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Journal of Monno Medical College (J Monno Med Coll) is a leading, open access, peer-reviewed scientific journal on medical science for rapid publication of articles published by Monno Medical College, Monno City, Gilondo, Manikgonj Bangladesh. This journal provides quick initial decisions followed by a high quality medical editing service and an excellent publishing service to its authors. This journal has been launched from June 2015 and will be continued. **J Monno Med Coll** is published 2 times per year. This journal aims to publish scientifically written, evidence-based articles from all disciplines of medical sciences and clinical practice, preventive medicine, epidemiology as well as healthcare research. There are a great scope to publish the different kinds of articles including original research papers, reviews of the specific topics, case report and short research communications. Submissions of basic and clinical research are both considered. Manuscripts should present novel findings addressing significant questions in clinical medicine research and practice, in the form of original research article, editorial, review article, short communication, case report, letter to the editor, and others. In addition to that **J Monno Med Coll** publishes studies performed by multi-center groups in the various disciplines of medicine, including clinical trials and cohort studies from large patient populations, specifically phase I, phase II, and phase III studies performed under the auspices of groups such as general clinical research centers, cooperative oncology groups, and the like. Reports of patients with common presentations or diseases, especially studies that delineate the natural history and therapy of important conditions are also published. Reviews oriented to the practicing internist and diagnostic puzzles, complete with images from a variety of specialties are also published. Careful physiological or pharmacological studies that explain normal function or the body's response to disease as well as analytic reviews such as meta-analyses and decision analyses using a formal structure to summarize an important field are acceptable to publish.

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- Authors should submit electronic version (Microsoft word doc) of the manuscript to the editor via e-mail (**editor.jmmc@yahoo.com**) and two hard copies of manuscript with cover letter signed by all authors of the paper
- Accepted papers will be acknowledged and processed further; if the papers are rejected, the decision will be communicated to the corresponding author but the manuscripts will not be returned.
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- The language of manuscript must be simple and explicit.
- Author's/Co-author's name or any other identification should not appear anywhere in the body of the manuscript to facilitate blind review.

Types of Manuscript

The following categories of manuscript are accepted for this journal:

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- b. Systematic Review or Meta Analysis
- c. Review Article
- d. Short communications
- e. Case reports
- f. Letter to Editor

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Original Research Articles:

It should be arranged into the following sections:

1. Title
2. Author(s)
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4. Structured Abstract
5. Key words
6. Introduction
7. Methodology
8. Results
9. Discussion
10. Conclusion
11. Acknowledgement
12. References
13. Tables
14. Figures

Title page

It should be paginated as page 1 of the paper. It should carry the title, authors' names and their affiliations, running title, address for correspondence including Email address & mobile number.

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Abstract: It must start on a new page carrying the following information: (a) Title (without authors names or affiliations), (b) Abstract body, (c) Key words, (d) Running title. It should not exceed 350 words excluding the title and the key words. The abstract must be concise, clear and informative rather than indicative. New and important aspects must be emphasized. The abstract must be in a structured form consisting of background, objectives, methodology, result and conclusion briefly explaining what was intended, done, observed and concluded. Authors should state the main conclusions clearly and not in vague statements. The conclusions and recommendations not found in the text of the article should not be given in the abstract.

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The results should be stated concisely without comments. It should be presented in logical sequence in the text with appropriate reference to tables and/or figures. The data given in tables or figures should not be repeated in the text. The same data should not be presented in both tabular and graphic forms. Simple data may be given in the text itself instead of figures or tables. Avoid discussions and conclusions in the results section.

Discussion

This section should deal with the interpretation, rather than recapitulation of results. It is important to discuss the new and significant observations in the light of previous work. Discuss also the weaknesses or pitfalls in the study. New hypotheses or recommendations can be put forth. Avoid unqualified statements and conclusions not completely supported by the data. Repetition of information given under Introduction and Results should be avoided.

Conclusion

Conclusions must be drawn considering the strengths and weaknesses of the study. They must be conveyed in the last paragraph under Discussion. Make sure conclusions drawn should tally with the objectives stated under Introduction.

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- Units of data given?
- “n” mentioned?
- Mean $\pm$ SD or Mean $\pm$ SEM given?
- Statistical significance of groups indicated by asterisks or other markers?
- P values given?
- Rows and columns properly aligned?
- Appropriate position in the text indicated?

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4) Study Selection: Describe inclusion and exclusion criteria used to select studies for detailed review from among studies identified as relevant to the topic. Under details of selection include particular populations, interventions, outcomes, or methodological designs. Specify the method used to apply these criteria (for example, blinded review, consensus, multiple reviewers). State the proportion of initially identified studies that met selection criteria.

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Systematic reviews are welcome. They should be critical assessments of current evidence covering a broad range of topics of concern to those working in the specific field of journal. Systematic reviews should be 4000-5000 words (abstracts to be structured as above).

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- Name, address, telephone and fax numbers and e-mail address of corresponding author
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More than six authors:

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2. Organization as author

The Cardiac Society of Australia and New Zealand. Clinical exercise stress testing. Safety and performance guidelines. *Med J Aust* 1996; 164: 282-4

3. No author given

Anonymous. Cancer in South Africa [editorial]. *S Afr Med J* 1994;84:15

4. Article not in English

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Ryder TE, Haukeland EA, Solhaug JH. Bilateral infrapatellar seneruptur hostidligere frisk kvinne. *Tidsskr Nor Laegeforen* 1996;116:41-2.

5. Volume with supplement

Shen HM, Zhang QF. Risk assessment of nickel carcinogenicity and occupational lung cancer. *Environ Health Perspect* 1994;102 Suppl 1:275-82.

6. Issue with supplement

Payne DK, Sullivan MD, Massie MJ. Women's psychological reactions to breast cancer. *Semin Oncol* 1996; 23(1 Suppl 2):89-97.

7. Volume with part

Ozben T, Nacitarhan S, Tuncer N. Plasma and urine sialic acid in non-insulin dependent diabetes mellitus. *Ann Clin Biochem* 1995;32(Pt 3):303-6.

8. Issue with part

Poole GH, Mills SM. One hundred consecutive cases of flap lacerations of the leg in ageing patients. *N Z Med J* 1994;107(986 Pt 1):377-8.

9. Issue with no volume

Turan I, Wredmark T, Fellander-Tsai L. Arthroscopic ankle arthrodesis in rheumatoid arthritis. *Clin Orthop*

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1995;(320):110-4.

10. No issue or volume

Browell DA, Lennard TW. Immuno-logic status of the cancer patient and the effects of blood transfusion on antitumor responses. *Curr Opin Gen Surg* 1993;325-33.

11. Pagination in Roman numerals

Fisher GA, Sikic BI. Drug resistance in clinical oncology and hematology. Introduction. *Hematol Oncol Clin North Am* 1995 Apr;9(2):xi-xii.

12. Type of article indicated as needed

Enzensberger W, Fischer PA. Metronome in Parkinson's disease [letter]. *Lancet* 1996;347:1337.

Clement J, De Bock R. Hematological complications of hantavirus nephro-pathy (HVN) [abstract]. *Kidney Int* 1992;42:1285.

13. Article containing retraction

Garey CE, Schwarzman AL, Rise ML, Seyfried TN. Ceruloplasmin gene defect associated with epilepsy in EL mice [retraction of Garey CE, Schwarzman AL, Rise ML, Seyfried TN. In: *Nat Genet* 1994;6:426-31]. *Nat Genet* 1995;11:104.

14. Article retracted

Liou GI, Wang M, Matragoon S. Precocious IRBP gene expression during mouse development [retracted in *Invest Ophthalmol Vis Sci* 1994; 35:3127]. *Invest Ophthalmol Vis Sci* 1994;35:1083-8.

15. Article with published erratum

Hamlin JA, Kahn AM. Herniography in symptomatic patients following inguinal hernia repair [published erratum appears in *West J Med* 1995;162:278]. *West J Med* 1995;162: 28-31. Books and Other Monographs

(Note: Previous Vancouver style incorrectly had a comma rather than a semicolon between the publisher and the date.)

16. Personal author(s)

Ringsven MK, Bond D. Gerontology and leadership skills for nurses. 2nd ed. Albany (NY): Delmar Publishers; 1996.

17. Editor(s), compiler(s) as author

Norman IJ, Redfern SJ, editors. Mental health care for elderly people. New York: Churchill Livingstone; 1996.

18. Organization as author and publisher

Institute of Medicine (US). Looking at the future of the Medicaid program. Washington: The Institute; 1992.

19. Chapter in a book

Phillips SJ, Whisnant JP. Hypertension and stroke. In: Laragh JH, Brenner BM, editors. Hypertension: Pathophysiology, diagnosis, and management. 2nd ed. New York: Raven Press; 1995. p. 465-78.

20. Conference proceedings

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Diagnostic and Prognostic Significance of Biochemical Tests among Covid-19 Patients: Bangladesh Perspective

Md. Akhtaruzzaman

The pandemic of COVID-19 has spread out all over the world, and over 250.0 million confirmed cases and more than 4.5 million deaths have been reported globally. Currently, COVID-19 patients are divided into four groups like mild, moderate, severe, and critical¹, and the COVID-19 patients mainly died from respiratory failure, septic shock, and multiple organ dysfunction syndrome². The clinicians diagnose the disease in several ways where biochemical parameter plays vital role in the diagnosis and prognosis of the disease as well as for deciding about treatment protocol.

Clinical course of COVID-19 can be staged as “early infection”, “pulmonary phase”, and “hyperinflammation phase”, each one characterized by specific biochemical alterations³ (Figure I).

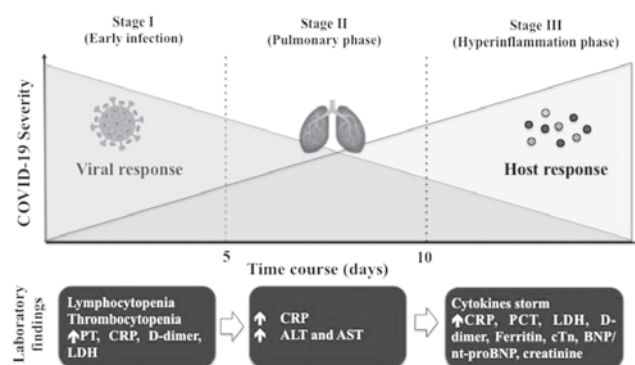


Figure I: Disease progression and main laboratory findings

The “early infection” phase is characterized by infiltration of lung parenchyma where SARS-CoV-2 infects ciliated bronchial epithelial cells through interaction with the angiotensin-converting enzyme 2 (ACE2). ACE2 is a monocarboxypeptidase with a critical role in regulating the cleavage of several peptides within the renin-angiotensin system and it is highly expressed on pneumocytes⁴. At this stage, most of the patients shows non-specific symptoms like dry cough and fever and characterized by lymphocytopenia, thrombocytopenia, raised transaminases, CRP (C-reactive protein), prothrombin time, D-dimer etc⁵. The pulmonary phase is characterized by viral pneumonia associated with localized inflammation within the lung and

biochemically characterized by lymphopenia, increase in transaminases, CRP etc. Most of the patients require hospitalization at this stage. Hyperinflammation stage of COVID-19 is the most severe, characterized by systemic

Table 1: Main Biochemical Alterations in Severe COVID-19 Patients

Alteration	Biomarkers
<i>Akhtaruzzaman</i>	
Haematological	↓ Lymphocyte count ↑ Neutrophil count ↑ NLR Platelet count
Inflammatory	↑ ERS ↑ CRP ↑ PCT ↑ Ferritin ↑ IL- ↑ LDH ↑ MDW
Coagulation	↑ D-dimer ↑ FDP ↑ PT ↑ aPTT ↑ Fibrinogen
Electrolyte	↓ K ⁺ ↓ Na ⁺ ↓ Ca ⁺⁺
Hepatic	↑ Alanine aminotransferase ↑ Aspartate aminotransferase ↑ Total bilirubin Albumin
Muscular	↑ CK ↑ Mioglobin
Renal	↑ Creatinine
Cardiac	↑ cTn ↑ BNP/nt-proBNP

ALT=alanineaminotransferase; aPTT=activatedpartialthromboplastin time; AST=aspartate aminotrasnferase; BNP=brain natriuretic peptide; CK=creatine kinase; CNS=central nervous system; cTn=cardiac Troponin; CRP=c-reactiveprotein; FDP=fibrindegredation

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inflammation and cytokine storm leading to ARDS (Acute Respiratory Distress Syndrome) and MOF (Multiple Organ Failure)⁶ requiring admission in an ICU⁷. Along with increase in several inflammatory biomarkers, this stage often presents with multi-organ involvement including heart, kidney and central nervous system(CNS)⁷. Table 1 shows the main biochemical alterations found in COVID-19 patients.

Many auxiliary parameters were used to diagnose and monitor treatment of COVID-19 disease⁸. C-Reactive Protein (CRP) is a non-specific marker of inflammation and can reflect the severity of COVID-19 pneumonia in the early stage, and the level of plasma is useful for physicians to stratify patients for intense care unit transfer. High Lactate Dehydrogenase (LDH) and high D-dimer level is found to be associated with higher mortality of COVID-19 patients. IL-6 and IL-10 are pro-inflammatory cytokines and can be used as predictors for fast diagnosis of patients with higher risk of disease deterioration and help physicians correctly allocate patients at an early stage⁹. Disease severity in COVID-19 is associated with a cytokine storm due to higher concentrations of GCSF, IP¹⁰, MCP1, MIP1A, and TNF- α , which are associated with higher ICU admissions¹⁰. Severe COVID-19 patients tend to have lower LYM and the significant reduction in T-lymphocyte subsets which was found to be positively correlated with in-hospital mortality¹¹. Though the diagnosis of COVID-19 is done by RT-PCR and typical chest computed tomography imaging features; increased levels of certain inflammatory biomarkers such as C-reactive protein, IL-6, procalcitonin, ferritin, D-dimer and WBC count are used to assess disease progression⁹. Even some urine parameters such as glucose and protein can also be used as effective markers to predict COVID-19 severity.

Decreased total serum protein levels are also identified in almost all patients died of COVID-19. Elevated aminotransferases (ALT, AST), ALP, bilirubin, creatinine levels were found in patients requiring ICU admission¹⁰. It is revealed that in the first six days of hospitalization, those patients in severe clinical conditions showed significantly higher levels of IL-6 and LDH in serum than those of the moderate group. Interestingly, the decrease of serum levels of LDH and CK was correlated with the elimination of viral mRNA, suggesting that the constitutive reduction in the levels of LDH or CK is likely to predict a favorable response to the course of infection in COVID-19 patients¹². For risk stratification, along with traditional biomarkers, new promising biomarkers like presepsin and MDW is being studied for early detection of patient at risk of complication. To understand immune response to the SARS-CoV-2 infection, study with immunoglobulin is underway. Further study with biochemical parameter can set a management protocol for managing outpatient and

inpatients including ICU settings and thus will make the treatment cost-effective.

Many laboratory parameters make it possible to assess the severity of the disease and predict the risk of it evolving toward more serious afflictions such as acute respiratory distress syndrome (ARDS), disseminated intravascular coagulation (DIC) and multiple organ failure (MOF)¹³. Some parameters for which an unfavorable course of the disease has been described are absolute neutrophilia, thrombocytopenia, hypoalbuminemia, the elevation of liver enzymes, creatinine and nonspecific inflammatory markers such as C-reactive protein (CRP) and Interleukin 6 (IL-6)¹⁴. Not with standing the above, the main progression predictors described are lymphopenia, elevated D-dimer and hyperferritinemia, although it is also necessary to consider LDH, CPK and troponin in the marker panel¹⁵.

By analyzing biochemical and other laboratory data, the test results of different parameters can be set as specific for specific stages of the clinical course of COVI-19. Which will help deciding which patients are to be treated at home or hospitalized; which patients are to be send to ICU/critical care unit. Thus it will make the treatment cost-effective and may save economy, time as well as sufferings of the patients.

[Journal of Monno Medical College, June 2021;7(1): 1-3]

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Attitude and Practices of Personal Hygiene among the Caregivers of the Patient of Acute Watery Diarrhoea Attending in a Tertiary Care Hospital

Saha G¹, Akter W², Karim SMN³, Das D⁴

Abstract

Background: The different practices of personal hygiene has some role during management of acute watery diarrhoea. **Objective:** The purpose of the present study was to find out the attitude and practices of personal hygiene among the caregivers of the patient of acute watery diarrhoea. **Methodology:** This Descriptive type of cross-sectional study was conducted in the Department of Paediatrics at Chittagong Medical College Hospital, Chittagong, Bangladesh from 20th March 2015 to 19th September 2015 for a period of six months. All caregivers were the respondents of children with up to 3 years old suffering from acute watery diarrhoea attended in Paediatrics unit of Hospital. This included persons residing in urban and semi-urban areas around Chittagong city, as well as persons transferred from hospitals in rural areas of the country. Sample was selected from the population by purposive sampling technique. The different questions of attitude and practices were recorded. **Results:** A total number of 100 patients were taken as sample for study. Majority (46%) caregivers considered loose and watery stool as Diarrhoea. Regarding causes of Diarrhoea, (40%) of mothers said lack of vitamin, (17%) considered due to indigestion. Regarding effects of impure water drinking, 39.0% caregivers considered it causes acute watery diarrhoea. A large number of the respondents (41%) habited the use of plain water after toileting, 32% caregiver having practice to clean hand properly with soap. a large number of the respondents (39%) drink tube well regularly, (23%) take pond/river water as source of drinking water. Approximately half of the respondents (42%) practiced defecation to the sanitary latrine. Main constrains for practicing hygiene noticed that lack of money (62%) is main cause and majority of caregiver considered. **Conclusion:** In conclusion the attitude and practices of personal hygiene as well as sanitation among the caregivers of the children presented with acute watery diarrhea is poor. [Journal of Monno Medical College, June 2021;7(1):.....]

Keywords: Attitude; Practices; Personal Hygiene; Caregivers; Acute Watery Diarrhoea

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Introduction

Diarrhoea remains the second leading cause of death among children under five globally¹. Nearly one in five child deaths about 1.5 million each year is due to diarrhea and it kills more young children than AIDS, malaria and measles combined². The United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) issued a report

highlighting the most common cause of death among children¹. The verbal autopsy study in the BDHS revealed that about one-quarter of deaths among children under five years were associated with acute respiratory infections (ARI) and about one-fifth of the deaths were associated with diarrhoea².

Diarrhoea is a common symptom of gastrointestinal

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infections caused by a wide range of pathogens, including bacteria, viruses and protozoa⁴. However, just a handful of organisms are responsible for most acute cases of childhood diarrhoea. Rotavirus is the leading cause of acute diarrhoea, and is responsible for about 40 per cent of all hospital admissions due to diarrhoea among children under five worldwide⁴. Other major bacterial pathogens include *E. coli*, *Shigella*, *Campylobacter* and *Salmonella*, along with *V. cholerae* during epidemics. Most pathogens that cause diarrhoea share a similar mode of transmission – from the stool of one person to the mouth of another⁵.

Improvements in access to safe water and adequate sanitation, along with the promotion of good hygiene practices particularly hand washing with soap, can help prevent childhood diarrhoea⁶. In fact, major causes of diarrhoeal deaths worldwide are attributable to unsafe water, inadequate sanitation and poor hygiene. Water, sanitation and hygiene programmes typically include a number of interventions that work to reduce the number of diarrhoea cases⁷. Awareness and practice of mothers or caregiver plays role for promotion of these events. It should be tried to involve nurse, health care workers also for counseling of caregiver in the treatment and proper management of Diarrhoea which is the leading cause of acute watery diarrhea and morbidity, mortality in children in Bangladesh⁸. If we find that their knowledge is poor we shall be able to arrange awareness programme of health education in the hospital setting. Therefore the objective of this study was to assess the attitude and practice regarding diarrhoea among caregivers of acute watery diarrhoea children under 3 years of age.

Methodology

This was design as descriptive type of cross-sectional study in the Department of Paediatrics at Chittagong Medical College Hospital, Chittagong, Bangladesh from 20th March 2015 to 19th September 2015 for a period of six months. Caregivers of the children of acute watery diarrhoea attending in Paediatrics unit of Chittagong Medical College Hospital, Chittagong, fulfilling the inclusion and exclusion criteria were selected as study population. Sample was selected from the population by purposive sampling technique. Non-random purposive sampling was adopted to subjects by interviewing caregivers after taking their consent. Caregivers of the children with up to 3 years old presented with acute watery Diarrhoea who attended in Paediatrics unit of Department of Paediatrics at Chittagong Medical College Hospital, Chittagong, Bangladesh were included as study population. Caregivers of above 3 years old patients of acute watery Diarrhoea, Caregivers who age below 18 years, Caregivers who psychologically ill, Patient with other morbidities were excluded from this study. Hygiene was defines as a set of practices performed for the preservation of health. Personal hygiene was involved those practices performed by an individual to care for one's bodily health and well-being through cleanliness. Caregivers have child

less than 3 years of age were included. An informed written consent was taken from the participants and they were interviewed using a validated questionnaire. After fulfilling the inclusion and exclusion criteria, caregiver were enrolled with unique ID. Subjects briefed about the objectives of the study, risk and benefits, freedom for participating in the study and confidentiality. The pre-structured Case Record Form (CRF) filled up by the study physician herself. This questionnaire was used for collection of information by interviewing patients. A score of more than 75% was considered good, 50-74% moderate and less than 50% poor. Collected all questionnaire checked very carefully to identify the error in collecting data. Data processing work were consisting of registration of schedules, editing, coding and computerization, preparation of dummy tables, analysis and matching data. Data for socio-demographic and clinical variables were obtained from all participants by the use of a pre-designed and easily understandable questionnaire. After collection of all information, these data were checked, verified for consistency and edited for finalized result. Analyses was performed with SPSS software, versions 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Continuous data were summarized in terms of the mean, standard deviation, minimum, maximum. Categorical or discrete data were summarized in terms of frequency counts.

Results

A total number of 100 patients were taken as sample for study according to inclusion, exclusion criteria, to assess the awareness, attitude and practice of personal hygiene among the caregivers of the patient of acute watery diarrhoea. The age group was divided into four groups: ≤ 6 month, 6 to 16 month, 17 to 26 month and 27 to 36 month. In this series, the maximum number of child patients 38(38%) were between 6-16 month age group, next 29(29%) were between the age group of 17-26 month. Mean age of the patient were 18.05 ± 6.78 month (Table 1).

Table 1: Age Distribution of the Diarrhoeal Patients (n=100)

Age Group	Frequency	Percent
≤ 6 months	13	13
6 to 16 months	38	38
17 to 26 months	29	29
27 to 36 months	20	20
Total	100	100.0
Mean $\pm$ SD	18.05 ± 6.78	

The respondents that said that they knew about hand washing, sanitation were asked to demonstrate definition of Diarrhoea, causes of AWD, with its overall conception and linkages. Majority (46%) caregivers considered loose and watery stool as Diarrhoea. Regarding causes of Diarrhoea, (40%) of mothers said lack of vitamin, (17%) considered due to indigestion. About

Interrelation of personal hygiene and AWD, 48% caregiver unknown and 37.0% gave specific answered. Regarding effects of impure water drinking, 39.0% caregivers considered it causes AWD. In this study half (50.0%) of the respondents in the entire study sample were considered proper hand washing can prevent AWD, 24.0% reported has no role. Among the study participant, 39.0% caregiver considered effects of improper food hygiene is responsible for AWD, while others 31.0% give answer that nothing happen. Unfortunately, (26.0%) of the caregiver unknown regarding effects of underprivileged sanitation system, and 62.0% caregiver considered it contaminates surrounding water, soil and environment (Table 2).

Table 2: Attitude Regarding Diarrhoeal Disease and Hand Hygiene among the Caregivers (n=100)

Variables	Frequency
Diarrhoea	
• Loose stool/ liquid stool	46
• Blood with stool	25
• Don't know	22
Cause of diarrhoea	
• Lack of vitamin	40
• Don't know	35
• Due to indigestion	17
Interrelation of personal hygiene and AWD	
• Don't know	48
• Yes	37
• No	15
Effects of impure water drinking	
• Others	43
• Causes AWD	39
• Don't know	18
Role of hand washing on AWD	
• Prevent AWD	50
• Reduce fatal outcome	25
• No role	24
Effects of improper food hygiene	
• Causes AWD	39
• Nothing happen	31
• Others	30
Effects of underprivileged sanitation system	
• Contaminates surrounding water, soil	62
• Don't know	26
• Has equal effect on health	12

In this study a large number of the respondents (41%) habited the use of plain water after toileting, 32% caregiver having practice to clean hand properly with soap. Hand washing practice before taking meal or feed of the baby were observed in (45%) in sometimes and (44%) with plain water. Almost half of the respondents (56%) having practice of hand washing with water after cleaning bottom of baby and (20%) Considered children are innocent, no need to clean hand. In this study, a large number of

the respondents (39%) drink tube well regularly, (23%) take pond/river water as source of drinking water. While a significant proportion of the respondents (35%) having practice to take food

Table 3: Practicing manner of personal hygiene, water supply and food utilization as well as sanitation among caregivers (n=100)

Variables	Frequency
Preference after toileting	
• Use plain water	41
• Clean hand properly with soap	32
• Clean with ash/sand	24
Hand washing practice before taking meal or feed baby	
• Sometimes clean	45
• Clean with plain water	44
• Clean with ash/sand/others	9
Hand washing attitude after cleaning bottom of baby	
• Clean with water	56
• Children are innocent, no need to clean hand	20
• Clean hand properly with soap	18
Source of drinking water	
• tube well water	39
• Others	34
• Pond/river water	23
Preference to take food	
• Just after cooking	35
• Re-heat before taking	30
• Several days later without preservation	28
Use of cover after cooking of food	
• Sometimes cover	43
• No need to cover	37
• Don't know	20
Defecation habit	
• Sanitary latrine	42
• Anywhere beside road, pond etc.	25
• Latrine which maintain privacy	22
Criteria of own latrine	
• Preserve privacy	39
• Should be clean	26
• Never contaminates surrounding water, soil	26
Preference of child's waste product disposal	
• Waste products are harmless	36
• Sometimes safety disposal	26
• Don't know	25
Main constrains of practicing hygiene	
• Lack of money	62
• Laziness	15
• Superstition	15
Way to overcome constrains	
• Improvement economic status	68
• More NGO's activities	16
• Media can play a role	11

Just after cooking, as others either Re-heat before taking (30%) or several days later without preservation (28%). However, majority of caregivers were observed that having practice to use of the cover occasionally or sometimes (43%) to never need to cover (37%) practice after cooking of food. Approximately half of the respondents (42%) practiced defecation to the sanitary latrine; a substantial number (25%) uses open place, while few reported (22%) using latrine which maintain privacy. There were about (26%) caregivers that said that they used safety disposal to manage child's waste product disposal, but 25 %unknown regarding Child's waste product disposal. Main constrains for practicing hygiene noticed that lack of money (62%) is main cause and majority of caregiver considered. Improvement of economic status (68%) and More NGO's activities (16%) can minimize these constrains (Table 3).

Discussion

A total of 100 caregivers attended in different Paediatrics unite of Chittagong Medical College Hospital, Chittagong were selected. The age group was divided into four groups: ≤ 6 month, 6 to 16 month, 17 to 26 month and 27 to 36 month. In this series, the maximum number of child patients 38(38%) were between 6-16 month age group, next 29(29%) were between the age group of 17-26 month. Mean age of the patient were 18.05 ± 6.78 month. Study demonstrated that the prevalence of AWD of male and female 6-16 month was highest. Out of 100 cases 31% were female and 69.0% were male. Male and female ratio was 2.22:1.

The study showed that only 72% of the mothers knew the correct definition of Diarrhoea. This result is consistent with the study conducted in Bangladesh stated that 72.0% mothers knew the correct definition of Diarrhoea⁹. Most of the mothers (47.0%) did not know the causes of Diarrhoea. They considered teething, falling from height, evil eye, eating pulses or hot food and weather changes as the predisposing factor. A study in Indonesia showed similar results¹⁰. Regarding prevention of diarrhoea, 62.0% mothers perceived the importance of personal hygiene for prevention of Diarrhoea in contrast to 45.0% in a Gambia research¹¹. Very few mothers knew various preventive methods like, boiling water (14.5%). Another research conducted in Indian city of Karnataka, showed that only 25% mothers boiled their drinking water¹².

This study sought to describe the attitude of mothers/caregivers as one of its objectives. Interestingly, majority (46%) caregivers considered loose and watery stool as diarrhoea. Regarding causes of Diarrhoea, (40%) of mothers said lack of vitamin, (17%) considered due to indigestion. Among the study participant, 39% caregiver considered effects of improper food hygiene is responsible for acute watery diarrhoea, while others 31% give answer that nothing happen. Unfortunately, (26%) of the caregiver unknown regarding effects of underprivileged sanitation system, and 62% caregiver considered it contaminates surrounding

water, soil and environment. Khalili et al⁷ reported that 155(52%) mothers declared that Diarrhoea may occurred due to the digestion of contaminated food and water, 142(47.7%) subjects reported that the teething may cause Diarrhoea, and the few remaining mentioned the common cold as an etiology. On the other hand, in a question about the effective factors in developing Diarrhoea approximately 36.5% participants considered unsafe water and unclean hands as one of the factors in developing Diarrhoea⁷.

Present study shows that, Hand washing practice before taking meal or feed of the baby were observed in (45%) in sometimes and (44%) with plain water. Almost half of the respondents (56%) having practice of hand washing with water after cleaning bottom of baby and (20%) Considered children are innocent, no need to clean hand. Large number of the respondents (39%) drink tube well regularly, (23%) take pond/river water as source of drinking water. Cross-sectional study⁷ in Zahedan, Iran reported that 20 caregiver mentioned all of the three factors of cooked and cold food, unsafe water, and not washing hands as being the cause for Diarrhoea. Among the study population, 240 individuals positively responded to the question about the importance of vaccination in preventing of Diarrhoea. Only 137 participants were aware of the importance of measles vaccination in order to prevent severe Diarrhoea⁷.

Approximately half of the respondents (42.0%) practiced defecation to the sanitary latrine; a substantial number (25.0%) uses open place, while few reported (22.0%) using latrine which maintain privacy. There were about (26.0%) caregivers that said that they used safety disposal to manage child's waste product disposal, but 25.0% unknown regarding Child's waste product disposal. Merga et al⁵ have reported that knowledge of mothers about causes, transmission, and prevention of diarrhoea was 37.5% respondents in their study. The overall knowledge in the indigenous community was 42.67% which was higher than that in the settlement area (32.68%). As shown 140 (20.2%) respondents reported that diarrhoea can be caused/transmitted by drinking unclean/unsafe water⁵. Present study demonstrated that main constrains for practicing of hygiene noticed that lack of money (62%) is main cause and majority of caregiver considered Improvement of economic status (68%) and More NGO's activities (16.0%) can minimize these constrains. The result indicates that there was a statistically significant relationship between the respondents' knowledge and practice, attitude. However, there was no significant relationship between attitude and practice. This implies that knowledge was not translated to personal hygiene practices¹³.

The result indicates that there was a statistically significant relationship between the respondents' knowledge and practice, attitude. However, there was no significant relationship between attitude and practice. This implies that knowledge was not translated to personal hygiene practices. This education and awareness should be focused on matter as importance of personal hygiene, pure drinking water,

sanitation, proper and systematic dietary habit for family member¹⁴⁻¹⁵.

Limitation of this study is that it is a hospital-based study where mothers or caregivers might have been given health education regarding Diarrhoea so their level of knowledge would be different from mothers in the community. It was a single centre study. Only patients admitted in Chittagong Medical College Hospital were taken for the study. So this will not reflect the overall picture of the country. A large scale study needs to be conducted to reach to a definitive conclusion. Study was conducted in a tertiary care hospital which may not represent primary or secondary centre. The study includes caregivers of under 3 children and excluded under 5 children and may have introduced selection bias. Another form of selection bias was also introduced by the exclusion of caregivers aged below 18. Those that belonged to this category were however, few. The use of a scoring system for this research is an additional gross estimate of the main outcome variable and has its limitations, however, it was hoped it would indicate a pattern of knowledge, attitudes and practices. The questionnaire used for this study was an adaptation of the same questionnaire that was used by other national and international study. Pilot study couldn't be done. This adaptation and corrections may have limited the validity of the measuring instrument. The findings in this study were mainly based on self-reporting. It is known that people tend to give responses that are perceived as desirable when they are under scrutiny (Hawthorne effect) which is a form of information bias.

Conclusion

The results suggest a making practicing mind of personal hygiene in water and sanitation measures to reduce diarrhoea at grass root level. This may be supported by promoting favourable change in hygienic health-seeking behaviour such as sanitary hand-washing practices and in general underscoring the importance of health-conscious home environment. Providing information through mass media and clarifying public opinion about the importance of personal hygiene, nutrition in physical and intellectual growth and development of children may also be beneficial. Present study also demonstrated that main constraints for practicing of personal hygiene were lack of money, laziness and superstition. More NGO's activities, health education, mass media involvement can improve the caregiver's awareness, attitude and practicing mind regarding personal hygiene. Mother's attitudes and practices should be increased on Diarrhoea home management through public education interventions and improved counseling in Primary Health Care facilities. Future research is needed to understand reasons of mothers' poor knowledge on and barriers against right practices of Diarrhoea home management.

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Comparison of Breast Feeding Practices among Mothers in Relation with Malnutrition of Their Children in Bangladesh

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Abstract

Background: Breast feeding is one of the most effective strategies to improve child nutrition. **Objectives:** The purpose of this present study was to compare the breast feeding practices among children with or without malnutrition. **Methodology:** This cross-sectional study was conducted in the Department of Epidemiology at National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh from January 2005 to June 2005 for a period of 6 months. All the children under the 2 years of age who were attended OPD or IPD were selected for the study purposively. Severe and acutely ill children were excluded from this study. **Result:** A total number of 113 children were recruited for this study of which healthy child were predominant which was 78(69%) cases and malnourished child were in 35(31%) cases. Majority healthy child were history of exclusive breast feeding 67(87.18%) than malnourished 10(25.71%) ($p<0.05$). Healthy Child who were fed colostrum after birth was found in 68(87.18%) cases and malnourished child was in 9(25.7%) cases ($p<0.05$). Child who fed formula milk or cow's milk before 6 months were more likely to be malnourished than healthy children which was 21 (66.2%) cases and 19(21.05%) cases respectively ($p<0.05$). **Conclusion:** In conclusion breast fed children are less likely to be malnourished. [*Journal of Monno Medical College, June 2021;7(1):.....*]

Keywords: Malnourished child; breast feeding practices; colostrum

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Introduction

Proper infant feeding is crucial for child nutrition, survival and development. Breast milk is the gold standard for infant feeding and also for other off springs of 4237 mammalian species¹. Allah, the creator has made the provision of only one food from the human body and that is breast milk. There are three determinants of good health, nutrition and child survival. These are food security, care and disease control. The important public health programs, which are undertaken in developing countries to reduce morbidity and mortality and to promote health, immunization, control of diarrheal disease, management of acute respiratory infections, high potency vitamin A capsule distribution and family planning².

Breast feeding makes significant contribution to the success of each one of these programs. Colostrum contains more immunoglobulin than mature milk and these provide protection to newborn against infection. About 10.0% of protein in mature milk is secretory IgA, which specific to pathogens commonly present in the mother's gastrointestinal or respiratory tract³. This specific protection is obtained by migration of immunogenic-triggered B-cells from payers' patches and lymphoid gland. Breast milk also contains lymphocytes, macrophages, and protein with nonspecific antibacterial activity, cytokines and complements^{3,4}. Artificial infant milk is one of the fastest growing food industries in the world. World sales estimated at over 10 billion per year, with

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annual increase of up to 15% cases⁵. Half of these sales are to developing countries. In urban areas of Bangladesh, 80.0% of mothers feed their infants artificial milk². Infant should be exclusively breast fed at least 4 months but if possible 6 months⁶.

Exclusive breast feeding means that nothing except medicines and water by dropper, spoon or cup is fed to the infant other than breast milk⁶. Nutritional requirements are fully met at this age by breast milk alone. Partial breast feeding is not ideal since giving the breast at the sometime the bottle, will reduce the amount of milk secreted by the breast and make the infant used to rubber nipples, making breast-feeding more difficult². Giving the bottle with or without breast feeding increases the risk of infection, as it is more susceptible to contamination⁷. Severe malnutrition is defined as a weight-for-height measurement of 70.0% or less below the median, or three SD or more below the mean National Centre for Health Statistics reference values, the presence of bilateral pitting oedema of nutritional origin, or a mid-upper-arm circumference of less than 110 mm in children age 1-5 years⁸. About 13 million children under age 5 years have severe malnutrition, and the disorder is associated with 1 million to 2 million preventable child deaths each year⁹. In practice malnutrition is a deadly disease that harms a nation multi-dimensionally; the current study will successfully be a platform for baseline information which might ignite the necessity of large scale nationwide program. The purpose of this present study was to compare the breast feeding practices among children with or without malnutrition.

Methodology

This comparative type of cross sectional study was conducted in the Department of Epidemiology at National Institute of preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh from January 2005 to June 2005 for a period of 6 months. All the children who attended OPD or IPD of above mentioned hospitals under the 2 years of age were selected for the study purposively. Severe and acutely ill children were excluded from the study. Research instrument was semi structured questionnaire, it was pre tested at homogenous non-sample area. Face to face interview of the respondent were taken with the help of semi structured questionnaire. The data were screened and checked for any missing value. Prior to the commencement of the study written consent were taken from every study participants and the research protocol was approved by the local ethics committee of National Institute of preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh. All data were recorded systematically in preformed data collection form and quantitative data were expressed as mean and standard deviation and qualitative data were expressed as frequency distribution and percentage. Chi-square test were carried out to find the association of categorical data. Statistical analysis was performed by using window based computer software devised with Statistical Packages for Social Sciences SPSS version 21.

Results

A total number of 113 respondents were recruited after fulfilling the inclusion and exclusion criteria. Among them healthy child were predominant 78(69%) and malnourished child were 35(31%) (Figure I)

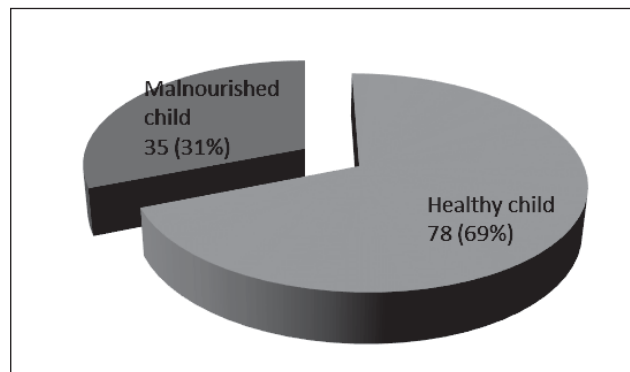


Figure I: Distribution of Study Population

Majority of the malnourished child were nursed by illiterate mother 16 (45.75%) cases and only 2 (5.68%) cases of the mother were HSC or above education. In healthy child predominant level of mother's education were HSC or above 27 (34.8%) and illiterate was 10 (9.5%). The difference was statistically significant ($p=0.04$) (Table 1).

Table 1: Distribution of the Children by Nutritional Status and Level of Mother's Education

Level of Mother's Education	Nutritional Status		Total	P Value
	Healthy	Malnourished		
Illiterate	10(9.5%)	16(45.75%)	26(55.25%)	0.04
Informal Education	11(10.3%)	8(22.86%)	19(33.16%)	
Primary	14(16.9%)	5(14.28%)	19(31.18%)	
SSC	16(18.5%)	4(11.43%)	20(29.93%)	
HSC& above	27(34.8%)	2(5.68%)	29(40.48%)	
Total	78(100%)	35(100%)	113(100%)	

Chi-square test was performed to see the level of significance.

Level of monthly family income among the study population was recorded. Less than 5000 taka was found in 33(65.9%) and 25(43.1%) in healthy and malnourished child respectively. More than 10000 taka was found in 18(94.74%) and 1(5.26%) in healthy and malnourished child respectively. The association was statistically significant ($p=0.017$) (Table 2).

Majority of healthy children who were fed colostrum after birth was found 68 (87.18%) cases and 9(25.7%) cases in malnourished child. Statistically significant difference was revealed between colostrum feeding and nutritional status ($p=0.027$) (Table 3).

Association between nutritional status of child and feeding of cow's milk and formula milk was recorded. Child who feed formula milk or cow's milk before 6 months were 19(21.05%) cases and 21(66.2%) cases in healthy and malnourished child

respectively. The association is statistically significant ($p=0.038$) (Table 4).

Table 2: Distribution of Nutritional Status and Monthly Family Income

Level of Monthly Family Income	Nutritional Status		Total	P Value
	Healthy	Malnourished		
Less than 5000 taka	33(65.9%)	25(43.1%)	58(109%)	0.017
5000-10000 taka	27(75.0%)	9(25.0%)	36(100%)	
More than 10000 taka	18(94.74%)	1(5.26%)	19(100%)	
Total	78(69%)	35(31%)	113(100%)	

Chi- Square (X^2) test was performed to see the level of significance.

Table 3: Distribution of Children by Nutritional Status and Colostrum Feeding

Colostrum Feeding	Nutritional Status		Total	P Value
	Healthy	Malnourished		
Yes	68(87.18%)	09(25.71%)	77(112.89%)	0.027
No	10(12.82%)	26(74.29%)	36(87.11)	
Total	78(100%)	35(100%)	113(100%)	

Chi- Square (X^2) test was performed to see the level of significance.

Table 4: Distribution of Children by Nutritional Status and Feeding of Cow's Milk and Formula Milk

Cow's & Formula Milk Before 6 month	Nutritional Status		Total	P Value
	Healthy	Malnourished		
Yes	19(21.05%)	21(66.20%)	40(87.25%)	0.038
No	59(78.95%)	14(33.80%)	73(112.75%)	
Total	78(69.00%)	35(31.0%)	113(100.0%)	

Chi- Square (X^2) test was performed to see the level of significance.

In healthy child majority were history of exclusive breast feeding 67(87.18%) and in malnourished child were 10(25.71%). The association is statistically significant ($P=0.026$) (Table 5).

Table 5: Distribution of Respondents by History of Exclusive Breast Feeding

History of Exclusive Breast Feeding	Nutritional Status		Total	P Value
	Healthy	Malnourished		
Yes	67(87.18%)	10(25.71%)	77(12.89%)	0.026
No	10(12.82%)	26(74.29%)	36(87.11%)	
Total	78(69.00%)	35(31.0%)	113(100.00%)	

Chi- Square (X^2) test was performed to see the level of significance.

Discussion

There is extensive evidence of the benefits of breastfeeding for infants and mothers. In 2003, the World Health

Organization (WHO) recommended infants be fed exclusively on breast milk until six months of age¹⁰. To compare the breast feeding practices among healthy and malnourished child about 113 respondents have been selected after fulfilling the inclusion and exclusion criteria. Among them healthy children were predominant 78(69%) cases and malnourished child were 35(31%) cases.

Association between nutritional status of child and level of mother's education was recorded. Majority of the malnourished child were nursed by illiterate mother 16 (45.75%) and only 2 (5.68%) of the mother were HSC or above education. In healthy child predominant level of mother's education were HSC or above 27 (34.8%) and illiterate was 10 (9.5%). The difference was statistically significant ($p=0.04$). In a study conducted at Ghana found that Z score of weight -for -age and mothers educational level were highly associated with one another and mothers' education is a risk factor for the prevalence of severe malnutrition¹¹.

Monthly family income is another important key factor that hinders proper nutrition of children. Less than 5000 taka was found in 33(65.9%) and 25(43.1%) in healthy and malnourished child respectively. More than 10000 taka was found in 18(94.74%) and 1(5.26%) in healthy and malnourished child respectively. The association was statistically significant ($p=0.017$). A study conducted in Nepal revealed that almost similar picturing relation with monthly income and malnutrition¹². Majority of healthy Child who were fed colostrum after birth was found 68(87.18%) and 9(25.7%) in nourished child. Statistically significant difference is revealed between colostrum feeding and nutritional status ($p=0.027$). A study has been done at University of Illinois, Urbana which has been revealed that most of mothers (45.13%) have given colostrum to their child as first food¹³.

In this study an association between nutritional status of child and feeding of cow's milk and formula milk has been recorded. Children who have fed formula milk or cow's milk before 6 months are in 19(21.05%) cases and 21(66.2%) cases in healthy and malnourished child respectively. The association is statistically significant ($p=0.038$). Significant association has been found between practices of commercial formula feeding and malnourished in a study conducted among the children attended the Well Baby Clinic of UHC Gokulpuri, Delhi, India during the year 2000¹⁴. The study also revealed that formula fed children were malnourished which corresponds to the finding of the current study.

In this study majority healthy child have given the history of exclusive breast feeding (87.18%) which is less in malnourished children (25.71%). The association is statistically significant ($p=0.026$). Similar findings have been also revealed by the surveillance report "Towards the Goals of the World Summit for Children, Helen Keller international and Institute of Public Health Nutrition. All infants less than 6 months old were breast fed, but a

substantial percentage was not exclusively breast fed¹⁵. Talukder⁹ has found that exclusive breast feeding has been done by 65.0% mothers, which almost corresponds to the result of current study.

Conclusion

The fact actually emphasizes to the under nutrition of mother herself. Malnutrition is more prevalent among the children of low income family. Exclusive breast feeding practice doesn't depend on socioeconomic condition as some poor people avoid feeding food other than breast milk to save extra expense. Babies who were fed colostrum after birth were less likely to be undernourished. Children who were fed formula milk or cow's milk before six months were more likely to be malnourished.

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Non-Union of Tibia Treated with Ilizarov External Fixator: Experience of 28 Cases at a Tertiary Care Hospital in Bangladesh

Uddin MN¹, Khan MAR², Dany AS³, Azad MLR⁴, Mallik MA⁵**Abstract**

Background: Various treatment options are available in case of nonunion of tibia and the Ilizarov external fixator application is considered superior due to its multiple advantages. **Objective:** The objective of this study was to analyses the role of Ilizarov fixation in tibial non-union as well as to assess bony union and associated functional outcomes. **Methodology:** This retrospective review was conducted for the duration from January 2017 to November 2019 in the Department of Orthopedic Surgery at Monno Medical College Hospital, Manikgonj, Bangladesh. The patients with tibial non-union who were treated with the Ilizarov fixator were included in the study. Patient records were reviewed for union of bone and functional outcomes and complications. **Result:** Out of the 28 patients, 05 patient had non-union of type A and were treated by compression technique and other 23 patient had non-union of type B and were treated using bone-transport. Tibial union was achieved in all the cases. Mean time to union was 46 weeks. The average follow up time was 48 weeks. According to the ASAMI score bone/radiological results ten were classed as excellent with the remainder being good. Functionally four were graded as excellent, eight as good, fourteen as satisfactory and two as poor. **Conclusion:** The Ilizarov technique is an effective method in treating both aseptic and septic tibial non-union. Our study and the current evidence suggested that Ilizarov methods in the treatment of infected tibial nonunion acquired satisfied effects in bone results and functional results. Radical debridement is the key step to control bone infection. [Journal of Monno Medical College, June 2021;7(1):.....]

Keywords: Aseptic; Tibial bone transport; Nonunion; infected nonunion ; bone defects Ilizarov methods.

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Introduction

Infected tibial nonunion is common in clinical practice, and there are usually some coexisting problems of bone and soft tissue loss, deformities, limb-length inequalities and polybacterial infection¹. Up to now, the treatment of infected tibial nonunion has still been a challenge for orthopedic surgeons. Some different treatment options have been reported, including bone grafting, free tissue transfer, antibiotic cement and Ilizarov methods. Bone grafting has some limitations such as size of graft for large bone defects and donor site morbidity². Free tissue transfer is technically

demanding treatment, and usually associated with some problems of stress fractures and non-unions.

Antibiotic cement is only suitable for the treatment of infected tibial nonunion with small bone defects or none, and bone grafting is usually indispensable³. Besides, these three methods may not be capable of treating infection and bone nonunion simultaneously. The ability is possible with application of the methods of Ilizarov. Bone transport is a type of Ilizarov methods, and it is suitable for the treatment of infected nonunion with bone defects of any length. Hence, bone transport has gradually been a major treatment for

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infected tibial nonunion. In the following report, we describe our successful experience in the treatment of infected tibial nonunion by bone transport using Ilizarov external fixator. To our knowledge, this study represents the largest retrospective series on the number of patients with infected tibial nonunion and the species of infectious bacteria, and we conducted a first systematic review of infected tibial nonunion treated by Ilizarov methods. Two hypotheses are proposed which are Ilizarov methods in the treatment of infected tibial nonunion can acquire satisfied effects in bone results and functional results and another one, radical debridement is the key step to control bone infection. The objective of this study was to analyses the role of Ilizarov fixation in tibial non-union as well as to assess bony union and associated functional outcomes.

Methodology

This retrospective review was conducted for the duration from January 2017 to November 2019 in the Department of Orthopedic Surgery at Monno Medical College Hospital, Manikgonj, Bangladesh. The patients with tibial nonunion were treated by ilizarov external fixator in Monno Medical College hospital were selected as study population. The eligible criteria were patients of age of 18 years or more, patients without an associated neurological impairment of the ipsilateral lower extremity, no amputation. 28 patients were included in our study. There were 21 males and 07 females with a mean of age 37.06 years (18 to 62) in this study. The mechanisms of initial injury were recorded. The mean interval from the initial treatment to administration to our hospital was 22.80 months. The initial treatments of the fracture included open reduction and internal fixation in 18 patients, unilateral external fixation in 06 patients and conservative treatment in patients. Infected tibial nonunion existed at the time of surgery in our hospital and the mean number of previous surgical procedures was 2.4 (range 1-8 procedures). The sites of tibia nonunion were proximal in 12 cases, middle in 10 cases and middle-distal in 06 cases.

Surgical Technique: The patients were positioned supine on a radiolucent table. Ilizarov external fixator was assembled, according to the length of patient's limb, the site of infected nonunion and the functional status of knee and ankle joint. Then the operative incision, the scope of the resection of infected bone and the site of pre-selected osteotomy were marked in order to make the full of preparation for the operation. The assembled Ilizarov external fixator was fixed to the tibia shaft as the way that Ilizarov rings were placed on the distal and proximal fragments paralleled to their respective joints and the fixed pins were inserted into the same plane and perpendicular to the mechanical axis of the tibia under the image intensifier control. The aforementioned step in entire operation is very important, if we don't do this step before the resection of infected bone, the reduction will become very difficult because of loss of reference object. Then the operative incision was performed in accordance with beforehand marked incision. The infected scarred soft

tissue and necrotic bone were debrided radically. Bones with bleeding margins were regarded as vital bones. A 1-2 cm incision was made below 1cm to the tibial tuberosity through the marked pre-selected osteotomy site, and then a subperiosteal transverse osteotomy was performed. If limbs were complicated with deformity or shorting, the distal lateral fibula was performed with a subperiosteal transverse osteotomy. The periosteum was sutured and the incisions were closed with drainage tubes. If large soft tissue defects existed in the infected site, open dressing changing or vacuum sealing drainage (VSD) were made to close the wound. All patients received a course of sensitive antibiotics for 2 to 4 weeks in intravenous way and were encouraged to partial weight bear with crutches, isometric muscle and joint range-of-motion exercises on the second day after operation. The latency period before bone transport was 7-10 days and the rate of distraction was 0.25 mm per 6 hour. If regenerate quality is poor, the speed of distraction will slow down. When bone transport completed, the tibia docked ends were compressed by 0.25 mm per day in order to provide full contact until the patient felt pain at the docking site.

Evaluation of Outcomes: Bone transport time, external fixation time, external fixation index, complications were all recorded. Radiographs were reviewed every 2 weeks during the distraction period and monthly during the consolidation period. Ilizarov external fixator was removed when radiographs showed solid docking-site union and the regenerate area had a minimum of three complete cortices. Bone results and functional results were evaluated according to Association for the Study and Application of the Method of Ilizarov (ASAMI) classification (6,9,21).

Post-Operatively, a course of appropriate intravenous antibiotics was given for two weeks to all patients for prophylaxis. Full weight bearing using crutches and isometric exercises as well as those for range of motion were encouraged from the first post-operative day. The latency period prior to bone transport was 5-7 days, while the distraction rate was 0.25mm per 6 hours. After completion of bone transport, the tibia docked ends were compressed by 0.25mm per day to provide full contact until the patient felt pain at the docking site.

Results

A total number of 28 cases were recruited for this study.

Table 1: The Mechanism of Initial Injury

Mechanism of Initial Injury	Frequency	Percent
Traffic accident	17	60.7
Low energy injury	06	21.4
Fall from height	03	10.7
Hitting by weight	02	07.2
Total	28	100.0

The average length of the bone defects after radical debridement was 6.27 cm (range 3-13 cm), which was measured in the

operation. The infection was active with purulent drainage in 42 patients and the rest was quiescent without drainage. The samples that were obtained from purulent drainage or deep bone at the site of infected nonunion were cultured and the outcomes were complete for 91% and the rest was incomplete, and bacterial species grown in culture were shown; 19 patients had bone infection with one bacterium and 09 patients had more than one (Table 2).

Table 2: Proportion of Bacterial Species Growth in Culture

Name of Organism	Frequency	Percent
Staphylococcus aureus		47.0
Pseudomonas aeruginosa		16.0
Escherichia coli		13.0
Klebsiella		9.0
Enterococcus		9.0
Proteus		4.0
Candida		2.0

The mean follow-up after removal of the apparatus was 22.80 months. All the patients achieved bone union. All soft tissue defects were healed by soft tissue transport or VSD technique, but there were some scars caused by the cutting of pins during the period of distraction. The time of bone transport took a mean of 68.74 days (range 33 to 137 days), and the mean external fixation time was 9.46 months (range 5.12- 15.11 months), and the mean external fixation index was 1.38 months/cm (range 1.15-1.58 months/cm). According to Association for the Study and Application of the Method of Ilizarov (ASAMI) classification, bone results were excellent in 21, good in 04, satisfactory in 02 and poor in 01 (Table 3).

Functional results were excellent in 18, good in 07, Satisfactory in 03 and no poor (Table 4).

Discussion

Ilizarov method has gained popularity for the treatment for both infected and non-infected nonunion⁴. The technique bases on a biological principle which has been termed the tension stress effect by Ilizarov. It entails a segmental bone transport in which corticotomy is performed in the metaphysis and the bone is gradually distracted. Ilizarov methods mainly have three techniques, including bone transport, acute compression and lengthening, and compression osteosynthesis. Compression osteosynthesis is suitable for small defects or no defects. The application of the technique of acute compression and lengthening is also limited for the extent of bone defects. It was reported by a literature that a 4-5 cm acute shorting of the tibia was the limit for compression-distraction if adequate safety was to be guaranteed. Because acute compression beyond the limit could cause overmuch soft tissue stacking and arteriolar occlusion, which could affect new bone information and the healing of fracture ends. Another literature reported bone defects (< 6 cm) was suitable for adopting the technique of acute compression and lengthening⁵.

However, treated successfully all large tibia defects (mean 10 cm, maximum 17 cm) by acute compression and distraction. They did not report any neurovascular complication and any additional surgery due to axial deviation or need for bone grafting. But then a letter questioned the research outcomes. Therefore, whether large tibia defects can be treated by acute compression and lengthening without neurovascular is still debatable. Bone transport could achieve good results in the treatment of both small and massive bone defects, so bone transport have no limit for the extent of bone defects. The initial literature search identified 225 relevant records, and finally 16 studies and a total of 303 patients were included in the systematic review. Mean age, mean bone defects, mean follow-up, bone

Table 3: Evaluation of the Bone Results

Bone results	No. of patients	Criteria
Excellent	21	Union, no infection, deformity < 7°, (LLD) < 2.5 cm
Good	04	Union plus any of two the following: absence of infection, deformity < 7°, LLD < 2.5 cm.
Satisfactory	02	Union plus any one of the following : absence of infection, deformity < 7°, LLD < 2.5 cm
Poor	01	Nonunion/refracture/union plus infection plus deformity > 7° plus LLD > 2.5 cm
Total	28	

Table 4: Evaluation of the Functional Results

Functional Results	No. of patients	Criteria
Excellent	18	Active, no limp, minimum stiffness (loss of < 15° knee extension/< 15° ankle dorsiflexion), no reflex sympathetic dystrophy (RSD), insignificant pain.
Good	07	Active, with one or two of the following : limb, stiffness, RSD, significant pain
Satisfactory	03	Active, with three or all of the following : limb, stiffness, RSD, significant pain
Poor	00	Inactive (unemployment or inability to return to daily activities because of injury), Amputation
Total	28	

union, bone results, functional results, complications per patient, external fixation time and external fixation index were recorded and statistically analyzed using weighted means based on the sample size in each study by SPSS 13.0. The following data were calculated. The mean age was 34.44 ± 5.05 years (range 25-44 years); the mean bone defects was 6.01 ± 1.99 cm (range 3.5-10.7 cm); the mean follow up was 44.37 ± 26.02 months (range 13-99 months); the bone union rate was 96.69% (range 87%-100%); the good and excellent rate in bone results was 87.52% (range 45% to 100%); the good and excellent rate in functional results was 76.03% (range 23% to 97%); the mean complications per patient was 1.47 ± 0.86 (range 0.12-3.35); the mean external fixation time was 9.19 ± 2.22 months (range 3.1-13.9 months); the mean external fixation index was 1.46 ± 0.42 months/cm (range 0.55-2.33 months/cm).

The mean external fixation index was 1.38 months/cm, and the complications per patient was 1.08, these data were better than the average data that recorded in aforementioned systematic review. Excellent rate in bone results was 75%, and in functional results was 64.28% in this study, these data was also better than the average data that recorded in aforementioned systematic review. However, the mean external fixation time was 9.46 months, which was longer than the average data that recorded in aforementioned systematic review. The reason might be our mean bone defects was larger. There is a controversial view on regular bone grafting at the docking site.

This study did not adopt regular bone grafting and bone grafting was required in only 04 patients. Pin-track infection and the axial deviation were common complications in the course of bone transport in previous reports and these complications also happened frequently in our study. In our experience, some important aspects of bone transport should be paid attention. Ilizarov external fixator should be assembled preoperatively under the image intensifier control. If we don't do this before the resection of infected bone, the reduction will become very difficult because of loss of reference object. Debridement should be performed radically in order to avoid the recurrence of infection. This is the key step to control bone infection. Distraction usually begins between 7 and 10 days after the operation at a rate of 0.25 mm per 6 hour.

If regenerate quality is poor, the speed of distraction will slow down. X-ray films should be reviewed every 2 weeks during the distraction period and monthly during the consolidation period in order to supervise the regenerate

quality, the stability of external fixation, the axis of the traction on the segment, and the mineralization of the distracted area. Thus, we can correct these promptly with efficient measures. Patients should be encouraged to conduct partial weight beat with crutches, isometric muscle and joint range-of-motion exercises on the second day after operation. When the callus mineralization completes, patients can gradually conduct full weight beat and remove the external fixator after 4 to 8 weeks.

There are multiple ways of treating them, for instance, with ring fixators, modified Arbeitsgemeinschaft Osteosynthesefragen (AO) fixators or specialized intramedullary nails. However, for complex non-unions (defect >4cm) it is seen that Ilizarov fixator provides a more superior method of treatment. This is the largest retrospective study from Monno Medical College hospital thus far regarding the treatment of non-union of tibia by the Ilizarov method with the help of ASAMI score to analyses the effectiveness of Ilizarov method in treating such cases.

Conclusion

This study and the current evidence suggested that Ilizarov methods in the treatment of infected tibial nonunion acquired satisfied effects in bone results and functional results. Radical debridement is the key step to control bone infection. However, the study lack of direct comparison with any other treatment options, further randomized controlled trials are needed to draw more valuable conclusion. However, patient discomfort due to long-lasting treatment duration, is one of the key disadvantages of this treatment modality.

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Breast Feeding Practices among Rural Mother in a Selected Area of Bangladesh

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Abstract

Background: The breastfeeding rates have improved globally and the disparities in breastfeeding practices persist particularly in rural and low resource settings. **Objective:** This study was conducted with a view to finding out the knowledge of the rural mother regarding initiation and duration of breast feeding, complimentary feeding and reasons of non-exclusive breast feeding. **Methodology:** This was a descriptive type of cross-sectional study which was conducted among the rural mother attending a temporary rural satellite health centre in four different villages of Raigonj upazila, Sirajganj, Bangladesh under the Department of Community Medicine at Monno Medical College, Manikganj, Bangladesh during the period of January to June, 2019. **Results:** This study revealed that out of 124 respondents majority belonged to the age group of 15 to 20 years which were in 60(48.3%) respondents, most of the respondents completed below SSC level which were in 82(66.1%) cases and monthly family income of most of the respondents was in the group of 5000 to 10000 taka which were in 68(54.8%) cases. More than half of the respondents initiated breast milk within one hour of delivery and two thirds of the respondents 80(64.5%) gave colostrums to their baby. Duration of exclusive breast feeding was only in 44(35.5%) respondents. About half of the mothers used cow's milk along with breast milk. Majority of the respondents (72.5%) blamed inadequate milk production as reason for non-exclusive breast feeding. **Conclusion:** Rural people still have a lack of proper knowledge about breast feeding practice. [*Journal of Monno Medical College, June 2021;7(1):.....*]

Keywords: Aseptic; Breast feeding; rural mother; cow's milk.

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Introduction

Breast feeding is the unique source of nutrition that plays an important role in growth, development and survival of the infants. It contains a balance of nutrients and other compound that acts against virus, bacteria and parasites. It acts as baby's first immunization¹. Breast milk contains all types of nutrients required for infant in right proportion and composition. Timely initiation of breastfeeding has been reported to reduce neonatal mortality by 19.1%². It is suggested by World Health Organization that an able mother should practice and maintain exclusive breast feeding for first

six months of her infant's life³. The initiation of breast feeding within 1 hour and continuation of only breast milk up to 6 months ensures maximum benefit.

Lack of exclusive breast feeding is associated with high incidence of diarrhea, pneumonia, meningitis and malnutrition⁴. These in turn are responsible for high mortality and morbidity in the lifelong association with poor social performance, impaired intellectual and social development⁵. Breast feeding improves bonding between mother and children, economical and hygienic. Compared bottle fed babies, breast fed babies have much lower chance of

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infection and higher chance of survival. Cognitive development is improved by breastfeeding, and infants who are breastfed and mothers who breastfeed have lower rates of obesity⁶. Factors that relate to the duration of breast feeding and supplements of other milk are present age of mother and socio economic status⁷. Therefore exclusive breast feeding is essential for better mother and child health.

Methodology

This was a descriptive type of cross-sectional study which was conducted among 124 rural mothers aged 15-45 years having one children in four different temporary satellite health centres of Moddhopara Vormohoni, Chowdhury Ghughat, Bowlatola, Jhaul under Dhubil union of Raigonj upazila, Sirajganj under the dept. of Community Medicine, Monno Medical College during the period of 1st January to 30th June, 2019. The ethical clearance was approved by ethics review committee of Monno Medical College. Sampling technique was convenient sampling technique. The participants were included in the study on the basis of some inclusion criteria which were mothers with a child aged more 6 months with informed verbal consent. Psychologically abnormal person and seriously ill patients were excluded. The data were collected by face to face interview with a pre-tested semi-structured questionnaire. The questionnaire was designed to find out the socio- demographic characteristics of the respondents, knowledge of the people regarding initiation and duration of breast feeding importance of colostrums, exclusive breast feeding barrier of exclusive breast feeding. Data thus collected were checked and verified for any omission or inconsistency. Finally data were analyzed by SPSS version 23.0 to find out necessary frequencies and percentages.

Results

The study showed that 60(48.3%) respondents belonged to the age group (15 to 25) years, 80(64.5%) respondents were housewives, 20(16.1%) respondents were service holders and 68(54.8%) respondents had monthly family income (5000 to 10000) taka (Table 1).

The study revealed that initiation of breast feeding within one hour of delivery occurred in 70(56.4%) respondents followed by 30(24.2%) respondents that occurred beyond one hour of delivery (Table 2).

The study showed that colostrums was given to the baby in 80(66.5%) respondents followed by non-intake of colostrums and inability to remember whether it was given or not were 20(16.1%) respondents and 24(19.3%) respondents respectively (Table 3).

It is revealed that exclusive breast feeding occurred in 44(35.5%) respondents followed by 0 to 3 months breast feeding in 48(38.0%) respondents in this study (Table 4).

The study showed that 42(52.5%) children less than 6 months was given cow's milk followed by infant formula 13(16.0%) in this study (Table 5).

In this study it was reflected that inadequate milk production was

Table 1: Socio- Demographic Characteristics of the Respondents (n=124)

Socio-demographic characteristics	Frequency	Percent
Age(years)		
15 to 25	60	48.3
25 to 35	50	40.3
35 to 45	14	11.2
Mean±SD= 31.40±7.626		
Education of mother		
Below SSC	82	66.1
SSC	28	22.5
HSC & above	14	11.2
Occupation		
Housewife	80	64.5
service	20	16.1
Day laborer	12	09.6
Others	07	05.6
Monthly Family Income (Taka)		
<5000	48	38.7
5000 to 10000	68	54.8
> 10000	08	06.4
Mean±SD= 31.40±7.626		

the main barrier for exclusive breast feeding which were 58(72.5%) respondents followed by maternal illness, working mother and lack of knowledge which were 12(15%) respondents, 6(7.5%) respondents and 4(5%) respondents respectively (Table 6).

Table 2: Initiation of breast feeding after delivery (n=124)

Status	Frequency	Percent
Within one hour	70	56.5
Beyond one hour	30	24.2
Unable to remember	24	19.3
Total	124	100

Table 3: Intake of Colostrum by the Baby (n=124)

Status	Frequency	Percent
Intake of colostrums	80	64.5
Not intake	20	16.1
Unable to remember	24	19.3
Total	124	100

Table 3: Intake of Colostrum by the Baby (n=124)

Status	Frequency	Percent
Intake of colostrums	80	64.5
Not intake	20	16.1
Unable to remember	24	19.3
Total	124	100

Table 4: Duration of Breast Feeding of the Baby (n=124)

Duration	Frequency	Percent
0 to 3 months	48	38.0
3 to <6 months	32	26.5
Exclusive breast feeding	44	35.5
Total	124	100

Exclusive breast feeding=Up to 6 months

Table 5: Complementary Feeding of Baby (n=80)

Items	Frequency	Percent
Cow's milk	42	52.5
Water	14	17.5
Infant formula	13	16.0
Others	9	5.0

Multiple response analysis

Table 6: Barrier of Exclusive Breast Feeding As Stated By Mother (n=80)

Reasons	Frequency	Percent
Inadequate milk production	58	72.5
Working mother	6	7.5
Maternal illness	12	15.0
Lack of knowledge	4	5.0

Multiple response analysis

Majority of the mothers breast fed their baby at an interval of 2 to 4 hours which was 70(56.4%) respondents followed by feeding haphazardly which was 30(24.2%) respondents (Table 7).

Table 7: Frequency Breast Feeding in First 6 Months (n=124)

Frequency	Number	Percent
2 to 4 hourly	70	56.4
haphazardly	30	24.2
On demand	24	19.3
Total	124	100.0

Multiple response analysis

Discussion

This cross-sectional study has been conducted among 124 rural women aged (15-45) years in four different villages of Raiganj Upazila of Sirajganj with a view to finding out the breast feeding practice of rural people. In the present study majority (48.39%) of the respondents belong to the age group (15-25) years, most of the respondents (53.4%) are male & majority (66.83%) complete below SSC level. Most of the respondents (64.52%) are house wives and monthly family income of most of the respondents (54.83%) is taken (5000-10000).

In this study, 56.45% breast feeding occurs within one hour of delivery. A similar study that has been conducted in India

shows that only 41% children breast feed within one hour which is consistent with this study⁸. Another study which has been conducted by Junaid M et al reveals that 78.28% show initiation of breast feeding within 6 hours of delivery which is inconsistent with this study⁹. The study reveals that colostrums is fed in 64.52% of new born. A study that has been conducted in Nigeria shows that 47.45% colostrums intake by new born. This finding is slightly higher than the result of this study¹⁰. In this study exclusive breast feeding is 35.5%. A similar study which has been conducted by Hossain M et al shows that the prevalence of exclusive breastfeeding (EBF) for first six months of an infant's life in Bangladesh is 35.90% which is highly consistent with this study³. Other studies which have been conducted in Japan and Mongolia reveals EBF practice in 50% & 65% respectively which are inconsistent with the results of this study¹¹.

In this study 52.5% children less than 6 months take cow's milk along with breast milk. (Table 5) A study conducted in Brazil shows 62.4% intake cow's milk which is consistent with the result of this study¹². Intake of bottle milk in South Africa in 2007 was 23% which is slightly higher (16%) than this result¹³. The study reflects that inadequate milk production 58(72.5%) is the main barrier for exclusive breast feeding. A study that has been conducted in South Africa shows that 90% women produces inadequate breast milk which is consistent with this result¹⁴. Majority (56.45%) of the mother breast fed their baby at an interval of 2 to 4 hours followed by feeding haphazardly (24.20%). This is a small study conducted in a small area selected conveniently. The sample size was also small for which it may not reflect the real picture of Bangladesh.

Conclusion

The study reveals that majority belong to the younger age group and most of the respondents have completed below SSC level. More than half of the respondents initiate breast milk within one hour of delivery and two-thirds of the respondents give colostrum to their baby. About one third of the respondents have the history of exclusive breast feeding. About half of the mothers use cow's milk along with breast milk. Majority of the respondents blame inadequate milk production as reason for non-exclusive breast feeding. Rural people still have a lack of proper knowledge about breast feeding practice. There is need to develop and implement community based EBF program to improve the situation. Moreover extensive education regarding the benefits must be provided for both parents and optimally the grandmother by physicians, nurses and the media before pregnancy or within the first trimester.

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Changing Pattern of Contraceptive Use among Adult Population at OPD of Tertiary Care Hospital at Dhaka City

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Abstract

Background: Contraception aims to prevent pregnancy by interfering with the normal process of ovulation, fertilization, and implantation. There are various contraceptive methods. **Objective:** The aim of this study was to assess the changing pattern of contraceptive use. **Methodology:** This descriptive cross-sectional study was carried out among the adult population at outpatient department of Mitford Hospital, Dhaka, Bangladesh during the period of September, 2018 to April, 2019. Data were collected by purposive sampling technique. A semi structured questionnaire was used for face to face interview of 300 respondents. **Results:** Majority of the respondents 130(43.33%) were 30-39 years' age group, 240(80%) were female. One third of the respondents 91(33.33%) had attended secondary education. Monthly income of 111(37%) respondents was between 10,000 to 15,000 Taka. Most (70%) respondents had 0-2 children. This study showed that majority 68% of the respondents used contraceptives. Among them 103(50.2%) used oral contraceptive while 43(21%) used barrier method, 33(16.1%) used contraceptive injection followed by tubal ligation 11(5.4%). Duration of contraceptive use was between 0-5 years among more than half 106(52%) respondents. Among the contraceptive users, 27.80% changed the methods. The reason behind their contraceptive changing was mainly ease of use 20(35%) and no side effects 15(26%) of subsequent methods. **Conclusion:** It is concluded that about one third of the contraceptive users has changed their contraceptive methods due to ease of use and no side effects. [Journal of Monno Medical College, June 2021;7(1):.....]

Keywords: Contraceptive method; changing pattern; adult population; Mitford hospital.

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Introduction

At the beginning of agriculture, around 8000 B.C., the number of population on the planet was roughly 5 million. Over the 8,000-year period up to 1 A.D. it grew to 200 million, with a growth rate of under 0.05% per year¹. A tremendous change occurred with the industrial revolution. During the twentieth century alone, the population on the planet has grown from 1.65 billion to 6 billion². Population in the world is currently (2018-19) growing at a rate of around 1.07% per year. The current normal population growth is assessed at 82 million individuals for each year. Annual growth rate arrived at its top in the last part of the 1960s, when it was at around 2%. The rate of increase has almost

half from that point forward, and will keep on declining in the coming years. It is assessed to arrive at 1% by 2023, under 0.5% by 2052, and 0.25% in 2076³. Because of declining growth rates, it will now take over 200 years to double again².

Fertility is the natural ability to produce offspring⁴. Total fertility rate is one of the several measures by which we can quantify fertility. The term total fertility rate simply refers to total number of children born or likely to be born to a woman in her life time if she were subject to the prevailing rate of age-specific fertility in the population⁵. The single most important factor in population growth is the total fertility rate (TFR)⁶. So, it is clear that fertility directly affects population

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growth and the higher the fertility rate, higher the growth rate. In order to control population growth, fertility has to be controlled. Contraception is one of the proximate determinants of fertility and the most important predictor of fertility transition^{7,8}. Contraception prevents pregnancy by interfering with the normal process of ovulation, fertilization, and implantation. There are different kinds of birth control that act at different points in the process⁹. The decision of contraceptive method, in any case, is impacted by, demographic, cultural, monetary and social elements which implies that a multidimensional methodology should be embraced for analyzing the contraceptive use pattern. Somewhere in the range of 1990 and 2010, contraceptive prevalence among wedded women of reproductive age expanded from 55.0% to 63.0%. The prevalence increased from 52.0% to 62.0% in developing countries and from 68.0% to 71.0% in developed countries¹⁰.

However, in the least developed countries contraceptive use was much lower (40.0%) and was particularly low in Africa (33.0%). In 2015, Eastern Asia had the highest prevalence (82.0%) in the world, due to the very high level of contraceptive use in China (84.0%). In other regions of Asia, the average prevalence was between 57.0% to 64.0% cases¹¹. Large regional differences are present in the use of various types of contraception. Generally, short acting and temporary methods, such as pill, injectable and male condom, are more common in Africa and Europe. Whereas long-acting or permanent methods, such as sterilization, implants and IUD are more common in Asia and Northern America¹¹. The oral contraceptive pill (OCP) is popular in Western Europe, Australia, several countries in Africa, and the southern part of South America. Male condom is the top method in Russia, much of Eastern Europe, and some countries in Africa. Injectable contraceptives are the best choice in parts of Africa. Africa is the only continent where rhythm method is still a top choice method, though it is least effective¹¹. According to BDHS 2014, in Bangladesh, the oral contraceptive pill is mostly used (43.0%) while 20.0% women use contraceptive injection¹². The use of modern and more effective contraceptive methods are increasing in Bangladesh. It is now clear that there is a difference in contraceptive choice between the developed and less developed countries. As a developing country, it is expected that our contraceptive trend would shift from that of the less developed to that of the developed countries. With improvement of socio-economic condition, higher education, contraceptive pattern is likely to be changed.

This study was carried out among married adult population of reproductive age at out-patient department of Mitford hospital to assess the changing pattern of contraceptive use among them.

Methodology

This descriptive cross-sectional study was carried out during the period of September 2018 to April 2019 at OPD of Mitford Hospital, Dhaka. The study population was married

adult men and women. Data was collected by purposive sampling technique. All the men and women of 20 to 49 years old were included in the study. Respondents who were below 20 and above 49 years old, very sick, pregnant and unwilling to participate in the study were excluded. The objectives of the study were explained to the respondents and written consent was taken. An Ethical clearance certificate was taken from Institutional Ethical Review Board. Then a face to face interview was done from 300 respondents using semi structured questionnaire. Finally data were analyzed by SPSS version 23 to find out necessary frequencies and percentages.

Results

A total number of 300 people were recruited. A large section 130(43.33%) of respondents were 30-39 years' age group. Majority 240(80%) were female. One third of them 91(33.33%)

Table 1: Socio-Demographic Characteristics of the Respondents (n=300)

Characteristics	Frequency	Percent
Age in years		
20-29	89	29.67
30 - 39	130	43.33
40-49	81	27.00
Mean $\pm$ SD (Range)	34 $\pm$ 7.54 year(20-49 years)	
Sex		
Female	240	80
Male	60	20
Level of Education		
Primary attended	37	13.15
Primary passed	57	20.88
Secondary attended	91	33.33
Secondary passed	47	17.22
Higher secondary	26	9.52
Degree & above	15	5.50
Occupation		
Housewife	215	71.7
Farmer	7	2.3
Day laborer	9	3
Rickshaw puller	8	2.7
Service holder	24	8
Businessman	25	8.3%
Unemployed	12	4.0
Monthly income (TK)		
<5,000	28	9.33
5,001 -10,000	91	30.33
10,000 -15,000	111	37
>15,000	70	23.33
Number of children		
1-5	199	66
6-10	75	25
>10	26	9

had attended secondary school. A very large number 215(71.7%) were housewives. Monthly income of large number 111(37%) of the respondents was T.K 10,000 -15,000. Most (70%) families had 0-2 children. (Table 1).

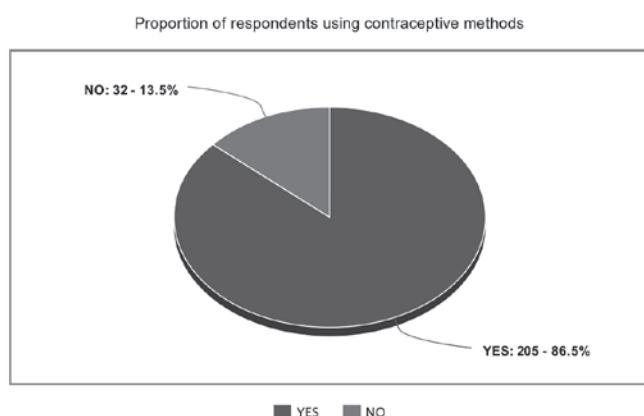


Figure 1: Proportion of respondents using contraceptives methods

Among 300 respondents 205 (68%) were using contraceptives (Figure1) and most of them 103(50.2%) were currently using OCP (Table 2).

Table 2: Present contraceptive method used by the respondents (n=205)

Contraceptive Method	Frequency	Percent
OCP	103	50.2
Contraceptive Injection	33	16.1
Barrier method	43	21
IUCD	6	2.9
Norplant	8	3.9
Vasectomy	1	0.5
Ligation	11	5.4

Among the contraceptive users, more than half 106(52%) were using contraceptive for 0-5 years (Table 3).

Table 3: Duration of contraceptive use by the respondents (n=205)

Duration of use (in years)	Frequency	Percent
0-5	106	52
6-10	61	30
10-15	21	10
>15	17	8
Total	205	100

Among the 205 contraceptive users, 57(27.80%) changed their contraceptive method (Table 4).

Table 4: Changing pattern of contraceptive use by the respondents (n=205)

Changing pattern	Frequency	Percent
From OCP to Injectable Contraceptive	22	10.73
From Injectable Contraceptive to OCP	5	2.43
From OCP to barrier method	20	9.76
From OCP to IUCD	2	0.98
From OCP to Norplant	3	1.47
From OCP to ligation	5	2.43
Total (change)	57	27.80
No change	148	72.20

The main reason behind changing was ease of use 20(35%) followed by no side effect 15(26%) cases (Table 5)

Table 5: Reason behind the changing pattern of contraceptives (n=57)

Reasons	Frequency	Percent
Easy to use	20	35
Easy availability	9	16
Low cost	8	14
Due to effectiveness	5	9
Due to no side effect	15	26

Discussion

This cross-sectional study was carried out among 300 adult people at OPD of Mitford Hospital provides descriptive information regarding their changing pattern of contraceptive use. A large section (43.33%) of respondents is 30 to 39 years' age group. About four fifth (80%) of the respondents are female. Among the respondents, one third (33.33%) attend secondary education. Similar finding was found in a study done by Jahan et al¹³ where 32.7 % women had attended secondary school.

In our study 71.67% respondents are housewives and it is more similar with the findings of Chandra, Howladaer and Nahar¹⁴. Majority (37%) of the respondents has monthly income between 10,000 to 15,000 Taka followed by 5,000 to 10,000 Taka (30.33%), more than 15,000 taka (23.33%) and the remaining 9.33% are in low socioeconomic condition.

In our study is observed that number of children of most (70%) of the families are between 0-2. It indicates that the number of contraceptive users is increasing. This study reflects that 68.0% of the respondents use contraceptives which is almost consistent with the finding of 63.24% women were using any type of contraceptive, a study done by Alam et al¹⁵. Among those who use contraceptive, majority of them (50.2%) currently use oral contraceptive pill followed by barrier method (21%), contraceptive injection (16.1%), ligation (5.4%), Norplant (3.9%), IUCD (2.9%) & vasectomy (0.5%). According to BDHS 2014, in Bangladesh, the pill is by far the most widely used method

(43%), followed by injectable (20%), male condom (10.3%), female sterilization (7.4%), implants (2.7%), IUDs (1%) and traditional methods (13%) which is quite similar to our study¹².

Among the 205 contraceptive users, (27.8%) changed their contraceptive method while (72.2%) did not change their method. Among them, 10.7% changed their method from OCP to contraceptive injection, 9.7% from OCP to barrier method, 2.4% from injectable contraceptive to OCP, 2.43% from OCP to tubal ligation (female sterilization), 1.7% from OCP to implants, 0.98% from OCP to IUCDs. Data of BDHS¹² stated that usage of oral pill (51.0% to 43.0%), female sterilization (9.0% to 7.4%) & IUD (1.6% to 1.0%) has declined, while usage of injectable contraceptives (12.5% to 19.9%), condom (8.0% to 10.3%), implants (1.3% to 2.7%) and male sterilization (1.3% to 1.9%) has increased in 2014 compared to 2007. In the study it is revealed that the reason behind the changing pattern of contraceptive being used is mainly due to ease of use (35.0%) followed by no side effect (26%), easy availability (16.0%), low cost (14.0%) and due to effectiveness (9.0%). So in this study we have seen the majority of the people are aware of the use of contraceptives. Though in previous times, OCP was the commonest method among the users, recently this pattern is changing into use of OCP, contraceptive injection, barrier methods and tubal ligation by analyzing both the positive sides and adverse effects of these methods by the users.

It was postulated that it would provide assessment regarding the pattern of contraceptive use and recent change of pattern of contraceptive use among the adult population at the outpatient department of Mitford Hospital in general, although a small number of people was selected for this purpose.

Conclusion

From the results of the study it is concluded that about one third of the respondents who used contraceptive previously change their contraceptive methods. More than one third of them change the method due to ease of use & no side effect of new method. More than two third respondents use contraceptives which is a positive sign. It would result in a decline in the growth rate of Bangladesh which indicates the success of the ongoing national program on family planning in Bangladesh. Major reason behind changing contraceptive method is side effects. By creating awareness among people about the advantages and disadvantages of various contraceptive methods, it would be possible to help people to choose the most effective and convenient method. Our

study was conducted among a specific population centered on a medical college hospital with a small sample size. Further research should be undertaken with a higher sample size all over the country to provide more comprehensive data representative of the whole country.

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Seroprevalence of Hepatitis B virus Surface Antigen (HBsAg) among blood Donors Attended at a Tertiary Care Hospital in Bangladesh

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Abstract

Background: The possibility of hepatitis transmission through blood and blood products is very high and pre-transfusion screening is mandatory by law in our country. **Objective:** To see the seroprevalence of HBsAg antigen among blood donors attended the department of laboratory services, Dhaka National Medical College Hospital, Dhaka, Bangladesh. **Methodology:** This cross-sectional study was carried out in the laboratory services department of Dhaka National Medical College & Hospital, Dhaka, Bangladesh from January 2020 to October 2020 for a period of nine (09) months. Apparently healthy adult persons who had not suffering from any illness and their physical examination including pulse, blood pressure, temperature, weight and hemoglobin percentage within normal range were included as study population. HBsAg Rapid Tests for the qualitative detection of Hepatitis B Surface Antigen (HBsAg) in serum or plasma by using EXCEL@R Quick Test Device, China with following the instruction of reagent manufacturer. **Result:** In this present study total number of 2189 (Two thousand one hundred eighty nine) respondents were enrolled after fulfilling the inclusion and exclusion criteria. Among them 52 (2.38%) were HBsAg positive. The male donors were predominant 42 (3.04%) than in female donors 10 (1.24%). The association was statistically significant ($P=0.007$). **Conclusion:** After proper donor selection and donor blood screening for HBsAg will decrease the possibility of post-transfusion hepatitis significantly. [Journal of Monno Medical College, June 2021;7(1):.....]

Keywords: Hepatitis B virus; HBsAg; Blood donors; Prevalence; Seropositive

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Introduction

Hepatitis B virus (HBV), a DNA virus with a human-only reservoir, is a worldwide public health problem. Hepatitis B is transmitted through parenteral or mucosal exposure to infected blood and body fluids. The mode of transmission is usually vertical or horizontal in highly endemic areas early in life, resulting in a high chronicity rate¹. The world health organization estimates that over 2 billion people have been exposed to hepatitis B virus and approximately 350 million people are chronically infected with HBV². HBV accounts annually for an estimated 31 million deaths worldwide and causes acute and chronic liver disease. Its prevalence varies throughout the world, but is highest in tropical regions³.

The infection is usually defined by the presence of hepatitis B surface antigen (HBsAg) in serum or plasma. However, HBV may exist in humans without detectable HBsAg but with presence of HBV DNA in the serum and/or in the liver, i.e. the occult HBV infection. The occult infection may result from the low viral load in circulation (usually <200 IU/ml)⁴. Perinatal transmission from an infected mother to her baby is common about 90% of those infected during the prenatal period. Transmission of HBV among adults occurs via contact with infected blood and body fluids such as semen, vaginal fluids, and saliva. Therefore transfusion of unscreened blood and its products, sexual activities, use of contaminated or inadequately sterilized instruments, sharing

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of sharp objects as could occur during some traditional or cultural practices, for example, local circumcision, are common means of spread⁵.

Blood donation is an important, lifesaving intervention. The world health organization (WHO) recommends that all blood donations should be screened for evidence of infections, such as human immunodeficiency virus (HIV), hepatitis B and C, and syphilis. Information provided by 164 countries to the WHO global database on blood safety showed that worldwide, more than 92 million blood samples are donated annually. Of these, an estimated 1.6 million units are excluded due to the presence of infectious markers, including HBsAg⁶. In the multiple countries where pre-transfusion screening of blood donations for HBsAg is conducted systematically, and the high-risk groups are rejected from blood donation, the prevalence of HBV in blood donors is less than that in the general population; this results in underestimation of the extent of this issue. However, the risk of transmission still exists in several developing countries⁷.

Unsafe blood transfusion and poor public health awareness are the major risk factors for HBV infection in this part of the world³. The WHO has defined prevalence of less than 2.0%, 2.0 to 8.0%, and more than 8.0% as low, intermediate, and high prevalence of HBV, respectively⁸. Characterization of the epidemiological profile of this disease has been enhanced by the recent development and availability of sensitive and specific immunoassay for the detection of serologic markers⁹. The first serological marker to appear in the blood is the HBV DNA followed by HBsAg, the DNA polymerase and HBeAg. Thereafter, the antibodies to the hepatitis B antigens (HBcAb, HBeAb and HBsAb) can be detected. Screening of donated blood by enzyme-linked immunosorbent assay (ELISA) for HBsAg is the common method for detecting hepatitis B infection¹⁰. Screening of blood for the detection of this viral marker, however, does not rule out the risk of transmission of hepatitis B totally, because there is a phase during which the HBsAg cannot be detected in the blood although hepatitis B infection is present. This phase is known as the 'window period'. It represents a carrier state of the disease. Findings indicate that testing done for HBsAg alone is not sufficient to eliminate HBV infection through blood transfusion¹¹. This present study was carried out to find out the prevalence of Hepatitis B virus positive (HBsAg positive) among the blood donors attended the department of laboratory services, Dhaka National Medical College Hospital, Dhaka.

Methodology

This cross-sectional study was carried out in the laboratory services department of Dhaka National Medical College & Hospital, Dhaka, Bangladesh from January 2020 to October 2020 for a period of nine (09) months. Apparently healthy adult persons who had not suffering from any illness and their physical examination including pulse, blood pressure, temperature, weight and hemoglobin percentage within normal range were included as study population. Persons who

had history of Jaundice, recent HBsAg vaccination, HBsAg carriers, history of recent major operation were excluded in this study. A total 2189 respondent were selected after fulfilling all inclusion and exclusion criteria. With all aseptic precaution, 5 ml of venous blood was collected in prelabeled tube. Centrifuged the blood and separated the serum from cell. Detection of HBsAg was done by Latex agglutination immuno-chromatographic test. HBsAg Rapid Tests for the qualitative detection of Hepatitis B Surface Antigen (HBsAg) in serum or plasma by using EXCEL@R QUICK TEST DEVICE, China with following the instruction of reagent manufacturer. The test was reconfirmed by using ELISA method. Assay runs were strictly performed following standard operating procedures, including quality controls, developed for the survey, and were validated as per manufacturer's instructions. All the participants were thoroughly informed about their roles and the procedure of this research work. All information was kept confidential with due respect to the participants wish and without any force or pressure. Prior to the commencement of the study written consent were taken from every study participants and the research protocol was approved by the local ethics committee. Data were collected by predesigned data collection sheet. Qualitative data were expressed as frequency distribution and percentage. Chi-square test were carried out to find the association of categorical data. Statistical analysis was performed by using window based computer software devised with Statistical Packages for Social Sciences SPSS version (SPSS 22.0).

Results

A total number of 2189 (Two thousand one hundred eighty nine) respondents were recruited after fulfilling the inclusion and exclusion criteria. Among them 52 (2.38%) were HBsAg positive (Figure I).

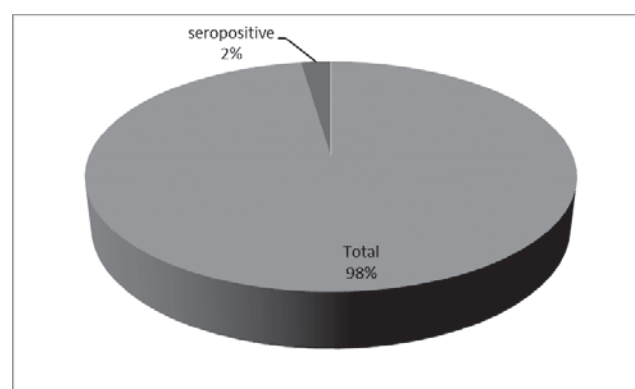


Figure I: Distribution of participants according to seropositivity

Male participants were predominant 1382 (63.13%) & female donors were 807 (36.87%)(Figure -II).

The distribution of HBsAg seropositivity and seronegativity among the study population was recorded. In this study HBsAg positive donors were 52(2.38%). Among them male donors were

predominant 42 (3.04%) than in female donors 10 (1.24%). The association between HBsAg seropositivity and seronegativity according to gender was statistically significant (P value =0.007634) (Table 1).

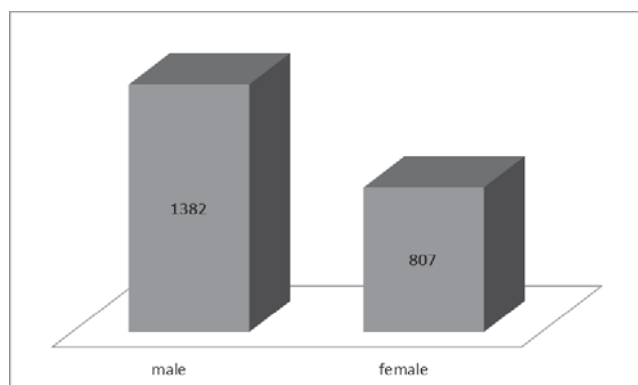


Figure II: Distribution of participants according to gender (n=2189)

Table 1: Distribution of HBsAg seropositivity and seronegativity according to gender

Gender	Positive	Negative	Total	P value
Male donors	42(3.04%)	1340(96.96%)	1382(100.0%)	
Female donors	10(1.24%)	797(98.76%)	807(100%)	0.007634
Total	52(2.38%)	2137(97.62%)	2189(100%)	

Chi- Square (X²) test was performed to see the level of significance; p value=0.007634.

Discussion

Worldwide Prevalence of the HBV infection has been recorded about 2 billion people or one-third of the world's population. It is estimated that 360 million people are chronic carriers¹². The global epidemiology of HBV is best reviewed according to the defined regions by the World Health Organization (WHO). Approximately 45% of the world's population lives in areas of high endemicity, such as the African and Asian countries, the Amazon Basin and parts of the Middle East, where the prevalence of HBsAg is $\geq 8.0\%$ and considered to live in with a lifetime risk of infection of more than 60.0%. Only about 12.0% of the world's population lives in areas of low endemicity, such as the United States, Western Europe and Australia, where the prevalence of HBsAg is less than 1.0% and the lifetime risk of infection is less than 20.0%. The remainder of the world's population lives in areas of intermediate endemicity, such as Eastern and Southern Europe, Russia, Central and South America, where the prevalence is 1-7% and the lifetime risk of infection ranges from 20.0 to 60% cases⁸.

To see the seroprevalence of HBsAg antigen among blood donors a total number of 2189 (Two thousand one hundred eighty nine) respondents have been selected after fulfilling the inclusion and exclusion criteria. Among them 52 (2.38%) were HBsAg positive and 2137(97.62%) were

HBsAg negative blood donors. In a 2002 Pakistani study, the prevalence of HBV infection was found to be 3.3% from a sample of over 100,000 cases¹³. In India, the national prevalence rate has been estimated to be 4% with approximately 36 million carriers overall¹⁴. HBsAg positive varies from one country to another country and varies from one part of the country to another part of the country. The lowest prevalence is 2.3% in a large cohort of 20,000 blood donors in northern India¹⁵. The highest reported rate is 5.7% in a community based study in almost 2000 people from southern India¹⁶.

The prevalence of the HBsAg markers among males and females has been recorded in this study. Compared to females, males showed significantly higher incidence of seropositivity 42(3.04%) versus 10(1.24%) respectively (P=0.007634). A study conducted by Abaalkhai et al¹⁷ mentioned that the male-female difference in HBsAg positivity exceeded the difference noted in marker positivity. Hence, the rate of HBsAg among males with positive markers was significantly higher than female 17.9% versus 8.4% respectively (P < 0.05). The explanation may be the presence of genes that control the production of antibodies on the X chromosomes and, therefore, females have a greater variety of responses to infection than males.

Conclusion

Despite continuous improvement in blood donation screening, HBV infection remains a major risk of transfusion-transmitted viral infection. The residual risk of HBV transmission is related to the pre-seroconversion window period, infection with immunovariant viruses and with occult carriage of HBV. Reduction of HBV residual risk is achieved by improving more sensitive HBsAg tests. Pre-transfusion testing and post-transfusion follow-up of recipients and molecular analysis of the virus infecting both donors and recipients appear essential to definitively confirm transfusion transmission of Hepatitis B virus.

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Diagnostic Validity of Stool Antigen Test by Comparing with Histopathology for the Detection of *Helicobacter pylori* infection among Peptic Ulcer Disease Patients

Chowdhury MNI¹, Samad K², Begum KNA³, Ahmed I⁴, Rupom TU⁵, Jahan F⁶

Abstract

Background: Proper detection of *Helicobacter pylori* infection among peptic ulcer disease patients is very important for management. **Objective:** The purpose of the present study was to validate the stool antigen test by comparing with histopathology for the detection of *Helicobacter pylori* infection among peptic ulcer disease patients. **Methodology:** This cross sectional study was conducted in the Department of Clinical Pathology with the collaboration of Department of Gastroenterology at Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbag, Dhaka, Bangladesh from October 2011 to September 2012 for a period of one year. All the clinically suspected *Helicobacter pylori* infected peptic ulcer patients attending in the Department of Gastroenterology at Bangabandhu Sheikh Mujib Medical University (BSMMU) for upper GI endoscopy were selected as study population. Stool antigen test for *H. pylori* specific antigen from stool sample was done with “ABON-One step *Helicobacter pylori* antigen test device” lateral flow immunochromatographic test device in the Department of Clinical Pathology. Endoscopy of upper GIT was performed in the Department of Gastroenterology. Biopsy taken during endoscopy for histopathology. Histopathological report for *Helicobacter pylori* was collected and recorded in data sheet. The stool antigen test result was compared with result of histopathological report. **Result:** A total 86 patients were recruited for this study. The mean ($\pm$ SD) age was found 38.53($\pm$ 10.40) years. The sensitivity, specificity, positive predictive values and negative predictive values and accuracy of SAT with histopathology are 84.0%, 72.73%, 95.45%, 40.0%, 82.56% respectively. The area under the curve was 0.325 with the lower and upper limits of 95% confidence interval of 0.176 and 0.474. This was statistically significant ($p=0.016$). **Conclusion:** In conclusion the stool antigen test is effective for the detection of *Helicobacter pylori* infection among peptic ulcer disease patients by comparing with histopathology. [Journal of Monno Medical College, June 2021;7(1):30-33]

Keywords: Diagnostic validity; stool antigen test; histopathology; *Helicobacter pylori* infection; peptic ulcer disease

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Introduction

Helicobacter pylori has a role in the pathogenesis of gastro duodenal diseases and to develop techniques for its accurate detection¹. *Helicobacter pylori* is a unipolar, multiflagellate, spiral shaped, microaerophilic, gram negative bacterium². The prevalence of *Helicobacter pylori* infection is high in Bangladesh³. There is a study which is conducted on

Bangladeshi children by ICDDRDB scientists and the study has shown that 60.0% cases are infected by the age of three months and 80.0% are infected by three years of age⁴. In another study on adult male about 92% are found seropositive for *Helicobacter pylori* antibody⁵. The prevalence among the middle-aged adults is over 80% in many developing countries and 20.0 to 50.0% in the developed countries⁶.

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Histology, culture and rapid urease test are the invasive tests requiring endoscopy and biopsy; however, on the other hand, serology, urea breath test and stool antigen tests are the noninvasive tests⁷. Histology is near to gold standard for the detection of *Helicobacter pylori* but it relies upon site, number, and size of gastric biopsies, method of staining, and the level of experience of the examining pathologist⁸. But there are significant advantages as it can evaluate inflammation, atrophy, intestinal metaplasia, and malignancy⁹.

Helicobacter pylori specific antigen can be detected from stool in suspected *Helicobacter pylori* infected patient. Stool antigen test is an easy noninvasive test requiring shorter time and low cost⁶. *Helicobacter pylori* specific stool antigen can be tested through available immunochromatographic strip³. The test is specific and reliable. As the test is noninvasive, easy to perform, requiring short time and cost effective, this test will be popular to both patient and physician⁷. The purpose of the present study was to validate the stool antigen test by comparing with histopathology for the detection of *Helicobacter pylori* infection among peptic ulcer disease patients.

Methodology

This cross-sectional study was conducted in the Department of Clinical Pathology with the collaboration of Department of Gastroenterology at Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbag, Dhaka, Bangladesh from October 2011 to September 2012 for a period of one year. All the clinically suspected *Helicobacter pylori* infected peptic ulcer patients attending in the Department of Gastroenterology at Bangabandhu Sheikh Mujib Medical University (BSMMU) for upper GI endoscopy were selected as study population. Non probable purposive sampling technique was used. The particulars of the patients and clinical data were recorded in a pre-designed data-sheet and were kept until the end of the study. The whole procedure was explained to the patient and informed written consent was taken. Patients were enrolled as per inclusion and exclusion criteria from the out patients Department of Gastroenterology at Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. Patients having upper abdominal pain, abdominal discomfort, anorexia, nausea, vomiting and belching were enrolled for upper GI endoscopy. Among them who were found ulcer in the stomach or in duodenum were enrolled in this study to detect *Helicobacter pylori* by stool antigen test and histopathology. Patients who were clinically suspected as *Helicobacter pylori* infection or patients complaining of abdominal symptoms suggestive of peptic ulcer disease and dyspepsia in adult age and both sexes were included in this study. Patient previously eradicated for *Helicobacter pylori*, Diagnosed patient getting treatment for *Helicobacter pylori* infection, complicated peptic ulcer including active bleeding, perforation and pyloric stenosis, co-existing gastric carcinoma, patient who had taken PPI within two weeks or unwilling or unable to undergo or had

the contraindication for endoscopy were excluded from this study. Stool antigen test for *Helicobacter pylori* specific antigen from stool sample was done with “ABON-One step *Helicobacter pylori* antigen test device” lateral flow immunochromatographic test device in the Department of Clinical Pathology. Endoscopy of upper GIT was performed in the Department of Gastroenterology. Biopsy was taken during endoscopy for histopathology. Histopathology of endoscopic biopsy was taken from the biopsy forceps and emerged into 10.0% formalin. Then it was sent to the Department of Pathology for detection of *Helicobacter pylori* from H&E and Giemsa stained biopsy. Data were collected by predesigned questionnaire. Endoscopy report and biopsy was collected from clinically suspected *Helicobacter pylori* infected patient from endoscopy room at Department of Gastroenterology. Patient's information was obtained through using patient's information sheet which involves questionnaire, clinical findings, SAT report and histopathology report. The stool antigen test was done from stool sample. The stool antigen test result was compared with result of histopathological report. Histopathology positive was considered as disease positive. Thus true positive, true negative and false positive, false negative results were recorded and sensitivity, specificity, positive and negative predictive values of stool antigen test was calculated. Statistical analysis was computed by using SPSS 17.0. The test was considered significant when p value <0.05. Endoscopy of upper GIT was performed from suspected *Helicobacter pylori* infected patient in the endoscopy room of Department of Gastroenterology at BSMMU, Dhaka. Prior to the commencement of this study, the research protocol was approved by the Institutional Review Board (IRB) of BSMMU, Dhaka.

Results

A total 86 patients were recruited for this study after fulfilling the inclusion and exclusion criteria. The age distribution of the study patients was recorded. It was observed that majority were age belonged to 31 to 40 years which was 28(32.6%) cases. The mean ($\pm$ SD) age was found 38.53($\pm$ 10.40) years with range from 21 to above 60 years (Table 1).

Table 1: Age group distribution of the study population (n=86)

Age group	Frequency	Percent
21 to 30 Years	25	29.1
31 to 40 Years	28	32.6
41 to 50 Years	23	26.7
51 to 60 Years	08	9.3
More Than 60 Years	02	2.3
Total	86	100.0
Mean $\pm$ SD (Range)	38.53 $\pm$ 10.40 (21 to 64)	

Out of 86 patients 76 were SAT positive and 10 were negative. Histopathology findings were positive in 65 and negative in 21. True positive were 63, false positive were 03. True negative were

08 and false negative were in 12. These findings were statistically highly significant ($p < 0.001$) (Table 2).

Table 2: Association between Stool Antigen Test (SAT) with Histopathology Findings (n=86)

Stool antigen test	Histopathology Test		Total	P value
	Positive	Negative		
Positive	63	13	76	<0.001
Negative	2	8	10	
Total	65	21	86	

*Chi square test was done to measure the level of significance.

The sensitivity, specificity, positive predictive values and negative predictive values and accuracy of SAT with histopathology are 84.0%, 72.73%, 95.45%, 40.0%, 82.56% respectively (Table 3).

Table 3: Sensitivity, specificity, positive predictive values and negative predictive values and accuracy of SAT with histopathology findings (n=86)

Validity	Values	95% CI
Sensitivity	96.92%	89.32% to 99.63%
Specificity	38.10%	18.11% to 61.56%
PPV	82.89%	77.55% to 87.17%
NPV	80.00%	47.93% to 94.56%
Accuracy	82.56%	72.87% to 89.90%

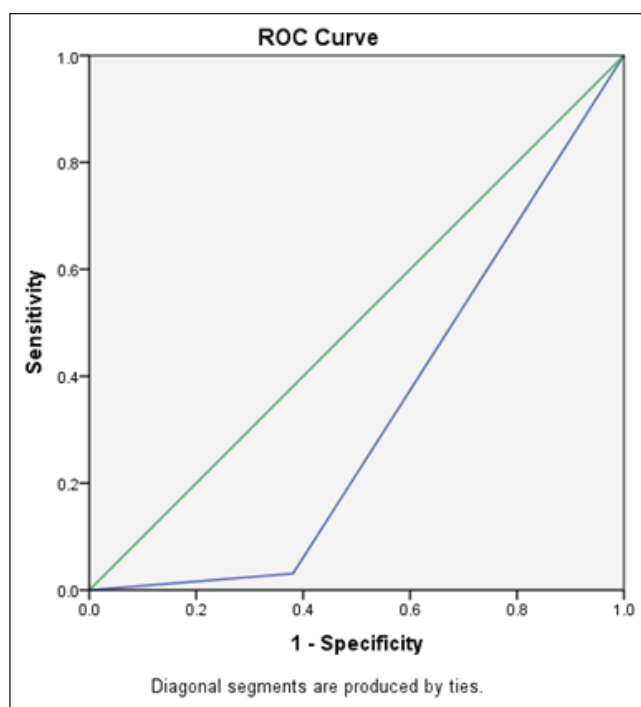


Figure I: Showing the ROC Curve of SAT

The area under the curve was 0.325 with the lower and upper limits of 95% confidence interval of 0.176 and 0.474. This was statistically significant ($p = 0.016$) (Table 4).

Table 2: Association between Stool Antigen Test (SAT) with Histopathology Findings (n=86)

Value of Area	Std. Error	P value	Histopathology Test	
			Lower Bound	Upper Bound
0.325	0.076	0.016	0.176	0.474

The test result variable(s): SAT has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.

Discussion

This cross sectional study was carried in the Department of Clinical Pathology in collaboration with Department of Gastroenterology, BSMMU. It has been tested antigen in stool for the detection of *Helicobacter pylori* with ABON lateral flow immunochromatographic test device in 86 peptic ulcer disease patients. Through endoscopy in the Department of Gastroenterology those patients who were found ulcer in the stomach or duodenum were enrolled in the study.

In this study SAT result is compared with histopathology of endoscopic biopsy. *Helicobacter pylori* status is defined when histopathology is positive and the test negative is considered as negative. There are many publications comparing SAT with different invasive and noninvasive tests for detection of *Helicobacter pylori*¹⁰. However, there is no known similar study done in comparing SAT with histopathology in PUD patients in Bangladesh.

In this study mean age was found 38.53 ± 10.40 years with range from 21 to above 60 years and the highest incidence of PUD patients were belonged to 31 to 40 years. Islam et al (2010) found that age between 16 to 70 years. Of the highest incidence were aged 21 to 30 and mean age was 37.98 years. These findings are near similar to this present study.

The sensitivity, specificity, positive predictive values and negative predictive values and accuracy of SAT with histopathology are 84.0%, 72.73%, 95.45%, 40.0%, 82.56% respectively. Similar result is reported in other studies. Trevisani et al¹¹ found the sensitivity, specificity, positive predictive and negative predictive values and the accuracy of SAT with Histopathology were found 94%, 90%, 93%, 92% and 92% respectively. The mentioned results are consistent with this present study. A comparative analytical study have been done by Qadeer et al¹² in Pakistan and have collected endoscopic biopsy specimens for histopathology examination. Stool samples have been taken for detection of antigen of *Helicobacter pylori* by rapid immune-assay based on lateral flow chromatography technique using monoclonal antibodies for qualitative detection of *Helicobacter pylori* antigen in human stool. The sensitivity and specificity of *Helicobacter pylori* stool antigen test (HPSA) with histopathology was 92.8% and 89.6% respectively. Finally they concluded that *Helicobacter pylori* stool antigen test (HPSA) is an accurate easily carried out in routine

laboratory and the test is non-invasive. This is similar to the present study result.

Kolho et al¹³ have been conducted a study in Finland to evaluate stool antigen test for the detection of *Helicobacter pylori* in children. Stool sample for fecal antigen test are taken one day before endoscopy, among them 41 was positive stool antigen out of 43 biopsies positive and negative in 53 out of 59 biopsies negative. The sensitivity of SAT was 95% and specificity was 90%. Finally they concluded that *Helicobacter pylori* antigen test in stool is an accurate non-invasive method for the detection of *H. pylori* infection and seem to provide parallel results. Gisbert et al¹⁴ have performed a study to evaluate stool antigen test for the diagnosis of *Helicobacter pylori* infection and have found sensitivity of SAT 96.0%, specificity 97.0%, positive predictive value 96% and negative predictive value 97%. They finally concluded that the stool antigen test seems to be a cost effective method for the diagnosis of *Helicobacter pylori* infection. Similarly, Koletzko et al¹⁵ have found the sensitivity, specificity, positive predictive value and negative predictive value of 98.0%, 99.0%, 98.0%, and 99.0% respectively which is consistent with his present study. Mishra et al¹⁶ have compared the SAT with the biopsy, PCR and RUT results together confirmed PUD cases and have found the sensitivity and specificity of HpSA test in 80% and 83.3% respectively in untreated patients.

Currently many reliable methods for detecting *Helicobacter pylori* infection are available. However, since invasive methods require endoscopy, they are not suitable for primary care physicians¹¹. In the absence of endoscopy facilities, primary care physicians require non-invasive methods to diagnose *Helicobacter pylori* infection¹⁷. Stool antigen test is an easy and quick procedure that does not require expensive equipments and can be used as an alternative to detect *Helicobacter pylori* infection. This method also offer advantages as a simpler sampling method. The stool test seems to meet the requirements of general practitioners who treat most patients infected with *Helicobacter pylori*, because it is easy to perform and requires no blood samples.

Conclusion

In conclusion the stool antigen test is an effective method for the diagnosis of *Helicobacter pylori* infection. The sensitivity is high by comparing with histopathology. However the specificity is low. Furthermore the accuracy is high which indicates the SAT is effective for the detection of positive cases of PUD. Large scale study should be conducted to get the real scenario.

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Hyperemesis Gravidarum: A Review Update

Siddiqua A¹, Karim MR², Moniruzzaman SM³, Sayem MA⁴, Khanum MA⁵, Alam MR⁶, Alam RJ⁷

Abstract

Hyperemesis gravidarum, or pernicious vomiting of pregnancy, is a complication of pregnancy that affects various areas of the women's health, including homeostasis, electrolytes, and kidney function, and may have adverse fetal consequences. Recent research now provides additional guidelines for protection against and relief from hyperemesis gravidarum. Alternations to maternal diet and lifestyle can have protective effects. Medicinal methods of prevention and treatment include nutritional supplements and alternative methods, such as hypnosis acupuncture, as well as pharmacotherapy. [Journal of Monno Medical College, June 2021;7(1):.....]

Keywords: Hyperemesis gravidarum; Nausea; vomiting; pregnancy

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Introduction

Nausea and vomiting are common in pregnancy, affection up to 70.0% to 85.0% of pregnant women¹. Hyperemesis affects between 0.3% and 2.3% of all pregnancies². The condition is defined as uncontrolled vomiting requiring hospitalization, severe dehydration, muscle wasting, electrolyte imbalance, ketonuria, and weight loss of more than 5.0% of body weight³. Most of these patients also have hyponatremia, hypokalemia, and a low serum urea level³. Ptyalism is also a typical symptom of hyperemesis. The symptoms of this disorder usually peak at 9 weeks of gestation and subside by approximately 20 weeks of gestation⁴. Approximately 1.0% to 5.0% of patients with hyperemesis must be hospitalized⁵. Women who experienced hyperemesis in their first pregnancy have a high risk for recurrence⁶⁻⁷.

Differential Diagnosis

Differential diagnosis of Hyperemesis gravidarum includes urinary tract infection, uremia, thyrotoxicosis, diabetic

ketoacidosis⁶, Addison's disease, hypercalcemia, gastritis, peptic ulcer disease, pancreatitis, bowel obstruction, hepatitis, drug induced vomiting, central nervous system disease, vestibular disease⁵.

Maternal and Fetal Effects

Electrolyte disturbances (hypokalemia), Coagulopathy, Mallory Weiss syndrome, Boerhaave syndrome, Hamman's syndrome, Wernicke's encephalopathy and psychological effects may occur. Hyperemesis gravidarum may be associated with preterm birth, low birth weight, still birth 5-min Apgar score less than 7, SGA and placental insufficiency⁸⁻⁹.

Laboratory Investigations

Common investigations include urine dipstick to quantify ketonuria as 1 plus ketones or more, MSU, Urea and electrolytes may show hypokalemia or hyperkalemia and hyponatremia, full blood count may show anemia, features of

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infection raised and to exclude molar or partial molar pregnancy⁸. In refractory cases thyroid function test and liver function tests usually done⁹.

Management

There is no research based evidence on the effectiveness of dietary treatment¹⁰. However, smaller amounts of food and fluids more often can help prevent mild cases of nausea and vomiting from worsening. The meals should contain more carbohydrate than fat and acid¹¹. Women who are affected by this illness should avoid stress and try to get as much rest as possible. If emotional support is needed, the patient can see a psychologist to help address the debilitating symptoms. Supportive counselling of crisis intervention may be necessary¹². Intravenous (IV) fluids should be provided to replenish the lost intravascular volume. Rehydration along with replacement of electrolytes is very important in the treatment of hyperemesis. Normal saline or Hartman solution are suitable solution; potassium chloride can be added as needed. While replacing electrolytes, the physician must consider the risks of rapid infusion in order to prevent such conditions as central pontine myelinolysis¹². Thiamine should be routine supplement in patients with protracted vomiting. Pregnant woman should take a total of 1.5mg/d. If this cannot be taken orally, 100 mg of thiamine may be diluted in 100 ml of normal saline and infused for 30 minutes to 1 hour weekly¹². Several common drugs are used as anti-emetics to control nausea and vomiting during pregnancy. They should not be used before 12 to 14 weeks of gestation due to possible detrimental effects to the developing fetus. However, there are data showing lack of teratogenicity with the use of dopamine antagonists, phenothiazine and histamine receptor blockers¹².

In a study by Nageotte¹³ and colleagues, patients using a combination treatment of droperidol and diphenhydramine have significantly shorter hospital stays for hyperemesis, fewer days hospitalized for hyperemesis during pregnancy, and fewer readmissions for hyperemesis compared with those who are not treated with these combinations as a primary therapy. Diphenhydramine may cause cleft palate. Droperidol is structurally related to haloperidol; it does not cause abnormal fetal or neonatal outcomes, and there are no maternal adverse outcomes, including hypotension. Promethazine is a type anti-dopaminergic therapy and has multiple mechanism of actions. Multiple formulations are available including injectable, tablets, syrup and suppositories. It has potential neurologic effects on fetus. Ondansetron is a 5-HT₃ antagonist that acts on the CNS and peripheral nervous system. The primary location of action is in the CNS, but it also increases gastric emptying. It is very effective for patients who experience the emetic effects of chemotherapy¹⁴. It also aids patients with postoperative nausea and vomiting. A study on ondansetron found that it significantly decrease vomiting after the first dose and decrease nausea subsequently¹⁴. The mechanism of action of steroids is assumed to be a direct effect on the vomiting

center of the brain. Because such high doses are required. It is improbable that there is a lack of pituitary adrenal reserve in this illness. Steroids are found to be more effective in a randomized, double-blind, controlled study comparing steroids and promethazine for the treatment of hyperemesis¹⁵. Side effects of steroid may be fetal oral cleft defects. Dose of steroid usually 16 mg TDS or injection 100 mg IV twice daily. The GI symptoms of motion sickness and hyperemesis are similar; therefore, the root of ginger, *Zingiber officinalis*, has been studied to treat hyperemesis. The effectiveness of ginger is thought to be dependent on its aromatic carminative and absorbent characteristics. In a double-blind, randomized crossover trial, 1 g of ginger was administered daily for 4 days⁷. The preference among the patients to receive ginger versus placebo was significant. There have been teratogenicity effects of ginger in this or other studies⁷.

In addition to standard treatment acupuncture to PC6, which is the point 5 cm proximal to the wrist crease on the palmar side of the forearm could quicken the resolution of hyperemesis. In a placebo-controlled randomized, single-blind, crossover study, acupuncture treatments were given for 30 minutes three times a day because, in previous studies, an 8-hour treatment effect had been shown¹⁴. Women in the active acupuncture group versus the placebo group had a significantly quicker decrease in the amount of nausea they experienced¹⁶.

Hypnosis is used to control physiologic changes that are thought to be involuntary. Hypnotized patients have, however, been able to control sympathetic tone. Vasoconstriction, vasodilation, heart rate, and muscle tone⁵. Hypnosis works through a dissociation of content, when the individual's attention is focused on a certain task causing the rest of the information surrounding him or her to be temporarily unreachable. An example of this is the unnoticed hum of a computer motor. Hypnosis also acts through dissociation of context, in which this narrowing of attention briefly suspends higher-order, processes⁵. In some refractory severe cases of hyperemesis Gravidarum, if maternal survival is threatened, or if hyperemesis Gravidarum is causing severe physical and psychological burden, termination of the pregnancy should be considered¹⁷.

Conclusion

Hyperemesis Gravidarum is a potentially severe condition that can cause detrimental changes in the pregnant and her fetus. In order to decrease these effects, managing the nausea and vomiting as well as their consequences, will prevent harmful or undesired outcomes. Recent research now provides additional guidelines for protection against and relief from hyperemesis Gravidarum. The current medications and treatments reviewed here will aid in proper management and relief of this disorder.

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Anesthetic Management of Patient with Fracture of Lower End of Humerus with Permanent Pace Maker with Different Co-morbidities: A Case Report

Hasan KMM¹, Dipankar S², Khan MAR³**Abstract**

Permanent pace maker (PPM) used for complete heart block (CHB) patient that means heart has no conductivity. The management of patient with PPM who undergoes a non cardiac surgery is challenging for an Anesthesiologist because of high mortality rate. Here we are reporting of a patient with PPM for fracture lower end of humerus surgical correction under supra clavicular block with intravenous anesthetics. [*Journal of Monno Medical College, June 2021;7(1):.....*]

Keywords: Supraclavicular block; IVA; PPM; CHB**Received:** 7 April 2021; **Accepted:** 5 May 2021; **Published:** 1 June 2021**Introduction**

Brachial Plexus block is now becoming a popular anesthetic technique for any kind of surgery in upper limb. Its benefit is lowering risk of anesthetic hazards compared to general anesthesia specially in patients with various co-morbid diseases like complete heart block, Ischemic Heart disease, HTN, DM. Supra-clavicular brachial plexus block associated with intravenous anesthetic agents can run a smooth surgery in patients with various co-morbid disease during intra-operative and post-operative period. It also helps to prolong the duration of post-operative analgesia.

Case Presentation

A 65 years old patient who presented with fracture lower end of humerus admitted for surgery. He was a known case of PPM, IHD (Ischemic heart disease), DM (Diabetes Mellitus). After admission the patient was subjected to required investigation and reports reveals- S. Creatine- 1.2 mmol/l, S. Na⁺ 142 mmol/l, S. K⁺ 3.9 mmol/l. Hb- 13.5 gm/dl. RBS 22.8 mmol/l, HbA1C 11.7 %. Heart Rate 70 beat/min, it was regular. Systolic and Diastolic BP 150/80 mm Hg

respectively. Respiratory rate- 18 br/min. On Auscultation Normal Vesicular Breath Sound, No added sound were heard. Preoperative ECG complete heart block, ECHO revealed EF 66%, LA was 27 mm LV 45 mm, IVSD 10 mm. All valves are normal. He was on treatment of inj. Humilin R 100U, inj. Humilin N 100U, Tab Betaloc 50 mg, Tab. Nidocard Retard 6.4 mg. Chest X-ray shows Left Ventricular Hyper trophy with PPM in situ. After high risk consent, patient planned for surgery. Supra clavicular block with IVA was planned; the reason for selection was explained to the patient. Brachial block was chosen to avoid GA hazards; it has minimal effects on H/R, contractility. Blood volume was maintain with colloid 1 ml/kg/hr. Intraoperatively there were no haemodynamic change. 5 lead ECG monitoring and SPO2 was monitored. Under aseptic preparations, supra clavicular block was given 2% lignocaine, 2% lignocaine with adrenaline & 0.5% bupivacaine combinations mixed with distilled water total volume about 40 ml. IVA are fentanyl & propofol infusion used, inj midazolam 2.5 mg bolus used. A vasopressor ephedrin was kept ready but it was not used as there was no drop BP. Intraoperatively, Blood loss was

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Figure I:



Figure II:

assessed by collection in suction bottle & soaked gauge piece and same was corrected by fresh blood. Total duration about 90 mins. No significant changes occurred. Post operatively BP was maintained & No complaints of chest pain, sweating, dyspnoea. Patient was discharged without any complications and advised for regular OPD follow-up.

Discussion

Anesthetic management of patients with PPM is challenging & high mortality rate. Complete Heart Block is defined as inability to conduct impulse through junctional pathway. These patients are at risk for dysrhythmia or death. The anesthesiologists should be known of its pathophysiology, C/F, Diagnostic Evaluations & treatment modalities. For

management of any ventricular arrhythmia there should be defibrillator available and also anti-arrhythmic drugs should be kept ready to overcome any kind of complications. This has to be followed by careful planning for safe anesthesia. Fluid management is critical. Initially Hartman fluid can be given if blood glucose level is controlled because lactate is broken down into glucose which can provide nutrition to the patient during perioperative period if there is no other contraindication. It is obvious that one must check-up capillary blood glucose level before operation, during operation and after operation to see the fluctuations of blood glucose level whether patient is hypoglycemic or hyperglycemic or euglycemic state. Choice of anaesthesia should be planned & it should have minimal Hemodynamic fluctuation. Brachial Block can be planned to avoid fluctuation in BP. Use of vasoactive or inotropes drugs may be required to counteract the negative effects of anesthetics on cardiac function & in this case these drugs were required to prevent hemodynamic changes. Our case was distinct from other cases in that Brachial Block was safely provided while G/A is used by others. There were no changes in H/R & BP in perioperative period. This showed Brachial Block had Minimal effects on H/R & contractility and safely used for Complete Heart Block patient with Permanent Pacemaker in situ.

Conclusion

The management of patient with PPM who undergoes a non-cardiac surgery is always challenging for the anaesthesiologist as it has high mortality. Patient with CHB with PPM can be effectively managed under regional anaesthesia. Anaesthesia planning, pre-operative assessment, optimizing cardiac status, post operative monitoring are vital parameters which have to be considered for reducing mortality. It is important to anaesthesiologists to must understand the pathophysiology for better management & they may need anaesthesia any time.

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Role of Duration of Smoking on Quality of Semen among Male Infertile Couple in Bangladesh

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Abstract

Background: Effect of duration of smoking can play an important role in the quality of semen. **Objective:** The purpose of the present study was to measure the effect of duration of smoking in semen quality. **Methodology:** This was an analytical cross-sectional study. This study was carried from June 2010 to December 2010 for a period of six months which was conducted in the Infertility Centre at Shaheed Suhrawardy College Hospital, Dhaka, Bangladesh and in selected private clinics of Dhaka City. The male smokers with the age group of more than or equal to 18 years who attended in the outpatient department of Infertility Clinic were selected as case group and nonsmoker male were selected as control group. The semen samples were analyzed in infertility laboratory of Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh. Based on their detailed smoking history, the smokers were divided into categories according to the duration of smoking. Those who smoked for 1 to 10 years were short term smokers; those who smoked for 11 to 20 years were long term smokers. **Result:** A total number of 100 male were recruited for this study. Most of the study populations were in the age group of 36 to 40 years which was 44(44.0%) cases. In this study it was found that the respondents who were the history of less than 10 years of smoking had lower mean with SD volume of semen than more than 10 years group which was 2.2 ± 0.8 mL and 2.3 ± 0.7 mL respectively ($p=0.835$). However, There was no significant change of mean with SD of pH of more and less than 10 years of history of smoking which was 7.3 ± 0.2 and 7.3 ± 0.1 respectively ($p=0.951$). The mean with SD of sperm count of semen was less in more than 10 years duration of smoking history than less than 10 years group which was 54.6 ± 25.7 /mL and 48.1 ± 18.5 /mL respectively ($p=0.583$). It was found that among smokers who were smoking for more than 10 years the mean with SD of motility of sperm were significantly lower than less than 10 years smokers which were 2.38 ± 7.4 and 40.4 ± 10.1 ($p=0.003$). The mean with SD of morphology of sperm in semen was less in more than 10 years duration of smoking than less than 10 years of history of smoking which was 45.6 ± 7.8 and 49.0 ± 13.5 respectively ($p=0.556$). **Conclusion:** In conclusion the duration is significantly affected the motility of sperm, morphology of sperm among male partner of the infertile couple. [*Journal of Monno Medical College, June 2021;7(1):30-33*]

Keywords: Role; duration of smoking; quality; semen; male; infertile couple

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Introduction

Infertility is a significant and common problem, affecting perhaps one couple in six¹. The reported incidence of male infertility varies widely and the overall incidence is estimated to be 30.0% to 50.0% of sub fertile couples²⁻⁴. In a

multicentric study done by WHO in 1989 of over 10,000 infertile couples from 33 centers in 25 countries a possible cause in the male partner was found in a third of the cases, in the female partner in 25% and in both partners in 25% of cases; however, in the remaining cases neither partner had a

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detectable cause for infertility⁵.

Despite worldwide anti-smoking campaigns, cigarette smoking is very common⁶. The highest prevalence of smoking is observed in young adult males during their reproductive period like 46.0% smokers between 20 and 39 years⁷. In 30.0% of infertile couples, the male factor, in the form of defective sperm quality, is major cause⁸. As a large number of men smoke worldwide and the fact that cigarette smoke contains known mutagens and carcinogens, there has been much concern that smoking may have unfavorable effects on male reproduction. Experimental studies have indicated that in male rats exposed to smoking, serum levels of nicotine was increased which adversely affected spermatogenesis and sperm fertilizing potential⁹.

In regard to the clinical studies on the relationship between smoking and male reproduction, the literature results have been non-conclusive. Osser et al¹⁰ showed that cigarette smoking did not adversely affect sperm concentration, motility or morphology in a population of Swedish infertile men. However, Merino et al¹⁶ and Chia et al¹¹ reported that in infertile population of Mexico and Singapore, smokers had significantly lower sperm density, motility, viability, and percentage of normal sperm morphology as compared with the non-smokers. Vine et al¹² believed that the association between male smoking and semen quality in 'healthy' men like volunteers and sperm donors than in the infertile population. The purpose of the present study was to measure the effect of duration of smoking in semen quality.

Methodology

This comparative cross-sectional study was carried from June 2010 to December 2010 for a period of six months in the Infertility Centre at Shaheed Suhrawardy Hospital, Dhaka, Bangladesh and selected private clinics of Dhaka City of Bangladesh. Consecutive smokers and non-smokers who attended outpatient department of Infertility Clinic of Shaheed Suhrawardy Hospital and selected private clinics and who were interested to join the study were included in this study. Man with age of 25 to 40 years with a history of primary sub fertility who were able to provide an ejaculate, the subject who had never had urogenital or serious systemic diseases, married at least for one year or none of them ever used any contraceptive measure for the past one year or longer were included in this study. Patients of history tobacco/betel nut chewing, bidi smoking, patients with occupational exposures to chemical or excessive heat, as for like cases working at petrol pumps, chemical factories and bakeries, patients with history of injury to the testes, varicocoele hydrocoele, undescended testis or its corrective surgery and vasectomy, patients with history of any chronic illness such as tuberculosis, diabetes mellitus, hypertension, thyroid diseases, mumps or any ailment for which long term medication was being given or azoospermics patient above 45 years of age to avoid effects of ageing on sperm variables were excluded from this study. The semen samples were analyzed in infertility laboratory of Shaheed Suhrawardy

Hospital, Dhaka, Bangladesh who qualified under stringent selection criteria. Based on their detailed smoking history the smokers were divided into categories according to the duration of smoking. Those who smoked for 1 to 10 years were short term smokers; those who smoked for 11 to 20 years were long term smokers. Semen samples were collected by masturbation in a clean specimen container after a sexual abstinence for 3 to 6 days, allowed to liquefy and evaluated immediately thereafter according to WHO guidelines World health organization²⁶. Azoospermia was diagnosed when even in the sediment after centrifugation at >3000 g for 15 min, no sperm were detected. Data was collected from the male partner and recorded on a pre-designed data collection sheet from each patient by face to face interview and from semen analysis report. Data was processed and statistical analysis was performed by SPSS software packet. P value <0.05 is considered significant and measured by unpaired Student 't' test and 'x²' test.

Results

A total number of 100 male were recruited for this study. Most of the study populations were in the age group of 36 to 40 years which was 44(44.0%) cases. However, next highest numbers of study population were 36(36.0%) respondents in the age group of 31 to 35 years. Only 20(20.0%) respondents were in the age group of 26 to 30 years (Table 1).

Table 1: Age Distribution of Study Population (n=100)

Age Group	Frequency	Percent
26 to 30 Years	20	20.0
31 to 35 Years	36	36.0
36 to 40 Years	44	44.0
Total	100	100.0

In this study it was found that the respondents who were the history of less than 10 years of smoking had lower mean with SD volume of semen than more than 10 years group which was 2.2±0.8 mL and 2.3±0.7 mL respectively. The difference between these two groups was not statistically significant (p=0.835). However, There was no significant change of mean with SD of pH of more and less than 10 years of history of smoking which was 7.3±0.2 and 7.3±0.1 respectively (p=0.951) (Table 2).

Table 2: Duration of Smoking and Semen Parameters (Mean ± SD)

Semen	Duration of smoking		P value
	Less Than 10 Years	More than 10 Years	
Volume (ml)	2.2 ± 0.8	2.3 ± 0.7	0.835
Range (min-max)	(1 - 3)	(2 - 4)	
pH	7.3 ± 0.2	7.3 ± 0.1	0.951
Range (min-max)	(7.2 - 7.6)	(7.2 - 7.5)	

Student t test was performed to see the level of significance.

From present study all the semen parameters were studied. The mean with SD of sperm count of semen was less in more than 10 years duration of smoking history than less than 10 years group which was $54.6 \pm 25.7/\text{mL}$ and $48.1 \pm 18.5/\text{mL}$ respectively. The difference of sperm count of semen between these two groups was not statistically significant ($p=0.583$). It was found that among smokers who were smoking for more than 10 years the mean with SD of motility of sperm were significantly lower than less than 10 years smokers which were 2.38 ± 7.4 and 40.4 ± 10.1 ($p=0.003$). Furthermore, duration of history of smoking had bad effect on the morphology of sperm. The mean with SD of morphology of sperm in semen was less in more than 10 years duration of smoking than less than 10 years of history of smoking which was 45.6 ± 7.8 and 49.0 ± 13.5 respectively. The difference of morphology of sperm in semen between these two groups was not statistically significant ($p=0.556$) (Table 3).

Table 3: Microscopy Findings of Semen based on Duration of smoking (Mean $\pm$ SD)

Semen	Duration of smoking		P value
	Less Than 10 Years	More than 10 Years	
Sperm count/(ml)	54.6 ± 25.7	48.1 ± 18.5	0.583
Range (min-max)	(30 - 110)	(15 - 70)	
Motility (%)	40.4 ± 10.1	23.8 ± 7.4	0.003
Range (min-max)	(18 - 45)	(15 - 40)	
Morphology (%)	49.0 ± 13.5	45.6 ± 7.8	0.556
Range (min-max)	(30 - 68)	(30 - 55)	

Student t test was performed to see the level of significance.

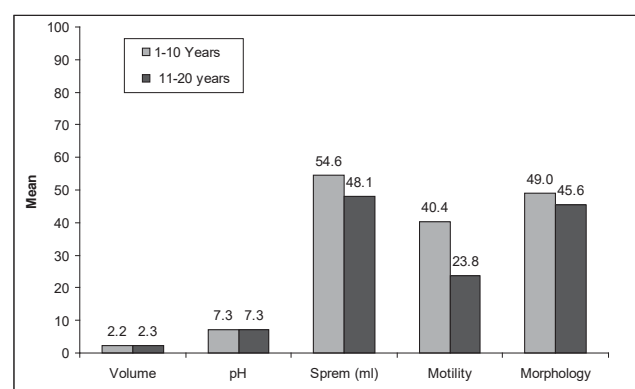


Figure I: Bar diagram showing the Duration of smoking and semen parameters of the study patients

Discussion

A study¹³ in Himalayan Institute of Medical Sciences, on infertile couples Uttaranchal India showed that 37 percent of non-smokers showed normozoospermia, while only three percent of smokers were normozoospermics. Light smokers predominately showed asthenozoospermia. Heavy smokers showed asthenozoospermia, teratozoospermia and oligozoospermia. Statistical analysis using Fisher's exact test showed that the incidence of both isolated asthenozoospermia (p -value is 0.0015) and

asthenozoospermia with teratozoospermia (p -value is 0.0106) among smokers was significantly more in comparison to non-smokers. Overall impact of asthenozoospermia (p -value is less than 0.0001) and teratozoospermia (p -value is 0.0328) but lot of oligozoospermia was observed on the semen quality in smokers compared with non-smokers.

The relationship between cigarette-year which is the number of cigarettes per day multiplied by the number of years of smoking and semen quality has been assessed in two studies by Chia et al¹¹ and one study by Brugo-Olmedo et al¹⁴. The two studies by Chia et al¹¹ reported an inverse dose-response relationship between cigarette-years and sperm concentration. The relationship between nicotine in seminal plasma and semen characteristics has been evaluated in three studies¹⁵⁻¹⁷, which reported an inverse correlation between nicotine and sperm concentration, motility, morphology or total sperm count.

A study¹² performed on 1232 patients attending in infertility out patients department and among them 395 patients fulfilled the criteria and comparing the semen results of the study group with WHO norms: 21.5% showed sperm concentration <20 million/ml which defines as Oligospermic. Total motility 22.1% showed $<40\%$ total motility and 22.7% showed total motility $<20\%$. Most remarkable observation of this study group is rapid linear motility is grossly affected. About 32.9% patient showed rapid linear motility which is between 0.0% to 10.0% and this is very low, compare to WHO norms. About 22.7% showed rapid linear motility between (11%-20%). In this study it is noted that sperm concentration is not very much affected by smokers but the quality of sperm i.e. sperm motility especially rapid liner movement of sperm is grossly affected by smoking and that is in terms influence a fertility status.

Osser et al¹⁰ showed that cigarette smoking did not adversely affect sperm concentration, motility or morphology in a population of Swedish infertile men. However, Merino et al¹⁶ and Chia et al¹¹ reported that in infertile population of Mexico and Singapore, smokers had significantly lower sperm density, motility, viability, and percentage of normal sperm morphology as compared with the non-smokers. Vine et al¹² believed that the association between male smoking and semen quality in 'healthy' men (e.g. volunteers and sperm donors) than in the infertile population.

A study in Joining Medical College, Shandong, China, 2000 showed that the semen volume and acidity and the sperm density, viability and forward progression were much lower in the medium, heavy and long-term smokers than in the non-smokers ($p < 0.01$). The sperm density, viability and forward progression were negatively corrected with the amount and duration of cigarette smoking ($p < 0.01$). This result also correlates our findings.

Conclusion

In conclusion the sperm count of semen is significantly less in more than 10 years duration of smoking history than less than 10 years group. Furthermore, duration of history of smoking had bad effect on the morphology of sperm. The morphology of sperm in semen is less in more than 10 years duration of smoking than less than 10 years of history of smoking. Further large scale study should be conducted to see the real scenario.

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