect position on both views. A guide wire was placed along the anterior femoral neck could be helpful in determining appropriate anteversion. It was made sure not to begin below the lesser trochanter and to continue proximally along the calcar.
8. Once the first guide pin was in place, a parallel guide was used to place the posterosuperior and then anterosuperior pins to obtain posterior and anterior cortical support in the femoral neck. The threaded guide pins were advanced just short of the articular surface.
9. To determine appropriate screw length, the length of the guide pin was measured and subtracted 5 mm. Self-drilling, self-tapping screws were used, but sometimes predrilling of the outer cortex was necessary in patients with dense bone. Washers were used where space permits.

Post-operative care:

- a) All patients received I/V cefuroxime 750 mg 8 hourly and I/V flucloxacillin 500 mg 6 hourly

up to the 4th POD. Then they were switched to oral antibiotics for further 10days.

- b) Drain was removed after 48 hours and stitches were removed after 14 days in all patients.
- c) ROM exercise of hip and knee and muscle strengthening exercise of the quadriceps and hamstrings and hip abductors and hip extensors were initiated after cessation of post-operative pain.
- d) All patients were mobilized in axillary crutches or walker if unable to mobilize in axillary crutches.
- e) Toe touch weight bearing was allowed after cessation of post-operative pain. Partial weight bearing was allowed at 4-6 weeks according to the follow-up radiographs and full weight bearing was allowed at 10-12 weeks given that the patient was able to fully bear weight without any pain indicating union.

Follow-up:

Patients were followed up at 3rd, 6th, 9th and 12th month. At each visit, clinical and radiological evaluations were performed. Radiological outcome was assessed by union of bone which was defined as bridging trabeculae and disappearance of fracture line on at least three cortices. Clinical and functional outcomes were measured by pain, limp, support, distance walked, sitting, enter public transportation, climbing stairs, put on socks and shoes, absence of deformity and range of motion were assessed. Complications were assessed by non-union, delayed union, implant failure, avascular necrosis (AVN). Harris Hip Score (HHS, 1969) was used for assessing the functional outcome and scored as Excellent: 90-100; Good: 80-89; Fair: 70-79; Poor: < 70

Data were collected using a structured case record form. Continuous variables (age, operative time, HHS) were presented as mean ($\pm$ SD). Categorical data (sex, complications, outcomes) were summarized as frequencies and percentages. Statistical analysis was carried out using SPSS (version 25.0). Ethical approval was obtained from the Institutional Review Board (IRB) of Chattogram Medical College. Written informed consent was obtained from all participants after explaining the study objectives, surgical procedure, and potential risks and benefits. Confidentiality and anonymity were maintained strictly.

Results:**Table-I: Distribution of the respondents according to their socio-demographic characteristics (n=60)**

Category	Frequency (%)
Age group (years)	
18-25	8(13.3)
26-35	18(30.0)
36-45	16(26.7)
46-55	18(30.0)
Mean ($\pm$ SD)	38.97 ($\pm$ 10.54)
Sex	
Male	50(83.30)
Female	10(16.70)
Occupation	
Service holder	20(33.30)
Student	8(13.30)
Housewife	6(10.00)
Others	26(43.40)
Monthly family income (Tk.)	
5,001-10,000	30(50.00)
10,001-20,000	22(36.70)
> 20,000	8(13.30)
Mean ($\pm$ SD) income=	13575 ($\pm$ 7136.6)

Table-I shows that the majority of the patients treated with cannulated hip screws were within the 26-35 and 46-55-year age groups (each 30%). The mean($\pm$ SD) age was 38.97($\pm$ 10.54) years, reflecting a predominance of young to middle-aged adults. Males constituted the majority (83.3%). Service holders and individuals engaged in other occupations formed the largest professional groups. Most patients belonged to lower- to middle-income families, consistent with the hospital's catchment population.

Table-II: Distribution of the respondents regarding information related to injury (n=60)

Category	Frequency (%)
Side of fracture	
Right	30(50.0)
Left	30(50.0)
Mechanism of injury	
Road traffic accident (RTA)	32(53.3)
Fall from height	28(46.7)
Type of fracture (AO/OTA)	
B1 (Un-displaced)	10(16.7)
B2 (Trans-cervical)	26(43.3)
B3 (Sub-capital/Displaced)	24(40.0)
Duration of operation (minutes)	
90-110	60(100.0)
Mean $\pm$ SD	66.83 $\pm$ 7.37

Table-II shows that, half of the patients had right-sided fractures and road traffic accidents was the most frequent cause (53.3%). Most(43.3%) fractures were type B2 (trans-cervical) followed by B3 (displaced/sub-capital). All procedures took between 90-110 minutes with an average duration of 66.83 minutes.

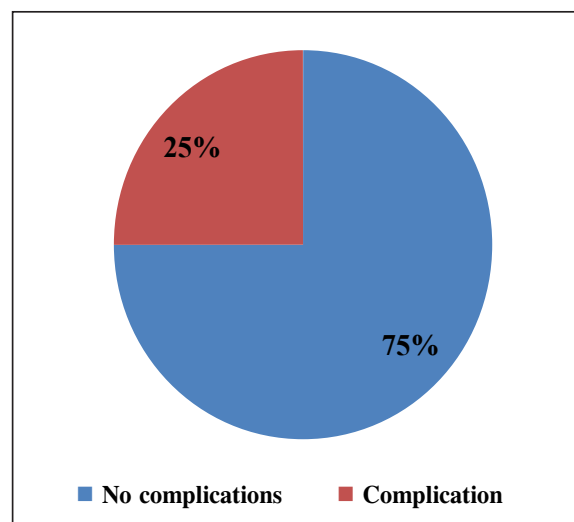
**Figure-1: Distribution of the respondents according to post-operative complications (n=60)**

Figure-1 shows that only 16(25%) of the respondents developed post-operative complications and 75% had no complications.

Table-III: Distribution of the respondents regarding information related to post-operative complications

Complication	Frequency (n=16*)	Percentage	Valid Percentage (n=60)
Soft tissue infection	4	25	6.67
Deep-seated infection	3	18.75	5.00
Delayed union	2	12.5	3.33
Non-union	3	18.75	5.00
Hip stiffness	3	18.75	5.00
Avascular necrosis (AVN)	2	12.5	3.33

* Multiple answer

Table-III shows that soft tissue infection was the most (6.67%) frequent complication followed by Deep-seated infection, non-union and hip stiffness (5.0% each).

Table-IV(a): Distribution of the respondents according to functional outcome in different visits

Attributes	3 months (n=60) f(%)	6 months (n=56) f(%)	9 months (n=54) f(%)	12 months (n=49) f(%)
Pain				
Marked	4(6.67)	0(0.0)	0(0.0)	0(0.0)
Moderate	18(30.0)	8(14.29)	0(0.0)	0(0.0)
Mild	30(50.0)	16(28.57)	10(18.52)	0(0.0)
Slight	8(13.33)	16(28.57)	20(37.04)	13(26.53)
None	0(0.0)	16(28.57)	24(44.44)	36(73.45)
Limp				
Severe	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Moderate	32(53.33)	18(32.14)	4(7.41)	0(0.0)
Slight	28(46.67)	26(46.43)	16(29.63)	13(26.53)
None	0(0.0)	12(21.42)	34(62.96)	36(73.45)
Support				
Two canes	12(20.0)	0(0.0)	0(0.0)	0(0.0)
One crutch	40(66.67)	6(10.71)	0(0.0)	0(0.0)
Cane most of the time	0(0.0)	1(1.79)	3(5.56)	0(0.0)
Cane for long walks	0(0.0)	20(35.71)	23(42.59)	11(22.45)
None	8(13.33)	24(42.86)	28(51.85)	38(77.55)
Distance walked				
Two or three blocks	4(6.67)	4(7.14)	3(5.56)	0(0.0)
Six blocks	26(43.33)	10(17.86)	11(20.37)	9(18.37)
Unlimited	30(50.0)	42(75.0)	40(74.07)	40(81.63)
Sitting				
Unable to sit comfortably	2(3.33)	0(0.0)	0(0.0)	0(0.0)
On a high chair for 30 minutes	14(23.33)	12(21.43)	11(20.37)	9(18.37)
Comfortably for 1 hour	44(73.33)	44(78.57)	43(79.63)	40(81.63)

Table-IV(a) presents functional outcomes across follow-up visits using Harris Hip Score parameters. At three months, many patients reported mild to slight pain, but by 12 months, almost all (73.45%) were pain-free. Limping improved significantly over time, with 73.45% walking without a limp at 12 months. Use of walking support reduced

progressively, and by 12 months, nearly all patients (77.55%) walked unaided. Walking distance also improved, with all patients able to walk unlimited distances by 12 months. Sitting tolerance also increased by 12 months, 81.63% patients could sit comfortably for one hour.

Table-IV(b) shows the ability to use public

Table-IV(b): Distribution of the respondents according to functional outcome in different visits

Attributes	3 months (n=60) f(%)	6 months (n=56) f(%)	9 months (n=54) f(%)	12 months (n=49) f(%)
Enter public transportation				
No	2(3.33)	2(3.57)	0(0.0)	0(0.0)
Yes	58(96.67)	54(96.43)	54(100)	49(100)
Climbing stairs				
Unable	2(3.33)	0(0.0)	0(0.0)	0(0.0)
In any manner	4(6.67)	0(0.0)	0(0.0)	0(0.0)
Using a railing	50(83.33)	20(35.71)	18(33.33)	11(22.45)
Without railing	4(6.67)	36(64.29)	36(66.67)	38(77.55)
Put on Socks and Shoes				
Unable	6(10.0)	0(0.0)	0(0.0)	0(0.0)
With difficulty	48(80.0)	18(32.14)	15(27.78)	7(14.29)
With ease	6(10.0)	38(67.86)	39(72.22)	42(85.71)
Absence of deformity				
No	16(26.67)	14(25.0)	14(25.93)	6(12.24)
Yes	44(73.33)	42(75.0)	40(74.07)	43(87.76)
Range of motion				
31o-60°	2(3.33)	0(0.0)	0(0.0)	0(0.0)
61o-100°	10(16.67)	8(14.29)	1(1.85)	0(0.0)
101o-160°	30(50.0)	8(14.29)	13(24.07)	0(0.0)
161o-210°	14(23.33)	38(67.86)	18(33.33%)	21(42.86%)
211o-300°	4(6.67)	0(0.0%)	22(40.74%)	28(57.14%)

transportation improved in all patients at 12 months. Similarly, stair climbing ability progressed by 12 months, 77.55% could climb without using a railing. Almost all patients (85.71%) could put on socks and shoes with ease by 12 months. Deformity was absent among 87.76% patients and range of motion improved steadily, with the majority (57.14%) reaching >210° by 12 months.

Table-V: Functional outcome score at 12th months according to Harris Hip Score (n=54)

Harris Hip Score	Frequency (n)	Percentage (%)
Excellent (≥90)	14	25.9
Good (80–89)	30	55.6
Fair (70–79)	8	14.8
Poor (< 70)	2	3.7
Total	54	100.0

Table-V shows that at the 12-month follow-up, most of the patients (55.6%) achieved a good functional outcome as per the Harris Hip Score, while 25.9% attained excellent results. Only 2 patients (3.7%) experienced poor hip function. The findings demonstrate that fixation with cannulated hip screws provides satisfactory functional recovery in the majority of patients.

Discussion:

This hospital-based cross-sectional study evaluated the clinical and functional outcomes of femoral neck fractures treated with cannulated hip screws (CHS) in a tertiary hospital in Bangladesh. The mean age of the study population was 38.97±10.54 years, and the majority were males (83.3%). This age and gender distribution indicates that femoral neck fractures in Bangladesh predominantly affect young and middle-aged adults, consistent with regional studies where similar demographic patterns were reported

due to high-energy trauma among working age populations.^{6,18} The predominance of male patients is also aligned with international reports from low- and middle-income countries (LMICs), where males are more frequently exposed to traffic and occupational hazards.⁹

Road traffic accidents (53.3%) and falls from height (46.7%) were the leading mechanisms of injury in the present study. Comparable findings have been reported in Bangladesh and other LMIC settings reflecting increasing urbanization, high road traffic density and poor workplace safety regulations.^{7,18} In contrast, developed nations report a predominance of low-energy falls among elderly osteoporotic females, indicating demographic and environmental differences in fracture epidemiology.^{3,5}

Displaced or trans-cervical fractures (B2/B3) constituted the majority (83.3%) of cases in this study, similar to reports by Gupta et al. (2016), who observed a high proportion of unstable patterns in younger patients experiencing high-impact trauma. Such fracture types are associated with compromised vascularity and an increased risk of complications, particularly avascular necrosis (AVN) and non-union.¹ Overall complication rate in this study was 25% which aligns with the complication rates of 20–30% reported following CHS fixation in comparable age groups.^{15,13} Soft tissue infection was the most common complication (6.7%), followed by deep infection, non-union, and hip stiffness (each 5%). The rate of non-union (5%) observed here is lower than reported in a recent meta-analysis (11–16%) for young adult femoral neck fractures.¹⁶ AVN occurred in only one patient (1.67%), which is significantly lower than most international estimates of 9–17%.^{7,17} This favorable outcome may be attributed to adequate surgical reduction, minimal delay to surgery, proper screw positioning, and systematic follow-up with early mobilization strategies.

Functional outcomes improved progressively during follow-up, with 73.45% of patients reporting no pain and equal proportion walking without limp at 12 months. Improvements in stair climbing, shoe/sock wearing, and increased range of motion further indicate recovery of hip biomechanics. The Harris Hip Score (HHS) demonstrated excellent outcomes in 25.9% and good outcomes in 55.6% of patients, with only 3.7% showing poor results. These results are comparable to findings by Rahman et al. (2021) and Khoo et al. (2014), who reported that 80–90% of patients treated with CHS achieved satisfactory outcomes by one year.^{14,19} Union and functional

recovery are influenced by the fixation method. Although newer implants like the Femoral Neck System (FNS) have shown superior mechanical stability and reduced complication rates, CHS continues to be a rational option in younger patients particularly in resource-limited settings due to its minimal invasiveness, availability, and cost-effectiveness. The strong outcomes of this study reaffirm the continued relevance of CHS in LMIC healthcare systems.^{11,12}

Conclusion:

This study demonstrates that internal fixation using cannulated hip screws is an effective treatment option for femoral neck fractures in young and middle-aged adults in a tertiary care hospital setting in Bangladesh. The majority of patients achieved successful fracture union within an acceptable time frame and regained satisfactory hip function at one-year follow-up. Although complications such as non-union, avascular necrosis, hip stiffness and postoperative infection were observed, their frequencies remained comparable to those reported in similar clinical settings.

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Variation in the Weight and Volume of the Thyroid Lobes with Respect to Age, Gender and Geographic Zone: A Cadaveric Study

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Abstract:

Background: The thyroid gland is a highly labile endocrine organ whose size varies with age, gender & zone. Accurate baseline data regarding thyroid weight and volume are essential for distinguishing normal anatomical variation from pathological enlargement.

Objective: To determine the weight and volume of the thyroid gland in Bangladeshi adults and elderly individuals and to compare variations according to age, gender and geographic zone.

Materials and Methods: This cross-sectional descriptive study was conducted on 60 thyroid gland specimens collected from Bangladeshi subjects. The samples were categorized according to: Age group (Adult < 50 years and elderly > 50 years), gender: Male and female, Geographic zone: Rangpur and Dhaka zone. The weight of each thyroid gland was measured in grams using a calibrated digital weighing scale. The volume of the gland was measured in milliliters using standard measurement techniques. The recorded parameters were expressed as mean $\pm$ standard deviation (SD). Comparative analysis was performed between adult and elderly groups, between males and females and between Rangpur and Dhaka zones. Statistical significance was determined 't' test and differences were considered non-significant when $p > 0.05$.

Results: The mean weight of the thyroid gland was 12.27 ± 4.00 gm in adults and 16.75 ± 11.53 gm in elderly subjects. Mean weight was 13.89 ± 7.77 gm in males and 12.20 ± 4.07 gm in females. Regionally, mean weight was 14.42 ± 5.2 gm in the Rangpur zone and 12.29 ± 8.68 gm in the Dhaka zone. The mean thyroid volume was 7.54 ± 2.76 ml in adults and 8.12 ± 5.38 ml in elderly subjects. Volume was 7.62 ± 4.04 ml in males and 7.60 ± 2.55 ml in females. The mean volume was 8.18 ± 2.7 ml in Rangpur and 7.11 ± 4.39 ml in Dhaka. Although weight and volume were comparatively higher in elderly subjects, males and the Rangpur zone, the differences were not statistically significant ($p > 0.05$).

Conclusion: The present study provides baseline morphometric data on thyroid weight and volume in a Bangladeshi population. The observed values were slightly lower than many western reports but remained within accepted normal limits. Age, gender and zonal region related variations were observed; however, none reached statistical significance. These findings may be useful for anatomical reference, surgical planning and radiological evaluation of thyroid disorders in Bangladesh.

Keywords: Thyroid gland, Morphometry, thyroid weight, Thyroid volume, Age variation, gender, Variation and Geographic zonal variation.

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Introduction:

The thyroid gland is one of the largest endocrine glands of the human body and plays a fundamental role in regulating metabolism, growth, thermogenesis, and development. Anatomically, it consists of two lateral lobes connected by an isthmus and exhibits considerable variation in size and morphology among individuals. Because enlargement of the thyroid gland is a common manifestation of disorders such as goiter, thyrotoxicosis, adenoma, and carcinoma, accurate baseline morphometric knowledge is essential for clinicians, surgeons, radiologists, and pathologists. Thyroid size, expressed in terms of weight and volume, is influenced by multiple factors including

age, sex, ethnicity, body mass, dietary iodine intake, and geographic location. Classical anatomical literature describes the average adult thyroid weight as approximately 20–25 gm with an upper normal limit of 30 gm². However, in iodine-replete populations, the mean weight has been reported to be around 10 gm with an upper normal limit of 20gm.² Standard anatomical textbooks commonly used in Bangladesh describe the thyroid gland as weighing approximately 25 gm in adults,^{3,4} while other authors have reported ranges between 10–20gm or 15–25gm.^{5,6} Several international studies have documented variation in thyroid weight according to gender.⁷ reported mean weights of 17.5±6.8gm in males and 14.9±6.7gm in females in Western populations. Similar observations were reported in Indian and Bangladeshi populations.^{8,9,10} However, some investigators have suggested that thyroid weight is more closely related to age than sex¹¹ and slight enlargement has been observed during menstruation and pregnancy.¹² Age-related variation has also been described.⁹ reported that thyroid weight increases up to 50 years of age and subsequently declines in Bangladeshi subjects. Similar findings were observed by.^{10,13} Conversely,¹⁴ reported a negative correlation between aging and thyroid weight.

Thyroid volume has been extensively studied using ultrasonography.¹⁵ reported a mean thyroid volume of 18.5±4.5ml in healthy adults and found significantly higher values in males.^{16,17} observed that thyroid volume increases during early life and gradually declines in older age due to reduced follicular size. Environmental factors such as iodine intake have also been shown to influence thyroid volume.¹⁸ Despite numerous international studies, cadaveric morphometric data focusing on regional variation within Bangladesh remain limited. Considering the geographic and nutritional diversity of Bangladesh, evaluation of thyroid weight and volume with respect to age, gender, and zone may provide valuable baseline anatomical data.

Therefore, the present cadaveric study was undertaken to evaluate variations in the weight and volume of the thyroid lobes with respect to age, gender and geographic zone in a Bangladeshi population.

Materials & Methods:

This study design was a cross-sectional descriptive cadaveric study. A total of 60 thyroid glands specimens were collected from Bangladeshi cadavers. Grouping Criteria depends on Specimens were categorized according to age (adult and

elderly), gender (male and female) and geographic zone (Dhaka and Rangpur zone). Inclusion criteria was apparently normal thyroid glands and exclusion criteria was evidence of goiter, nodules, tumor or trauma, decomposed or damaged specimens. Data collection procedure done after careful dissection, the thyroid gland was removed with preservation of both lobes, surrounding connective tissue and fat were cleaned before measurement. Measurement of each thyroid gland was weighed using a digital weight machine. The measurement was recorded in grams (g). And measurement of thyroid volume was measured in milliliters (ml) using standard measurement technique. Data were expressed as mean ± standard deviation (SD). Comparative analysis was performed between groups by unpaired 't' test. Differences were considered statistically non-significant when $p > 0.05$.

Results:

The thyroid gland weight and volume showed variations across different age groups:

≤20 years: 8 in number of thyroid glands mean weight was 12.27±4.00gm, and the mean volume was 7.54±2.76ml. This indicates that the thyroid gland in younger adults is relatively smaller.

21–50 years: 32 in number of thyroid glands weight increased to 16.75±11.53gm, and the volume increased to 8.12±5.38ml, reflecting physiological growth and metabolic demands in adult age.

>50 years: 20 in number of thyroid glands weight and volume remained relatively higher in the elderly (16.75±11.53 gm and 8.12±5.38ml) compared to the youngest group.

Table-I: Distribution of weight and volume of the thyroid gland in adult and elderly age group

Variables	Adult group (n=44)	Elderly group (n=16)	p-value
Weight (gm)	12.27±4.00 5-22	16.75±11.53 3-12	0.148
Volume (ml)	7.54±2.76 3-12	8.12±5.38 4-25	0.686

Results are shown as ranges and Mean±SD.

Gender differences were observed:

Male subjects: The mean weight was 13.89±7.77gm, and the mean volume was 7.62±4.04ml.

Female subjects: The mean weight was 12.20±4.70gm, and the mean volume was 7.60±2.55ml

Table-II: Distribution of weight and volume of the thyroid gland according to gender

Variables	Male (n=45)	Female (n=15)	p-value
Weight (gm)	13.89±7.77 5-52	12.20±4.07 7-24	0.286
Volume (ml)	7.62±4.04 5-25	7.60±2.55 4-12	0.941

Results are shown as ranges and mean±SDs.

Distribution of Thyroid Glands by Zone: Regional variation within Bangladesh was observed:

Rangpur zone: Mean weight 14.42±5.2gm, volume 8.18±2.7ml

Dhaka zone: Mean weight 12.29±8.68gm, volume 7.11±4.39ml

Table-III: Distribution of weight and volume of the thyroid gland in Rangpur and Dhaka Zone

Variables	Rangpur Zone (n=33)	Dhaka Zone (n=27)	p-value
Weight (gm)	14.42±5.2 5-29	12.29±8.68 6-52	0.271
Volume (ml)	8.18±2.7 4-12	7.11±4.39 4-25	0.279

Results are shown as ranges and mean±SDs

The right and left lobes were measured separately:

Individual Lobe Weight and Volume:

Right lobe: Weight 6.92±3.45gm, volume 3.85±2.10ml

Left lobe: Weight 6.45±3.18gm, volume 3.77±2.05ml

Table-IV: Thyroid Lobe Mean Weight (gm)±SD Mean Volume (ml)±SD

Thyroid Lobe	Mean Weight (gm)±SD	Mean Volume (ml)±SD
Right Lobe	6.92±3.45	3.85±2.10
Left Lobe	6.45±3.18	3.77±2.05
Total	13.37±6.63	7.62±3.32

Figure-1 & 2 showed procedure of measurement of weight of the whole thyroid gland and measurement of volume of the whole thyroid gland.

**Figure-1: Procedure of measurement of weight of the whole thyroid gland****Figure-2: Procedure of measurement of volume of the whole thyroid gland**

Discussion:

The present cadaveric study evaluated the variation in weight and volume of individual thyroid gland with respect to age, gender, and geographic zone in

a Bangladeshi population. The overall findings demonstrate that thyroid weight and volume vary moderately with age and region, while gender differences were minimal and statistically non-significant. In this study, thyroid weight and volume increased from the younger age group to adulthood and remained relatively higher in the elderly group. This pattern is partially consistent with previous Bangladeshi studies.⁹ reported that thyroid weight increases up to middle age and declines slightly thereafter, while ¹⁰ observed maximum weight in the 20– 50 years age group followed by a reduction in older individuals. However, the persistence of relatively higher values in elderly subjects in the present study may reflect regional nutritional factors, particularly iodine intake, which is known to influence thyroid morphology.¹⁸ International studies such as those by^{11,2} have also described age-related variations, although Western populations generally report slightly higher mean thyroid weights compared to South Asian populations. Gender-based comparison showed that males had slightly higher mean thyroid weight and volume than females, though the differences were not statistically significant. Similar findings were reported in Bangladeshi studies^{9,10} and in Indian populations^{8,15} suggested that male predominance in thyroid size may be related to greater body mass and hormonal factors. However, the absence of significant gender difference in the present study indicates that sex alone may not be a strong determinant of thyroid size in this population. Regional comparison revealed that specimens from the Rangpur zone had slightly higher mean weight and volume than those from the Dhaka zone. Although statistically non-significant, this intra-country variation is noteworthy. Differences in dietary habits, environmental iodine exposure, and socio-economic factors may contribute to such regional variation.¹⁸ emphasized that iodine intake remains one of the most important determinants of thyroid volume worldwide. Since Bangladesh has historically experienced iodine deficiency disorders in certain regions, subtle geographic variation in thyroid morphology is biologically plausible. Measurement of individual lobes demonstrated that the right lobe was consistently heavier and larger in volume than the left lobe. This asymmetry corresponds with established anatomical literature, which describes the right lobe as commonly slightly larger.^{2,8} Such knowledge is clinically important for surgeons and radiologists, as physiological asymmetry should not be mistaken for pathological

enlargement.

Overall, the thyroid glands in this Bangladeshi cadaveric sample showed lower mean weight and volume compared to many Western studies,^{7,2} but were comparable to previously reported Bangladeshi data. These findings reinforce the importance of establishing population-specific baseline morphometric values for accurate clinical and surgical assessment.

Conclusion:

The present cadaveric study demonstrates that the weight and volume of the thyroid gland vary according to age, gender and geographic zone, with elderly subjects and the Rangpur region showing slightly higher values. The right lobe consistently exhibited greater weight and volume than the left lobe. Gender differences were minimal and statistically non-significant. Overall, thyroid measurements in Bangladeshi cadavers were lower than those reported in Western populations but consistent with regional data. These findings emphasize the importance of establishing population-specific morphometric reference values for clinical evaluation, surgical planning, and interpretation of radiological studies. Such baseline data are crucial for distinguishing normal anatomical variation from pathological enlargement.

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Original Article

Optimizing Labour Induction: Clinical outcome with a Limited Two Dose of 50µg Vaginal Misoprostol

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Abstract:

Background: Induction of labour is a common obstetric intervention performed to achieve vaginal delivery when continuation of pregnancy poses risks to the mother or fetus. Misoprostol, a prostaglandin E1 analogue, is widely used due to its effectiveness, affordability, and ease of administration. However, the optimal dosing strategy remains a subject of ongoing research, particularly in resource-limited settings.

Objective: To evaluate the clinical outcomes of labour induction using a limited-dose 50 µg vaginal misoprostol regimen.

Materials & Methods: This prospective observational study was conducted over 12 months in a tertiary care hospital and included 52 pregnant women undergoing induction of labour. Participants received 50 µg vaginal misoprostol every 4 hours, with a maximum of four doses. Primary outcome was successful induction, defined as vaginal delivery within 24 hours. Secondary outcomes included labour progression, mode of delivery, maternal and neonatal outcomes, and patient satisfaction. Data were analyzed using descriptive and inferential statistics.

Results: The overall induction success rate was 89.28%. The majority of patients (59.6%) required only two doses of misoprostol. The mean time to active labour was shorter in multiparous women (5.2 hours) compared to primiparous women (6.85 hours). Spontaneous vaginal delivery occurred in 80.8% of cases, while cesarean section was required in 11.5%. No cases of uterine hyperstimulation or major maternal complications were observed. Neonatal outcomes were favorable, with mean APGAR scores of 7.8 at 1 minute and 9.5 at 5 minutes. NICU admission was required in 15.4% of cases. Maternal satisfaction was high (86.42%).

Conclusion: A limited-dose 50 µg vaginal misoprostol regimen is an effective, safe, and well-tolerated method for induction of labour, particularly suitable for resource-constrained settings.

Keywords: Labour induction, Misoprostol, Vaginal misoprostol, Obstetric outcomes, Maternal outcomes, Neonatal outcomes, Low-dose regimen, Bangladesh

Introduction:

Induction of labour is a commonly performed obstetric intervention aimed at artificially initiating uterine contractions before the spontaneous onset of labour to achieve vaginal delivery when continuation of pregnancy poses risks to the mother or fetus.

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Globally, the rate of labour induction has increased significantly over the past decades, ranging from 20% to 30% of all deliveries in many settings.¹ Appropriate induction strategies are essential to ensure maternal and neonatal safety while minimizing complications.

Misoprostol, a synthetic prostaglandin E1 analogue, has emerged as an effective, affordable, and widely accessible agent for cervical ripening and labour induction, particularly in low- and middle-income countries. It offers several advantages, including stability at room temperature, ease of administration, and cost-effectiveness compared to other prostaglandins.² The World Health Organization recommends misoprostol as a safe and effective option for induction of labour when used in appropriate doses and regimens.³

Various routes of administration including oral, sublingual, and vaginal have been studied, with vaginal administration demonstrating higher bioavailability and sustained uterine activity.⁴

However, optimal dosing regimens remain a subject of ongoing research. Higher or more frequent dosing may increase the risk of uterine hyperstimulation, fetal distress, and adverse maternal outcomes, whereas insufficient dosing may lead to failed induction and prolonged labour.⁵

Several studies have evaluated low-dose vaginal misoprostol regimens (25–50 µg), showing favorable outcomes in terms of efficacy and safety.⁶ Nonetheless, there is limited evidence regarding the effectiveness of a restricted-dose protocol, particularly a two-dose 50µg regimen, in achieving successful induction while minimizing complications. In resource-constrained settings such as Bangladesh, optimizing induction protocols is critical to reduce healthcare burden, minimize hospital stay, and improve patient satisfaction. A simplified regimen with fewer doses could enhance compliance, reduce monitoring requirements, and lower risks associated with repeated dosing.

Therefore, this study aimed to evaluate the clinical outcomes of labour induction using a limited-dose 50 µg vaginal misoprostol regimen, focusing on induction success rate, labour progression, maternal and neonatal outcomes, and overall patient satisfaction.

Materials & Methods:

This prospective observational study was conducted in the Department of Obstetrics and Gynecology of a tertiary care hospital over a period of 12 months to evaluate the clinical outcomes of labour induction using a limited-dose 50 µg vaginal misoprostol regimen. A total of 52 pregnant women requiring induction of labour were enrolled and categorized based on parity into primiparous (n=16) and multiparous (n=36) groups.

Women with singleton or multiple pregnancies with a viable fetus at ≥34 weeks of gestation and a clinical indication for induction (such as preeclampsia, postdated pregnancy, PROM, oligohydramnios, GDM, or fetal anomaly) were included. Only those with cephalic or breech presentation deemed suitable for induction and an intact uterus without prior cesarean section were considered eligible. Patients with a history of cesarean section or uterine surgery, hypersensitivity to prostaglandins, placenta previa or vasa previa, severe fetal distress requiring immediate delivery, or any contraindication to vaginal delivery were excluded.

Labour induction was performed using 50 µg vaginal misoprostol administered in the posterior fornix under aseptic precautions. The dose was repeated every 4 hours if adequate uterine contractions were not achieved, with a maximum of four doses.

Patients were closely monitored for uterine activity, fetal heart rate, and maternal vital signs. Once active labour was established, no further doses were given. Oxytocin augmentation was administered when clinically indicated.

The primary outcome was successful induction of labour, defined as vaginal delivery within 24 hours of initiation. Secondary outcomes included time to onset of active labour, induction-to-delivery interval, mode of delivery, need for oxytocin augmentation, maternal complications (such as postpartum hemorrhage, uterine rupture, perineal or cervical tears, and infection), neonatal outcomes (including APGAR score, birth weight, NICU admission, and complications), and maternal satisfaction.

Data were collected using a structured proforma capturing demographic details, obstetric history, indication for induction, dosing, labour progression, and maternal and neonatal outcomes. Data analysis was performed using SPSS (version XX). Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies and percentages. Comparisons between groups were made using the independent sample t-test and chi-square test as appropriate, with a p-value <0.05 considered statistically significant.

Ethical approval was obtained from the institutional review board, and written informed consent was secured from all participants. Confidentiality and anonymity of patient information were strictly maintained throughout the study.

Results:

A total of 52 participants were included, comprising 16 primiparous and 36 multiparous women. Multiparous women were older and had slightly higher gestational age compared to primiparous women. Most pregnancies were singleton and cephalic in presentation.

Table-I: Baseline and Obstetric Characteristics

Variable	Primiparous (n=16)	Multiparous (n=36)	p-value
Age (years), Mean	22.5	29.4	0.001
Height (cm), Mean	60.9	60.8	
Weight (kg), Mean	55.1	58.8	
Gestational Age (weeks), Mean	35.2	36.7	
Singleton Pregnancy	16	34	
Cephalic Presentation	16	33	
Breech Presentation	0	3	

Preeclampsia (30.8%) was the most common indication for induction, followed by postdated pregnancy (19.2%), PRM, and oligohydramnios.

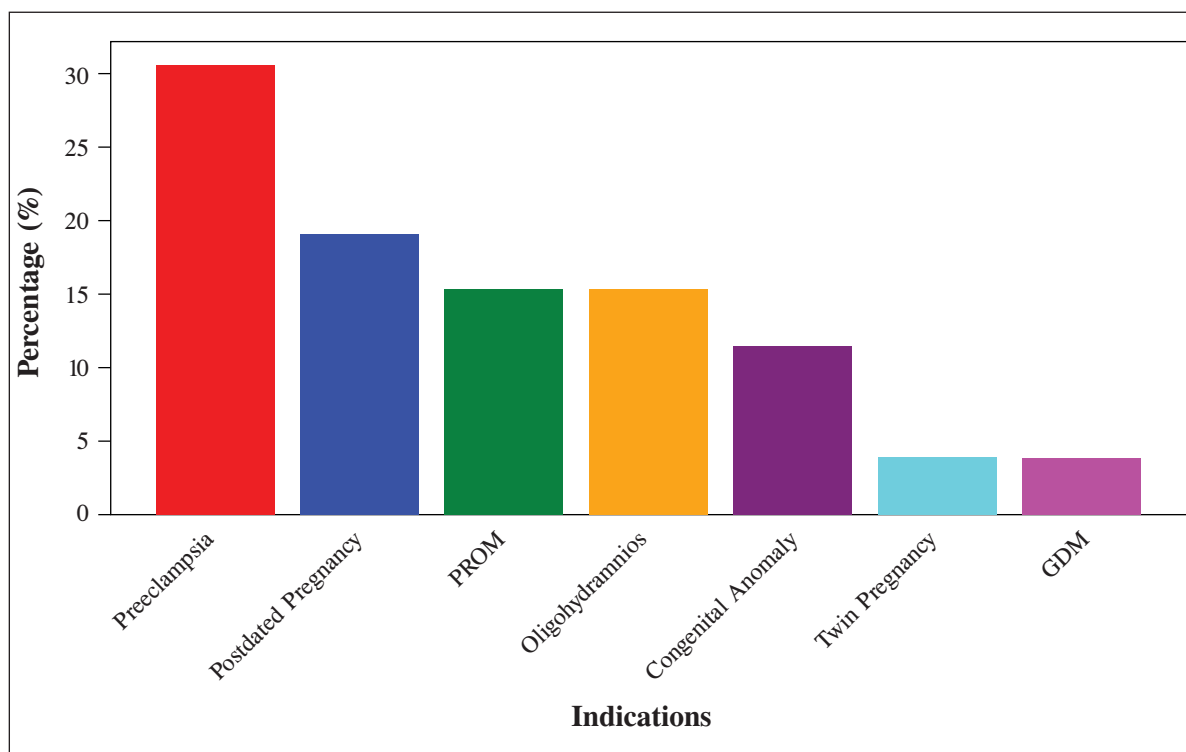


Figure-1: Indication for Induction of Labour

Vaginal misoprostol (50 µg, 4-hourly) was used for induction. The majority of patients (59.6%) required two doses, while 30.8% required three or more doses.

Table-II: Induction Protocol and Dosing Pattern

Paramet	Value	p-value
Dose	50 µg vaginal misoprostol	0.001
Interval	4 hourly	
Number of Doses	n(%)	
1 dose	5(9.6)	
2 doses	31(59.6)	
≥3 doses	16(30.8)	

The mean time to active labour was shorter in multiparous women (5.2 hours) compared to primiparous women (6.85 hours). Oxytocin augmentation was required in 42.3% of cases, with similar distribution across parity groups. No cases of uterine hyperstimulation were observed.

Table-III: Labour Progress and Augmentation

Parameter	Primiparous	Multiparous
Time to active labour (hours), Mean	6.85	5.2
Oxytocin augmentation, n(%)	7(43.8)	15(41.7)
Uterine hyperstimulation	0	0

Spontaneous vaginal delivery occurred in 80.8% of cases, while cesarean section was required in 11.5%. The induction-to-delivery interval was notably shorter in multiparous women (7.54 hours) compared to primiparous women (11.81 hours).

Table-IV: Delivery Outcomes

Outcom	n (%)	p-value	T-value
Spontaneous vaginal delivery	42(80.8)	0.001	4.74
Assisted vaginal delivery	4(7.7)		
Cesarean section	6(11.5)		
Induction-to-delivery interval (hours) Mean			
Primiparous	11.81		
Multiparous	7.54		

Maternal outcomes were favorable, with no major complications such as postpartum hemorrhage, uterine rupture, or sepsis. Minor complications included perineal tears (9.6%) and cervical tears (3.8%). The average hospital stay was 26.5 hours.

Table-V: Maternal Outcomes

Outcom	n (%)
Pyrexia	2(3.8)
Cervical tear	2(3.8)
Perineal tear	5(9.6)
PPH / Uterine rupture / Sepsis	0
Hospital Stay (hours) Mean	26.5

Neonatal outcomes were generally satisfactory, with mean APGAR scores of 7.8 at 1 minute and 9.5 at 5 minutes. NICU admission was required in 15.4% of cases. Neonatal complications included asphyxia (5.8%) and hypoglycemia (3.8%).

Table-VI: Neonatal Outcomes

Parameter	Value	n(%)
Birth weight (kg), Mean	2.7	-
APGAR (1 min)	7.8	-
APGAR (5 min)	9.5	-
Complication		
Asphyxia	-	3(5.8)
Hypoglycemia	-	2(3.8)
NICU admission	-	8(15.4)

Overall, the induction success rate was 89.28%, with high maternal satisfaction (86.42%), indicating that the limited-dose vaginal misoprostol regimen is both effective and well tolerated.

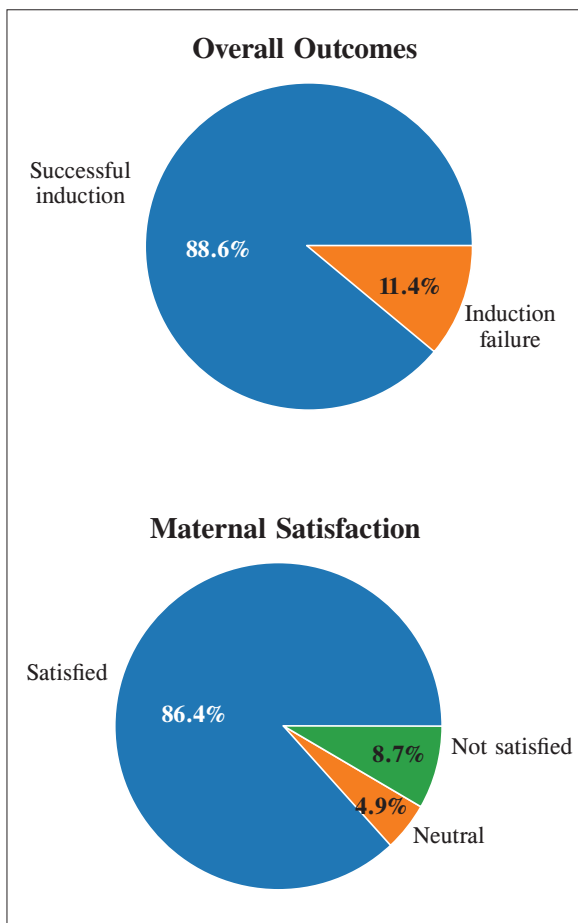


Figure-2: Overall outcomes and Maternal Satisfaction

Discussion:

This study evaluated the effectiveness and safety of a limited-dose 50 µg vaginal misoprostol regimen for induction of labour and demonstrated a high success rate (89.28%) with favorable maternal and neonatal outcomes. These findings are consistent with existing literature supporting the use of low-dose vaginal misoprostol as an effective induction agent.

The baseline characteristics of the study population were comparable between primiparous and multiparous women, although multiparous women were older and had slightly higher gestational age. Similar demographic distributions have been reported in previous studies, where multiparity is often associated with increased maternal age and improved labour outcomes.⁶

Preeclampsia was identified as the most common indication for induction in this study (30.8%), followed by postdated pregnancy. This aligns with global trends where hypertensive disorders and prolonged pregnancy remain leading indications for labour induction.⁷ The diversity of indications in this study reflects real-world clinical practice and enhances the generalizability of the findings.

The majority of participants (59.6%) required only two doses of misoprostol, supporting the effectiveness of a limited-dose regimen. Comparable studies have reported that low-dose vaginal misoprostol achieves adequate cervical ripening and labour initiation in most cases without the need for repeated dosing.⁸ Importantly, reducing the number of doses may decrease the risk of uterine hyperstimulation, a known complication associated with prostaglandin use.

In this study, no cases of uterine hyperstimulation were observed, which is a significant safety outcome. Previous research has shown that higher doses or shorter dosing intervals of misoprostol are associated with increased rates of tachysystole and fetal compromise.⁹ The absence of such complications in this study highlights the safety of the restricted-dose approach.

Labour progression was faster among multiparous women, with a shorter time to active labour and reduced induction-to-delivery interval compared to primiparous women. These findings are consistent with established obstetric knowledge that multiparity is associated with increased uterine responsiveness and more efficient labour.¹⁰

The rate of spontaneous vaginal delivery in this study (80.8%) was notably high, while the cesarean section rate (11.5%) remained relatively low. These

outcomes compare favorably with other studies using misoprostol, which have reported vaginal delivery rates ranging from 70% to 85%.¹¹ The lower cesarean rate may be attributed to effective cervical ripening and timely progression of labour.

Maternal outcomes were generally favorable, with no major complications such as postpartum hemorrhage, uterine rupture, or sepsis. Minor complications, including perineal and cervical tears, were observed but remained within acceptable clinical limits. Similar safety profiles have been reported in previous studies evaluating low-dose misoprostol regimens.¹²

Neonatal outcomes were also satisfactory, with good APGAR scores and a relatively low incidence of complications. Although NICU admission was required in 15.4% of cases, this may be influenced by underlying obstetric conditions rather than the induction method itself. Previous studies have similarly reported that misoprostol, when used appropriately, does not significantly increase adverse neonatal outcomes.¹³

The high level of maternal satisfaction (86.42%) observed in this study further supports the acceptability of the limited-dose regimen. Reduced duration of labour, fewer interventions, and minimal complications likely contributed to this positive perception.

From a clinical perspective, the findings suggest that a limited two-dose 50 µg vaginal misoprostol protocol is both effective and safe for labour induction. This approach may be particularly beneficial in resource-limited settings, where simplified protocols can reduce workload, improve efficiency, and optimize patient outcomes.

However, this study has certain limitations. The relatively small sample size and single-center design may limit generalizability. Additionally, the absence of a comparison group restricts the ability to directly evaluate superiority over other induction methods. Future randomized controlled trials with larger sample sizes are recommended to validate these findings.

Conclusion:

This study demonstrates that a limited-dose 50 µg vaginal misoprostol regimen is an effective and safe method for induction of labour. The high rate of successful vaginal delivery, minimal maternal and neonatal complications, and absence of serious adverse events such as uterine hyperstimulation highlight the clinical utility of this approach.

The regimen was associated with efficient labour progression, particularly among multiparous

women, and required relatively few doses in the majority of cases. Additionally, the high level of maternal satisfaction observed suggests good acceptability of this protocol.

In resource-limited settings, where cost-effectiveness and simplicity of protocols are crucial, a restricted-dose misoprostol regimen offers a practical and reliable option for labour induction. It reduces the need for repeated dosing, minimizes monitoring burden, and optimizes healthcare resource utilization.

However, larger randomized controlled trials are recommended to further validate these findings and to compare this regimen with other standard induction methods.

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Prostate Cancer Screening: Knowledge, Attitudes and Practices in a Sample of Men in Rangpur: A Survey

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Abstract

Background: Prostate cancer (PCa) is a major public health concern worldwide, with a significant burden in low- and middle-income countries, including Bangladesh. Despite the benefits of early detection through screening, awareness and participation remain low due to various socio-economic and cultural barriers.

Objective: To assess the knowledge, attitudes, and practices regarding prostate cancer screening among men in Rangpur, Bangladesh.

Materials & Methods: A cross-sectional survey was conducted among 500 men aged 40 years and above in Rangpur. Data on knowledge, attitudes, and screening practices were collected using a structured questionnaire. Descriptive statistics were used to analyze the findings, and associations between socio-demographic factors and screening behaviors were examined.

Results: Out of 500 participants, 64% had heard of prostate cancer, but only 30% were aware of available screening tests. Despite 76% believing that screening is necessary, only 16% had ever undergone screening. The major barriers to screening were lack of awareness (50%), fear of diagnosis (24%), and financial constraints (16%). Higher education levels and occupational status were positively associated with better screening awareness and practices.

Conclusion: This study highlights significant knowledge gaps and barriers to prostate cancer screening among men in Rangpur. There is an urgent need for targeted awareness campaigns and accessible screening programs to enhance early detection and improve health outcomes. Future interventions should focus on educating at-risk populations and integrating screening services into primary healthcare.

Keywords: Prostate cancer, Screening, Knowledge, Attitudes, Practices, Bangladesh, Awareness

Introduction:

Prostate cancer (PCa) is one of the most prevalent malignancies among men worldwide, contributing significantly to cancer-related morbidity and mortality. It is estimated that in 2020, prostate

cancer accounted for approximately 1.41 million new cases and 375,000 deaths globally.¹ The disease predominantly affects older men, with a median age of diagnosis around 66 years.² Although early detection through screening programs has been shown to reduce mortality, uptake remains suboptimal, particularly in low- and middle-income countries (LMICs), where awareness and accessibility to healthcare services are limited.³

In Bangladesh, where non-communicable diseases are an emerging public health burden, prostate cancer screening is not widely practiced. The lack of national guidelines, coupled with limited awareness and healthcare infrastructure, has contributed to late-stage diagnoses and poor prognosis for many patients.⁴ Studies in South Asian countries suggest that socioeconomic factors, educational levels, and cultural beliefs significantly influence the adoption of screening practices.⁵ In this context, understanding the knowledge, attitudes, and practices (KAP) of men regarding prostate cancer screening is crucial for the development of targeted interventions to improve early detection rates.

Prostate cancer screening primarily involves prostate-specific antigen (PSA) testing and digital rectal

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examination (DRE). However, controversies persist regarding the benefits and risks associated with routine screening. The European Randomized Study of Screening for Prostate Cancer (ERSPC) demonstrated a 21% reduction in prostate cancer mortality with PSA screening, while the Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial in the United States found no significant mortality benefit.^{6,7} These conflicting findings, coupled with concerns about overdiagnosis and overtreatment, have contributed to variations in screening recommendations across different healthcare systems.⁸

Despite these debates, the American Urological Association (AUA) and other international organizations advocate for shared decision-making regarding prostate cancer screening, particularly for high-risk populations, including men with a family history of PCa and African or South Asian ancestry.⁹ In Bangladesh, however, there is a paucity of research on men's awareness and perceptions regarding prostate cancer screening. Previous studies conducted in similar settings have highlighted substantial knowledge gaps and attitudinal barriers that hinder screening uptake.¹⁰

Given this background, the present study aimed to assess the knowledge, attitudes, and practices regarding prostate cancer screening among men in Rangpur, Bangladesh. By identifying key factors that influence screening behavior, our findings can inform public health strategies to enhance awareness and promote early detection efforts. So, this study aims to assess the knowledge, attitudes, and practices regarding prostate cancer screening among men in Rangpur, Bangladesh.

Materials & Methods:

This study was a cross-sectional survey conducted in Rangpur, Bangladesh, between July 2024 and December 2024. The study aimed to assess knowledge, attitudes, and practices regarding prostate cancer screening among adult men. A total of 500 men aged 40 years and above were conveniently selected. Participants were recruited from outpatient clinics, community centers, and public gathering places in Rangpur. Inclusion criteria were men aged 40 and above who provided informed consent. Exclusion criteria included those with a history of prostate cancer or prior prostate screening. A structured questionnaire was used to collect data on demographics, knowledge, attitudes, and practices regarding prostate cancer screening. The questionnaire was developed based on previous studies and validated through a pilot study involving 50 participants. Trained data collectors conduct face-to-face interviews.

Study Variables

Knowledge: Awareness of prostate cancer, risk factors, symptoms, and screening methods.

Attitudes: Perceptions regarding the importance of screening and willingness to undergo screening.

Practices: Previous screening behavior, frequency, and reasons for undergoing or avoiding screening.

Data were entered and analyzed using SPSS version 26. Descriptive statistics were used to summarize data, with categorical variables presented as frequencies and percentages. Chi-square tests were used to assess associations between knowledge, attitudes, and practices.

Results:

Table-I presents the age distribution of the study participants. Among the 500 respondents, the majority (40%) were in the 40-49 age group, followed by 36% in the 50-59 age group. The smallest proportion (24%) belonged to the 60+ age group. This distribution reflects a diverse representation of middle-aged and older men, which is crucial for assessing knowledge, attitudes, and practices regarding prostate cancer screening.

Table-I: Age distribution of the study participants

Age in years	Frequency (n=500)	Percentage (%)
40-49	200	40
50-59	180	36
60+	120	24
Total	500	100

Figure-1 illustrates the educational levels of the participants. A significant proportion (34%) had completed secondary education, while 30% had attained primary education. Notably, 16% had no formal education, which may contribute to lower health literacy and awareness regarding prostate cancer screening.

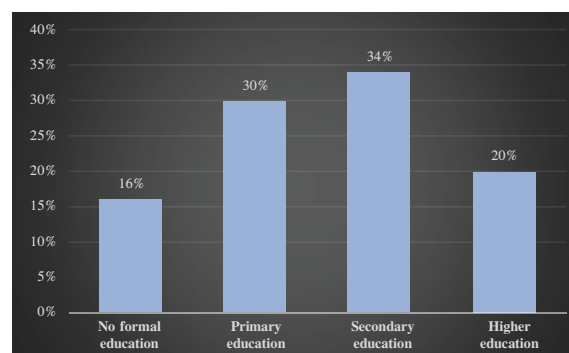


Figure-1: Educational Level of Study Participants

Figure-2 outlines the occupational status of the participants. Farmers constituted the largest occupational group (30%), followed by business professionals (24%) and service workers (20%). A substantial proportion (26%) were retired or unemployed, potentially affecting their access to healthcare services and screening facilities.

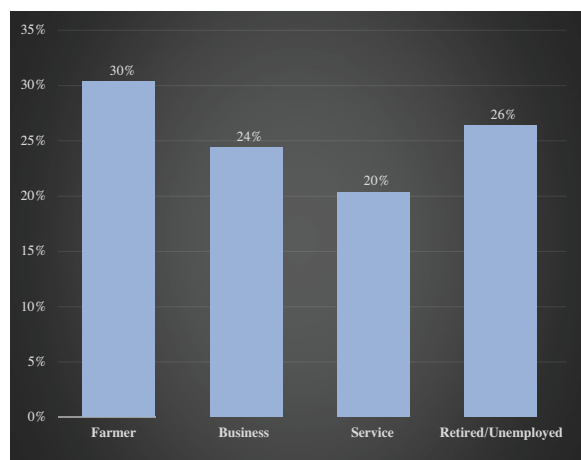


Figure-2: Occupational Status of Study Participants

Table-II outlines the occupational status of the participants. Farmers constituted the largest occupational group (30%), followed by business professionals (24%) and service workers (20%). A substantial proportion (26%) were retired or unemployed, potentially affecting their access to healthcare services and screening facilities.

Table-II: Knowledge, Attitudes, and Practices on Prostate Cancer Screening

Variable	Frequency (n=500)	Percentage (%)
Heard of prostate cancer	320	64.0
Aware of risk factors	200	40.0
Aware of screening tests	150	30.0
Believe screening is necessary	380	76.0
Ever undergone screening	80	16.0
Reasons for not screening		
Lack of awareness	250	50.0
Fear of results	120	24.0
Cost concerns	80	16.0
No symptoms	50	10.0

Discussion:

The findings of this study indicate a significant gap in knowledge, attitudes, and practices regarding prostate cancer screening among men in Rangpur.

Despite a relatively high proportion (64%) of participants having heard of prostate cancer, only 30% were aware of available screening tests. This low level of awareness is consistent with previous studies conducted in other South Asian countries, where limited health literacy and lack of prostate cancer education contribute to inadequate screening uptake.^{11,12}

Educational attainment appeared to play a crucial role in shaping awareness and attitudes toward screening. Participants with secondary or higher education were more likely to be aware of prostate cancer screening tests compared to those with no formal education. Similar trends have been observed in studies from Nigeria and India, where higher educational levels were associated with better knowledge and proactive health-seeking behavior.^{13,14} This underscores the need for targeted educational campaigns to improve prostate cancer awareness, particularly among less-educated populations.

Despite 76% of respondents believing that screening is necessary, actual screening rates were notably low (16%). The primary barriers to screening included lack of awareness (50%), fear of results (24%), and financial constraints (16%). These findings align with research from Ghana and Pakistan, where fear of a cancer diagnosis and cost-related concerns were identified as major deterrents to screening.^{15,16} Addressing these barriers through community-based awareness programs and subsidized screening initiatives could enhance participation in early detection efforts.

Occupational status also influenced screening behavior. Farmers and unemployed individuals had lower screening rates compared to business and service professionals, likely due to financial constraints and lack of access to healthcare facilities. Similar socioeconomic disparities have been reported in studies from Malaysia and Kenya, emphasizing the need for accessible and affordable screening services for disadvantaged groups.^{17,18}

In light of these findings, there is an urgent need to implement targeted awareness campaigns, particularly through mass media, community outreach programs, and involvement of healthcare providers in educating men about the importance of prostate cancer screening. Additionally, policymakers should consider integrating prostate cancer screening into existing primary healthcare services to improve accessibility and affordability.

While this study provides valuable insights, it has certain limitations. The cross-sectional design

precludes causal inferences, and self-reported data may be subject to recall bias. Furthermore, the study was conducted in a single region, limiting its generalizability to other areas of Bangladesh. Future research should explore longitudinal trends in screening behaviors and assess the effectiveness of intervention strategies in improving screening uptake.

Conclusion:

This study highlights significant gaps in knowledge, attitudes, and practices regarding prostate cancer screening among men in Rangpur, Bangladesh. To improve early detection rates, targeted awareness campaigns should be implemented, focusing on educating men about the importance of prostate cancer screening. Healthcare providers should be actively involved in patient education, and policymakers should work toward integrating prostate cancer screening into routine healthcare services. Additionally, efforts should be made to subsidize screening programs, ensuring affordability and accessibility for disadvantaged populations. Future research should explore the effectiveness of various intervention strategies in enhancing screening uptake and reducing prostate cancer mortality in Bangladesh. Addressing the identified barriers through a comprehensive, community-based approach will be essential in promoting early detection and improving overall health outcomes for men at risk of prostate cancer.

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Clinical and Functional Outcomes of Total Hip Arthroplasty in Ankylosing Spondylitis: A Prospective Cohort Study at a Tertiary Care Center in Rangpur

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Abstract:

Background: Ankylosing spondylitis (AS) is a chronic inflammatory disease primarily affecting the axial skeleton and sacroiliac joints, often leading to progressive stiffness and disability. Hip joint involvement occurs in approximately 30–40% of patients and may result in severe pain, deformity, and reduced mobility requiring surgical intervention. Total hip arthroplasty (THA) is considered an effective treatment for advanced hip involvement in AS patients, offering significant pain relief and functional improvement.

Materials & Methods: This prospective study was conducted at a tertiary care hospital in Rangpur, Bangladesh, to evaluate the clinical and functional outcomes of THA in patients with ankylosing spondylitis. Patients diagnosed with AS who underwent THA were included in the study. Preoperative assessment included demographic characteristics, duration of disease, and clinical evaluation. Functional outcomes were measured using the Harris Hip Score (HHS) and range of motion (ROM) before surgery and during postoperative follow-up. Statistical analysis was performed to compare preoperative and postoperative outcomes.

Results: The study included patients with ankylosing spondylitis who underwent THA. The majority were male and presented with severe hip pain and limited mobility before surgery. Postoperative assessment demonstrated a significant improvement in functional outcomes. The mean Harris Hip Score improved markedly after surgery, and hip range of motion increased substantially. Most patients achieved good to excellent functional results, and postoperative complications were minimal. Similar studies have also reported significant improvement in HHS and functional outcomes following THA in AS patients.

Conclusion: Total hip arthroplasty is a safe and effective surgical procedure for managing advanced hip involvement in ankylosing spondylitis. The procedure provides significant pain relief, improved mobility, and enhanced functional outcomes with low complication rates, making it a reliable treatment option for these patients.

Keywords: Ankylosing spondylitis, Total hip arthroplasty, Harris hip score, Functional outcome, Range of motion, Hip involvement

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Introduction:

Ankylosing spondylitis (AS) is a chronic inflammatory rheumatic disease that primarily affects the axial skeleton and sacroiliac joints but may also involve peripheral joints such as the hip. Hip involvement is considered one of the most disabling manifestations of the disease and occurs in approximately 30–40% of patients with ankylosing spondylitis.¹ Progressive inflammation of the hip joint leads to cartilage destruction, joint space narrowing, stiffness, and eventual ankylosis, which significantly affects mobility and quality of life.

The hip joint plays a critical role in weight-bearing and locomotion; therefore, involvement of this joint in ankylosing spondylitis can result in severe functional impairment. Patients commonly

experience chronic pain, reduced range of motion, and difficulty performing daily activities such as walking, sitting, or climbing stairs. In advanced stages, complete bony ankylosis may occur, which severely restricts joint movement and causes permanent disability.²

The initial management of ankylosing spondylitis usually includes conservative measures such as non-steroidal anti-inflammatory drugs (NSAIDs), physiotherapy, and biologic agents. Although these treatments help control inflammation and relieve symptoms, they often fail to prevent progressive structural damage of the hip joint once advanced disease develops. In such cases, surgical intervention becomes necessary to restore joint function and relieve pain.³

Total hip arthroplasty (THA) is widely considered the most effective surgical treatment for advanced hip involvement in ankylosing spondylitis. The procedure involves replacing the diseased hip joint with artificial prosthetic components, thereby restoring joint mechanics and improving functional capacity. Advances in implant design, surgical techniques, and perioperative management have significantly improved the outcomes of THA in patients with inflammatory joint diseases.⁴

Several clinical studies have demonstrated substantial improvement in functional outcomes after THA in patients with ankylosing spondylitis. Improvements are typically assessed using standardized scoring systems such as the Harris Hip Score (HHS). Previous studies have reported significant increases in HHS following THA, indicating improved hip function and mobility after surgery.⁵

In addition to functional improvement, total hip arthroplasty has also been shown to significantly increase hip range of motion and reduce pain. Clinical studies have reported that hip flexion and overall joint mobility improve markedly after surgery, enabling patients to perform daily activities more easily and regain independence.⁶

Long-term follow-up studies have also demonstrated favorable implant survivorship and relatively low complication rates following THA in ankylosing spondylitis patients. Large cohort analyses have shown that the majority of patients achieve satisfactory outcomes with minimal revision surgery over extended follow-up periods.⁷

Despite these encouraging outcomes, performing THA in ankylosing spondylitis patients remains technically challenging. Severe hip ankylosis, soft-tissue contractures, and altered spinopelvic

mechanics may complicate surgical exposure and implant positioning. Furthermore, delayed surgical intervention may result in reduced postoperative mobility and functional recovery.⁸

In developing countries such as Bangladesh, there is limited local data regarding the outcomes of total hip arthroplasty in ankylosing spondylitis patients. Understanding the functional outcomes and complications associated with THA in local healthcare settings is important for improving patient management. Therefore, the present study aimed to evaluate the clinical outcomes of total hip arthroplasty in ankylosing spondylitis patients treated at a tertiary care hospital in Rangpur.

Materials & Methods:

This prospective observational study was conducted in the Department of Orthopaedic Surgery at a tertiary care hospital in Rangpur, Bangladesh, over a 12-month period from January 2023 to December 2023. The study aimed to evaluate the functional outcomes and postoperative complications of total hip arthroplasty (THA) in patients with ankylosing spondylitis (AS) presenting with advanced hip involvement. A prospective design was adopted to allow systematic evaluation and follow-up of patients undergoing THA.

A total of 50 patients diagnosed with ankylosing spondylitis who underwent total hip arthroplasty during the study period were included using purposive sampling. Eligible participants were aged between 18 and 60 years and had clinical and radiological evidence of advanced hip involvement or ankylosed hip joints, with significant pain, restricted range of motion, and functional limitation requiring surgical intervention. Only those who provided informed written consent were included. Patients with hip pathology due to other causes such as trauma, malignancy, or infection, those with prior hip replacement, severe systemic illness contraindicating surgery, or those unwilling or lost to follow-up were excluded.

All patients underwent comprehensive preoperative assessment, including clinical, radiological, and laboratory evaluation. Demographic data such as age, sex, duration of disease, and laterality were recorded. Pain severity was assessed using the Visual Analog Scale (VAS), and functional status was evaluated using the Harris Hip Score (HHS). Radiological assessment included anteroposterior pelvic and lateral hip radiographs to determine joint destruction, deformity, and ankylosis, aiding in surgical planning.

All surgeries were performed by experienced

orthopedic surgeons under spinal or general anesthesia using either a posterolateral or modified lateral approach based on patient anatomy and surgeon preference. The procedure involved removal of the diseased femoral head and acetabular cartilage, followed by preparation of the acetabulum and femoral canal. Cemented or cementless prostheses were used depending on bone quality and intraoperative findings. Special attention was given to implant positioning and alignment to ensure joint stability. In patients with severe stiffness or ankylosis, soft-tissue release and deformity correction were performed prior to implantation.

Postoperatively, patients received standard care including antibiotics, analgesics, and thromboprophylaxis according to institutional protocol. Early mobilization was encouraged, and physiotherapy with range-of-motion exercises was initiated from the first postoperative day. Follow-up assessments were conducted at 1, 3, 6, and 12 months, including clinical and radiological evaluation to assess prosthesis position, joint function, and complications.

The primary outcome was functional improvement measured using the Harris Hip Score, which assesses pain, function, deformity, and range of motion. Secondary outcomes included hip range of motion, pain severity using VAS, and postoperative complications such as infection, dislocation, heterotopic ossification, and prosthesis loosening. Functional outcomes were categorized as excellent (90–100), good (80–89), fair (70–79), and poor (<70).

Data were analyzed using SPSS version 25.0. Continuous variables were expressed as mean±standard deviation, and categorical variables as frequency and percentage. The paired t-test was used to compare preoperative and postoperative values, with a p-value <0.05 considered statistically significant.

Ethical approval was obtained from the Institutional Ethical Review Committee, and written informed consent was secured from all participants. Patient confidentiality was maintained throughout the study.

Results:

A total of 50 patients with ankylosing spondylitis (AS) who underwent total hip arthroplasty (THA) were included in this prospective study. The patients were followed for 12 months postoperatively. The results were analyzed in terms of demographic characteristics, clinical parameters, functional outcomes, and postoperative complications.

The majority of patients were male (84%), reflecting

the higher prevalence of ankylosing spondylitis among men. The 31–40 year age group (36%) represented the largest proportion of patients. Bilateral hip involvement was observed in 50% of cases, indicating advanced disease at the time of surgery.

Table I: Demographic Characteristics of the Study Population (n=50)

Variable	Frequency (n)	Percentage
Age Group (years)		
21–30	10	20
31–40	18	36
41–50	14	28
> 50	8	16
Gender		
Male	42	84
Female	8	16
Laterality of Hip Involvement		
Unilateral	25	50
Bilateral	25	50
Mean Age (years)	37.8±9.6	

Before surgery, patients presented with severely impaired hip function, reflected by a low mean Harris Hip Score (44.2±12.3) and restricted range of motion. Pain intensity was also high with a mean VAS score of 7.4, indicating significant disability prior to THA.

Table-II: Preoperative Clinical Characteristics

Variable	Mean±SD
Duration of Disease (years)	9.2±3.8
Preoperative Harris Hip Score	44.2±12.3
Preoperative Range of Motion (ROM)	101.4°±40.4

Significant improvements were observed after THA. The Harris Hip Score improved from 44.2 to 87.2, indicating marked improvement in hip function. Range of motion nearly doubled postoperatively, while pain scores decreased substantially. All changes were statistically significant (p < 0.001).

Table-III: Comparison of Functional Outcomes Before and After THA

Parameter	Preoperative	12-Month Postoperative	p-value
Harris Hip Score	44.2±12.3	87.2±17.4	<0.001
Range of Motion (ROM)	101.4°±40.4	202.2°±23.5	<0.001
Pain Score (VAS)	7.4±1.2	2.1±0.8	<0.001

Based on the Harris Hip Score grading system, 84% of patients achieved good to excellent outcomes, demonstrating the effectiveness of THA in restoring hip function among patients with ankylosing spondylitis.

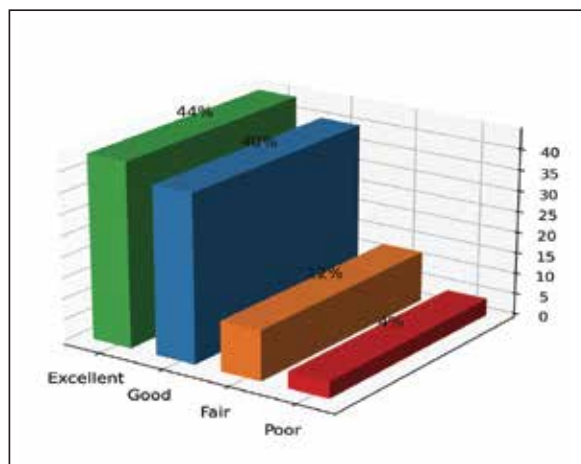


Figure-1: Postoperative Functional Outcome Based on Harris Hip Score

Postoperative complications were relatively uncommon. Most patients (88%) experienced no complications, while minor complications such as superficial infection and heterotopic ossification occurred in a small number of cases.

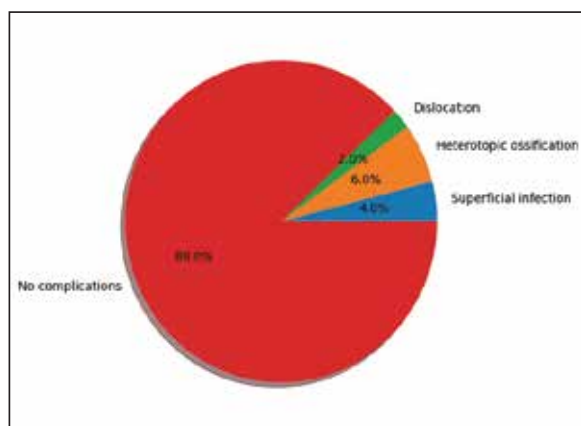


Figure-2: Postoperative Complications

Discussion:

The present study evaluated the functional outcomes of total hip arthroplasty (THA) in patients with ankylosing spondylitis and demonstrated significant improvement in hip function, range of motion, and pain relief following surgery. Hip involvement is a common manifestation of ankylosing spondylitis and is considered a major cause of disability among affected patients.¹ Progressive inflammation of the

hip joint may result in cartilage destruction, stiffness, and eventual ankylosis, which severely limits mobility and quality of life.

In this study, the majority of patients were male and belonged to a relatively young age group. This finding is consistent with the epidemiological characteristics of ankylosing spondylitis, which predominantly affects young males. Previous large cohort studies evaluating THA outcomes in ankylosing spondylitis have also reported that approximately 80% of patients undergoing hip replacement surgery were male, with a mean age ranging between 30 and 50 years.² Similar demographic findings were reported in other studies conducted in South Asian populations, where the highest prevalence of hip involvement was observed among patients aged between 30 and 40 years.³

One of the most important findings of the present study was the significant improvement in the Harris Hip Score following surgery. The mean HHS increased markedly after total hip arthroplasty, indicating substantial improvement in hip function and patient mobility. Similar results have been reported in previous studies. For instance, Marahatta et al. reported that the mean Harris Hip Score improved from approximately 39.7 before surgery to 86.6 after THA in ankylosing spondylitis patients.⁴ Likewise, a prospective study conducted in Bangladesh demonstrated improvement in HHS from 44.2 ± 12.3 preoperatively to 87.2 ± 17.4 postoperatively, which closely resembles the findings of the present study.³ These findings confirm that THA significantly improves functional outcomes and quality of life in patients with advanced hip involvement.

Improvement in hip range of motion was another important outcome observed in this study. Ankylosing spondylitis frequently causes severe stiffness or ankylosis of the hip joint, resulting in restricted movement and functional limitations. Previous studies have demonstrated significant improvements in hip mobility after THA. For example, a clinical study reported that hip flexion improved from approximately 29° before surgery to more than 100° after surgery following THA in patients with stiff hips.⁵ Similarly, another study reported an increase in the total hip range of motion from nearly 0° before surgery to more than 140° after surgery, indicating substantial restoration of joint mobility.⁶ These improvements enable patients to regain independence in daily activities and improve their overall functional capacity.

Pain relief is another major objective of total hip

arthroplasty. In the present study, postoperative pain scores were significantly reduced following surgery. Chronic hip pain in ankylosing spondylitis results from inflammatory processes, cartilage degeneration, and joint deformity. Surgical replacement of the damaged joint eliminates the source of pain and restores joint function. Previous studies have also reported significant reductions in pain scores after THA in ankylosing spondylitis patients, along with improvement in overall quality of life.⁷

The overall functional outcomes observed in this study were favorable, with most patients achieving good to excellent results according to the Harris Hip Score classification. These findings are consistent with previous systematic reviews evaluating bilateral THA in ankylosing spondylitis patients. Such studies have demonstrated substantial improvement in hip function and mobility, with postoperative HHS improving by more than 60 points on average.⁸ These findings highlight the effectiveness of THA as a reliable surgical intervention for advanced hip disease in ankylosing spondylitis.

Postoperative complications in the present study were relatively uncommon. Only a small number of patients experienced minor complications, and no cases of prosthesis loosening were observed during follow-up. Long-term studies evaluating THA outcomes in ankylosing spondylitis have reported similarly low complication rates. For example, a large cohort study involving more than 300 patients reported a dislocation rate of less than 3% and a revision rate of approximately 17% over a 20-year follow-up period.² These findings suggest that modern implant designs and improved surgical techniques have significantly enhanced the safety and durability of total hip arthroplasty.

Despite these favorable outcomes, performing THA in ankylosing spondylitis patients can be technically demanding. Severe hip ankylosis, soft-tissue contractures, and altered spinopelvic alignment may complicate surgical exposure and implant positioning. Recent studies have also shown that patients with complete bony ankylosis may experience relatively lower postoperative hip mobility compared to those with partial stiffness, emphasizing the importance of timely surgical intervention.⁹

Overall, the findings of the present study are consistent with previously published literature and confirm that total hip arthroplasty is an effective treatment for advanced hip involvement in ankylosing spondylitis. The procedure significantly

improves hip function, range of motion, and pain relief while maintaining a relatively low complication rate. Therefore, THA remains the treatment of choice for patients with severe hip disease secondary to ankylosing spondylitis.

Conclusion:

Total hip arthroplasty (THA) is an effective surgical treatment for patients with ankylosing spondylitis with advanced hip involvement. The procedure significantly improves pain relief, hip mobility, and functional outcomes, leading to better quality of life. Most patients achieve good to excellent postoperative results with relatively low complication rates when proper surgical techniques are used. Therefore, THA remains a reliable and safe option for restoring function and mobility in patients with ankylosing spondylitis.

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Comparison of Early (Hot) Versus Interval Tonsillectomy in Cases of Quinsy (Peritonsillar Abscess): A Comparative Study of 50 Cases

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Abstract

Background: Peritonsillar abscess (quinsy) is the most common deep neck space infection and remains a frequent emergency in otolaryngology practice. It usually presents with severe sore throat, fever, trismus, muffled voice, dysphagia and unilateral peritonsillar swelling. Management options include needle aspiration, incision and drainage, antibiotics and tonsillectomy. Tonsillectomy may be performed during the acute episode (early/hot tonsillectomy) or after resolution of infection (interval tonsillectomy). The ideal timing remains debated.

Objective: To compare clinical outcomes of early (hot) tonsillectomy versus interval tonsillectomy in patients diagnosed with quinsy.

Materials & Methods: A comparative hospital-based study was conducted on 50 patients diagnosed with peritonsillar abscess. Patients were divided into two groups: Group A (n=25) underwent early tonsillectomy within 24–48 hours of admission after stabilization, while Group B (n=25) underwent drainage and medical treatment followed by interval tonsillectomy after 6–8 weeks. Data collected included age, sex, symptom duration, hospital stay, pain scores, postoperative hemorrhage, recurrence, return to normal diet and patient satisfaction. Statistical comparisons were made using standard tests with significance set at $p < 0.05$.

Results: Mean age was 24.8 ± 8.1 years. Males constituted 58% of cases. Mean hospital stay was significantly shorter in Group A (2.8 ± 0.9 days) than Group B (4.6 ± 1.3 days; $p < 0.001$). Recurrence before planned surgery occurred in 4 patients (16%) in Group B and none in Group A. Return to normal swallowing was faster in Group A (5.2 ± 1.4 days) than Group B (8.1 ± 2.0 days; $p < 0.001$). Secondary hemorrhage occurred in one patient in each group. Overall satisfaction was higher in the early tonsillectomy group.

Conclusion: Early (hot) tonsillectomy is a safe and effective option in selected patients with quinsy, offering shorter hospitalization, faster recovery and prevention of recurrence. Interval tonsillectomy remains useful when acute inflammation or anesthetic risk makes immediate surgery unsuitable.

Keywords: Quinsy, Peritonsillar abscess, Hot tonsillectomy, Interval tonsillectomy, Tonsil surgery.

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Introduction:

Peritonsillar abscess, commonly known as quinsy, is the most frequent deep infection of the head and neck encountered in otolaryngology emergency settings. It usually develops as a complication of acute tonsillitis when infection spreads beyond the tonsillar capsule into the peritonsillar space between the capsule and superior constrictor muscle.¹ The condition is characterized by severe unilateral sore throat, odynophagia, fever, drooling, trismus, altered speech ("hot potato voice"), uvular deviation and peritonsillar swelling.² Quinsy predominantly affects adolescents and young adults, although it may occur in any age group. Delayed treatment can result in dehydration, airway compromise, aspiration, spread into parapharyngeal or retropharyngeal spaces, septicemia, and rarely life-threatening

complications.³ Prompt diagnosis and appropriate treatment are therefore essential. Traditional treatment of peritonsillar abscess includes intravenous hydration, analgesics, antibiotics targeting streptococci and anaerobic organisms and drainage of pus either by needle aspiration or incision and drainage.⁴ However, recurrence after drainage and conservative management has been reported in a proportion of patients, particularly those with recurrent tonsillitis.⁵ Tonsillectomy is therefore considered in many cases either as definitive treatment during the acute stage or after infection has subsided. Early tonsillectomy, also termed "hot tonsillectomy," refers to removal of the tonsils during the active infective episode after initial stabilization. It provides immediate drainage of the abscess, relieves symptoms and prevents recurrence while avoiding a second hospital admission.⁶ Opponents of this approach have historically expressed concern regarding increased bleeding, difficult dissection due to inflammation, anesthetic challenges and postoperative pain.⁷ Interval tonsillectomy is performed several weeks after successful drainage and resolution of acute inflammation. Advocates believe delayed surgery allows safer dissection and lower operative morbidity.⁸ However, this approach requires two treatment phases, exposes patients to recurrence while waiting and may increase total healthcare cost and time away from normal activities.⁹ The choice between early and interval tonsillectomy often depends on surgeon preference, institutional protocols, patient condition, and available resources. In many developing countries, where follow-up may be uncertain and repeat admissions costly, early definitive treatment may offer practical advantages. Nevertheless, evidence comparing outcomes remains mixed. This study was undertaken to compare early (hot) tonsillectomy with interval tonsillectomy in 50 patients with quinsy. Specific objectives were to evaluate duration of hospitalization, postoperative morbidity, recurrence rate, recovery time, complications and patient satisfaction. The findings may help guide evidence-based decision-making regarding the timing of tonsillectomy in patients presenting with peritonsillar abscess.

Materials & Methods:

This comparative clinical study was conducted in the Department of ENT and Head-Neck Surgery, Rangpur Community Medical College, Rangpur, Bangladesh from January to December 2025. A total of 50 consecutive patients clinically diagnosed with peritonsillar abscess were enrolled after obtaining

written informed consent. Ethical approval was obtained from the institutional review board prior to commencement of the study. Patients aged 12 years and above with unilateral peritonsillar abscess confirmed by clinical examination and evidence of pus on aspiration or incision were included in the study. Only patients considered fit for surgery under general anesthesia were selected. Patients younger than 12 years, those with bleeding disorders, immunocompromised conditions, suspected malignancy, uncontrolled systemic illness, pregnancy, or contraindications to anesthesia were excluded from the study.

The enrolled patients were divided into two equal groups consisting of 25 patients each. Group A underwent early (hot) tonsillectomy within 24–48 hours of admission after initial stabilization with hydration and intravenous antibiotics. Group B received conventional management consisting of needle aspiration or incision and drainage along with intravenous antibiotics, followed by interval tonsillectomy after 6–8 weeks. Allocation into the two groups was determined according to surgeon preference, patient consent, and overall clinical suitability.

A detailed clinical history and physical examination were performed in all cases. Information regarding duration of symptoms, history of recurrent tonsillitis, fever, odynophagia, dysphagia, trismus, muffled voice, and airway compromise was recorded. Routine preoperative investigations included complete blood count, coagulation profile, random blood sugar estimation, and anesthetic fitness assessment. Additional investigations were performed when clinically indicated.

All patients received standard supportive treatment including intravenous fluids, broad-spectrum antibiotics, analgesics, anti-inflammatory medications, and antiseptic mouth gargles after symptomatic improvement. Antibiotic therapy mainly consisted of amoxicillin-clavulanate or ceftriaxone combined with metronidazole to provide adequate aerobic and anaerobic coverage. Tonsillectomy procedures were performed under general anesthesia using the standard dissection and snare technique with meticulous hemostasis.

The primary outcome measures assessed were duration of hospital stay, recurrence of abscess before definitive surgery, and incidence of postoperative hemorrhage. Secondary outcome measures included postoperative pain assessed by Visual Analog Scale (VAS) on the first postoperative day, time required to resume normal oral intake,

duration needed to return to routine daily activities, and overall patient satisfaction measured on a 10-point scoring system.

All collected data were entered into spreadsheet software and analyzed using standard statistical methods. Continuous variables were expressed as mean±standard deviation, while categorical variables were presented as frequencies and percentages. Student's t-test was applied for comparison of continuous variables and chi-square test was used for categorical data where appropriate. A p-value of less than 0.05 was considered statistically significant throughout the analysis.

Results:

A total of 50 patients diagnosed with peritonsillar abscess (quinsy) were included in the study. They were divided equally into two groups: Group A (Early/Hot Tonsillectomy, n=25) and Group B (Interval Tonsillectomy, n=25). Both groups were comparable regarding demographic and clinical characteristics at presentation.

Table-I: Age Distribution of Patients

Age Group (Years)	Group A (n=25)	Group B (n=25)	Total (n=50)	Percentage
12–20	8	7	15	30
21–30	10	11	21	42
31–40	5	4	9	18
> 40	2	3	5	10
Total	25	25	50	100

The majority of patients belonged to the 21–30 years age group, accounting for 42% of all cases, followed by the 12–20 years group (30%). Only 10% of patients were older than 40 years. This indicates that quinsy was more common among adolescents and young adults in the present study (Table-I).

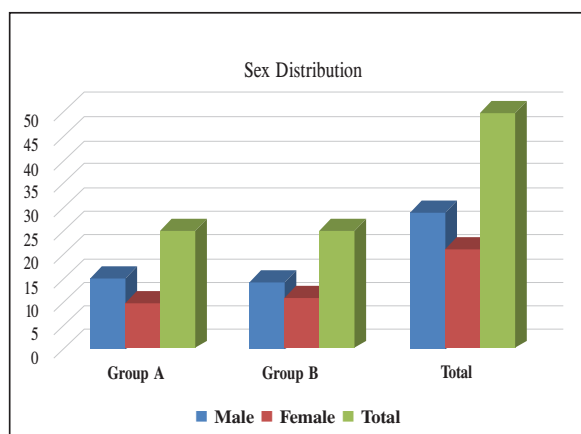


Figure-1: Gender distribution

Among the 50 patients, 29(58%) were male and 21(42%) were female, showing a slight male predominance. The distribution of sex was similar in both treatment groups (Figure-1).

Table-II: Presenting Symptom

Symptom	Group A	Group B	Total	Percentage
Severe sore throat	25	25	50	100
Fever	21	20	41	82
Dysphagia	23	22	45	90
Trismus	17	18	35	70
Muffled voice	15	16	31	62
Earache	11	10	21	42

All patients presented with severe sore throat. Dysphagia was the second most common symptom (90%), followed by fever (82%). Trismus was present in 70% of patients, while muffled voice and referred earache were seen in 62% and 42% respectively. Clinical presentation was almost similar in both groups (Table-II).

Table-III: Mean Duration of Hospital Stay

Group	Mean Stay (Days)	Standard Deviation
Group A (Hot Tonsillectomy)	2.8	±0.9
Group B (Interval Tonsillectomy)	4.6	±1.3

The mean hospital stay was significantly shorter in Group A (2.8±0.9 days) compared to Group B (4.6±1.3 days). Patients undergoing early tonsillectomy required fewer inpatient days than those managed initially by drainage followed by delayed surgery (Table-III).

Table-IV: Recovery Parameters

Parameter	Group A	Group B	p-value
Return to normal swallowing (days)	5.2±1.4	8.1±2.0	<0.001
Resume routine activity (days)	7.4±1.8	10.6±2.5	<0.001
Pain score Day-1 (/10)	6.8±1.2	6.1±1.0	0.04

Patients in Group A recovered faster than Group B. Return to normal swallowing occurred earlier in the early tonsillectomy group (5.2 days) compared to the interval group (8.1 days). Similarly, patients resumed normal daily activity sooner in Group A. However, immediate postoperative pain on day one was slightly higher in Group A (Table-IV).

Table-V: Postoperative Complications

Complication	Group A	Group B	p-value
Primary hemorrhage	0	0	0
Secondary hemorrhage	1	1	2
Dehydration needing IV fluids	2	3	5
Readmission	0	2	2
Recurrence before planned surgery	0	4	4

No patient in either group developed primary hemorrhage. Secondary hemorrhage occurred in one patient from each group. Four patients in Group B developed recurrence of abscess before scheduled interval tonsillectomy, whereas no recurrence was seen in Group A. Readmission was also more common in Group B (Table-V).

Table-VI: Patient Satisfaction Score

Group	Mean Satisfaction Score (1-10)	Standard Deviation
Group A	8.6	±1.1
Group B	7.2	±1.5

Patient satisfaction was higher in the hot tonsillectomy group, with a mean score of 8.6 ± 1.1 compared with 7.2 ± 1.5 in the interval tonsillectomy group. Patients preferred single-stage definitive treatment and faster recovery (Table-VI).

Discussion:

Peritonsillar abscess continues to be an important ENT emergency, especially in adolescents and young adults. The present study demonstrated that early (hot) tonsillectomy offers several practical and clinical advantages over interval tonsillectomy in selected patients. The age profile in our series showed maximum incidence in the second and third decades, consistent with previous reports indicating that quinsy is most common in younger populations.^{1,2} Male predominance observed in this study has also been described by several authors, although sex differences are generally modest.³ The most important finding was significantly shorter hospital stay in the early tonsillectomy group (2.8 days versus 4.6 days). This agrees with studies showing that immediate surgical management can combine drainage and definitive treatment in one admission, thereby reducing inpatient burden.⁴ In resource-limited settings, fewer admissions may reduce overall treatment cost and bed occupancy. Return to normal swallowing and routine activities was faster in Group A. This may be explained by immediate removal of the infected tonsil and

decompression of the abscess cavity. In contrast, patients in the interval group required initial drainage, healing of infection, followed later by elective surgery, prolonging the total recovery period. Similar functional benefits have been reported in comparative studies.⁵ Pain score on postoperative day one was slightly higher in Group A. This is unsurprising because surgery during active inflammation may intensify local tissue sensitivity. However, the difference was small and clinically manageable with analgesics. Importantly, faster symptom resolution and reduced recurrence outweighed transient discomfort. One major concern regarding hot tonsillectomy has traditionally been hemorrhage due to inflamed vascular tissue.⁶ In the present study, secondary hemorrhage occurred in one patient from each group, with no primary hemorrhage. This suggests that when performed by experienced surgeons with proper technique, early tonsillectomy does not necessarily carry substantially greater bleeding risk. Recent literature similarly supports acceptable safety profiles.⁷ Recurrence before planned interval surgery occurred in 16% of Group B patients. This is clinically significant because recurrent quinsy can cause severe pain, missed work or study days, repeat antibiotic exposure, and emergency readmission. Previous studies have reported recurrence rates varying from 5% to 22%, especially in patients with recurrent tonsillitis.⁸ Early tonsillectomy eliminates this waiting-period risk. Patient satisfaction was higher in the hot tonsillectomy group. Many patients prefer one definitive treatment rather than staged care requiring follow-up visits and another hospitalization. This factor is especially relevant in populations with transportation barriers or poor follow-up compliance. Despite these positive findings, interval tonsillectomy still has a role. Patients with marked edema, difficult airway, uncontrolled comorbidities, or poor anesthetic fitness may be better managed initially with drainage and delayed surgery. Likewise, institutions lacking emergency surgical support may choose staged treatment. This study has limitations. The sample size was modest, and group allocation was not randomized. Single-center data may limit generalizability. Microbiological culture patterns and long-term quality-of-life outcomes were not assessed. Larger randomized multicenter trials would strengthen evidence. Overall, our findings support the growing view that early tonsillectomy is not only feasible but beneficial in carefully selected quinsy patients. The procedure provides immediate

drainage, definitive cure, shorter hospitalization, reduced recurrence, and greater patient satisfaction. Therefore, clinicians should consider hot tonsillectomy as a first-line surgical option where expertise and facilities are available.^{9,10}

Conclusion:

Early (hot) tonsillectomy in cases of peritonsillar abscess is a safe and effective treatment option with clear advantages over interval tonsillectomy in selected patients. It significantly reduces hospital stay, hastens recovery, prevents recurrence during the waiting period and improves patient satisfaction. Complication rates, including postoperative hemorrhage, were low and comparable in both groups. Interval tonsillectomy remains appropriate in patients with anesthetic risk, severe edema, or where immediate surgery is not feasible. Individualized treatment planning based on patient status and institutional capability is recommended.

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Suicidal Hanging: Postmortem Analysis in A Tertiary Care Hospital

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Abstract

Background: Suicide, defined as the intentional act of ending one's own life, remains a major public health concern worldwide. Hanging, a violent form of asphyxial death, is among the most frequently employed methods of suicide, particularly in Bangladesh.

Objectives: This study aimed to examine the socio-demographic characteristics of victims of hanging, identify commonly used ligature materials, and document post-mortem findings.

Materials & Methods: This observational study was conducted at the Rangpur Medical College mortuary between January 2021 and December 2025. Data were collected from 575 medico-legal autopsies using purposive sampling.

Results: The majority of victims were young adults (21–30 years, 46%), predominantly female (64.6%), single (66.26%), and from low-income backgrounds (69%). Most bodies were discovered indoors with locked doors (76.7%), suspended from the roof angle (67.65%), or using cloth (64.35%) as the ligature material. Complete hanging was overwhelmingly common (91.65%), with the ligature gap most often at the side of the neck (78.78%). Post-mortem findings were dominated by petechial haemorrhages (93.39%), cyanosis (92.35%), and pale, glistening subcutaneous tissue beneath the ligature mark (90.78%).

Conclusion: Suicide by hanging remains a critical public health concern, reflecting deep socio-demographic vulnerabilities and preventable risk factors. Strengthening awareness, timely intervention, and supportive policies is essential for reducing its devastating impact on individuals, families, and communities.

Keywords: Suicide by hanging, Socio-demographic characteristics, Ligature material, Autopsy findings, Bangladesh

Introduction:

Suicide is a major global public health concern, accounting for more than 700,000 deaths annually worldwide, with hanging being one of the most common methods due to its lethality and accessibility.¹ In South Asia, particularly

Bangladesh, suicide rates are alarmingly high, yet remain underreported and stigmatized.² Hanging is the predominant method of suicide in Bangladesh, often associated with socio-economic stressors, family disputes, and mental health disorders.³ Young adults are disproportionately affected, reflecting vulnerabilities linked to unemployment, relationship conflicts, and social pressures.⁴ Forensic studies highlight characteristic post-mortem findings such as ligature marks, petechial hemorrhages, and fractures of neck structures.⁵ Despite its prevalence, suicide by hanging has received limited research attention in Bangladesh compared to other causes of mortality.⁶ Epidemiological data suggest that females are increasingly represented among victims, challenging traditional assumptions of male predominance.⁷ The socio-demographic profile of victims often includes low-income status, single marital status, and discovery of bodies within locked households.⁸ Effective prevention requires integrating forensic evidence with public health strategies, emphasising awareness, mental health support, and socio-economic interventions.⁹ Addressing suicide by hanging in Bangladesh is therefore critical to

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reduce its devastating impact on individuals, families, and communities.¹⁰

Materials and Methods:

This retrospective cross-sectional study was conducted at the mortuary of Rangpur Medical College, Rangpur, Bangladesh, between January 2021 and December 2025. A total of 575 medico-legal autopsy cases were reviewed. Data collection focused on socio-demographic characteristics, types of ligature materials, and post-mortem findings. All observations were analysed using descriptive statistical methods, with results expressed in terms of frequencies and percentages.

Results:

Table-I: Age-wise distribution

Age groups (years)	Frequency	Percentage
10-20	69	12.00
21-30	265	46.09
31-40	167	29.04
41-50	46	8.00
51-60	29	4.87
Total	575	100

Table-I shows that the majority of victims were young adults aged 21–30 years, accounting for 46.09% of the cases.

Table-II: Gender wise distribution

Gender	Frequency	Percentage
Male	204	35.4
Female	371	64.6
Total	575	100

Table-II shows that victims were predominantly female, accounting for 64.6% of the cases.

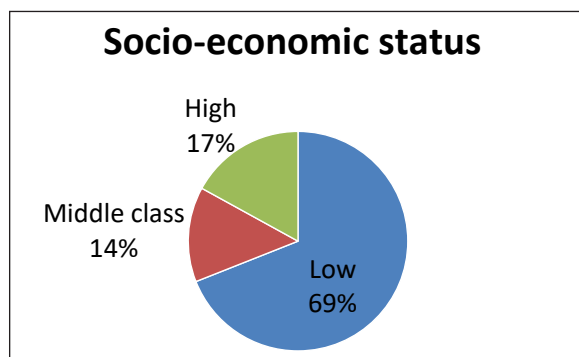


Figure-1: Shows that most of the victims came from low income backgrounds (69%)

Table-III: Distribution According to Marital Status

Marital Status	Frequency	Percentage
Single	381	66.26
Married	112	19.48
Divorced	58	10.09
Widowed	24	4.17
Total	575	100

Table-III shows that most of the victims were single (66.26%), while 19.48% were married.

Table-IV: Distribution according to Circumstances in which the dead body was found

Circumstances of the dead body found	Frequency	Percentage
In the house with a locked door	441	76.70
In the house with an open door	88	15.30
Outside the house	46	8.00
Total	575	100

Table-IV shows that in 76.70% of cases, the dead bodies were found inside the house with a locked door, in 15.30% of cases inside the house with an open door, and in 8.00% of cases outside the house.

Table-V: Point of suspension

Point of suspension	Frequency	Percentage
Angle of Roff	389	67.65
Ceiling Fan	164	28.52
Tree	22	3.83
Total	575	100

Table-V shows that 67.65% of victims were suspended from the roof angle, 28.52% from the ceiling fan, and 3.83% from a tree.

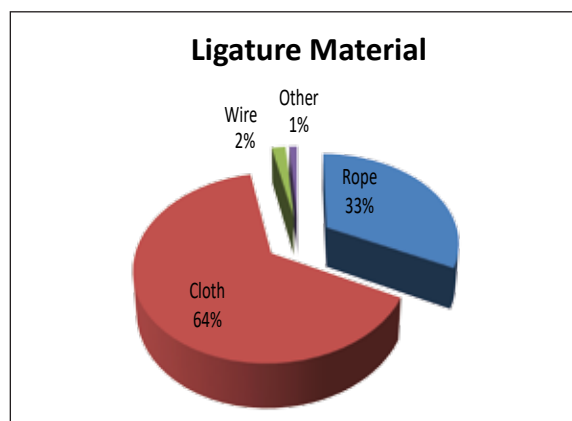


Figure-2: Shows that cloth was used as the ligature material in 64% of cases, rope in 33%, wire in 2%, and other materials in 1%.

Table VI: Presence of Knot Impression

Presence of Knot Impression	Frequency	Percentage
Present	513	89.22
Absent	62	10.78
Total	575	100

Table-VI shows that knot impressions were present in 89.22% of the victims.

Table-VII: Distribution according to Position of Ligature Mark

Ligature Mark	Frequency	Percentage
Above the Thyroid Cartilage	541	94.09
Over the Thyroid Cartilage	34	5.91
Total	575	100

Table-VII shows that in 94.09% of cases, the ligature mark was positioned above the thyroid cartilage, while in 5.91% of cases it was located directly over the thyroid cartilage.

Table-VIII: Distribution according to Position of Gap

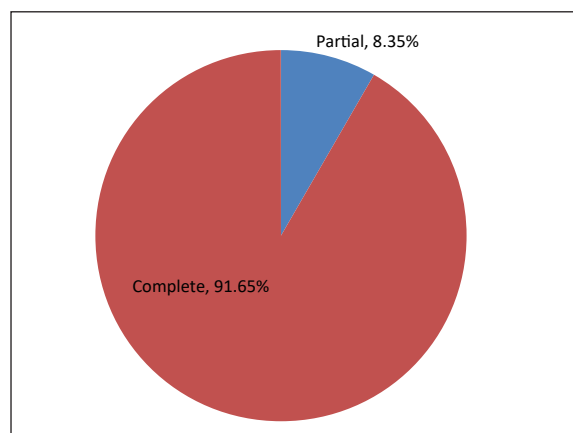
Position of Gap	Frequency	Percentage
Side of the Neck	453	78.78
Back of the Neck	122	21.22
Total	575	100

Table-VIII shows that the ligature gap was located on the side of the neck in 78.78% of cases, while in 21.22% it was positioned at the back of the neck.

Table-X: Distribution according to post-mortem findings

Point of suspension	Frequency	Percentage
Subcutaneous tissue underneath the ligature mark found pale, white, hard, glistening	522	90.78
Dribbling marks of saliva	360	62.61
Tongue bite	185	32.10
Injury to the subcutaneous tissue underneath the ligature mark	172	29.91
Injury to neck muscles (below the angle of the mandible)	357	29.91
Petechial Hemorrhages	537	93.39
Cyanosis of Fingertips/Lips	531	92.35
Soft Tissue Haemorrhage in Neck Structures	36	6.26
Pulmonary Congestion and Edema	402	69.91
Presence of Gastric Contents in the Airway	69	12.00
Presence of External Trauma Not Related to Hanging	27	4.70

Table-X shows that the principal post-mortem findings among victims were dominated by petechial haemorrhages (93.39%), cyanosis (92.35%), and pale, glistening subcutaneous tissue beneath the ligature mark (90.78%).

**Figure-3: Shows that complete hanging was observed in 91.65% of victims, while partial hanging was noted in 8.35%****Table-IX: Type of neck Injury (Fracture)**

Type Injury	Frequency	Percentage
Hyoid Bone Fracture	27	4.70
Thyroid Cartilage Fracture	7	1.22
Fracture of Cervical Vertebrae	12	2.09

Table-IX shows that neck fractures among victims were relatively uncommon, with hyoid bone fractures being the most frequent at 4.70%, followed by cervical vertebrae fractures at 2.09% and thyroid cartilage fractures at 1.22%.

Discussion:

Suicide by hanging continues to be a major public health challenge, and the present dataset provides valuable insights that both corroborate and diverge from recent forensic medicine literature. The predominance of young adults aged 21–30 years (46.09%) is consistent with findings from South Asian and global studies, which identify this age group as the most vulnerable to suicide.^{4,11} Interestingly, the female predominance (64.6%) observed here contrasts with the male predominance reported in most international studies,^{12,13} suggesting regional or cultural variations in gender-related suicide risk. Socio-economic vulnerability is evident, with 69% of victims belonging to low-income groups, aligning with research that links financial instability and poverty to increased suicide risk.¹ The majority of cases occurred indoors with locked doors (76.7%), reflecting the privacy and concealment often associated with suicidal acts, a finding echoed in prospective autopsy studies.¹⁴ Roof angles and ceiling fans were the most common suspension points, and cloth was the predominant ligature material (64.35%), differing from other regions where rope is more frequently used.^{11,13} Autopsy findings such as petechial hemorrhages (93.39%), cyanosis (92.35%), and pale, glistening subcutaneous tissue beneath ligature marks (90.78%) are consistent with established forensic descriptions, though the higher prevalence of petechiae compared to global averages may reflect differences in documentation or case selection.¹⁴ Overall, the data confirm that young, socio-economically disadvantaged, and unmarried individuals are at greatest risk, while regional variations in gender distribution and ligature material highlight the importance of tailoring suicide prevention strategies to local contexts alongside global approaches.

Conclusion:

The findings highlight hanging as the predominant method of suicide, particularly among young women from socio-economically disadvantaged backgrounds, underscoring its significance as a public health concern in Bangladesh.

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Critical View of Safety in Laparoscopic Cholecystectomy in RCMCH: A Prospective Observational Study

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Abstract:

Background: The critical view of safety (CVS) has been increasingly recognized as the standard method for identification of different cystic structure and to prevent any vascular or biliary injuries during laparoscopic cholecystectomy operation.

Objective: To observe the percentage of patients in whom CVS was attained during laparoscopic cholecystectomy, percentage of patients where bail out procedures were needed and the type of bail out procedure adopted.

Materials & Methods: This prospective, observational study was conducted in the Department of Surgery, Rangpur community Medical College, Rangpur, Bangladesh at over a period of 6 months. This study was carried out January 2025 to July 2025. A total of 55 patients of symptomatic cholelithiasis, aged > 20 years were enrolled in this study. The said patients were followed up for a period of 6 weeks in the post operative time.

Results: 29(52.73%) of the patients were in the age group of 40-59 years, followed by 16(29.09%) in 20-39 years age group. Female predominance was observed as male-female ratio was 1:5. Critical view of safety (CVS) was attained in 50 patients (90.9%), while 5 patients had difficulties: difficulty in dissection of calot's triangle in 5 cases, dense adhesions were found in 3 cases and 1 had perforated gallbladder. Significant differences were observed between two groups (CVS attained and not attained) in terms of operative time, gallbladder wall thickness and total hospital stay ($p < 0.001$). However, no complications like bile duct injuries or mortality were observed in our study. Bail out procedures were opted - conversion to open cholecystectomy in 3 cases (60%) and laparoscopic fundus first cholecystectomy in 2 cases (40%).

Conclusion: Even after adopting all these strategies of critical view of safety (CVS), the surgeons often fail to secure safety in some cases in laparoscopic cholecystectomy due to difficulty in handling gall bladder in situ.

Keywords: Laparoscopic cholecystectomy, Critical view of safety, Symptomatic cholelithiasis, Gall bladder, Bile duct injury

Introduction:

Gall bladder pathologies include symptomatic cholelithiasis, cholecystitis (acute and chronic), biliary dyskinesia, acalculous cholecystitis, gall stone induced pancreatitis and gall bladder

masses/polyps. Among these cholelithiasis is the commonest pathology encountered.¹ The prevalence of symptomatic cholelithiasis in the West is around 5.9-21.9% and 3.1-10.7% in Asia. The National Institute of Health consensus declared Laparoscopic cholecystectomy as the "gold standard" for cholelithiasis in 1992.² Laparoscopic cholecystectomy provides the benefit of decreased post-operative pain, cosmetically better scar, reduced duration of hospital stay and a faster recovery period in comparison to open cholecystectomy technique.³ However, Laparoscopic cholecystectomy is associated with an increase in incidence of bile duct injuries from 0.2% vs 0.4% as compared to open^{3,4} cholecystectomy.⁴ Strasberg et al classified common bile duct injuries into five types ranging from bile leak from a minor duct (Type A)

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to complete occlusion, resection⁵ or division of major bile ducts (Type E).⁵ Lacerations under 25% of CBD diameter were classified as minor injury whereas transection or lacerations more than 25% of CBD diameter and post-operative bile duct stricture were classified as major injury as per⁶ McMahon et al classification.⁶ The management of such injuries to bile duct may vary from Endoscopic Retrograde Cholangio Pancreatography (ERCP) to biliary anastomosis and more complex restorative procedures like Hepatico Jejunostomy and hepatic transplantation in rare cases which leads to an increased post-operative⁷ morbidity.⁷ Despite of the time of three decades have elapsed since the first Laparoscopic cholecystectomy was performed, the prevention of such iatrogenic injuries is still a matter of significant concern⁸ Factors contributing to bile duct injuries can be patient-related like age, gender, BMI or surgery related like anatomical anomalies, surgical technique, surgeon's experience or improperly functioning equipment.⁹ The correct approach to the gall bladder's pedicle and the accurate identification of cystic structures within Calot's triangle are the 5 keys to reduction in biliary injuries. Strasberg observed that in cases of severe inflammation, one might injure common hepatic duct as it may be adhered to gall bladder wall which leads to increased complication rate.¹⁰ Three main techniques of Calot's triangle dissection have been standardized.¹¹ The "infundibular" technique which entails dissecting the gallbladder from its neck upwards, after dissecting the cystic artery and the cystic duct using electrocautery.¹² This classical dissection of Calot's triangle may result in misidentification of vascular or biliary anatomical variants, which are 8 frequently located in the medial part of this region.¹³ The "dome down" or "fundus first" technique is another way of preventing bile duct injuries even though it concerns the possible injury to the right hepatic artery as it may get retracted downwards^{9,10} along with the gallbladder.¹⁴ The effort to standardize an approach to the cystic artery and duct that could effectively avoid the area where ductal and vascular anomalies are likely to be encountered brought Strasberg et al to outline¹¹ the Critical View of Safety (CVS) in 1995.¹⁵ Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) in its "Safe Cholecystectomy Program" has advocated the use of CVS technique to minimize the 12 risk of bile duct injuries.¹⁶ Currently, the CVS technique is accepted as a Gold Standard for reducing morbidity associated with Laparoscopic cholecystectomy by the European

Association of 13 Endoscopic Surgery (EAES)¹¹ The criteria of a Critical View of Safety included: 1. Calot's triangle to be completely free of fat and fibrous tissue, it does not require that the common bile duct be exposed.¹⁷ The lower one-third part of the gallbladder be separated from the cystic plate. The cystic plate referred to as the liver bed of the gallbladder is part of the plate/sheath system of the liver.³ The two and only two structures should be seen entering the gallbladder i.e., cystic duct and cystic artery. However the incidence of bile duct injuries have not decreased even after use of CVS technique¹⁴ and there are very few studies published up-to-date to give us level-1 evidence that achievement of critical view of safety prevents such injuries.¹⁸ Factors influencing the attainment of CVS and its role in preventing bile duct injuries need to be studied in detail.¹⁹ The current study focused on the attainment of the principles of CVS and its role in preventing bile duct injuries.²⁰

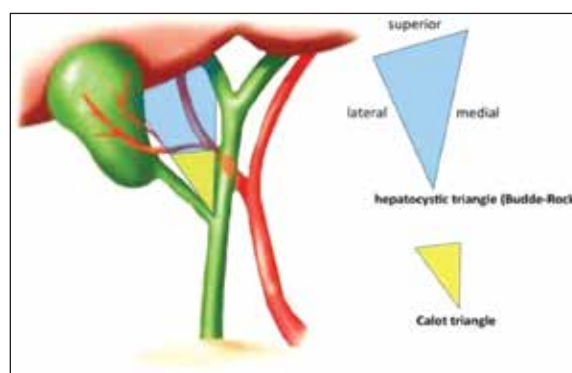


Figure-1: Hepatocystic triangle and triangle of Calot. Hepatocystic triangle (blue): upper boundary of hepatocystic triangle is the inferior border of liver. Lateral, the cystic duct and the neck of the gall bladder. Medial, the common hepatic duct. Triangle of Calot (yellow): Upper boundary is the cystic artery. Lateral the cystic duct. Medial the common hepatic duct, common bile duct (CBD).

Bile duct is mistaken for cystic duct and hence cut.²¹ This injury is known as classical laparoscopic injury. LCC carries an overall 0.3-1.8% risk of bile duct injury and 0.1-0.5% risk of severe bile duct injury.³⁻⁷ Critical View of Safety (CVS) has three components:⁸

- Hepatocystic triangle must be cleared off the fibrous tissue and fat;

- Lower part of gall bladder has to be separated from cystic plate (liver bed of gall bladder); and
- Only two structures i.e., cystic duct and cystic artery should be entering the gall bladder. (Figure 1).²²

Even after adopting all these strategies of critical view of safety (CVS), the surgeons often fail to secure safety in some cases in laparoscopic cholecystectomy.²³ For those cases, there are bail out strategies, as laparoscopic cholecystectomy could be converted into other possible procedures to complete the operation.²⁴ Most common bail out procedures are laparoscopic subtotal cholecystectomy, laparoscopic fundus first cholecystectomy, laparoscopic tube cholecystostomy, and conversion to open cholecystectomy.²⁵ In this study, we tried to observe the percentage of patients in whom CVS was attained during laparoscopic cholecystectomy, percentage of patients where bail out procedures were needed and the type of bail out procedure adopted.²⁶

Methods:

This prospective, observational study conducted in the Department of Surgery, Rangpur community Medical College Rangpur Bangladesh, over a period of 6 months. A total of 55 patients of symptomatic cholelithiasis, aged >20 years were enrolled. Sample selection was done using a purposive sampling technique. Information regarding age, gender, clinical presentation, and etiological factors was collected through an interview-based questionnaire from the patients or their attendants. We collected the following data of each patients:

(i) operative time; (ii) gall bladder wall thickness; (iii) par operative bile duct injury; (iv) bail out procedure during surgery, if any; (v) any other complications or mortality and finally; (vi) the length of stay in hospital. The patients were followed up to a period of 6 weeks after discharge from the hospital.

Data was collected in pre-designed data collection sheet. Data compilation, sorting and analysis were conducted using the MS-Excel. Data were then presented through tables expressed in frequencies with percentage. Chi-square tests were performed to compare between two groups (CVS attained and not attained). A p-value <0.05 was considered as statistically significant. Statistical analysis was carried out using the Statistical Package for the Social Sciences (SPSS) software version 22.0 for windows (SPSS Inc, Chicago, Illinois, USA).

Results:

A total of 55 patients were enrolled in this study aged ≥20 years. 29 (52.73%) of the patients were in the age group of 40-59 years, followed by 16 (29.09%) in 20-39 years age group. Female predominance was observed as male-female ratio was 1:5 (Table 1). Out of 55 patients, critical view of safety (CVS) was attained in 50 patients (90.9%), while 5 patients had difficulties: difficulty in dissection of Calot's triangle in 1 case, dense adhesions were found in 3 cases and 1 had perforated gallbladder. Significant differences were observed between two groups (CVS attained and not attained) in terms of operative time (50.76 ± 6.34 minutes vs. 96 ± 16.24 minutes), gallbladder wall thickness (2.25 ± 0.64 mm vs. 4 ± 0.63 mm) and stay in hospital (2.08 ± 0.22 days vs. 3.2 ± 0.74 days) ($p < 0.001$).

However, no complications like bile duct injuries or mortality were observed in our study (Table 2). Bail out procedures were opted: conversion to open cholecystectomy in 3 cases (60%) and laparoscopic fundus first cholecystectomy in 2 cases (40%) (Table-III).

Table-I: Patient Characteristics

	Percentage
Age	
< 30 years	22
31 to 40 years	26
> 40 years	52
Gender	
Males	18
Females	82
Food habits	
Vegetarians	76
Non vegetarians	24
Oily food intake	
Present	76
Absent	24
BMI	
Underweight	10
Normal	32
Overweight	40
Obese	18
Co morbid states	
Diabetes	18
Hypertension	22
No co morbidities	66
Presenting complaints	
Pain abdomen	80
Post meal fullness	50
Dyspepsia	52
Fever	0
Asymptomatic	8
Complaints duration	
< 5 months	38
5 to 10 months	36
> 10 months	26

Table-II: Age and gender distribution of the participants (n=55)

Age group (in years)	Male		Female		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
20-39	2	12.5	14	87.5	16	29.09
40-59	5	14.24	24	82.76	29	32.73
> 60	2	20	8	80	10	18.18
Total	9	16.36	46	83.64	55	100

Majority (52%) of the patients in this study were above the age of 40 years and 82% patients were females. A large proportion of the patients were overweight (40%), had oily food intake (76%). Most common presenting symptoms were pain abdomen. The investigation of choice in gall bladder pathologies is ultrasonography. Therefore, USG was performed in all patients. Most common finding was multiple gall stones (86%) followed by single gall. All the patients were subjected to laparoscopic cholecystectomy, while in 12% of the patients, due to dense pericholecystic adhesions (frozen calot's triangle) or non-achievement of critical view of safety, procedure was converted to open cholecystectomy. (80%) followed by post meal fullness (50%) and dyspepsia (52%). As in our population, most of the patients tend to ignore early symptoms of gall bladder disease, so 62% patients in this study

had symptoms for 5 to 10 months or more stone (14%), gall bladder sludge (14%), stone impacted in GB neck (4%) and GB wall thickness (4%). Intra operative findings suggested 28% of patients had adhesions followed by empyema and aberrant anomalies in 4% of patients. Most of the patients (98%) had serous drain output whereas it was bilious in 2%. Bile duct injury was diagnosed in 2% of patients.

Table-III: Investigations

USG findings	Percentage
Multiple gall stones	86
Single gall stone	14
Gall bladder sludge	14
Stone impacted in neck	4
Gall bladder wall thickness > 4mm	4

All the patients were subjected to laparoscopic cholecystectomy, while in 12% of the patients, due to dense pericholecystic adhesions (frozen calot's triangle) or non-achievement of critical view of safety procedure was converted to open cholecystectomy.

Intra operative findings suggested 28% of patients had adhesions followed by empyema and aberrant anomalies in 4% of patients. Most of the patients (98%) had serous drain output whereas it was bilious in 2%. Bile duct injury was diagnosed in 2% of patients.

Table-IV: Per-operative Characteristics

		Percentage
Conversion to open cholecystectomy	Absent	88
	Present	12
Intra operative findings	Aberrant anomalies	4
	Empyema	4
	Adhesions	28
Contents of drain	Bilious	2
	Serous	98
Duration of surgery	< 60 minutes	58
	> 60 minutes	42
Intra operative aim	CVS achieved	86
	CVS not achieved	14
Bile duct injury	Absent	98
	Present	2

Table-V: Association of CVS

		CVS Achieved	
		Yes	No
Age	< 30	23.3%	14.3%
	31 to 40	27.9%	14.3%
	> 40	48.8%	71.4%
Gender	Female	90.7%	28.6%
	Male	9.3%	71.4%
BMI	Underweight	11.6%	0%
	Normal	37.2%	0%
	Overweight	30.2%	100%
	Obese	20.9%	0%
Presenting complaints	Pain abdomen	79.1%	85.7%
	Post meal fullness	46.5%	71.4%
	Dyspepsia	46.5%	85.7%
	Asymptomatic	9.3%	0%
	Fever	0%	0%
Conversion to open cholecystectomy	Not done	100%	14.3%
	Done	0%	85.7%
Content of drain	Bilious	0%	100%
	Serous	87.8%	12.2%
Bile duct injury	Absent	100%	12.2%
	Present	0%	87.8%

Table-VI: Bail out procedures adopted during laparoscopic cholecystectomy (n=5)

Bailout procedure	Frequency	Percentage
Open shelesyatestony	3	60
Fundus first cholecystectomy	2	40

Discussion:

Laparoscopic cholecystectomy is the current standard of care for symptomatic cholelithiasis. However, it is associated with higher incidence of complications such as bile duct injury and vasculobiliary injury (VBI) than open cholecystectomy. Anatomical misperception is the most common underlying mechanism of such injuries. Although several strategies have been described to prevent such injuries, critical view of safety (CVS) method of structural identification seems to be the most effective preventive measure. The purpose of present study was to evaluate the CVS achievement in laparoscopic cholecystectomies, bile duct injuries and bail-out procedure options in patients where CVS was not attained. In our study we had total of 55 patients who underwent cholecystectomy by laparoscopic approach. In our study out of 55.¹

Patients 46(83.6%) were females and 9(16.4%) were males. Female to male ratio in our study was 5:1. Most of the patients presented in 4th and 5th decade. The mean age was 47.28 years. Overall, only 7 patients were more than 60 years. Similar findings have been reported by; on 240 females and 40 males with the mean age of 42.8 years.⁹

386 females and 106 males in their study with mean age of 49.35 years. Iskandar et al.¹¹ enrolled 77% of females in his study. 180 females and 90 males affected with cholelithiasis.¹⁰ In our study, in 5(9.1%) cases, CVS was not attained. The most common cause for non- attainment of CVS was difficult Calot's triangle dissection (frozen Calot's triangle), which was present in all 5(100%) patients. Dense adhesions were also present in 3(60%) cases that made CVS attainment difficult. In addition, 1(10%) patient had perforations in the gallbladder. Out of these 5 patients 3 were females and 2 were males.¹³ The findings were corresponding to the studies by 35 patients out of 238 in whom CVS was not attained due to dense adhesions and stone impaction. Taki- Elden & Badawy¹⁰ found difficult dissection through Calot's triangle in 4.9% of patients that lead to non-attainment of CVS in laparoscopic cholecystectomy. Hamza et al.⁹ observed 149 patients, of which 52 gall bladder were found difficult to operate and the reasons were difficult Calot's dissection, thickened gall bladder wall and acute cholecystitis.¹⁵ Rosen et al.¹³ found dense adhesion as the most common cause for conversion in laparoscopic cholecystectomy. Out of the 5 difficult gall bladders where CVS was not attained the bail-out surgery was opted - open cholecystectomy in 3(60%) patients and fundus first

in 2(40%) patients. out of 238 patients, open total cholecystectomy and subtotal cholecystectomy was opted in 9 and 2 cases respectively.¹⁶ opted for open cholecystectomy in 24 cases as bail-out surgery. In our study, the cases where CVS was not attained had a longer duration of procedure time (96 ± 16.24 minutes) compared to patients in whom CVS was attained (50.76 ± 6.3 minutes) ($p < 0.001$). Those patients also had a longer duration of hospital stay and delayed drain removal (3.2 ± 0.74 days). Gall bladders with thickened walled (4 ± 06 mm) also contributed to the non-attainment of CVS. The differences were found statistically significant ($p < 0.001$) between the groups. Similar to our findings, also reported gall bladder wall thickness as a significant predictor of difficult laparoscopic cholecystectomy. No complications were seen in our study, e.g., bile duct injury, vasobiliary injury or mortality. Similar findings were reported by Randhawa & Pujahari.¹⁷

Conclusion:

Our data revealed that symptomatic cholelithiasis was more observed in females and the age group most affected were 4th and 5th decades of life. CVS was not attained in 5 patients (out of 55 patients), with most common cause being frozen calot's followed by dense adhesions. Two bail-out procedures were employed in our study, viz., conversion to open cholecystectomy and laparoscopic fundus first approach. Critical view of safety (CVS) plays a critical role in laparoscopic cholecystectomy. Attainment of CVS makes the procedure easy and convenient. Various predictive factors that lead to difficult gall bladder included difficult Calot's triangle dissection, dense adhesion and thickened gall bladder wall. All these factors play predictive role for various bail-out procedures or conversion. Further study with larger sample size and longer study periods are required to emphasize the vast categories of complications and predictive factors.

Ethical declaration: This study was approved by the Institutional Review Board of the Govt. Medical College Srinagar, Kashmir, India.

Authors' contribution: Concept and design: SNM; data collection, compilation and analysis: SNM, WURD, HB, IAM, BAL; manuscript writing, editing, revision and approval of the final manuscript: SNM, WURD, HB, IAM, BAL.

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The Culture and Sensitivity Pattern of Urinary Tract Infections in Tertiary Hospital

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Abstract

Background: Urinary tract infection (UTI) remains a significant public health problem worldwide. The spectrum of causative organisms and their antimicrobial susceptibility patterns vary across regions and healthcare institutions, making local surveillance essential for effective empirical treatment.

Objective: To determine the culture positivity rate, distribution of uropathogens, and their antimicrobial sensitivity patterns among patients attending a tertiary care hospital.

Materials and Methods: This retrospective cross-sectional study was conducted in the Department of Microbiology of Rangpur Community Medical College Hospital from January 2024 to December 2024. A total of 100 clean-catch midstream urine samples from clinically suspected UTI patients were analyzed. Standard microbiological techniques were used for isolation and identification of organisms. Antimicrobial susceptibility testing was performed using the Kirby-Bauer disc diffusion method, and results were interpreted according to Clinical and Laboratory Standards Institute (CLSI) guidelines.

Results: Out of 100 urine samples, 80(80%) showed significant bacterial growth. Females constituted 62(77.5%) of culture-positive cases, while males accounted for 18(22.5%). Gram-negative bacilli were predominant (90%). *Escherichia coli* was the most common isolate (46; 57.5%), followed by *Pseudomonas* spp. (14; 17.5%), *Klebsiella* spp. (12; 15.0%), and *Staphylococcus aureus* (8; 10.0%). High susceptibility was observed with aminoglycosides, particularly gentamicin and amikacin, while resistance was common against nalidixic acid and fluoroquinolones.

Conclusion: Gram-negative organisms, predominantly *Escherichia coli*, are the major causes of UTIs in this tertiary care hospital. Aminoglycosides and amoxicillin-clavulanic acid remain effective therapeutic options. Routine urine culture and antimicrobial susceptibility testing are essential to guide rational antibiotic use.

Keywords: Urinary tract infection, Antimicrobial resistance, Tertiary hospital, *Escherichia coli*, *Staphylococcus aureus*

Introduction:

Introduction:

Urinary tract infections (UTIs) are among the most common bacterial infections in clinical practice, affecting individuals of all age groups and both sexes worldwide. They are responsible for significant morbidity and account for millions of outpatient visits and hospital admissions annually. Women are affected

more frequently than men due to anatomical and physiological factors, while complicated UTIs are commonly encountered in hospitalized patients.^{1,2}

The majority of UTIs are caused by Gram-negative bacteria, particularly *Escherichia coli*, followed by *Klebsiella* spp., *Proteus* spp., and other members of the Enterobacteriaceae family. Gram-positive organisms such as *Staphylococcus aureus* and *Enterococcus* spp. also contribute to a smaller proportion of infections.³ Empirical antibiotic therapy is often initiated before culture results are available; however, the rising prevalence of antimicrobial resistance has significantly compromised the effectiveness of many commonly prescribed drugs.⁴ The distribution of uropathogens and their antimicrobial susceptibility patterns varies according to geographic location, patient population, and antibiotic usage practices. Continuous local surveillance is therefore crucial for guiding appropriate empirical therapy and supporting antimicrobial stewardship programs.⁵

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In Bangladesh, particularly in northern regions, data regarding the bacteriological profile and resistance patterns of uropathogens in tertiary care hospitals are limited. Rangpur Community Medical College Hospital serves a large and diverse patient population, making it an appropriate setting for such an investigation. This study was undertaken to evaluate the culture and sensitivity patterns of urinary tract infections in this tertiary care hospital.^{6,7}

Materials and Methods:

This retrospective cross-sectional study was conducted in the Department of Microbiology at Rangpur Community Medical College Hospital, a tertiary care institution in northern Bangladesh. Urine culture and sensitivity reports of patients clinically suspected of having urinary tract infections over a one-year period from January to December 2024 were reviewed. Patients of all age groups and both sexes were included if their urine culture showed significant bacteriuria, defined as the growth of a single organism with $\geq 10^5$ colony-forming units (CFU)/mL of urine. Samples showing mixed growth, contamination, or incomplete records were excluded from analysis.⁴

Urine specimens were collected as clean-catch midstream samples in sterile containers following standard aseptic procedures. Samples were processed within one hour of collection. Cultures were performed on Cystine Lactose Electrolyte-Deficient (CLED) agar, MacConkey agar, and blood agar, and incubated aerobically at 37°C for 18–24 hours. Identification of isolates was carried out based on colony morphology, Gram staining, and conventional biochemical tests.⁴

Antimicrobial susceptibility testing was performed using the Kirby–Bauer disc diffusion method on Mueller–Hinton agar. Results were interpreted according to Clinical and Laboratory Standards Institute (CLSI) guidelines.⁵ Antibiotics tested included amoxicillin, amoxicillin-clavulanic acid, ciprofloxacin, nitrofurantoin, gentamicin, amikacin, ceftriaxone, norfloxacin, cefuroxime, and co-trimoxazole.

Data were entered and analyzed using Microsoft Excel. Results were expressed as frequencies and percentages and presented in tables and figures. Ethical approval was obtained from the Ethical Review Committee of Rangpur Community Medical College Hospital. As this was a retrospective study based on laboratory records, informed consent was waived, and patient confidentiality was strictly maintained.

Results:

Out of 100 urine samples analyzed during the study period, 80(80%) yielded significant bacterial growth. Female patients constituted 62(77.5%) of the culture-positive cases, while 18(22.5%) were males, indicating a marked female predominance of UTIs.

Gram-negative bacilli accounted for 72 (90%) of the isolates, whereas Gram-positive cocci constituted 8 (10%). *Escherichia coli* was the most frequently isolated organism (46; 57.5%), followed by *Pseudomonas* spp. (14; 17.5%), *Klebsiella* spp. (12; 15.0%), and *Staphylococcus aureus* (8; 10.0%).

Table-I: Distribution of Bacterial Isolates among UTI Patients according to gender (n=80)

Bacterial isolate	No. of patients (%)	Male (n=18)	Female (n=62)
<i>Escherichia coli</i>	46 (57.5)	8	38
<i>Pseudomonas</i> spp.	14 (17.5)	4	10
<i>Klebsiella</i> spp.	12 (15.0)	3	9
<i>Staphylococcus aureus</i>	8 (10.0)	3	5
Total	80 (100)	18	62

When stratified by socioeconomic condition, the majority of culture-positive patients belonged to the low (42; 52.5%) and middle (27; 33.75%) socioeconomic groups, with a comparatively smaller proportion from the high socioeconomic group (11; 13.75%). This distribution was observed consistently across all four major isolates, with *Escherichia coli* remaining the predominant organism in every socioeconomic category.

The higher burden of UTI among patients from lower socioeconomic groups observed in this study is in keeping with global evidence linking socioeconomic deprivation to increased risk of bacterial infection, including UTI, likely through factors such as limited access to healthcare, residential crowding, and inconsistent antibiotic use.

Table-II: Distribution of Bacterial Isolates among UTI Patients according to Socioeconomic Condition (n=80)

Bacterial isolate	Total (%)	Low SEC	Middle SEC	High SEC
<i>Escherichia coli</i>	46(57.5)	24	16	6
<i>Pseudomonas</i> spp.	14(17.5)	8	4	2
<i>Klebsiella</i> spp.	12(15.0)	6	4	2
<i>Staphylococcus aureus</i>	8(10.0)	4	3	1
Total	80(100)	42(52.5)	27(33.75)	11(13.75)

(SEC=socioeconomic condition; classified as low/middle/high.)

Antimicrobial susceptibility testing showed that most Gram-negative isolates were highly sensitive to aminoglycosides, particularly gentamicin and amikacin. Nitrofurantoin demonstrated good activity against *E. coli*. Moderate sensitivity was observed with third-generation cephalosporins, while fluoroquinolones and nalidixic acid showed comparatively lower effectiveness.

Table-III: Antimicrobial Susceptibility Pattern of Major Uropathogens (%)

Antibiotic	<i>E. coli</i> (n=46)	<i>Pseudomonas</i> spp. (n=14)	<i>Klebsiella</i> spp. (n=12)	<i>S. aureus</i> (n=8)
Gentamicin	82.6	71.4	75.0	87.5
Amikacin	89.1	78.6	83.3	-
Amoxicillin-clavulanic acid	76.1	64.3	66.7	75.0
Ceftriaxone	63.0	57.1	58.3	62.5
Nitrofurantoin	80.4	-	41.7	62.5
Ciprofloxacin	52.2	50.0	41.7	50.0
Nalidixic acid	34.8	28.6	33.3	-
Co-trimoxazole	47.8	-	41.7	50.0

Discussion:

The present study demonstrates that Gram-negative bacilli are the predominant causative agents of urinary tract infections in this tertiary care hospital, with *Escherichia coli* being the most frequently isolated uropathogen. This finding is consistent with reports from other tertiary care centers in Bangladesh and neighboring regions.^{3,9}

The marked female predominance observed in this study can be attributed to anatomical and physiological factors, including a shorter urethra and proximity of the urethral opening to the anal region. Similar findings have been consistently reported in previous studies.²

The antimicrobial susceptibility pattern revealed high effectiveness of aminoglycosides, particularly gentamicin and amikacin, against most isolates. Nitrofurantoin also retained good activity against *E. coli*, supporting its role as a useful oral agent for uncomplicated UTIs.⁴ In contrast, high resistance rates were observed against nalidixic acid and fluoroquinolones, reflecting widespread and often inappropriate antibiotic use.^{5,10}

These findings underscore the importance of routine urine culture and sensitivity testing and the need for continuous monitoring of local antimicrobial resistance patterns to guide empirical therapy.⁸

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Manuscript Preparation and Submission: Guidelines for Authors

Uniform Requirements for Manuscripts Submitted to RCMC Journal following the guideline of "International Committee of Medical Journal Editors" updated April 2010.

General Principles:

The text of observational and experimental articles is usually (but not necessarily) divided into the following sections: Introduction, Methods, Results, and Discussion. This so-called "IMRAD" structure which is a direct reflection of the process of scientific discovery. Long articles may need subheadings within some sections (especially Results and Discussion) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, probably need to be formatted differently. Authors need to work closely with editors in developing or using such new publication formats and should submit supplementary electronic material for peer review.

Preparation of manuscripts:

Type manuscripts double-spaced in all portions, including the title page, abstract, text, acknowledgments, references, individual tables, and legends. Leave 1-inch margin on all sides with number in every page so that it is possible for editors and reviewers to edit the text line by line and add comments and queries directly on the copy. As a general rule, articles should not exceed 4000 words. Over-length manuscripts will not be accepted for publication.

Title page

The title page should have the following information:

1. Article title: Concise titles are easier to read than long, convoluted ones and should not exceeding 50 characters.
2. Authors' names, highest academic degree, affiliations, and complete address for correspondence including mailing address, telephone number and E-mail address.

Abstract

Structured abstracts are preferred for original research and systematic reviews. The abstract should provide the context or background for the study and should state the study's purpose, basic procedures

(selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), principal conclusions, and funding sources in a running manner and not under separate headings with three to five key words for use as indexing terms. Do not cite references in the abstract. Be concise (250 words, maximum). Limit use of acronyms and abbreviations. Abbreviations must be defined at the first mention. Because abstracts are the only substantive portion of the article, and the only portion many readers read, authors need to be careful that they accurately reflect the content of the article.

The Text

The following are typical main headings: Introduction, Materials and Methods, Results, Discussion and Conclusion.

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b. More than six authors:

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c. Optional addition of a database's unique identifier for the citation:

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